



**Report of the
Comptroller and Auditor General of India
on
Economic Sector
for the year ended March 2017**



Government of Odisha
Report No.2 of the year 2017

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Preface

This Report for the year ended March 2017 has been prepared for submission to the Governor of Odisha under Article 151 of the Constitution of India.

The Report contains significant results of the performance audit and compliance audit of the Departments of the Forest and Environment, Works and Water Resources Government of Odisha under the Economic Sector.

However, the Departments of Agriculture and Farmers' Empowerment; Co-operation; Energy; Fisheries and Animal Resources Development; Industries; Micro, Small and Medium Enterprises; Skill Development and Technical Education; Tourism; Handlooms Textiles and Handicrafts coming under Economic Sector are not covered in this Report.

The instances mentioned in this Report are those which came to notice in the course of test audit for the period 2016-17 as well as those which came to notice in earlier years, but could not be reported in the previous Audit Reports. Instances relating to the period subsequent to 2016-17 have also been included, wherever necessary.

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

Chapter I

Introduction

Chapter I Introduction

1.1 *About this Report*

This Report of the Comptroller and Auditor General of India (CAG) on Economic sector of Government of Odisha relates to matters arising from Performance Audit of Contract Management in Department of Water Resources and Compliance Audit of Government Departments.

The primary purpose of the Report was to bring to the notice of the State Legislature significant results of audit. The audit findings are expected to enable the executive to take timely corrective action. This would help in framing policies and directives that will lead to improved management of the organisations, thus contributing to better governance.

Compliance Audit refers to examination of the transactions relating to expenditure, receipts, assets and liabilities of the audited entities to ascertain whether the provisions of the applicable Rules, Laws, Regulations, various orders and instructions issued by the competent authorities are being complied with.

Performance Audit examined the extent to which the objectives of an organisation, programme or scheme were achieved economically, efficiently and effectively.

This chapter provides the audited entity's profile, the planning and extent of audit and a synopsis of the significant audit observations. Chapter II of this Report deals with the findings of Performance Audit and Chapter III deals with Compliance Audit of various departments.

1.2 *Audited Entity's Profile*

There are 38 departments in the State at the Secretariat level headed by Additional Chief Secretaries/Principal Secretaries/Commissioner-cum-Secretaries. They are assisted by Directors and Sub-ordinate Officers. Of these, 17 Departments including PSUs/Autonomous Bodies coming under these Departments are under the audit jurisdiction of the Principal Accountant General (Economic and Revenue Sector Audit). This Report includes the results of audit of three departments out of 12 Departments dealt with in Economic Sector.

1.3 *Authority for Audit*

The authority for Audit by the CAG is derived from Articles 149 and 151 of the Constitution of India and the Comptroller and Auditor General's (Duties, Powers and Conditions of Services) Act (CAG's DPC Act), 1971. The CAG conducts audit of expenditure of the departments of Government of Odisha under section 13¹ of the CAG's DPC Act, 1971. In addition, the CAG conducts audit of Autonomous Bodies substantially funded by the State Government. Principles and methodologies for various audits are prescribed in

¹ Audit of (i) all transactions from the Consolidated Fund of the State, (ii) all transactions relating to Contingency Fund and Public Account and (iii) all trading, manufacturing, profit and loss accounts, balance sheets and other subsidiary accounts.

the Auditing Standards and the Regulations on Audit and Accounts 2007 issued by the CAG.

1.4 Planning and Conduct of Audit

Audit process starts with the risk assessment of the Department / Organisation as a whole and that of each unit. The assessment was based on expenditure incurred, criticality/complexity of activities and level of delegated financial powers and assessment of internal controls. Previous audit findings were also considered in this exercise. Based on this risk assessment, the frequency and extent of audit were decided. An Annual Audit Plan was formulated to conduct audit on the basis of such risk assessment.

After completion of audit of each unit, Inspection Reports containing audit findings are issued to the Heads of the entities. The entities are requested to furnish replies to the audit findings within one month of receipt of the Inspection Reports. Whenever replies were received, audit findings were either settled or further action for compliance was advised. The important audit observations made in the Inspection Reports/Performance Audit were processed for inclusion in the Audit Reports. These are submitted to the Governor of Odisha under Article 151 of the Constitution of India.

1.5 Significant Observations of Performance Audit

This Report contains one Performance Audit on Contract Management in Department of Water Resources. It includes suitable recommendations that would assist the Executive in taking timely corrective action and improving service delivery to the citizens. Significant audit observations are discussed below:

1.5.1 Performance Audit of Contract Management in Department of Water Resources

Performance Audit covered the period 2012-17. Audit noted that contracts were awarded to Odisha Construction Corporation on nomination basis. Out of 198 works awarded to Odisha Construction Corporation (OCC), 96 works were not completed in time. Of those, 51 works were delayed by more than one year. It was observed that only 34 *per cent* of works awarded to OCC were completed in time. The department had not imposed penalty for failure to complete the work in stipulated time. Audit examination showed that there were delays at every stage of the contract process i.e. issue of letter of acceptance, signing of agreements and execution of works.

E-tendering introduced (January 2009) is yet to be fully utilised as all the required details were not uploaded on the portal.

Many projects remained incomplete due to award of work before acquisition of land and finalisation of design. Overall, there was an idle investment of ₹ 134.07 crore on seven works. Two bridges could not be opened to traffic as approach roads were not constructed. A canal was constructed without ensuring water flow which resulted in blockage of funds. This indicated poor planning and contract management.

The shortcomings in preparation of estimates inflated the unit rate and it resulted in extra expenditure.

The Quality Control Divisions and State Quality Monitoring Cell pointed out defects in quality of material used in works. Action taken reports were not, however, submitted and no follow up action was taken defeating the purpose. Land was not acquired for three water management projects i.e. Nuagaon distributary, Akhadasahi Creek and Construction of pond at Samanga. As a result, the objective of providing irrigation to 4850 ha of land and drinking water to Puri town was not achieved.

The construction of three flood protection embankments was partially completed. As a result investment on three works was lying idle. Further, the objective of protecting lives and property from flood water remained unfulfilled.

1.6 Significant Audit Observations on Compliance Audit

1.6.1 Interest on delayed payment of Net Present Value not realised

The user agencies deposited Net Present Value for diversion of forest land with delays ranging from 18 to 1115 days. However, interest of ₹ 1.31 crore for the period of delay in payment was neither demanded by the Divisional Forest Officers nor deposited by the user agencies. The Government stated that ₹ 0.29 crore had already been realised from two user agencies. Steps were being taken for collection of balance amount.

(Paragraph 3.1)

1.6.2 Sandal wood, timber and Poles not disposed

In 29 forest divisions, sandal wood, timber and other forest produce valued at ₹ 1.58 crore seized in 1281 undetected (UD) forest offence cases remained undisposed. The Government stated that timber and poles valuing ₹ 2.61 lakh involving 58 cases were disposed of and action would be taken to dispose of other materials. Thus, delay in disposal of timber, poles and sandal wood led to blocking of revenue of ₹ 1.55 crore (₹ 1.58 crore - ₹ 2.61 lakh).

(Paragraph 3.2)

1.6.3 Avoidable expenditure on purchase of gabions

In six forest divisions, against approved rate for gabion made of bamboo twigs, gabions made up of iron, fiber and poly wire mesh were purchased by Divisional officers. Rates paid were in excess of prescribed cost norm for use in different avenue plantations. This resulted in avoidable expenditure of ₹ 1.77 crore.

(Paragraph 3.3)

1.6.4 Avoidable expenditure on cement concrete

In Upper Indravati left canal Division No-II, Dharamgarh estimates for water course and field channels were prepared in deviation from Indian Standard Code. Against requirement of 75 mm thick cement concrete for lining of both bed and vertical side walls, provision had been made for 150 mm thick for bed and 200 mm thick for vertical side walls. The excess provision of cement concrete for 75mm on bed and 125mm in vertical side walls led to extra expenditure of ₹ 13.28 crore.

(Paragraph 3.4)

1.6.5 ***Avoidable expenditure due to excess provision of cement concrete***

In Anandapur Barrage Project estimate for renovation of canal works was prepared adopting 100 mm thickness of cement concrete lining of canal for discharge of 5-50 cumecs of water. However, the required thickness as per Indian Standard Code should have been 75 mm as discharge capacity of canal was 46.534 cumecs. The excess provision of cement concrete inflated the estimated cost by ₹ 10.36 crore resulting in avoidable cost of ₹ 10.62 crore with tender premium.

(Paragraph 3.5)

1.6.6 ***Improvement of roads and bridges with Central Road Fund and Additional Central Assistance***

Audit of projects under Improvement of Roads and Bridges with Central Road Fund (CRF)/ Additional Central Assistance (ACA) showed that the projects were selected in deviation from CRF/ACA guidelines. As a result, eight roads under CRF were not directly connected to places of important market centres, economic zone, agricultural region and tourist centres. Similarly, 42 roads under ACA were not connected to any places of tourist importance or cultural heritage.

The projects were not completed due to delay in acquisition of land, shifting of utility services, removal of encroachments and want of forest clearance. As a result there was delay in completion of projects. The delay ranged from 60 to 1188 days.

The guidelines required adherence to IRC specifications. There were several instances of deviations leading to avoidable extra expenditure of ₹ 87.44 crore. Preparation of estimates in deviation from OPWD Code, Schedule of Rates and Analysis of rates led to undue benefit of ₹ 25.68 crore to contractors.

Government of India released only 47 *per cent* of the sanctioned cost under CRF due to under utilisation of funds by Government of Odisha.

(Paragraph 3.6)

1.6.7 ***Undue benefit to contractors***

In three Roads and Buildings divisions, average lead distance, instead of shortest lead distance, was adopted, in the estimates of seven road projects. This inflated the estimated cost of works by ₹ 27.24 crore. Award of works based on these inflated estimates led to undue benefit of ₹ 25.61 crore to contractors including tender premium.

(Paragraph 3.7)

1.6.8 ***Extra cost due to incorrect inclusion of conveyance charges to prime cost for calculating overhead charges***

A review of the item rates of the works showed that conveyance charges were added to prime cost. Thereafter, overhead charges at eight/ten *per cent* and contractors profit at 10 *per cent* were calculated and added. Further, one *per cent* labour cess was also calculated on conveyance charges and added. These

inadmissible elements for purpose of calculating overhead charges, contractors' profit and labour cess had inflated the estimated cost by ₹11.01 crore.

(Paragraph 3.8)

1.6.9 Avoidable cost due to unwarranted/excess provision of Bituminous item

In Malkangiri (R&B) Division sanctioned estimates of seven works showed the traffic of one MSA² and CBR³ value ranged from two to five *per cent*. As per IRC specifications there was no requirement of Bituminous Macadam (BM). However, BM of 50 mm to 60 mm was provided. Further against requirement of 20 mm Semi Dense Bituminous Concrete provision was made for 25 mm to 30 mm. Thus, unwarranted provision of BM and excess provision of 05 to 10 mm SDBC inflated the estimates by ₹ 66.63 crore. The extra cost due to inflated estimates worked out to ₹ 65.38 crore taking into account the tender premium.

(Paragraph 3.9)

1.6.10 Avoidable cost due to provision of surface dressing

As per Indian Roads Congress specifications the bituminous surfacing shall consist of either a wearing course or a binder course with wearing course depending upon the traffic. However, in five Divisions, in the estimates of 19 works, provision of surface dressing was made over and above the binder course and a wearing course. This violated the Indian Roads Congress specifications leading to extra cost of ₹ 12.08 crore.

(Paragraph 3.10)

1.6.11 Undue benefit to contractors

As per the State Analysis of Rates, the total distance from quarry to work site should not exceed the distance from quarry to mixing plant plus distance from mixing plant to work site to carry mixed materials. However, in two divisions the estimates of three road works included extra lead charges⁴ from mixing plant to work site. This was in addition to lead charges provided from quarries to work site for transportation of stone products. This inflated the estimated cost leading to extra cost and undue benefit of ₹ 4.77 crore.

(Paragraph 3.11)

1.6.12 Avoidable cost

As per Indian Roads Congress guidelines where California Bearing Ratio (CBR) of sub grade soil is less than two *per cent*, the design should be based on sub grade CBR value of two *per cent*. Capping layer is provided where the CBR value of sub base is less than 2 percent to raise the CBR value to 10 percent. In six divisions, estimates provided capping layer of sand ranging from 115 mm to 450 mm although CBR value was more than two *per cent*. The unwarranted provision of sand, deviating from Indian Road Congress

² Million standard axles: vehicles per day

³ California Bearing Ratio is a penetration test for evaluation of the mechanical strength of natural ground, subgrades and base courses beneath new carriageway construction.

⁴ Transportation charges for carrying materials from the quarry located at a particular distance

guidelines inflated the estimated cost by ₹ 8.12 crore. With tender premium/discount the extra cost worked out to ₹ 7.55 crore.

(Paragraph 3.12)

1.6.13 ***Avoidable expenditure due to use of morrum and sand instead of earth***

As per Indian Roads Congress specifications, sub-grade constructed for road formation should be well compacted with earth available on project area or burrow earth. In four divisions, provisions were made in the estimates of four works for 0.78 lakh cum of morrum and 6.57 lakh cum of sand instead of earth. The undue provision of morrum and sand against earth resulted in extra cost of ₹ 12.66 crore. As of March 2017, with tender premium ₹ 13.09 crore had already been passed on to the contractors.

(Paragraph 3.13)

1.6.14 ***Excess provision of pavement thickness led to extra cost***

In five divisions, estimate of five road projects showed the CBR of sub grade soil ranged from four to eight *per cent* and cumulative traffic from three to eight MSA. As per IRC specifications, the required thickness of pavement consisting of Granular Sub Base, Granular Base and Bituminous Surface ranged from 515 to 620 millimeter (mm). However, pavement thickness ranging from 535 to 685 mm was provided against 515 to 620 mm resulting in excess provision between 5 and 100 mm. This inflated the estimated cost by ₹ 15.65 crore and considering rates quoted by bidders the extra cost worked out to ₹ 13.16 crore.

(Paragraph 3.14)

1.6.15 ***Response to Audit***

A review of IRs issued up to March 2017 pertaining to 12 departments showed that 9,219 paragraphs relating to 2,944 IRs were outstanding at the end of June 2017. Of these, 1,046 IRs containing 2,213 paragraphs are outstanding for more than 10 years. Even first replies from the Heads of Offices, which was to be furnished within one month, have not been received in respect of 319 IRs issued up to March 2017.

Serious irregularities noticed in audit were included in the Reports of the Comptroller and Auditor General that were presented to the State Legislature. The Administrative Departments were required to furnish explanatory notes on transaction audit and performance audit paragraphs included in the Audit Reports within three months of their presentation to the State Legislature. Audit observed that in respect of Audit Reports from the year 2007-08 to 2014-15, nine departments did not submit explanatory notes on 35 paragraphs. Four departments did not submit explanatory notes on five performance audits as of March 2017.

The Public Accounts Committee (PAC) made 730 recommendations on Audit Report paragraphs from the First Report of Tenth Assembly (1990-95) to Fifth Report of Fourteenth Assembly (2009-14). Final action on 42 recommendations out of 730 recommendations was awaited as of March 2017.

(Paragraph 3.15)

Chapter II

Performance Audit

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Chapter II Performance Audit

Department of Water Resources

2.1 Performance Audit on Contract Management

Executive Summary

Department of Water Resources (DoWR) has the mandate to plan, develop and manage water resources. Allocations were regularly provided in annual budget for construction and maintenance of irrigation and flood control projects. The works were carried out by contractors through contracts enforceable by law as per Indian Contracts Act of 1872. DoWR followed the provisions of Odisha Public Works Department (OPWD) Code which laid down the procedure for award and execution of works. This report focuses on the performance of DoWR in respect of tendering process and execution of projects and management of contracts. Performance Audit was conducted from April to June 2017 covering award of contracts for execution of works during 2012-17. Out of 44 divisions, 15 divisions were selected based on expenditure incurred. Against 2892 contracts valuing ₹ 3140.93 crore (in the 15 test checked divisions), 1014 contracts with value of ₹ 1933.41 crore, were reviewed during the audit.

Contracts were awarded to Orissa Construction Corporation (OCC) on nomination basis. A total of 198 works for a value of ₹ 1549.09 crore were entrusted to OCC by the DoWR bypassing the tendering procedure. Out of 198, Ninety Six (96) works awarded to OCC were not completed within the scheduled time. Of those, 51 works were delayed by more than one year.

The works involving 618 contracts awarded to contractors other than OCC were not completed within the stipulated period.

E-tendering portal introduced in January 2009 is yet to be fully utilised.

In five divisions, 20 embankments/canal works were executed providing for manual excavation of earth though mechanical excavation was cheaper. This resulted in undue payment of ₹ 18.13 crore to the contractors.

As per Schedule of Rates 2013, hire charges of a dozer (D-80-A-12) was ₹ 2463.54 per hour, excluding supervision charges, for compaction of 300 cum of earth. The outturn was reduced from 300 cum to 100 cum for compaction of earth, however, the rate was not reduced accordingly. Thus, adoption of items rate of 300 cum of earth, with reduced outturn of dozer, inflated estimated cost between ₹ 19.60 and ₹ 20.30 per cum. Audit observed that in 38 works, for compaction of 63.31 lakh cum of earth, the estimates were inflated by ₹ 12.41 crore.

Two projects were taken up with objective of providing irrigation to 4850 ha of land and one project was taken up to provide 75 MLD drinking water to Puri town. However, due to delay in acquisition of land these objectives remained unfulfilled.

The construction of three flood protection embankments was partially completed. As a result investment on three works was lying idle. Further, the

objective of protecting lives and property from flood water remained unfulfilled.

Overall, there was an idle investment of ₹134.07 crore on seven works.

There were inordinate delays in completion of projects due to lack of proper design. As a result, objectives of providing effective communication facilities to local people remained unfulfilled.

Effective quality assurance as envisaged by Government was not achieved.

2.1.1 Introduction

The Department of Water Resources (DoWR) has the mandate to plan, develop and manage water resources. Accordingly, the DoWR undertakes construction and maintenance of major, medium, minor irrigation, drainage and flood control projects. The Department also maintains 1591.312 km of Capital Embankment, 2443.974 km of Other Agricultural Embankment, 1534.909 Test Relief Embankments and 1567.555 km of Saline Embankment.

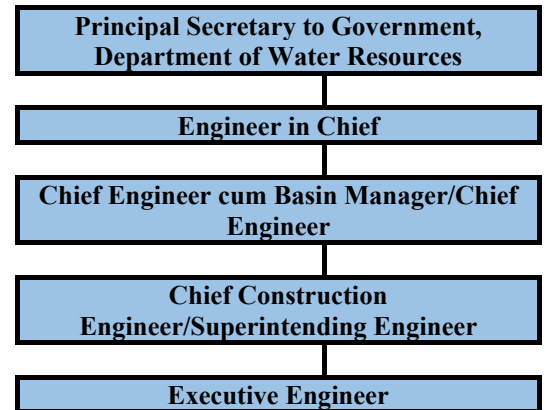
Allocations were regularly provided in annual budget for creating above assets. The works were carried out by contractors through contracts enforceable by law as per Indian Contracts Act, 1872. DoWR followed the provisions of Odisha Public Works Department (OPWD) Code. It has laid down the procedure for award and execution of works undertaken by the Department through contractors.

The essence of efficient and effective contract management is that competitive rates were ensured, qualified contractors were engaged and the works were executed in time bound manner. Performance Audit of contract management was conducted in 15 divisions covering 1014⁵ contracts for ₹ 1933.41 crore awarded during 2012-17 to assess economy, efficiency and effectiveness in execution of works.

2.1.2 Organisational set up

The Principal Secretary to Government of Odisha is the officer in charge of Department of Water Resources and implements various projects in the State. The project implementation is administered by Engineer in Chief (EIC) assisted by eight Chief Engineer & Basin Managers (CE&BM), two Chief Engineers (CE), 10 Chief Construction Engineers (CCE) and 17 Superintending Engineers(SE). At field level, execution of projects was supervised by 132 Executive Engineers (EE). The flow chart No 1 indicates the organisational structure.

Chart No 1: Organisational Structure



⁵ 78 OCC (₹ 622.74 crore) and 936 Non-OCC (₹ 1310.67 crore)

2.1.3 *Audit Objectives*

The performance audit was conducted to assess whether;

- availability of water for irrigation and drinking purpose was ensured;
- procedures as per code/rules were followed for invitation, finalisation of tenders and also award of works;
- projects were executed as per conditions of contract relating to payments, quality assurance and timely completion including funds utilisation;
- internal control and monitoring at all levels were adequate;

2.1.4 *Audit Criteria*

Audit criteria were sourced from the following:

- Provisions of OPWD Code
- Orders issued by Government of Odisha
- Contract conditions
- Specifications of Indian Road Congress/ Bureau of Indian Standards, Schedule of Rates and State Analysis of Rates
- Inspection notes of higher authorities

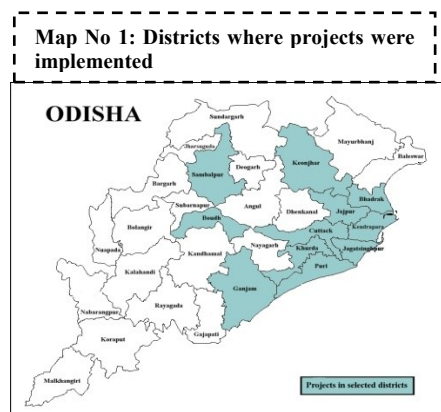
2.1.5 *Scope and methodology*

Performance Audit was conducted from April to June 2017 covering award of contracts for execution of works during 2012-17. Contracts under Accelerated Irrigation Benefit Programme (AIBP) were excluded since a separate Performance Audit is being conducted for inclusion in Audit Report on Union Government.

The audit universe constituted offices of four CE&BM, one CE, 12 SEs and 44 EEs. Out of 44 divisions, 15 divisions were selected by adopting stratified random sampling method based on expenditure incurred.

In the 15 test checked divisions, out of 2892 contracts for ₹ 3140.93 crore, 1014 contracts with value of ₹ 1933.41 crore were reviewed during the audit. Audit objectives, criteria as well as scope and methodology were discussed in the entry conference held with Special Secretary to Government of Odisha in DoWR on 22 April 2017.

Draft Performance Audit Report was issued on 26 July 2017 to Government and findings were discussed in an exit conference held on 13 September 2017. Views of the Government wherever necessary have been considered while finalising the report.



2.1.6 Details of Contracts executed by contractors other than OCC

In 15 test checked divisions, the following contracts were awarded to contractors other than OCC. Contracts for works which were completed and in progress as of March 2017 are given below:

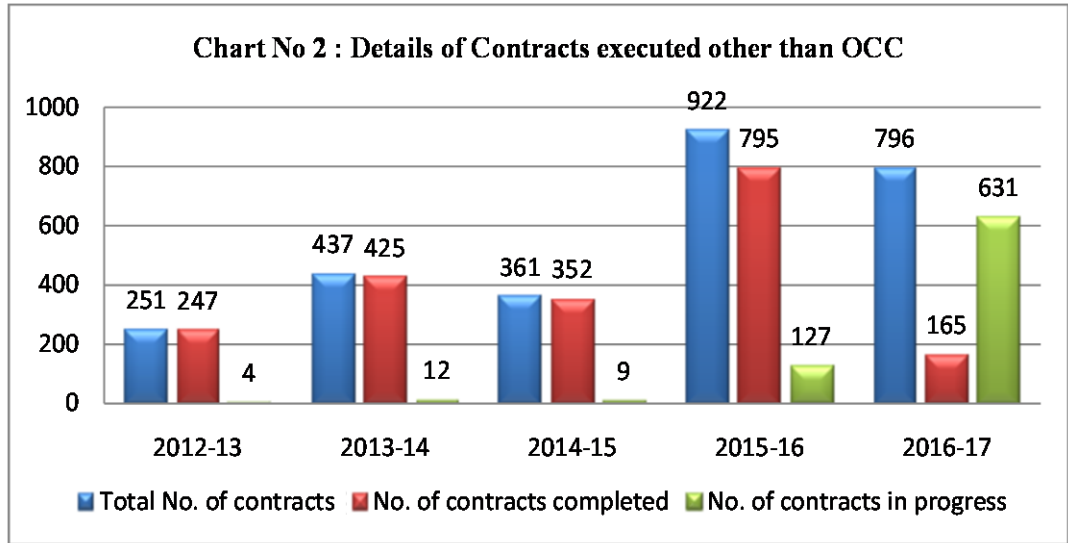


Table No. 2.1: Details of Contracts executed by contractors other than OCC during 2012-17

(₹ in crore)

Year	Total contracts		Contracts where works were completed			Contracts where works were in progress			
	No. of contracts	Contract Value	No. of contracts	Contract Value	Expenditure incurred	No. of contracts	Contract Value	Value of works done	Percentage of works done
2012-13	251	93.11	247	88.61	87.49	04	4.50	4.20	98
2013-14	437	400.38	425	348.35	343.37	12	52.03	45.22	97
2014-15	361	300.13	352	207.65	202.69	09	92.48	58.82	97
2015-16	922	747.26	795	407.95	391.20	127	339.31	226.16	86
2016-17	796	756.52	165	76.41	68.53	631	680.11	220.36	20
Total	2767	2297.40	1984	1128.97	1093.28	783	1168.43	554.76	71

(Source-Information furnished by Executive Engineers)

2.1.7 Contracts executed by Odisha Construction Corporation

Department of Water Resources has been awarding contracts to OCC, a State Public Sector Undertaking without tender. As per the procedure prescribed by Government, where the bid is non-responsive or due to exigency or security reasons, works were to be awarded to OCC on negotiated value with overhead charges at 10 *per cent* of contract value for supervising execution of works. However, Audit observed that the works were awarded to OCC even when there were no exigencies or security reasons. Further, only 34 *per cent* of the works awarded to OCC were completed in time.

In 15 test-checked divisions, year wise details of contracts awarded to OCC during 2012-17, contracts for works which were completed, contracts for works which were in progress and expenditure incurred are given below:

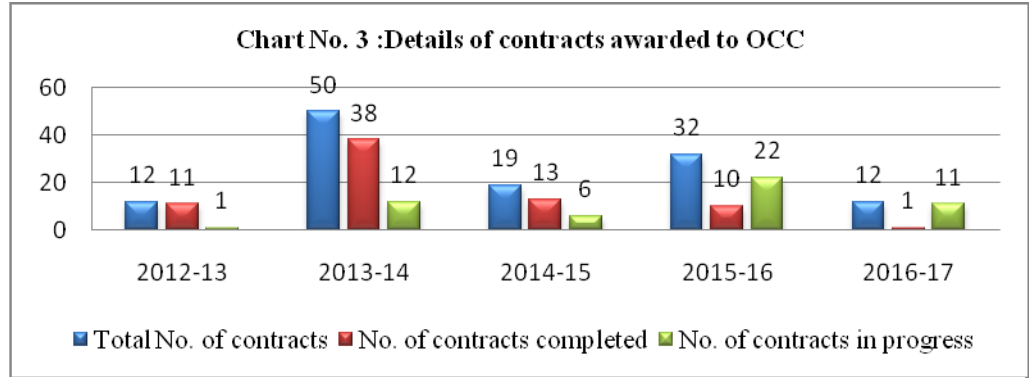


Table No.2.2: Details of contracts awarded to OCC and expenditure incurred

(₹ in crore)

Year	Total works contracts		Contracts for which works were completed			Contracts for which works were in progress		
	No of contracts	Contract Value	No of contract	Contract Value	Expenditure	No of contracts	Contract Value	Expenditure
2012-13	12	45.59	11	40.92	10.47	01	4.67	0
2013-14	50	350.09	38	214.28	178.86	12	135.81	103.00
2014-15	19	107.17	13	52.82	44.63	06	54.35	34.72
2015-16	32	255.47	10	30.68	25.49	22	224.79	46.74
2016-17	12	85.21	01	1.10	0.38	11	84.11	23.58
Total	125	843.53	73	339.80	259.83	52	503.73	208.04

(Source: Information furnished by OCC)

It may be observed from Table-2.1 and 2.2 that only 125 contracts out of 2892(2767 + 125) were awarded to OCC for ₹ 843.53 crore. It was only four per cent of the total number of contracts. It, however, made up 27 per cent of total value of contracts ₹ 3140.93 crore (2297.40 crore + 843.53 crore). This indicates that many of the high value contracts were awarded to OCC on nomination basis as discussed in paragraph 2.1.8.2.

2.1.8 Audit Findings

2.1.8.1 e-Procurement system

To eliminate the human interface in bid submission process, Government of Odisha introduced e-tendering system in January 2009. E-tendering is an internet based process wherein the complete tendering process beginning with advertising, placing of tender documents, submission of bids with required documents by the tenderers, evaluation of bids and finalisation of list of responsive bidders is done on a real time basis over the internet. For the above purpose, e-procurement portal was created in Works Department with Engineer-in-Chief (Civil) Odisha as Chief Procurement Officer. Government decided to host all tenders costing ₹ 20 lakh and above on the e-procurement portal. This was revised to ₹ 10 lakh from July 2013. Audit of the e-procurements system showed the following deficiencies:

- As per Government instructions (January 2009) the Procurement Officer shall upload on the portal a summary of status regarding technical bid opening, technical evaluation, financial bid opening, financial bid evaluation, award of contract and cancelled tender/ re-tendering. After uploading the above details on the portal, the Procurement Officer shall

declare the above process as complete.

Audit observed that the Chief Engineer-cum-Chief Manager (Technical), State Procurement Cell, Odisha intimated (January 2017) EIC of the DoWR that the uploading of the above details up to the award of contracts during the period from April 2012 to March 2016 was not done.

Audit further observed that, out of 9932 tenders published, only in respect of 493 cases, details were uploaded. The details of works executed by OCC were also not uploaded on the portal. Thus, in the absence of uploading of all the relevant details on the portal, the e-procurement system was not fully utilised.

- Odisha Public Works Department Code (Para 3.5.14) stipulated that in case a contractor is blacklisted, it will be widely published by uploading the details of blacklisted contractors on the portal and intimated to all departments of Government of Odisha and the Government of India Agencies working in the State.

Audit observed that since the uploading of most of the details pertaining to the contracts was not done, the details of blacklisted contractors were not available on the portal. Test check of records showed that defaulting contractors were not blacklisted as discussed in paragraph 2.1.12.

The Government accepted the factual position and stated (September 2017) that any error so pointed out by audit in tendering procedure is being rectified.

2.1.8.2 Award of works on nomination basis to OCC

Best governance practices requires award of works on competitive basis. In this regard Central Vigilance Commission (CVC) had instructed (December 2012) Government bodies to curb the practice of Government Public Sector Undertakings (PSUs) obtaining contract from other Government organisation/PSUs and subsequently awarding the same to private entities, to avoid the competitive tendering mechanism. CVC had also observed that the above practice subverts integrity, transparency, fairness and equity in decision making. CVC directions also require that details of all tenders awarded on nomination basis shall be posted on website in public domain along with brief reasons for doing so.

Further, Government prescribed (September 2012) procedure which stipulated that projects should be executed through tender/e-tender process. However, the option of taking up works execution through OCC was also available where the bidding is non-responsive in tender/e-tender or due to exigencies or security reasons.

Audit observed that works were awarded to OCC on nomination basis to avoid competitive tendering mechanism. The details of award of works on nomination basis were not posted on web site in public domain in violation of CVC guidelines. As such, the DoWR failed to explore the competitive or the lowest rate at which the works could have been awarded. Execution of 198 works valuing ₹ 1549.09 crore was entrusted to OCC by the DoWR during 2012-17. DoWR entered into agreements with OCC for execution of works till 2012-13. From 2013-14, only Memorandums of Understanding (MoU) were

The works were awarded to OCC without invitation of bid.

signed though the procedure prescribed by Government in September 2012 and May 2015 required an agreement. The MoU had no contractual clause for levy of liquidated damages and penalty for abandonment of works, OCC was given undue advantage as discussed in paragraphs 2.1.8.4 and 2.1.8.5.

The Government stated (September 2017) that OCC is a wholly owned Government of Odisha Corporation. The DoWR entered into annual agreement (MoU), to award certain works valuing at ₹ 400 crore in 2015-16 and ₹ 700 crore in 2016-17, to enhance the activities and efficiency of the corporation. The Government also stated that OCC was highly efficient in works meant for protection from flood and executed works in difficult and complex conditions. The Government further stated (September 2017) that the above works were taken up through OCC considering vulnerability of embankments during and before flood seasons to safeguard the localities from floods.

The reply was not acceptable since Central Vigilance Commission guidelines insisted on award of work through tender to ensure transparency in public procurement. It was to maximise economy and efficiency, to promote healthy competition among the tenderers and to provide for fair and equitable treatment of all tenderers. Moreover, the Government reply was silent regarding its failure to post the details of works awarded to OCC on nomination basis on web site. Further, many of works were delayed by OCC defeating the very purpose of safeguarding localities from floods. The works executed by OCC also had certain shortcomings as delineated in the report.

2.1.8.3 Delays in execution of works by OCC

Audit observed that 198 (from all 44 divisions) works were entrusted to OCC through agreements/MoUs. However, the Government had stipulated in working procedure issued in June 2002, September 2012 and May 2015 that the DoWR should enter into an agreement with OCC. The agreement would include a clause for levy of liquidated damages (LD) for not completing the work in stipulated time. Details of Agreements/MoUs signed by OCC with department, number of works completed and range of delays in execution during 2012-17 are given below:

Table No. 2.3: Details of works under execution by OCC

Sl. No.	Year	Total No. of Agreements / MoU	Value of Agreements/ MoUs	Completed in time	Range of delays in Completed works			Work in progress within scheduled time	Range of delays in work in progress		
					Up to one Year	One year and above	Total		Up to one year	One year and above	Total
1	2012-13	20*	178.07	05	03	07	10	0	0	05	05
2	2013-14	72**	484.58	28	09	20	29	0	2	13	15
3	2014-15	36	185.65	16	08	02	10	02	5	03	08
4	2015-16	47	326.15	15	02	0	02	19	10	01	11
5	2016-17	23	374.64	03	01	0	01	14	05	0	05
	Total	198	1549.09	67	23	29	52	35	22	22	44

Source: Data collected from OCC
*Agreements up to 2012-13. ** MoUs from 2013-14

The above table shows that 96 (52+44) out of 198 works awarded to OCC were not completed within the stipulated time. Of them 51 (29+22) works were delayed by more than one year. Agreements were entered into during

2012-13 however no liquidated damages were levied for slow progress of work. From 2013-14, MoUs signed between the Department and OCC did not include a clause for levy of LD. The records were not maintained to identify delays for which OCC could be held responsible. Hence, the potential loss to Government towards levy of LD could not be worked out.

The Government stated (September 2017) that provision for levy of liquidated damages had not been incorporated in the MoU and inclusion of penalty clause was not in the interest of Government as OCC was a State PSU.

The reply was not tenable since as per the working procedure issued by Government in June 2002, September 2012 and May 2015 agreement should be entered into with OCC which included recovery of LD for slow progress. This would have ensured timely completion by fixing accountability of OCC. Thus, award of works through MoU having no LD clause was in deviation from the working procedure of Government.

2.1.8.4 Payment of advances to OCC

Advances of ₹ 1059.02 crore were released violating provisions of OPWD Code.

Para 3.7.21 of OPWD Code stipulated that advances to contractors are as a rule prohibited. When issue of such advances is indispensable sanction of Government should be obtained in exceptional circumstances. Such advances shall carry interest at the rate of 18 *per cent* per annum.

It was seen that in violation of OPWD code, DoWR stipulated that 33 *per cent* of the project cost should be deposited with OCC in advance and the balance 67 *per cent* should be released in two equal installments in relaxation of the above codal provisions. Release of second and third installments would be subject to submission of utilisation certificate of at least 75 *per cent* of the funds released earlier.

Audit observed that the Chief Engineer and Basin Managers (CE&BM) of the projects concerned sanctioned interest free advances and Executive Engineers released the amount to OCC. However, efforts were not made to adjust the same in the subsequent installments. As of March 2017, against ₹ 1059.02 crore released as advances, ₹ 737.94 crore only had been adjusted and a balance of ₹ 321.08 crore remained unadjusted.

Audit further observed that for 75 contracts, ₹ 65.00 crore was released as first advances to OCC during 2012-17. Even before adjustment of 75 *per cent* of the first advances, further advances amounting to ₹ 106.60 crore were also released in above cases.

The Government stated (September 2017) that OCC was a PSU under DoWR and it did not get any budgetary support from Government. Interest free advances were paid as per working procedure approved by Government. In some cases, advances remained unadjusted for reasons beyond the control of OCC and department.

The reply was not acceptable since provisions of OPWD Code were violated and the release of further advances before adjustment of 75 *per cent* of earlier advances was in violation of procedure approved by the Government.

2.1.8.5 Payment of Overhead Charges

Department of Water Resources has been paying 10 per cent of project cost as overhead charges to OCC as per working procedure. The OCC bears the cost of survey, investigation, design, drawing and preparation of estimates out of the above charges. Accordingly, for 198 works with contract value of ₹ 1549.09 crore, ₹ 154.90 crore was payable to OCC, against which ₹ 67.09 crore was paid to OCC as of March 2017.

Audit, however, observed that detailed estimates based on survey/investigation had been prepared by Divisional Officers themselves and not by OCC. The circular of May 2016 stipulated that officers of OCC were to be assisted by the Divisional Officers during execution, measurement as well as to ensure quality of works. As such, the payment of overhead charges lacked justification.

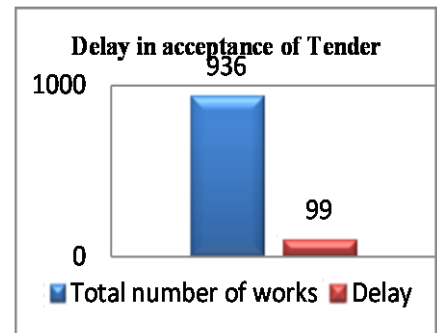
The Government stated (September 2017) that OCC was being paid overhead charges as per Finance Department Notification of February 2011. The Government further stated that as and when required, OCC took up investigation, design and drawing of works, especially mechanical works.

The reply was not acceptable since the above notification stipulated only the rate of overhead charges at 10 per cent payable to OCC. OCC was provided with all technical support by the Department in planning and execution of work. Thus, the payment of overhead charges to OCC lacked justification.

2.1.9 Delay in acceptance of tenders

Tender for 99 out of 936 works with tender value of ₹ 484.30 crore were not accepted within three months.

Para 3.5.18 (iv) of OPWD Code stipulated that currency period of any tender should not be more than three months from the last date prescribed for receipt of the tenders. In 15 test checked divisions, it was observed that tenders for 99 out of 936 works with tender value of ₹ 484.30 crore were not accepted within three months from the last date for receipt of tenders. Further, 62 out of the above 99 tenders were accepted and agreements drawn with delays ranging from 61 to 534 days from the last dates for acceptance of tenders.



The Government accepted the factual position and stated (September 2017) that 90 days provided in the Code was not sufficient. The delays were caused in verification of documents of bidders, allegations and court cases. Moreover, consent of bidders for extension of bid validity was also obtained before acceptance. However, the proposal would be submitted to Codes Revision Committee for revision of OPWD code.

The fact remained that the period of three months were prescribed by OPWD Code after considering the above factors.

2.1.10 Delay in drawal of agreements

Para 3.5.18 (vii) of OPWD Code stipulated that order to commence work should be given to contractor within 15 days from the date of receipt of tender duly accepted in the Divisional Office, provided the contract agreement

29 out of 936 contracts were signed with a delay of 86 to 250 days against prescribed period of 15 days.

complete in all respects has been duly executed. Signing of contract is a pre-requisite for commencement of work.

Audit observed that in 15 test checked divisions, for 29 out of 936 works with contract value of ₹ 125.63 crore, there were delays in signing of agreements ranging from 86 to 250 days. Reasons for delay in drawal of agreements were not on record.

The Government accepted the factual position and stated (September 2017) that the observations were noted for future guidance.

2.1.11 Delay in refund of earnest money deposit

In five divisions, EMD for ₹ 1.08 crore was refunded to the unsuccessful bidders with delay ranging from 116 to 711 days against prescribed period.

Detailed Tender Call Notice stipulated that earnest money deposit (EMD) shall be in shape of National Saving Certificate/KissanVikas Patra/Post Office time Deposit Account, with the deposit receipt of scheduled bank duly pledged in favour of concerned Executive Engineer. Further, Para 3.5.20 of OPWD Code stipulated that earnest money deposited by the bidders except the three lowest tenders should be returned within a week from the date of receipt of tenders. The earnest money deposited by the other two parties except the one whose tender is accepted should be refunded within 15 days of acceptance of tender.

Audit, however, observed that register for receipt and refund of EMD was not maintained properly in five⁶ out of 15 divisions test checked. As of March 2017, in five divisions, EMD amounting to ₹ 1.08 crore received in respect of 36 works had not been refunded to the unsuccessful bidders. The delay ranged from 116 to 711 days. Further in three⁷ divisions, the EMD amount was refunded after delay ranging from 137 to 319 days. Reasons for delay in refund of EMD to unsuccessful bidders were not on record.

The Government accepted the factual position and stated (September 2017) that the unsuccessful bidders had not applied for refund of earnest money deposit. Quick action was however being taken to refund the EMD to the contractors and the audit observation was noted for future guidance.

2.1.12 Relaxation of conditions in favour of defaulting bidders

EMD of ₹ 98.97 lakh was not forfeited in respect of 94 bidders who did not turn up to sign the agreements.

Para 3.5.14 of OPWD Code stipulated that if the lowest bidder does not turn up for agreement after finalisation of tender, he shall be debarred from participation in bidding for three years and action will be taken to blacklist the contractor. Further, Detailed Tender Call Notice (DTCN) stipulated that EMD deposit of the bidder will also be forfeited. In 15 divisions, it was observed that in 94 out of 936 bids (10 per cent), the bidders who quoted the lowest rates did not turn up to sign agreements. Agreements were signed with the second lowest bidders at the L1 rate. Further, the EMD of ₹ 98.97 lakh in respect of 94 bidders remaining with the divisions were not forfeited and credited to government account. The defaulting bidders had also not been blacklisted.

Check of records showed that in 10 tenders, bid documents furnished by four bidders in support of past experience in execution of works were forged. The

⁶Mahanadi South, Mahanadi North, Berhampur Irrigation, Sambalpur Irrigation and Baitarani Irrigation Division.

⁷Jajpur Irrigation, Berhampur Irrigation and Baitarani Irrigation Division.

CE & BM, Lower Mahanadi Basin had moved Government in December 2016 to forfeit the EMD and to blacklist a bidder. The EE, Jaraka Irrigation Division stated that he would initiate action to blacklist three contractors.

The Government accepted the factual position and stated that it had forfeited EMD for ₹ 2.06 lakh and credited the amount to Government account. The Government further stated that action would be taken to blacklist them.

The reply was, however, silent on the delay in blacklisting the contractors and forfeiture of remaining amount of EMD.

2.1.13 Shortcomings in estimation of works

Para 3.2.7 of OPWD Code stipulated that for obtaining technical sanction of competent authority, detailed estimates should be accurately calculated based on adequate data. Further Para 3.4.10 provides that the estimate should be prepared using sanctioned Schedule of Rates and providing for the most economical and safe way of executing the work. Instances of deviations from the above conditions in preparation of estimates and their impact are discussed below:

2.1.13.1 Adoption of manual instead of mechanical excavation led to undue payment to contractors

In five divisions, 20 works were executed with estimates providing manual excavation instead of mechanical excavation which led to undue benefit of ₹ 18.13 crore

Para 3.4.10 of OPWD Code stipulated that Divisional Officer should certify that he has personally visited the spot and prepared the estimate providing for the most economical and safe way of executing the work. Further State Analysis of Rates (AoR) 2006 provides for excavation, by mechanical means as well as loading and transportation. AoR does not provide for manual excavation.

Audit observed that in five⁸ divisions, 20 embankments/canal works were executed providing for manual excavation though mechanical excavation was cheaper. Thus adoption of manual excavation rates inflated the estimated cost between ₹ 18.00 and ₹ 41.87 per cubic meter (cum). For excavation of 40.72 lakh cum of earth, the estimated cost was inflated by ₹ 15.62 crore. Against above, amount payable to contractors was ₹ 18.13 crore considering the rates quoted by bidders. As of August 2017, ₹ 15.29 crore had already been passed on to the contractors as detailed in *Appendix 2.1.1*.

The Government stated (September 2017) that in the absence of Government burrow area, the contractors took earth from private land and land owners did not permit the use of excavators on the plea that the excavators might cut deeper trenches.

The reply was not tenable since the DTCN forming part of contract stipulated that the contractor has to arrange burrow earth at his own cost and responsibility. In exit conference Principal Secretary, DoWR accepted the observation and agreed to adopt only mechanical excavation in respect of earthwork. The reply was, however, silent as regards undue payment of ₹ 18.13 crore to contractors.

⁸Mahanadi South, Mahanadi North, Kendrapara Irrigation, Jagatsinghpur Irrigation and Jaraka Irrigation Division.

Adoption of hire charges of dozer with reduced outturn by seven EEs resulted in undue payment of ₹ 11.40 crore to contractors.

2.1.13.2 Adoption of excessive hire charges

As per Schedule of Rates 2013, hire charges of a dozer (D-80-A-12) was ₹ 2463.54 per hour excluding supervision charges for compaction of 300 cum of earth. The EE Baitarani Irrigation division, in a work of Anandapur Main Canal, adopted the rate reducing it to one third of rate for compaction of 100 cum. However, EEs of seven divisions adopted full hire charges of dozer. The outturn was reduced from 300 cum to 100 cum for compaction of earth, the rate was not reduced accordingly. Thus, adoption of items rate with reduced outturn of dozer inflated estimated cost between ₹ 19.60 and ₹ 20.30 per cum.

Audit observed that in 38 works, for compaction of 63.31 lakh cum of earth, the estimates were inflated by ₹ 12.41 crore. Against above, amount payable to contractors was ₹ 11.40 crore considering the rates quoted by the bidders. As of August 2017 ₹ 9.09 crore had already been paid to contractors as detailed in *Appendix 2.1.2*.

In the exit conference, the Principal Secretary, DoWR accepted (September 2017) the audit observation and stated that instructions would be issued to follow the Analysis of Rate.

2.1.13.3 Use of higher capacity crane resulting in inflation of estimates

The EEs of three divisions adopted hire charges of 80 tonne capacity crane against 35 tonne resulting in extra cost of ₹ 4.06 crore.

The Schedule of Rate provided rate for hire charges of crane for three tonnes (₹ 230), 35 tonnes (₹ 550) and 80 tonnes (₹ 825) to be utilised in packing of stones in rip rap⁹, launching apron¹⁰ and nose of spurs¹¹. In contracts for restoration and protection of river embankments in flood prone areas of three Divisions¹², the cranes were required for collecting, supplying, providing stone in launching apron using stones of one ton and above weight.

Audit observed that there was a requirement of a crane for handling stones weighing one to four tones. This could have been easily accomplished by use of a crane of 35 tonnes or lower capacity. However, EE adopted higher rate of hire charges of ₹ 825 per hour applicable to crane of 80 tonnes capacity despite availability of rate in the SoR for crane of 35 tonnes capacity at ₹ 550 per hour. In addition, charges of oil, lubricants and food charges, which were not admissible, were also included in the item rate. Adoption of rate of ₹ 825 per hour, which was applicable to higher capacity crane inflated the estimates. Inclusion of other charges further increased the estimated cost. This led to avoidable extra cost of ₹ 4.06 crore. As of August 2017 ₹ 3.37 crore had already been paid to the contractor as detailed in *Appendix 2.1.3*.

The Government stated (September 2017) that the item of dumping armory stone boulder weighing up to four metric tonnes in rip-raps, spurs and slope protection work was not in Analysis of Rate published by Works Department, Odisha. Hence analysis of this item approved by the Paradeep Port Trust was adopted by the Division.

⁹Large stone used to form a foundation for break water and other structures.

¹⁰A ground covering of concrete or other materials used to protect underlying earth from water erosion.

¹¹Structure protecting river bank from flood

¹²Balasore Irrigation Division, Nimapara Irrigation Division and Prachi Irrigation Division

The reply was not acceptable since higher hire charges applicable to crane of 80 tonnes capacity was adopted although the work could have been done using 35-tonnes capacity. Also, Schedule of Rates had already prescribed hire charges for crane of 35-tonnes. Further inclusion of charges of oil, lubricants and food charges was also not admissible.

2.1.14 Shortcomings in execution of works

Technical sanction accorded to estimates indicates that the proposal is structurally sound and is based on adequate data. After award of works, the Executive Engineer is expected to get the works executed by the contractor as per the terms and conditions of contract. Deficiencies observed in execution of works are given below:

2.1.14.1 Delays in commencement of works

DTCN stipulated that execution of works shall commence from 15th day or such time period as mentioned in letter of award or from the date of handing over of the site whichever is later.

Audit observed that in seven divisions, 85 works for ₹ 45.24 crore were awarded between April 2013 and December 2016 for completion between August 2013 and November 2017. The works were not taken up for execution within the stipulated time. As a result, the commencement of works was delayed.

The Government accepted the factual position and stated (September 2017) that in some cases delays in commencement was due to unauthorised encroachment of site and inclement weather condition. The Government further stated that action would be taken against the contractors as per the clauses of the contract.

The Government reply was not acceptable since Divisional Officer had inspected the site before preparation of estimates and encroachment if any and seasonal factors should have been considered before award of works.

2.1.14.2 Variations in quantities during execution

Para 3.2.7 of OPWD Code stipulated that detailed estimate is to be prepared based on adequate data. For this purpose, the Divisional Officer is required to visit the work spot. Further, as per Para 6.3.18 of the Code, no payment can be made for works where excess was more than 10 *per cent* of approved cost until a revised administrative approval is accorded. Check of records showed that in eight¹³ divisions, there were wide variations between the agreed quantities and quantities executed. 11 contracts were identified with variations. In execution of 32 items viz. earth work, stone work, cement concrete work, use of steel materials, such variations ranged from 30.11 to 743.38 *per cent*. Value of excess items executed worked out to ₹ 8.80 crore. The above variations indicated inaccuracy in preparation of estimates.

Expenditure exceeded estimates by more than 10 *per cent* of approved cost in three out of 11 contracts. It was, however, observed that in anticipation of

In seven divisions 85 works for ₹45.24 crore were not commenced within 15 days as required under DTCN.

In 11 contracts, ₹ 8.80 crore was paid towards variations in quantities in different items without approval.

¹³ Mahanadi South, Jagatsinghpur Irrigation, Aul Embankment, Prachi Irrigation, Puri Irrigation, Kendrapara Irrigation, Jaraka Irrigation and Jajpur Irrigation Division.

revised approval, ₹ 5.69 crore had already been paid violating the provisions of OPWD Code.

The Government stated (September 2017) that quantity variations were due to site condition, change of design and drawing during execution. The above variations were approved by the competent authorities.

The reply was not acceptable since Divisional Officers had visited the work sites before preparation of estimates. These are wide variations from the agreements which indicate inadequate survey/investigation of site.

2.1.14.3 Delays in execution of works contracts

Detailed Tender Call Notice stipulated that time allowed for carrying out a contract shall be strictly observed by the contractor. The contractor shall pay, as compensation, an amount equal to half *per cent* of the estimated cost for every day that the work remains un-commenced, or un-finished. The above compensation to be paid shall not exceed 10 *per cent* of the estimated cost of work.

In 15 divisions 618 contracts out of 2767 contracts were not completed within the stipulated date.

During test check of 15 divisions, it was observed that 618 contracts awarded for execution during 2012-17, were not completed within the stipulated period. Out of 618 contracts, the reasons for delay in respect of 310 contracts were not given by the Department. Of the remaining 308 contracts, in 61 contracts the works were delayed due to general election, land not being available and for want of approved design. The above constraints were beyond the control of the contractors. Reasons for the delay in respect of remaining 247 contracts are shown in the table below:

Table No.2.4: Details of delay in execution of works attributable to contractors

Sl. No.	Reasons for the delay	Number of contracts
1	Rainy season	204
2	Materials were not available	19
3	Reasons attributable to contractors	24
	Total	247

Source: As per information collected from field units

Audit noted that contractors were responsible for above delay assigned by the department. The period of contract had been fixed considering the rainy season. As per the contract condition, ₹ 39.79 crore being 10 *per cent* of estimated cost (₹ 397.92 crore) of the work should be recovered as compensation for delay. However, no recovery was made from the contractors for the above compensation.

The Government stated (September 2017) that execution of irrigation works depends upon rainy season, extreme heat wave condition, problems in land acquisitions, shifting of utilities, etc. The Government further stated that cases where reasons for delays were attributable to the contractors, the compensation would be imposed and recovered.

The reply was not acceptable as the department should have ensured encumbrance free land and shifting of utilities before award of works to contractors. The period of contract had been fixed considering the rainy

season. Further, no action had been taken for levy of compensation during the last five years.

2.1.14.4 *Refund of security deposits before expiry of defect liability period*

Para 3.5.20 of OPWD Code stipulated that contractors shall be required to deposit one *per cent* of estimated cost of work as initial security at the time of acceptance of tender. The DTCN states that contractor shall be responsible to make good the defects which may develop or may be noticed before expiry of one year from the date of completion.

Audit observed that in six¹⁴ out of 15 test checked divisions, security deposits of ₹ 1.21 crore in respect of 80 contracts had been refunded before expiry of one year. The period of early release ranged from 44 to 361 days.

The Government accepted the factual position and stated (September 2017) that in some cases security deposits had been refunded inadvertently. Action would be taken against the contractors, if defects were noticed.

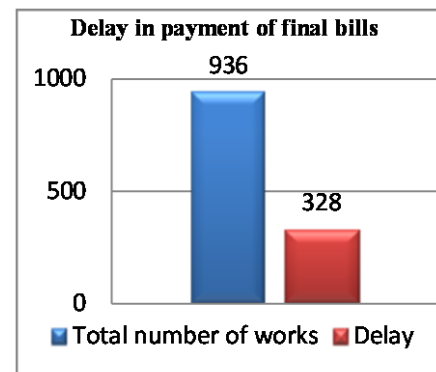
The Government reply was silent as regards action against officials for undue refund of security deposit.

2.1.14.5 *Delay in payment of final bills*

DTCN forming part of a contract stipulated that intermediate payments to contractors shall be regarded as advance payment against final payment. The final payment is to be made against final bill. The final bill is generally prepared taking into account deviations in execution, if any as approved by competent authority. Para 3.5.29 of OPWD Code also stipulated that all payments due to the contractors for works done/services rendered should be settled not later than 60 days after completion of work. Audit observed that in 14 out of 15 test checked divisions, there were delays in payment of final bills in respect of 328 works. The reasons were want of approval for extension of time, deviations in scope of works and measurement of works not being found acceptable to contractors.

The Government accepted the factual position. It was stated (September 2017) that for want of final level section measurement and delay in grant of extension of time, the final bills had not been paid. This practice has been removed after introduction of e-payment/e-billing through Works Accounts Management Information System (WAMIS).

The reply was not acceptable since in the absence of preparation and payment of the final bills, the fact of completion of works in all respects was not assured. The reply was silent on the action taken against the officials responsible for not taking final level section measurement of work done and



Security deposit of ₹ 1.21 crore in 80 contracts were refunded before expiry of one year of completion.

In 328 works there was delay between the date of actual completion of work and payment of final bill.

¹⁴Berhampur Irrigation, Jajpur Irrigation, Baitarani Irrigation, Jagatsinghpur Irrigation, Boudh Irrigation and Puri Irrigation Division.

processing of extension of time. Further, the above practice unnecessarily kept the contracts alive.

2.1.14.6 Completion certificate not prepared and submitted

In 515 works the completion certificates was not issued.

DTCN stipulated that on completion of works, the contractor shall be furnished with a certificate that the work has been completed as per drawing and design. Audit observed that no completion certificates had been issued for 515 works with contract value of ₹ 192.81 crore. Reasons for not preparing completion certificates were not on record.

The Government stated (September 2017) that in respect of major works completion certificates had been issued on successful completion of works. It was to help the contractors to participate in future tenders. Efforts will be made for issue of completion certificates to each and every contractor in future.

The reply was not acceptable since in the absence of completion certificates, the fact of completion of works as per approved drawings and designs was not assured.

2.1.14.7 Absence of check measurement

In 10 divisions, EEs had not check measured the works as required under OPWD Code.

Appendix-II of OPWD Code Vol-II stipulated that Divisional Officer must check measure 10 *per cent* of the measurements of important and costly items. The object of check measurement is to detect errors in measurement, to prevent fraudulent entries and also to see that the works were executed as per specifications.

Audit observed that in 10¹⁵ divisions, the EEs had not done check measurements. Reasons for the above lapse were not on record.

The Government stated (September 2017) that all work bills were presently generated through billing module and check measurement percentage was also entered in the bill.

The reply was silent as regards action against the persons responsible for not conducting check measurement.

2.1.15 Idle investment as the bridge and embankment works were not completed

Work on two bridges and three flood protection embankments commenced without acquisition of land. As a result the works remained incomplete resulting in idle investment.

As per Para 3.7.4 of OPWD Code, no work should be commenced on land which had not been duly made over by a responsible civil officer.

Audit noted that bridge works were commenced on the river bed before acquisition of land for approach roads to the bridges. Similarly embankment works for protection from flood were commenced before acquisition of required lands. As a result, the projects could not be completed. Status of these projects when last audited and their impact are summarised below:

¹⁵ Puri irrigation, Sambalpur irrigation, Jaraka irrigation, Salandi canal, Jagatsinghpur irrigation, Kendrapara irrigation, Mahanadi North, Mahanadi South, Prachi irrigation and Baitarani irrigation division.

Table No- 2.5 Details of projects remained incomplete for want of land

Sl No	Name of the work	Observation in brief	Impact
1	Construction of bridge across river "Salandi"	Construction of Bridge across river Salandi was awarded (September 2013) for ₹ 2.15 crore to provide all-weather road for the people of Balibarei Gram Panchayat. The work was due for completion by August 2014. As of September 2016, the bridge work was completed with an expenditure of ₹ 1.89 crore. The approach road remained incomplete since the required land was not acquired.	The bridge work completed at a cost of ₹1.89 crore remained idle. As a result communication facility could not be provided to people in Balibarei Gram Panchayat.
2	Construction of high level bridge across Ganda nallah near Jokadia	Construction of High Level Bridge across Ganda Nallah near Jokadia was awarded (March 2009) for ₹ 4.94 crore for completion by September 2010. This would provide communication facility with Jajpur Road for 20,000 people of four Gram Panchayats. The contractor stopped the work from January 2014 as land was not acquired. So far, the contractor executed work valued at ₹ 5.02 crore for bridge and portion of left approach road. The right approach road was, however, not commenced.	The bridge and left approach road completed at a cost of ₹5.02 crore remained idle. As a result communication facility with Jajpur Road for four Gram Panchayat not provided.
3	Construction of flood protection embankments on right side of Baitarani river near Ghasipura Block	Construction of flood protection embankment on right side of the river Baitarani was awarded (January 2014) to OCC for ₹ 14.58 crore. The work was scheduled for completion in July 2015. As of August 2016, embankment measuring 9.450 km against the total length of 10.300 km was completed with an expenditure of ₹ 9.40 crore. The remaining 850 meter could not be completed as land was not acquired and design of sluice and road crossing was not finalised.	The embankments completed partially with investment of ₹9.40 crore did not serve the purpose of flood protection.
4	Flood protection embankment for Brahmani Kelua Birupa Doab	The work of flood protection of Brahmani Kelua Birupa Doab was approved for ₹ 62.32 crore. The work was taken up to protect the lives and property of 160 villages and Kharif Crop of 18000 ha. The project was split into seven packages. Out of seven packages, five packages were completed with expenditure of ₹ 46.87 crore. As of May 2017, the remaining two packages (Package V and I) for 4.735 km remained incomplete for want of required land. The work involved acquisition of private land. An expenditure of ₹ 7.36 crore was incurred on two packages.	Construction of flood protection embankment leaving a gap of 4.735 km resulted in idle investment of ₹ 54.23 crore.

Sl No	Name of the work	Observation in brief	Impact
5	Restoration to Banamalipur Gherry from RD 00 to 4320 meter	The work Restoration to Banamalipur Gherry ¹⁶ from RD 00 to 4320 meter was awarded to OCC in January 2013 for ₹ 4.24 crore. This would protect Banamalipur village from flood. As of August 2016, raising and strengthening of existing embankment had been completed at a cost of ₹ 2.56 crore. The work of new embankment could not be taken up as the land owners did not spare their land.	Construction of new embankment was not completed as a result flood protection was not assured. Investment of ₹ 2.56 crore on completed work did not serve the intended purpose.

The Government stated (September 2017) that in respect of in Sl. No.1, 2 and 5 the works were taken up in anticipation of completion of land acquisition process. However, land owners demanded higher compensation and persuasion with land owners failed. The Government further stated that the alignment of approach road was changed to provide communication in respect of work at Sl. No 1. In respect of works at Sl No. 3 and 4 even when a portion of embankment was not constructed, the villages were protected from floods.

The replies were not acceptable since the bridges and embankments were commenced without acquisition of land as a result the works remained idle. The work was not over as land acquisition process was not completed for work at Sl. No. 1. There was a gap of 850 meter and 4.375 km respectively in respect of work of embankments at Sl. No. 3 and 4. Also the protection of life and property of the villages from floods was not assured as other portions of embankment remained incomplete.

2.1.16 Inordinate delay in completion of projects due to lack of proper design

Completion of two bridge works was delayed due to lack of proper design.

As per Para 3.4.17 of OPWD Code, before detailed estimates for bridges are made, as many trial pits or borings as are considered necessary should be taken for each pier and abutment. It is necessary to make a careful preliminary investigation of the sub-soil in order to ascertain exact nature of strata. It was observed that due to faulty design, the following two bridges remained incomplete and their impacts are given below:

¹⁶Gherry means an embankment to protect from flood

Table No.2.6 Details of projects remaining incomplete due to lack of proper design

Sl No	Name of the work	Observation in brief	Impact
1	Construction of bridge across river Bhargavi near Malisahi	The estimate for construction of a bridge across the river Bhargavi near Malisahi was sanctioned in May 2008. This would reduce the distance of eight villages including Malisahi to district headquarter Puri. The work was awarded (November 2008) to a contractor for ₹ 1.56 crore for completion by October 2009. During execution, the department observed heavy seepage after excavation requiring change of design. The department could not supply drawings in time. As a result, the contractor could not complete the work. The designs of the six out of eight piers were supplied in November 2010 only after one year of stipulated date of completion. The bridge work remained incomplete as of September 2017.	The inadequate investigation of soil strata of river bed led to faulty design. As a result, the pier work could not be completed. Thus, the objective of reducing distance of eight villages to District headquarters Puri remained unachieved.
2	Construction of high level bridge over Pandra Nallah	Construction of high level bridge over Pandara Nallah ¹⁷ at village Atta estimated to cost ₹ 6.58 crore was sanctioned in December 2008. This would provide communication facility to the people of eight villages. The work was awarded for ₹ 6.57 crore in March 2009 for completion by September 2010. The project could not be completed due to delay in acquisition of land and for finalisation of drawings of right embankment. As of March 2017, an expenditure of ₹ 10.24 crore had been incurred including the payment of price escalation of ₹ 2.13 crore.	The award of work without adequate investigation and proper design resulted in time overrun of three years and eight months besides cost overrun of ₹ 3.67 crore.

The Government in reply accepted the factual position and stated (September 2017) that the works would be started after rainy season. The Government further stated that change in drawing and design was due to change of sub-soil strata and the price escalation was paid as per contract conditions.

The fact, however, remained that the bridge remained incomplete for eight years due to faulty design. Further, the reply indicated that the survey and investigation was inadequate resulting in time and cost overrun.

2.1.17 Award of works without budget provision

Para 3.7.1 of Odisha Public Works Department Code stipulated that no work shall be commenced or liability created unless allotment of funds has been made. Further Rule 126 of Odisha Budget Manual stipulated that a sanction

¹⁷ Watercourse

In five divisions, 213 works were awarded in anticipation of allocation violating OPWD Code and Budget Manual.

becomes operative only when funds are appropriated to meet it. The EEs of five¹⁸ divisions, on the direction of Principal Secretary to Government, awarded 213 works for execution from September to December 2016 in anticipation of allotment during 2017-18. This had violated the provisions of OPWD Code and Budget Manual.

The Government accepted the factual position and stated (September 2017) that the projects were undertaken in order to address the emergent situation and for timely execution of works.

The reply was not acceptable since there is no provision in OPWD Code and Budget Manual exempting execution of work without budget provision.

2.1.18 Availability and sustainable management of water

Sustainable Development Goal formulated by the United Nations Open working group stipulates that access to safe water, sanitation and sound management of fresh water, ecosystem are essential to human health, environmental sustainability and economic prosperity.

Audit noted that two projects were taken up with objective of providing irrigation to 4850 ha of land. Further, one project was taken up to provide 75 MLD¹⁹ of drinking water to Puri town. The above objectives were not achieved due to delay in acquisition of land as discussed below.

2.1.18.1 Construction of canal before ensuring water resulting in blockage of funds

To provide irrigation to Cultivable Command Area (CCA) of 2350 ha of land, construction of Nuagaon distributary²⁰ under Rushikulya Irrigation System was approved (November 2010) for ₹ 24.49 crore. Detailed Project Report envisaged construction of 13.00 km Nuagaon distributary, construction of 11.00 km sub- minors²¹, Head Regulator²², Cross Drainage²³ works etc. An expenditure of ₹ 14.37 crore was incurred on construction of Head Regulator, sub-minor, and shifting of utility services including acquisition of land, as of February 2017.

Audit noted that one package²⁴ of the work for construction of Nuagaon distributary was awarded to a contractor for ₹ 2.42 crore for completion by December 2014. The required land was not handed over by the Department and existing KV line was not shifted from the site. The contractor abandoned the work after execution of work for a value of ₹ 48.88 lakh. The agency requested to close the contract. The closure proposal was submitted (July 2015) to Superintending Engineer, Southern Irrigation Circle, Berhampur. This was not approved till the date of audit.

Nuagaon distributary remained incomplete with an expenditure of ₹ 14.37 crore as the required land was not acquired. As a result the objective of providing irrigation to 2350 hectare of land was not achieved.

¹⁸Kendrapara Irrigation, Jaraka Irrigation, Aul Embankment, Puri Irrigation and Mahanadi North Division.

¹⁹Million Litres per day

²⁰ Distributary: - A stream that flows away from a main stream channel.

²¹ Sub-minor: -Small canal provided water to field for irrigation purpose.

²² Head Regulator: -Structure at the head of canal taking off from a reservoir may consist of number of spans separated by piers and operated by gates.

²³ Cross Drainage: -When a natural drain crosses or intercepts an irrigation canal it becomes necessary to construct some suitable structure to carry forward the canal safely. As these works are constructed for crossing the drainage, they are termed as cross drainage work.

²⁴ Package III from RD 3810 meter to 4860 meter

Further, it was observed that another package²⁵ was awarded to a contractor for ₹ 2.66 crore for completion by January 2015. The contractor could not take up the work for want of required land and requested to close the contract without imposition of penalty. The Superintending Engineer, Southern Irrigation Circle, Berhampur approved (Aug 2016) the closure proposal without penalty. The work remained incomplete as of May 2017. Thus, the objective of providing irrigation to 2350 ha of land was not achieved.

The Government stated (September 2017) that, notifications for acquisition of land were issued by Government between April 2011 and March 2013. The required land could not be acquired due to implementation of new Land Acquisition Act with effect from 1 January 2014.

The reply was not acceptable as the decision to award the work before completion of land acquisition process led to idle investment. It defeated the very purpose of providing irrigation facilities to 2350 ha of land.

2.1.18.2 Idle investment on construction of pond, embankment and structures

Construction of Pond, Embankment and other structures at Samanga area was taken up to provide 75MLD of drinking water for Puri town. The work comprised construction of storage pond of 1.41 lakh square metre, structure across Dhaudia Nalla, inlet and outlet structures with bridges. Two contracts²⁶ were awarded for ₹ 111.57 crore in March 2010/August 2013 to OCC for construction of control structure on Bhargavi river for completion in March 2012/July 2015.

Odisha Construction Corporation was paid ₹ 46.60 crore as of May 2017 for both the contracts. The works remained incomplete as the land was not acquired. It was observed that for acquisition of 195.07 out of 417.72 acres of private land, the villagers demanded higher compensation. Hence cost of land had been deposited in the High Court by the Land Acquisition Officer, Puri.

The Government stated (September 2017) that land owners demanded higher compensation. The matter was taken up with Collector, Puri to settle the issue.

The fact remained that awarded works could not be completed for want of land. It defeated the very purpose of providing drinking water besides rendering the investment idle.

Construction of pond, embankment and structures remained incomplete resulting in idle investment of ₹ 46.60 crore.

²⁵ Package I from RD 210 meter to 2100 meter

²⁶ (i) Construction of control structure of Gobkund Cut near RD 37.500 km of Bhargavi river-Agreement value ₹ 19.97 crore and (ii) Construction of Pond embankment and other structures at Samanga area – Agreement value ₹ 91.60 crore.

2.1.18.3 Delay in project completion due to design errors resulting in the objectives being unfulfilled

A Creek Irrigation Project remained incomplete as the design was not proper. As a result the objective of providing Creek Irrigation to 2500 hectares of land was not achieved.

Akhadasahi Creek Irrigation project in Mahakalpada Block of Kendrapada District with an estimated cost of ₹ 5.65 crore was sanctioned in March 2013. It was for providing creek irrigation to 2500 ha of land and checking the saline ingress²⁷ of 5500 ha land. The work was awarded to OCC in October 2013. Their negotiated offer amount was for ₹ 6.99 crore which was 27.71 per cent above estimated cost for completion by April 2015.

During execution of work, OCC requested for change in drawing and design anticipating heavy seepage during open excavation. This was due to flow of river Mahanadi along its side. The revised drawing for drainage sluice was approved (October 2014) by Chief Engineer, Designs, Water Resources, Bhubaneswar. Due to change of drawing and design of drainage sluice, the estimate was revised (April 2016) to ₹ 10.30 crore. This exceeded original estimated cost by ₹ 4.65 crore. As of August 2017, against the advance of ₹ 6.80 crore to the contractor, ₹ 5.26 crore was adjusted. Thus, the award of work without adequate site investigation and proper design delayed the project completion and availability of water over two years (March 2017). As a result, the objective of providing creek irrigation to 2500 ha of land could not be fulfilled.

The Government stated (September 2017), that the delay was mainly due to revision of sluice drawing as per technical requirement and demand of site condition.

The reply was not acceptable since revision of drawing was due to inadequate survey and investigation which led to change of design during execution.

2.1.19 Quality Control and Monitoring

2.1.19.1 Quality check by Quality Control Divisions

Compliances to defects noticed in 2996 samples by the Quality Control Divisions were not submitted.

Twenty one Quality Control Divisions have been functioning in the State to ensure execution of work as per specifications and for checking quality of materials to be used in works. Records in three Quality Control Divisions at Berhampur, Cuttack and Bhubaneswar were reviewed. During 2012-17 the above divisions had received 18915 samples of materials to be used in the work from 11 Divisions²⁸. Out of 18915, 17099 samples were tested. Defects were observed in 2996 cases. The test reports pointing out the defects were sent to the divisions concerned for compliance. It was, however, observed that the divisions had not submitted compliances to the observations.

The Government accepted the facts and stated (September 2017) that materials of unsuitable samples as pointed out in the test reports were not used in the work. The Government further stated that a digital Management Information System would be introduced soon to ensure effective control.

The fact remained that the existing control mechanism did not ensure the

²⁷Protecting crops from saline water

²⁸Puri Irrigation, Prachi Irrigation, Mahanadi South, Mahanadi North, Kendrapara Irrigation, Aul Embankment, Jajpur Irrigation, Jagatsinghpur Irrigation, Jaraka Irrigation, Berhampur Irrigation and Bhanjanagar Irrigation Division.

required quality of materials used.

2.1.19.2 Quality checks by State Quality Monitoring Cell (SQMC)

Action Taken Reports in respect of 562 cases of defective execution were not submitted.

To strengthen the existing quality control and assurance arrangement, one State Quality Monitoring Cell (SQMC) was constituted in March 2008.

Engineer-in-Chief, Planning & Designs was the chairman of the SQMC. The SQMC performed quality tests through State Quality Monitors. In 15 test checked divisions, SQMC received details of 1921 works for quality checks and tests were done in 1733 works. During 2012-17 after the quality tests, in 690 cases defective execution of works was observed. SQMC called for Action Taken Reports (ATR) from the implementing divisions. ATRs, however, were received only in respect of 128 out of 690 cases. For the remaining 562 cases ATRs were not received.

The Government stated (September 2017) that to ensure specification and quality of work, the Quality Monitoring Cell received compliance reports. The SQMC verified those reports to ascertain the rectifications/corrections made. The field EEs had also been requested time and again to provide compliances.

The reply was, however, silent regarding failure of implementing divisions to submit compliances for 562 ATRs where the defects may have continued to persist.

2.1.20 Lack of management meetings

Management Meetings as required under OPWD Code was not held at divisions to review bottlenecks in implementation of works.

Para 2.5 of OPWD Code and DTCN stipulated that either the Engineer or the Contractor may require the other to attend a management meeting. The business of this meeting shall be to review the plans for remaining work and to deal with matters raised in accordance with early warnings. Audit observed that no management meeting had been held to find solution to hurdles or bottlenecks in implementation of contracts.

The Government stated (September 2017) that the discussions were held frequently with contractors at work sites on progress of works and other issues. But documentations were not done.

The reply was not acceptable since documentation of proceedings and decisions taken in those meetings were vital for ensuring progress of works as per specifications. Documentations were required for fixing responsibility and avoiding disputes with the contractors in future.

2.1.21 Conclusion

Audit examination showed that there were delays at every stage of the contract process i.e. issue of letter of acceptance, signing of agreements and execution of works.

E-tendering introduced (January 2009) is yet to be fully utilised as all the required details were not uploaded on the portal.

Contracts were awarded to Odisha Construction Corporation on nomination basis. It was observed that only 34 *per cent* of works awarded to OCC were completed in time. The department had not imposed penalty for failure to complete the work in stipulated time.

Many projects remained incomplete due to award of work before acquisition of land and finalisation of design. This indicated poor contract management.

The shortcomings in preparation of estimates inflated the unit rate and it resulted in extra expenditure.

The Quality Control Divisions and State Quality Monitoring Cell pointed out defects in quality of materials for use. Action taken reports were not, however, submitted and no follow up action was taken.

The required lands were not acquired for three water management projects i.e. Nuagaon distributary, Akhadasahi Creek and Construction of pond at Samanga. As a result, the objective of providing irrigation to 4850 ha of land and drinking water to Puri town was not achieved.

2.1.22 *Recommendations*

- Department of Water Resource needs to ensure that adequate action for acquisition of the required land is initiated well before award of contracts.
- To ensure transparent and effective contract management, details of activities from technical bid opening to award of work may be uploaded on the portal.
- Award of work on nomination basis to Odisha Construction Corporation needs review.
- Without exception, estimate of work should be prepared adopting Schedule of Rates and Analysis of Rates to avoid extra expenditure.
- To strengthen the Quality Control and Assurance arrangement, a digital management information system may be introduced.

Chapter III

Compliance Audit

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Chapter-III

Compliance Audit

Compliance audit of Departments of Government and their field formations brought out several instances of lapses in management of resources. There was failure in observance of regularity and propriety. These have been discussed in the succeeding paragraphs.

FOREST AND ENVIRONMENT DEPARTMENT

3.1 Interest on delayed payment of Net Present Value not realised

Interest of ₹ 1.02 crore on delayed payment of Net Present Value not realised

As per Guidelines issued (September 2003) by Ministry of Environment and Forests, Government of India, forest land may be diverted for non-forest purposes under Forest (Conservation) Act 1980 on collection of Net Present Value (NPV) of forest land. The Central Empowered Committee constituted by the Hon'ble Supreme Court of India instructed (May 2010) that mining lease holders who did not pay NPV within a period of 30 days from the date of issue of demand would not be allowed to continue mining till payment of NPV along with interest. Forest and Environment Department, Government of Odisha prescribed (May 2013) the rate of interest at nine *per cent* per annum for delayed payment of NPV.

Audit observed (May-December 2016) that four Divisional Forest Offices (DFOs)²⁹ raised demands against 10 user agencies between June 2010 and May 2015. The user agencies had to deposit NPV of ₹ 103.68 crore for diversion of forest land within 30 days. The user agencies had deposited ₹ 103.68 crore between July 2010 and August 2015 towards NPV. There were delays ranging from 18 to 1115³⁰ days from the due dates of payment. However, interest of ₹ 1.31 crore (rate of nine *per cent*) for the period of delay was neither demanded by the DFOs nor deposited by the user agencies. Thus, ₹ 1.31 crore (*Appendix 3.1.1*) towards interest on NPV remained unrealised.

The Government stated (June 2017) that out of ₹ 1.31 crore, interest of ₹ 0.29 crore had already been realised from two user agencies. The steps were being taken for collection of balance amount of ₹ 1.02 crore.

²⁹ DFO, Angul, Cuttack, Jharsuguda and Chandaka (WL).

³⁰ (18 to 50 -11 cases, 51 to 150 – 2 cases, 1115- 1case)

3.2 Sandal wood, timber and poles not disposed

The Government did not fix market price for disposal of red sander/sandal wood. DFOs also failed to take timely action for disposal of timber and poles which resulted in blocking of revenue of ₹ 1.55 crore

The Government of Odisha, Forest and Environment Department had issued (August 2005) instructions for early disposal of seized forest produce in undetected (UD)³¹ forest offence cases either by public auction or by delivery to the Odisha Forest Development Corporation (OFDC) Limited. Timber³² and pole³³ were to be disposed of within two months and red sander/sandal wood within three months from the date of seizure. It was to avoid loss of revenue and deterioration in quality and consequent value reduction on account of prolonged storage. The rates of royalty on regular and irregular lots of timber, poles and firewood for the year 2016-17 were fixed by the Government (October 2016). As per standing arrangement, red sander/ sandal wood seized in different forest Divisions were being sold by the DFO, Forest Resources Survey Division (FRSD), Cuttack.

Audit observed that in 230 undetected (UD) forest offence and offence report cases (1987-88 to 2015-16), 53,490.40 kg of red sander and 3180.3 kg of sandal wood were lying undisposed. This pertained to five³⁴ forest divisions³⁵. In Parlakhemundi Forest Division a stock of red sander was lying undisposed since 1987-88. The stocks of sandal wood remained undisposed in five divisions since 2011-12. The prolonged storage of red sander/ sandal wood is fraught with the risk of deterioration in quality. Considering the price fixed by Government during 1998, which was ₹ 200 per kg the value of seized red sander/sandal wood worked out to ₹1.13 crore. The price had not been revised by Government since 1998 although proposal was submitted by DFO, FRSD, Cuttack in December 2004. Audit observed that the price of sandal wood in neighboring State of Andhra Pradesh was fixed at ₹ 1200 per kg in February 2016. Thus, inordinate delay in notification of market price of red sander / sandal wood by the Government resulted in blockage of Government revenue of ₹ 1.13 crore. This would have increased manifold calculated at the rates prevalent in neighbouring States.

Records of twenty eight³⁶ forest divisions³⁷ showed that 15583.08 cft of timber (logs and sized), 5143 poles and 177.40 stacks of firewood were lying un-disposed till date. The material was seized in 1051 UD forest offence cases during 2009-16. This was valued at ₹ 45.13 lakh (details as per *Appendix 3.2.1*). This indicated lack of effective and timely action by the Divisional Forest Officers, which resulted in blocking of revenue of ₹ 45.13 lakh.

³¹ Theft of forest material seized but person was not found.

³² A type of wood that has been processed into beams and planks.

³³ A long cylindrical piece of wood.

³⁴ Parlakhemundi, Khariar, Koraput, Baliguda and Keonjhar

³⁵ between December 2016 and February 2017

³⁶ Athargarh, Cuttack, Dhenkanal, Athamallik, Angul, Phulbani, Subarnapur, Khordha, Sambalpur, Bargarh, Jharsuguda, Chandaka (WL), Satkosia (WL), Ghumsur (N), Rourkela, Ghumsur (S), Baripada, Bonai, STR Baripada, Rayagada, Karanjia, Nayagarh, Keonjhar, Parlakhemundi, Kalahandi (S), Sundargarh, Koraput and Baliguda.

³⁷ between May 2016 and February 2017

Government accepted the factual position and stated (August 2017) that the concerned DFOs had already been instructed (May/ August 2017) for immediate disposal. The Government further stated (September 2017) that 1159.63 cft timber (log), 77.086 cft of timber (size) and 129 poles involved in 58 cases for ₹ 2.61 lakh had been disposed of by way of delivery to OFDC. The steps were being taken to dispose of the balance materials seized under forest offence cases. The Government further stated that seized red sander would be disposed of through OFDC or by public auction. Thus, delay in disposal of timber, poles and sandal wood led to blocking of revenue of ₹ 1.55 crore.

3.3 Avoidable expenditure on purchase of Gabions

Procurement of Gabions (Tree Guards) in excess over prescribed cost norms resulted in extra expenditure of ₹ 1.77 crore

The Principal Chief Conservator of Forests (PCCF) Odisha prescribed (July 2014/ January 2016) the cost norms for different plantation modules. It was based on the recommendation of the cost norm committee. The approved cost norm per gabion (tree guards) made up of bamboo twigs for Urban tree and Avenue plantation was ₹ 175 upto 23 July 2015 and ₹ 253 from 24 July 2015 onwards. Further, para 11 & 12 of Office Memorandum of Finance Department, Government of Odisha, stipulated that where the estimated value of goods is ₹ 5 lakh and above, procurement shall be done by invitation of bids through wide circulation in one local and one national newspaper and details made available in the website.

The records of six forest Divisions³⁸ showed that 19,917 gabions made of iron, fibre and poly wire mesh were purchased. These were purchased for use in different avenue plantations for ₹ 2.23 crore³⁹. The prices ranged from ₹ 670 to ₹ 1547 per gabion against the approved rate of ₹ 175 and ₹ 253 for each gabion made of bamboo twigs. Thus, procurement of gabions at higher cost than the prescribed cost norm resulted in avoidable extra expenditure of ₹ 1.77 crore (*Appendix 3.3.1*).

Check of records further showed that two⁴⁰ out of six DFOs placed (June/July 2015) procurement orders range-wise through short tender call notices at different rates. Invitation of bids was not widely circulated. In the remaining Divisions, tender procedure was not followed. Approval of higher authority was also not obtained for split up purchase at different rates.

The Government in reply stated (August 2017) that all the Divisional Forest Officers had executed works within the prescribed norms. The addition and alteration of fencing cost so attributed with excess expenditure was within the overall approved cost norm. Urban plantation, field requirements, location (populated, less populated, within boundary wall, etc.), were considered.

³⁸DFOs, Jharsuguda, Rourkela, Baripada, Rayagada, Malkangiri and Koraput

³⁹₹ 2.23 crore {Jharsuguda - ₹ 8.68 lakh, Rourkela - ₹ 1.00 crore, Baripada - ₹ 30.54 lakh, Rayagada - ₹ 16.90 lakh, Malkangiri - ₹ 37.56 lakh, and Koraput - ₹ 29.00 lakh}.

⁴⁰DFO, Rayagada, Rourkela

Further, safety needs of plants and nature of plantations (avenue mode, single line, double line, block plantation etc.) were also considered. Safety of plants from cattle, human etc. had been given importance to enhance survival percentage in those Divisions. Hence there was no deviation and excess expenditure was within the overall approved cost norms of urban plantation.

The reply of government that the addition and alteration of fencing cost was within the overall approved cost norm is not relevant. The cost norm in these cases are the approved cost norm of ₹ 175 and ₹ 253 for each gabion (bamboo twigs); while the cost of the purchases made by forest division ranged between ₹ 670 to ₹ 1547 per Gabion.

DEPARTMENT OF WATER RESOURCES

3.4 *Avoidable expenditure on cement concrete*

Excess cement concrete provided in lining of bed and vertical side walls of water course and field channels violated Indian Standards Code. It led to extra expenditure of ₹ 13.28 crore.

Para 4.4 of Indian Standard Code of Practice for lining of water-courses and field channels issued by Bureau of Indian Standards stipulated that for cement concrete lining, 75 mm thick cement concrete should be laid in the bed if Low Density Polyethylene (LDPE) film is not used. Similarly, vertical side walls should also be constructed with 75 mm thick cement concrete.

Audit noted that 37 contracts were awarded for ₹ 33.57 crore (between August 2015 and August 2016) for construction of water course and field channels⁴¹. They were to be completed between May 2016 and May 2017. The above contracts were awarded for execution of 0.55 lakh cum of cement concrete lining without LDPE film in the bed and vertical side walls. As of March 2017, the works were in progress with payment of ₹ 26.95 crore.

Audit further noted (November 2016) that estimates of the above works were prepared in deviation from Indian Standard Code (IS-12379-1988). The cement concrete for 150 mm thick for bed 200 mm thick vertical side walls were taken in estimates against the requirement of only 75 mm. An excess provision of cement concrete for 75mm on bed lining and 125mm in vertical side walls was made. It led to extra expenditure of ₹ 13.28 crore as detailed in *Appendix 3.4.1*

The Government accepted the facts. It stated (May 2017) that Para 4.4 of IS-12379-1988 prescribed thickness of bed and vertical side wall of cement concrete lining as 75 mm for general conditions. It was meant for lining on compacted sections. In the instant cases, the vertical walls were exposed and beds were not compacted. The Government further stated that extra thickness was adopted due to presence of expansive soil in water courses/field channels.

The reply was not tenable since Bureau of Indian Standard prescribed 75 mm cement concrete in vertical side walls of water courses/field channels in exposure condition. Moreover, the estimates provided for sand filling in bed over the expansive soil.

⁴¹ In Upper Indravati Left Canal Division No.II, Dharamgarh (Nov 2016),

3.5 *Avoidable cost due to excess provision of cement concrete*

Provision of excess thickness of cement concrete in lining of canal led to extra cost of ₹ 10.62 crore.

The work “Renovation of Anandapur main canal, branch canals, distributaries and minors” under “Canal Lining and System Rehabilitation Programme” was sanctioned (February 2014) by Chief Construction Engineer, Anandapur Barrage Project for ₹ 68.80 crore. The work was awarded (January 2015) to a contractor for ₹ 69.26 crore to be completed by June 2016. The work could not be completed due to delay in acquisition of land. As of March 2017, the work was in progress with expenditure of ₹ 27.95 crore. As per para 5.2 of Indian Standard Code (IS 3873:1993), required thickness of cement concrete lining in canal for discharge of 5-50 cumecs of water ranges 60 -75 mm. The projected discharge of canal in the sanctioned estimate was 46.534 cumecs. As such cement concrete lining should have been 75 mm as per Indian Standard Code. The estimate however provided for 100 mm of cement concrete lining in canal bed and side slope measuring 0.81 lakh cum. Thus, excess provision of cement concrete lining of 25 mm measuring 20166.47 cum inflated the estimate by ₹ 10.36 crore. This resulted in avoidable extra cost. With tender premium, extra cost worked out to ₹ 10.62 crore. As of March 2017, for the work executed the extra cost incurred was ₹ 5.45 crore.

The Government stated (August 2017) that the test report of the soil showed that the nature of soil was expansive (Black Cotton). The project authorities had decided to enhance the thickness of cement concrete lining from 75 mm to 100 mm in the interest of quality. Moreover, there was no upper limit for fixation of thickness of cement concrete lining. As such the estimate for the work had been prepared with provision of 100 mm thickness of cement concrete. The factors like shape and size of canal, climatic condition and tolerance in concrete besides better stability and durability of the lining work were also considered.

The Government’s reply justifying the excess provision of cement concrete lining based on the expansive nature of soil was not acceptable. For treatment of expansive soil, the estimate had provided cohesive non-swelling soil (CNS)⁴² layer in the bed at a cost of ₹ 8.04 crore. Moreover, Indian Standard Code prescribed limits after considering all the relevant factors.

WORKS DEPARTMENT

3.6 *Improvement of Road and Bridge Projects with Central Road Fund and Additional Central Assistance*

3.6.1 *Introduction*

Roads play a vital role in the economic development of the State. The Works Department of Government of Odisha (GoO) is responsible for construction, improvement, widening and maintenance of National Highways(NH), State

⁴² Material having cohesion but not have swelling/ expansive properties.

Highways(SH), Major District Roads (MDR), Other District Roads (ODR) and bridges in the State.

For construction of roads and bridges, certain funds were provided by Government of India (GoI) under Central Road Fund (CRF). During 2012-17, out of 83 projects proposed, GoI had approved 49 projects for widening, strengthening and up-gradation of 340.64 km roads including 27 bridge works at a cost of ₹ 933.81 crore under CRF. The balance 34 projects under CRF were not sanctioned for which reasons were not on record. Similarly, during 2012-15 Government of India, Planning Commission allocated ₹ 319.67 crore for 78 projects proposed by GoO under one time Additional Central Assistance (ACA). Under this scheme 30 *per cent* of project cost was given as grant and the balance 70 *per cent* was provided by State Government. The assistance was to improve 377.48 km roads for providing better connectivity to places of tourist importance/cultural heritage. In 2015-16, GoI, National Institution for Transforming India (NITI) Ayog withdrew one time Additional Central Assistance. The spillover projects were however executed with funds provided by GoO. Government of Odisha implemented the projects after approval from GoI and submitted claims to GoI for reimbursement.

Works Department, headed by Engineer-in-Chief-cum-Secretary to the Government of Odisha had been implementing the CRF/ACA projects. Execution was monitored by Engineer-in-Chief (EIC) (Civil), Chief Engineer, Design, Planning, Investigation & Roads (DPI&R). They were assisted by 12 Superintending Engineers (SEs) and 49 Executive Engineers (EEs) at the field level.

Audit of execution of projects with assistance from CRF and ACA was conducted during March-May 2017. The objective was to assess whether planning and implementation of the projects were as per scheme guidelines, execution of works was done economically, efficiently and effectively and whether funds received from GoI under CRF/ACA was utilised properly. For this purpose, records and data maintained in the Works Department, office of EIC (Civil), Chief Engineer, (DPI&R) and 10⁴³ out of 49 divisions implementing 74 projects (33 out of 49 CRF projects and 41 out of 78 ACA projects) were test checked.

The Draft Report was issued on 20 June 2017 to Government. The findings were discussed on 18 September 2017 with Engineer-in-Chief-cum-Secretary to Government of Odisha, Works Department. Views of Government have been considered wherever necessary while finalising the report.

⁴³ Rourkela, Keonjhar, Mayurbhanj, Panikoiili, Baragarh, Kalahandi, Sundargarh, Koraput, Rairangpur and Phulbani (R & B) Division.

3.6.2 Audit Findings

3.6.2.1 Physical and financial progress of works under CRF

Details of projects taken up and projects completed under CRF during 2012-17 are given below.

Table No. 3.1: Details of projects sanctioned/completed under CRF during 2012-17

Year	Projects sanctioned				Projects completed		
	Roads (in Nos.)	Roads (in Km)	Bridges (in Nos.)	Total Sanctioned cost (₹ in crore)	Roads (in Km)	Bridges (in Nos.)	Total Cost (₹ in crore)
2012-13	04	39.00	0	69.55	25.25	01*	57.91
2013-14	07	83.00	0	136.64	30.32	0	67.50
2014-15	00	0.00	04	70.86	68.67	0	108.08
2015-16	03	47.90	19	257.73	70.32	0	101.37
2016-17(up to February 2017)	08	170.74	04	399.03	3.70	02**	101.99
Total	22	340.64	27	933.81	198.26	03	436.85

Source: Data provided by EIC (Civil) and Works Department

* from previous year,

** pertains to bridge sanctioned in 2014-15

It may be seen from the above table, GoI sanctioned roads for 340.64 km under CRF. The Department, however, could complete 198.26 km (58 per cent) of the total roads sanctioned. Against 27 bridges sanctioned during the period, only three bridges were completed. One bridge completed during this period had been taken up before 2012-13. Four⁴⁴ bridge works were not awarded as the tender was not finalised even within the prescribed period of 24 months for completion of individual works as per CRF guidelines. The projects were not completed in time due to delay in acquisition of land, want of forest clearance, delay in shifting of utility services and encroachments. The delay in completion of projects ranged from 240 to 1188 days. As roads in some stretches were not laid, quality riding surface was not maintained continuously.

3.6.2.2 Physical and financial progress of works under ACA

Details of projects taken up during 2012-15 and completed as of March 2017 under ACA are given below.

Table No. 3.2: Details of projects sanctioned/ project completed under ACA

Year	Projects sanctioned			Completed projects	
	Roads (in Nos.)	Roads (in Km)	Total sanctioned cost (₹ in crore)	Roads (in Km)	Total cost (₹ in crore)
2012-13	31	159.42	114.67	164.30	98.20
2013-14	31	130.14	88.00	125.17	108.59
2014-15	16	87.92	117.00	146.07	86.93
2015-16	0	0	0	75.21	0.00
2016-17	0	0	0	5.63	0.00
Total	78	377.48	319.67	516.38	293.72

Source: Information furnished by the EIC (Civil) & Works Department

⁴⁴(i) Construction of HL bridge over river Kala at 39th km on Seragarh Nilagiri Kaptipada Udala Baripada Medinapur Border road (SH-19) (ii) Construction of HL bridge over Budhabalanga at 87th km on Nilagiri Kaptipada Udala Baripada Medinapur road (iii) Construction of HL bridge over Kalosihiria nalla at 3/315 km on Kuarmunda Purnapani Nuagaon road and (iv) Construction of HL bridge over Khatma nallah at 16/095 km on Kuarmunda Purnapani Nuagaon road

It may be noted from the above table that GoI sanctioned 377.48 km roads under ACA during 2012-15. The Department however completed 516.38 km roads during 2012-17. Execution of works in excess of sanctioned limit was due to completion of spillover road works taken up before 2012-13. The execution of works was done from State funds to the full extent since funding under ACA was stopped after 2014-15. In four out of ten test checked divisions, four works were not completed in time. This was due to delay in acquisition of land, shifting of utility services and want of forest clearance, re-tender and eviction of encroachments.

3.6.3 Planning and submission of proposals for approval under CRF

As per para 5(5) of CRF guidelines, proposals should focus on a balanced development of road network in the entire State. To ensure the above, the department had to conduct surveys and prepare a master plan for roads. The department had prepared the master plan. The same was, however, not approved till the date of audit. Further, the guidelines stipulated that the executive agency shall render a certificate that the land was available and it was in possession for road development and utility services⁴⁵ were removed. The following deficiencies were observed in project proposals submitted for approval:

3.6.3.1 Projects taken up deviating from CRF guidelines

Government of India, Ministry of Road Transport and Highways issued Central Road Fund (State Roads) Rules 2007. The above Rules were revised in July 2014. In all the test checked divisions, the projects sanctioned in deviation from the above Rules are discussed below:

- Para 5(3) of CRF State Road Rule 2007 stipulated that roads taken up under CRF should cover at least 10 km length.

Audit observed that 15 roads with less than 10 km were sanctioned for ₹ 180.71 crore. The reasons for selection of roads with lesser length were not on record.

The Government stated (September 2017) that the projects under CRF were selected for completion in a corridor concept basis and to fill up gaps.

Audit observed that the CRF guidelines of funding for filling up gaps had not been provided. Further, in the absence of approved master plan, selection of projects in corridor concept could not be confirmed.

- Para 7(iv) of CRF State Road Rules 2007 states that estimated cost of project shall not exceed ₹ 25 crore. However, two⁴⁶ road projects for ₹ 57.83 crore were sanctioned, each costing more than ₹ 25 crore. The reasons for selection of roads with excessive costs were not on record.

The Government stated (September 2017) that after administrative approval

⁴⁵Utility services viz. Telephone line, electricity line, sewerage connection, water supply lines etc.

⁴⁶(i) Improvement to VRC from 10.0 to 25/0 km (Rairangpur to Jashipur) (₹ 25.33 crore) and (ii) Improvement to Seragarh Nilagiri Kaptipada Udala Medinapur Border road from 95/0 to 113/0km (₹.32.50 crore)

by GoI to each project, the detailed project report would be technically sanctioned by the CE (DPI&R) and taken up.

The fact remained that the projects selected were in deviation from guidelines of CRF.

- Para 6(3) of CRF State Road Rules 2014 (revised and effective from July 2014) stipulate that the project proposal shall not be less than ₹10 crore. However, 18 projects for ₹ 107.82 crore were sanctioned each costing less than ₹ 10 crore during 2015-16 deviating from CRF guidelines. The reasons for selection of roads with lesser cost were not on record.

The Government accepted the facts. It was stated (September 2017) that important roads were taken up to fill up the gaps keeping in view the requirement of road safety aspect also.

The reply was not acceptable since filling up of gaps was not permissible as the value of works were less than Rs. 10 crore

- Para 7(2)(i) of CRF State Road Rules 2007 stipulate that the proposed road should be either, directly connecting to or leading to an important market centres, economic zone, agriculture region, tourist centres etc. Eight⁴⁷ projects executed at a cost of ₹ 246.81 crore did not connect to the above locations. The reasons for selection of roads which do not serve the intended purpose were not on record.

In exit conference, the Engineer-in-Chief-cum-Secretary to Government, Works Department accepted the facts. He stated (September 2017) that the funds were utilised to fill up critical gaps in the road network of the State.

The reply is not acceptable since the CRF guidelines stipulated that proposed road should directly connect or lead to important market centres, economic zone, agriculture region, and tourist centres etc. The above objective was not achieved. The funding under CRF was not for filling up gaps in road networks. The funding was for providing roads to market centres/economic zone etc.

- Para 5(7) of CRF State Road Rules 2007 stipulated that design and specification of works should follow relevant guidelines, codes and Indian Road Congress (IRC) specifications in preparation of estimates for execution of works. As such, the Department had to follow appropriate IRC specifications for development of Other District Roads (ODRs). IRC SP: 20-2002 (para 2.6.4) stipulated carriageway of 3.75 meter for ODRs.

Audit observed that 22 ODRs out of 55 roads with a total length of 121.988 km sanctioned (2012-17) at a cost of ₹ 112.22 crore had carriage way of 5.5 meter. This resulted in additional expenditure of ₹ 42.25 crore as detailed in *Appendix 3.6.1*.

The objective to provide direct connectivity to important market centers, agriculture regions and tourist centres was not achieved in eight road projects executed.

Execution of excess carriageway width for 22 ODRs in deviation of IRC guidelines resulted in additional expenditure of ₹42.25 crore.

⁴⁷(i) Improvement of Karamdihi-Talsara-Lulkidihi road (SH-31) from 43/0 to 52/0 km, (ii) Improvement to Vizag-Jeypore road (MDR-52) from 139/5 to 149/5 km, (iii) Widening and Improvement to Vizag-Jeypore road (MDR-52) from 163/0 to 173/0 km, (iv) Improvement such as Widening and Strengthening of Sohela Nuapada road from 60/0 to 80/5 km, (v) Improvement such as Widening of Sohela Nuapada road from 80/5 to 101/125 km (except one bridge and its approaches), (vi) Widening and Strengthening of Ampani Dharmagarh road from 31/328 to 41.328 km, (vii) Widening and Strengthening of Kunar-Banspal road from 6/0 to 14/4 km and (viii) Widening and Strengthening of Suakati-Dubuna road from 12/5 to 31/0 Km

The Government stated (September 2017) that the growth of traffic would increase considerably soon after improvement of such roads.

The reply was not acceptable. The sanctioned estimates of the above roads showed that the traffic intensity projected for ten years for these roads would remain low.

Execution of carriageway with excess width for four roads in deviation from IRC guidelines resulted in additional expenditure of ₹5.49 crore.

- IRC: SP-73-2007/IRC-SP-84-2014 stipulated carriageway of 7 meter width for double lane road.

Audit observed that in two⁴⁸ divisions, four⁴⁹ road works for 67.846 km roads sanctioned at a cost of ₹ 159.35 crore had carriageway width of 7.25 meter. Reasons for provision of excess width were not on record. The deviation from IRC specifications resulted in additional expenditure of ₹ 5.49 crore.

The Government stated (September 2017) that the projects were actually the stretches of Biju Expressway with provision of 0.25 meter for kerbs.

The reply was not acceptable since the above roads were of two lane carriageway as per the sanctioned estimates. The provision of kerbs for these two lane carriageway was in deviation from IRC specifications.

3.6.3.2 Projects taken up deviating from Additional Central Assistance guidelines

As per ACA guidelines, roads constructed were to provide better connectivity to places of tourist importance/cultural heritage to attract tourists from various parts of the world.

Objectives to provide better connectivity to places of tourist importance/cultural heritage were not achieved in 42 roads in 18 divisions.

Audit observed that in 18 divisions, 42 roads sanctioned from ACA for ₹ 166.45 crore were not directly connected to any place of tourist importance/cultural heritage. The reasons for taking up the roads which did not serve the intended purpose were not on record.

The Engineer-in-Chief-cum-Secretary to Government, Works Department accepted the facts. He stated (September 2017) that all the tourist places were already connected. The roads under ACA were sanctioned to fill up critical gaps in conjunction with other roads.

The Government reply confirmed the audit observation. The diversion of funds to fill up critical gaps was a violation of ACA guidelines.

3.6.4 Award of works before acquisition of land and adequate survey

Odisha Public Works Department Code (OPWD) (Para 3.7.4) stipulated that no work should be commenced on land which has not been duly made over by a responsible civil Officer. Further, para 3.2.7 stipulated that before execution of any work, technical sanction of detailed estimate must be obtained to ensure

⁴⁸ Kalahandi and Khariar (R&B) Division

⁴⁹ (i) Widening and Strengthening of Sinapali-Ghatipada road from 49/09 to 69/95 km, (ii) Widening and Strengthening of Sinapali-Ghatipada road from 69/95 to 92/674 km, (iii) Widening and Strengthening of Ampani Dharmagrh road from 0/0 to 11/812 km and (iv) Widening and Strengthening of Ampani Dharmagrh road from 28/855 to 41/305 km.

that the proposal is structurally sound and is based on adequate data. These provisions were not complied with for some projects and their impacts are discussed below:

3.6.4.1 Central Road Fund

Selection of project before completion of land acquisition, shifting of utilities and forest clearance in deviation from CRF guidelines resulted in delays in completion of projects.

Para 5(5) (ix) of CRF State Road Rule 2007 insisted on unencumbered land for the project. Further, para 7(8) of the above rule stipulated that the executive agency should not sponsor any proposal involving acquisition of land and shifting of utility services. The proposal would be approved only when the executing agencies render a certificate to the effect that land is available for road development. The maximum time allowed for completion of individual work was 24 months including period required for tendering. As such, the Department has to ensure completion of individual works within the above time schedule.

In six divisions, 10 roads⁵⁰ were sanctioned for ₹ 209.99 crore before completion of land acquisition/shifting of utility services (five projects) and receipt of forest clearance (five projects). As a result, there were delays in completion of works. The delay in completion of projects ranged from 240 to 1188 days.

The Government accepted the facts. It was stated (September 2017) that the projects were delayed in some sporadic locations of these road works. Causes were either that the required land was not acquired, or shifting of utilities and want of forest clearance. The Government further stated that there was no cost overrun due to the delayed completion of these works.

The reply was not acceptable since the roads were selected before land acquisition, shifting of utilities and forest clearance in deviation from CRF guidelines. This led to delay in completion of works.

Change of scope of work during execution in deviation of CRF guidelines resulted in extra expenditure of ₹ 2.97 crore requiring approval from GoI.

- As per para 7(3) of CRF State Road Rules 2014, the scope of work as per administrative approval should not be changed during execution. The revised estimate shall not be considered by GoI. Further, GoI while sanctioning the projects, instructed that if the project cost is exceeded by more than ten *per cent*, revised sanction from GoI should be obtained. The widening and strengthening of a road⁵¹ was awarded for ₹ 19.97 crore in August 2014 under CRF. This was to be completed by July 2015. The scope of the work was changed for widening of carriageway from 5.5 meter to 7 meter.

During execution, the carriageway width was increased (February 2017) from 7 meter to 7.25 meter. As a result, the estimated cost was revised to ₹ 22.05 crore. This revised cost included an additional cost of ₹ 2.97 crore for change in scope of works. The increase in revised cost was more than

⁵⁰(i) Improvement and Widening to Bhubaneswar Chandaka road (MDR) from 6/25 to 17/25 km (Nakagate square to Chandaka), (ii) Improvement to Charichhak to Phulbani from 8/0 to 10/0 km on Phulbani Tikarpada road, (iii) Improvement to Charichhak to Phulbani from 15/0 to 23/0 km on Phulbani Tikarpada road, (iv) Improvement to Charichhak to Phulbani from 23/0 to 35/0 km on Phulbani Tikarpada road, (v) Improvement to Jagannathpur Berhampur Phulbani road from 112/0 to 117/0 km, (vi) Widening and Improvement of Nayagarh Khandapada road from 1/0 to 16/0 km, (vii) Improvement to Digapahandi Ghodahada Meghajholi road from 0/0 to 8/0 km, (viii) Widening /Strengthening of Sohela Nuapada road from 60/0 to 80/5 km, (ix) Widening /Strengthening of Sohela Nuapada road from 80/5 to 101/125 km and (x) Improvement to Karanjia Thakurmunda Satokosia Anandapur road from 0/0 to 10/0 km

⁵¹Dharmagarh Golamunda Sinapali road from 0/0 to 2/0 km and from 16/0 to 24/0 km

15 per cent than the original estimated cost of ₹ 19.08 crore. Hence, this required revised sanction from GoI. As of March 2017, the work was in progress with payment of ₹ 20.23 crore. Thus, change in scope of work during execution was in deviation from CRF guideline. It had resulted in extra expenditure of ₹ 2.97 crore.

The Government stated (September 2017) that the said road was part of Biju Expressway. The project cost was, however, within the sanctioned cost.

The reply was not acceptable since the scope of work was changed and the revised estimated cost exceeded by more than 15 per cent. As such, approval from GoI needed to be obtained.

3.6.4.2 Additional Central Assistance

Selection of projects before acquisition of land and shifting of utilities in deviation from ACA guidelines resulted in delays in completion of projects.

- Four⁵² out of 41 road works were awarded for ₹ 31.60 crore before acquisition of land/eviction of encroachment/shifting of utility services. The contracts were closed before completion. As a result, the intended purpose for providing uninterrupted connectivity to places of tourist interest/cultural heritage could not be achieved under ACA. The delay ranged from 264 to 2011 days.

The Government accepted the factual position. It stated (September 2017) that projects were delayed in some sporadic locations of these road works.

It was due to delay in land acquisition, eviction of encroachment, shifting of utility and forest clearance.

The reply was not acceptable since the roads were selected without ensuring availability of land, shifting of utilities and forest clearances. This was in deviation from OPWD code.

Change in scope of works during execution led to extra expenditure of ₹ 1.10 crore.

- The work for up-gradation of Ghatagaon Harichandanpur road (14 km) was awarded at ₹ 17.17 crore in January 2015 for completion by May 2016. The execution of work could not be continued for want of forest clearance, delay in eviction of encroachment and shifting of utility services. The remaining portion of the road was completed as of November 2016 with payment of ₹ 16.05 crore to the contractor. Further, a high level bridge was approved (December 2015) at 12th km and approach road costing ₹ 16.63 crore was also sanctioned. This was against the original proposal of two slab culverts of ₹ 0.22 crore. The work was taken up availing loan assistance from Rural Infrastructure Development Fund. It resulted in extra expenditure of ₹ 16.41 crore. Moreover, additional expenditure of ₹ 1.10 crore was incurred on three extra items. This was incurred without the approval of competent authority.

The Government stated (September 2017) that on completion of bridge and its approaches, there would be thorough connectivity. The Government further stated that the additional works were taken up as per

⁵² (i) Improvement to Ravi Takies Tankapani road such as widening from 0/0 to 1/04 km, (ii) Upgradation of Ghatagaon Harichandanpur road from 0/0 to 15/0 km, (iii) Improvement and Widening the road from Nakagate to Kateni (IIT to Kateni) Bhubaneswar from 4/78 to 8/18 km and balance work and (iv) Upgradation of road from NH 5 to Mumtaz Ali High School via Diabetic Centre near Dumduma Bhubaneswar from 0/0 to 1/85 km.

site requirement and was approved by the competent authority subsequently.

The Government reply was, however, silent regarding change in scope of work during execution. The change of scope of work was due to erroneous estimates by the field Engineers as replied by EE Ghatagaon (R&B) Division. Further, the work with revised scope involved extra cost of ₹16.41 crore. For this purpose, assistance from Rural Infrastructure Development Fund (RIDF) was taken.

3.6.5 Financial Management

Government of Odisha (GoO) made initial fund allocation through budget for implementing projects approved by GoI under CRF and ACA. GoI released 50 per cent of project cost in first installment on the basis of requirement communicated by GoO. The quantum of the first installments was, however, regulated by GoI based on progress of expenditure. The second installment covering up to entire project cost was also regulated based on progress of work and actual expenditure. Details of approved costs and funds released by Government of India are given below:

3.6.5.1 Central Road Fund (CRF)

Table No. 3.3: Details of approved cost and funds released by GoI

Year	Cost of project approved by GoI (₹in crore)	Funds released by GoI (₹in crore)	Percentage of release	Utilisation certificate submitted to GoI (₹in crore)
2012-13	69.55	63.69	92	64.12
2013-14	136.64	53.68	39	57.59
2014-15	70.86	123.42	174	83.05
2015-16	257.73	125.98	49	140.77
2016-17 (upto February 2017)	399.03	68.20	17	24.25
Total	933.81	434.97	47	369.78

Source: Information provided by Works Department & EIC (Civil)

Under utilisation of CRF fund resulted in surrender of ₹ 504.42 crore.

- The above table showed that GoI had released ₹ 434.97 crore (47 per cent) against the committed assistance of ₹ 933.81 crore. The reason behind this was under utilisation of fund under CRF during 2012-17. This was mainly due to delays in acquisition of land, eviction of encroachment, finalisation of tender, receipt of forest clearance and default in execution of works by contractors. Department could submit utilisation certificates for ₹ 369.78 crore only to GoI against release of ₹ 434.97 crore (85 per cent) for which reasons were not on record.
- Audit observed that Government of Odisha had made budget provision of ₹ 941.27 crore during 2012-17. The actual expenditure was however ₹ 436.85 crore only (46 per cent of allocation) resulted in surrender of ₹504.42 crore.

3.6.5.2 Additional Central Assistance

Table No. 3.4: Details of budget provision and expenditure (GoO)

Year	Budget provision (₹in crore)	Expenditure (₹in crore)	Surrender/Excess (₹in crore)
2012-13	119.00	98.21	20.79
2013-14	94.00	108.59	-14.59
2014-15	117.00	86.93	30.07
2015-16	0.0	0.0	0
2016-17	0.0	0.0	0
Total	330.00	293.73	36.27

Source: Information provided by Works Department and EIC (Civil)

Under utilization of ACA fund resulted in surrender of ₹ 36.27 crore.

- The Department had incurred expenditure of ₹ 293.73crore (89 per cent) during 2012-15 against the budget provision of ₹ 330.00 crore. This resulted in surrender of ₹ 36.27 crore. The surrender was mainly due to delays in acquisition of land, eviction of encroachment, retender and default in execution of works by contractors.

The Government accepted the facts. It stated (September 2017) that less expenditure was due to late sanction of projects, contractual litigations, court cases, slow progress of works in maoist affected areas, scarcity of materials, untimely rainfall and less tender premium.

The fact, however, remained that under utilisation of fund ultimately delayed the project completion. Further, as per provisions of OPWD code and the guidelines of CRF, projects for which lands were yet to be acquired and utilities to be shifted should not be proposed for sanction. As per conditions of contract, the arrangement of material was the responsibility of the contractor. Further, the maoist affected areas were known to the department before selection of projects.

3.6.5.3 Savings under CRF/ACA not utilised

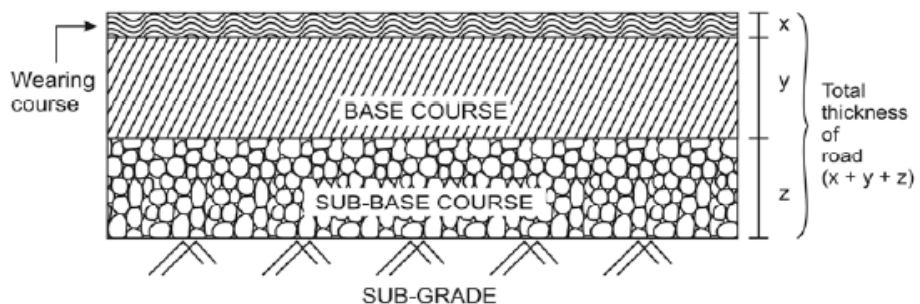
Saving of ₹ 22.85 crore due to receipt of lesser bids than the sanctioned cost was retained by GoO.

Audit observed that in 10 test checked divisions, there was savings of ₹ 22.85 crore during 2012-17 under CRF/ACA. The bids received by the divisions were lower by more than 10 per cent of the estimated cost as detailed in Appendix 3.6.2. The Department had neither utilised the savings nor intimated GoI about the retention of the amount saved.

The Government accepted the factual position and stated (September 2017) that GoI would be consulted to suggest appropriate action for utilisation of saved amount.

3.6.6 Execution of works

General profile of Road Formation



Central Road Fund (State Roads) Rules, 2007 para 5(7) stipulated that design and specification of works shall follow relevant guidelines, codes and IRC specifications in preparation of estimates for execution of works. As such, the Department had to follow OPWD Code, Schedule of Rates/Analysis of Rates so that economy, efficiency and effectiveness in execution could be achieved. The following deviations from IRC specifications and their impact are discussed below:

3.6.6.1 *Unwarranted provision of capping layer*

Unwarranted provision of capping layer in deviation from IRC specifications led to extra expenditure of ₹ 2.25 crore.

According to IRC specifications (IRC-37-2001 Para 4.2.1.5) sub grade soil strength expressed in California Bearing Ratio (CBR) should not be less than two *per cent*. Where CBR value of sub grade soil is less than two *per cent*, the pavement design should be based on sub grade CBR value of two *per cent* and a capping layer of 150 mm thickness with minimum CBR of 10 *per cent* shall be provided in addition to sub base.

Audit observed that in nine divisions, estimates of 13 works provided for unwarranted capping layer of sand though the CBR values of sub grade soil were above two *per cent*. The above provision inflated the estimates by ₹ 2.48 crore. With tender received being higher or lower than the estimates, extra cost worked out to ₹ 2.25 crore. Out of this amount ₹ 1.35 crore had already been paid to the contractors as of March 2017 as detailed in *Appendix 3.6.3*.

The Government stated (September 2017) that the extra thickness of sand was provided to compensate less thickness of GSB and to act as a drainage layer.

The reply was not acceptable as capping layer was provided in addition to the required thickness of GSB. Moreover, as per para 5.5 of IRC guidelines, the drainage layer was required only under shoulders of the road at the sub grade level and not for the entire width of the road.

3.6.6.2 *Unwarranted provision of surface dressing*

Provision of additional wearing course of bituminous layer in deviation from IRC specifications resulted in extra expenditure of ₹ 1.50 crore.

As per IRC specifications (37-2001) pavement layers were to consist of Granular Sub Base, Granular Base and Bituminous Surfacing. Further, bituminous surfacing was to consist of either wearing course or a binder course with a wearing course depending upon traffic to be carried.

Audit observed in 10 out of 55 road works (in seven divisions) that after having provided for wearing course, provision was made for another wearing course of surface dressing. The above excess provision inflated the estimates by ₹ 1.61 crore. Taking into account the lesser rate quoted by the bidders, the extra cost worked out to ₹ 1.50 crore as detailed in *Appendix 3.6.4*.

The Government stated (September 2017) that surface dressing was provided in one side of road from the centre line to avoid disturbance to the Wet Mix Macadam layer. The traffic was also allowed and the other side was used for construction of bituminous layer to avoid inconvenience to the traffic during their movement at the time of construction.

The reply was not acceptable since provision of surface dressing in addition to semi dense bituminous concrete was not admissible as per IRC specifications.

Moreover, as per conditions in detailed tender call notice forming part of the agreement, traffic management was to be done at the risk and cost of the contractors.

3.6.6.3 Unwarranted provision of Semi Dense Bituminous Concrete in wearing course

Undue provision of richer bituminous surfacing for roads having less traffic intensity led to extra expenditure of ₹ 5.55 crore.

According to IRC (37-2001) guidelines, designing of flexible pavements depend upon cumulative traffic expressed in terms of Million Standard Axles (MSA) and load bearing strength of sub grade soil. As per the above guidelines, premix carpet of 20 mm only is required for bituminous surfacing for roads with one MSA traffic.

Audit observed that in four divisions, five out of 55 roads were constructed over sub grade with CBR value of over five *per cent*. The cumulative traffic to be carried by these roads was one/two MSA only. The estimates however, provided for 50mm bituminous macadam as binder course which was unwarranted as per IRC specifications. Again for roads of 2 msa, in addition to 20mm premix carpet as wearing course, 50mm bituminous macadam (BM) was to be provided as binder course. Against the above requirement, the estimates provided 25mm Semi Dense Bituminous Concrete (SDBC) as wearing course along with 50mm bituminous macadam as binder course. This inflated the estimates by ₹ 6 crore. It led to avoidable extra expenditure of ₹ 5.55 crore including tender premium as detailed in *Appendix 3.6.5*.

The Government stated (September 2017) that SDBC was provided, considering environmental condition and experience gained that SDBC was functioning better.

The reply was not acceptable since the specifications were prescribed by the IRC, considering the cumulative traffic, load bearing capacity of soil and past experience also. Moreover, the deviations from the specifications were noticed only in five out of 55 roads. This implied that such deviations were not a decision across divisions, but an error which needs to be rectified.

3.6.6.4 Excessive provision of Granular Sub Base and Bituminous Macadam

Guidelines for designing of flexible pavements (IRC:37-2001) recommended thickness of Granular Sub Base (GSB) between 150mm and 230mm, Bituminous Macadam for 67mm⁵³, keeping in view the sub grade soil strength and cumulative traffic to be carried on the road.

Excessive provision of GSB thickness in deviation from IRC specifications led to extra expenditure of ₹ 8.15 crore.

In four divisions, Audit observed that seven out of 55 works for improvement/strengthening of existing roads, thickness of GSB was provided between 200mm and 300mm. This resulted in excess provision ranging from 50 mm to 70 mm. In one work, bituminous macadam was provided for 75mm against the requirement of 67mm. The above excess provision inflated the estimates and led to extra expenditure of ₹ 8.15 crore including tender premium as detailed in *Appendix 3.6.6*.

⁵³Requirement of BM as per IRC: -37-2001 for substitution of 50mm DBM= (75mm/55.85mm)*50mm= 67mm BM

The Government stated (September 2017) that excess GSB layer was provided to match the existing crust.

The reply was not acceptable since the GSB thickness was recommended by IRC considering cumulative traffic growth. The thickness of crust for a road is determined on the basis of cumulative traffic and load bearing strength of sub grade soil as per IRC: 37-2001. As such, the excess provision of GSB and BM was not justified.

3.6.6.5 *Undue provision in Bituminous surfacing*

Provision of excess SDBC in deviation from IRC specifications led to extra expenditure of ₹ 1.28 crore.

For bituminous surfacing, IRC specifications recommended either wearing course or a binder course with wearing course depending upon traffic to be carried. Where number of commercial vehicles per day (CVPD) plying over a road was up to 450, IRC: SP-20-2002/ IRC: 37-2001 recommended only 20mm premix carpet (PC) or 20mm Semi Dense Bituminous Concrete (SDBC).

Audit observed in three divisions that 12 out of 55 works estimates for Other District Roads took 25mm SDBC against the requirement of 20mm PC/SDBC. In addition, 50mm bituminous macadam which was not required was also provided. The above excess/undue provisions inflated the estimates by ₹ 1.28 crore. It led to avoidable extra expenditure of ₹ 1.17 crore including tender premium as detailed in *Appendix 3.6.7*.

The Government stated (September 2017) that the works executed with wearing course of 25mm SDBC had performed very well.

The reply was not acceptable since the IRC: 37-2001 (Para 4.2.3.4) guidelines prescribed bituminous course based on several factors like design traffic, type of base/binder course provided to the road, rain fall etc. Hence, the excess provision of bituminous surfacing was unwarranted.

3.6.6.6 *Computation of inflated design traffic leading to excessive provision*

Considering 15 years design life instead of 10 years for strengthening/improvement of existing road in deviation from IRC specification led to extra expenditure of ₹ 8.97 crore.

IRC specifications (IRC-81) recommend design life for 10 years for strengthening/widening of existing roads other than State Highways. For three Major District Roads (MDR), design of road was computed by taking design life of 15 years instead of 10 years. The estimates adopted vehicle damage factor of 3.5 for traffic volume up to 1500 vehicles per day against the present traffic of 600 vehicles per day. As a result, design traffic was inflated to 9-10 msa against 5 msa. As such higher GSB were provided. This led to extra expenditure of ₹ 8.97 crore including tender premium.

The Government stated (September 2017) that all the three roads were in mining area of Keonjhar district and leading to important National Highways of the State. Increase of heavy commercial/traffic in the mining area/industrial area was always expected to be more than 7.5 per cent per annum.

The reply was not acceptable since in computation of design traffic, the estimates adopted vehicle damage factor of 3.5 applicable for traffic volume up to 1500 vehicles per day against the present traffic of 600 vehicles per day.

3.6.6.7 Undue provision of Dry lean Concrete to roads with low traffic intensity

Provision of dry lean concrete for roads of low traffic intensity in deviation from IRC specifications led to extra expenditure of ₹ 1.14 crore.

IRC: 15-2000 (para 6.2.1) specifically stipulated that dry lean concrete (DLC) sub base is recommended for modern concrete pavements, preferably with high intensity of traffic. Further, specification no. IRC: SP-62 do not provide for DLC as sub base for construction of cement concrete pavement roads with low traffic intensity.

In six divisions, Audit observed in seven out of 55 existing roads that commercial vehicles plying on these roads ranged from 121 to 351 per day (as per DPR). Further, design traffic computed for these roads for 10 years ranged from 1msa to 3 msa, indicating traffic of low intensity. In deviation from the IRC specifications, 100 mm of dry lean concrete for entire width of these roads were provided in the estimate. However there was availability of sub base and base materials of 300 mm under the existing roads. The provision of dry lean concrete was unwarranted and it led to avoidable expenditure of ₹ 1.14 crore including tender premium as detailed in *Appendix 3.6.8*.

The Government stated (September 2017) that to cater to heavy traffic dry lean concrete was provided as sub base as there was every potential for increase of heavy commercial vehicles in all these roads.

The reply was not tenable since as per the estimates, roads mentioned above were expected to be of low traffic intensity during their design life. The requirement of base and sub base thickness as per IRC guidelines was already available.

3.6.6.8 Provision of Wet Mix Macadam/ Granular Sub Base without considering existing crust

Provision of WMM without deducting existing crust led to avoidable extra expenditure of ₹ 10.97 crore.

IRC:81-1997 provides guidelines for strengthening of flexible road pavements and recommends "Benkelman Beam Deflection Technique" (BBDT) test. This test would assess the existing thickness and help to calculate additional thickness required to improve or strengthen the existing road pavement.

Audit observed in four divisions that in eight out of 55 existing roads estimates provided for overlaying of WMM⁵⁴/GSB⁵⁵ for entire width of the roads⁵⁶. The roads were taken up for widening and improvement. Further, they had not deducted the quantum of crust available in the existing roads. BBDT test was also not conducted for the above purpose. Thus, not deducting of existing crust inflated the estimates. It led to avoidable extra expenditure of ₹ 10.97 crore including tender premium (*Appendix 3.6.9*).

The Government stated (September 2017) that the available existing crust of each of the above roads had been duly accounted for during preparation of the estimates and during execution of works as well.

The reply was factually incorrect since no deduction was made for the crust available in the existing roads as mentioned in the estimates of the roads.

⁵⁴Wet Mix Macadam

⁵⁵Granular Sub Base

⁵⁶(both existing and widening portion)

3.6.7 Preparation of estimates in deviation from OPWD Code, Schedule of Rates and Analysis of Rates

Provision of excess transportation charges inclusive of voids for stone products resulted in undue benefit of ₹ 13.68 crore to the contractors.

Odisha Public Works Department Code (para 3.4.10) stipulated that estimates should be prepared using Schedule of Rates (SoR) and providing for the most economical and safe way of executing the work. Instances of preparation of estimates in deviation from the above provisions are discussed below:

- As per SoR, rates allowed for transportation of materials are exclusive of void⁵⁷ in materials. Estimates had been prepared by the Department with provision of transportation charges for 1.28/1.32 cubic meter (cum) of GSB/WMM against one cum. This led to excess provision for transportation charges for 0.28/0.32 cum of stone products. In respect of 46 road works, the Department allowed transportation charges for 12.57 lakh cum materials. The admissible quantity was however 11.04 lakh cum only taking into account the related void. The excess provision of transportation charges made in the estimate was ₹ 14.84 crore. Considering tender premium, undue benefits extended to the contractors worked out to ₹ 13.68 crore.

The Government stated (September 2017) that the SoR provided carriage charges for stone products for each cubic meter. Each cubic meter has been defined as box heap of 1.5m x 1.5m x 0.44m. Hence, there were no voids.

The reply was not acceptable since stone products were transported loose. Further, the estimate provided transportation charges for 1.28/1.32 cum against one cum. In the Exit Conference the EIC-cum-Secretary agreed to amend the SoR/AoR in this regard.

Non deduction of stacking charges from the rate of materials of stone products resulted in undue benefit of ₹ 3.27 crore to the contractors.

- Schedule of Rates stipulated that the rates of materials (stone products) include stacking charges. Further as per Detailed Tender Call Notice forming part of contract, stone products are to be stacked for pre-measurement to assess the exact quantity transported to the work site. The contractors had utilised 12.57 lakh cum of materials directly in road construction without stacking in respect of 46 road works. As such, payment of stacking charges of ₹ 3.27 crore built in the estimated cost resulted in undue benefit to the contractors.

The Government stated (September 2017) that there was no need for stacking of the materials on the road side for pre measurement or assessment of the quantity of materials brought to site as the measurement was taken on compacted thickness for finished items of work.

The Government accepted that there was no need for stacking of the materials on the road side. The reply was, however, silent on recovery of stacking charges from the contractors.

- Odisha Public Works Department Code (para 3.4.10) stipulated preparation of estimates in the most economical manner. Audit observed that in six road works, estimates provided for excess utilisation of burrow earth. This happened because the volume of GSB, WMM, Morrum, BM, SDBC and sand for use in filling section was not deducted from the estimated thickness. The provision of burrow earth in excess of actual

⁵⁷ A void is a pore that remains unoccupied in a composite material

Non-consideration of materials for crust thickness to be used in filling section resulted in excess provision of burrow earth. It led to undue benefit of ₹ 4.08 crore to the contractors.

requirement inflated the estimates by ₹ 4.54 crore for transportation of 3.42 lakh cum of burrow earth. This resulted in undue benefit of ₹ 4.08 crore to the contractors with tender variations as detailed in *Appendix 3.6.10*.

The Government accepted audit findings and stated (September 2017) that quantity of crust was not deducted at the time of estimate and the crust provided was to be deducted from finished section at the time of final payment.

Provision of average lead instead of shortest lead for stone products led to undue benefit of ₹ 20 lakh to a contractor.

- Audit reviewed records on widening to KTSA⁵⁸ road under ACA for 2013-14. The Executive Engineer adopted lead distance of 72 km taking average lead of two quarries against the shortest lead distance of 50 km. Provision of excess lead distance of 22 km inflated the estimates by ₹ 20 lakh towards conveyance of 0.17 lakh cum of stone products. This led to undue benefit of ₹ 20 lakh to a contractor including tender premium.

The Government stated (September 2017) that estimate was an approximate proposed cost. Once a competitive bid was accepted, that becomes the workable cost with least market value and the inflation in estimate if any would have no impact on lowest tender.

The reply was not acceptable. The inflated estimated cost would be passed on to the contractor since the stone products were available in nearby quarry located at a distance of 50 km. Moreover, as per condition of contract, materials required for the work was to be arranged by the contractor at his own cost. Provision of average lead distance led to undue benefit to the contractor.

Provision of conveyance charges for excavated earth which were to be reused led to undue benefit of ₹ 1.13 crore to the contractors.

- Earth excavated from the side of existing road while widening them, would be kept aside for reuse in the embankment of widened road. The estimates of 19 works provided for conveyance of excavated earth for a distance of up to one kilometer. The above unwarranted provision inflated the estimates by ₹ 1.13 crore. It led to undue benefit of ₹ 1.02 crore to the contractors including tender variations as detailed in *Appendix 3.6.11*.

The Government stated (September 2017) that provision for excavation of earth by mechanical means with disposal upto one kilometer lead was provided as per GoI Data Book.

The reply was not acceptable. As provided in the estimates, the excavated materials were required to be used in the shoulder of the road throughout its entire length under construction. As such, provision of conveyance was not justified.

- The estimates of four road works, executed with ACA assistance were reviewed in Rourkela (R&B) Division. Two out of four estimates provided for slag which was obtained free of cost for construction of sub base. For two⁵⁹ works under ACA and one⁶⁰ work under CRF, estimates provided for

⁵⁸Karanjia Thakurmunda Satkosia Anandapur Road from 30/00 to 31/902 km and from 34/700 to 42/040 km

⁵⁹(i) Improvement to Lalei to Khandadhar Waterfall road from 6/0 to 15/0 km and (ii) Upgradation of Koira-Tensa-Bansuan-Kaleiposh road from 24/0 to 27/35 km

⁶⁰Widening and Improvement of Hatibari Biramitrapur-Raiboga Salangabhal Bihar Border road from 0/0 to 10/0 km

Not considering slag at free of cost for construction of sub base resulted in extra expenditure of ₹ 3.43 crore.

use of coarse graded GSB instead of slag as sub base. It resulted in extra expenditure of ₹ 3.43 crore including tender variations.

The Government stated (September 2017) that there was nothing wrong in use of GSB with crushed stone aggregates in lieu of slag. The Government also stated certain problems in getting slag.

The reply was not acceptable since the same division had provided for slag (free of cost) for two other ACA works.

3.6.8 *Internal control and Monitoring*

Internal control and monitoring are prerequisite to ensure economy, efficiency and effectiveness besides preventing officers from indulging in irregular activities. Lapses noticed in this regard are discussed below:

3.6.8.1 *Check measurements not conducted*

OPWD Code (Appendix-II) stipulated that Sub Divisional Officers and Divisional Officers are to check the accuracy of measurements recorded by subordinate officers. The Divisional officer should particularly check measure at least 10 *per cent* of items of works done.

Audit observed that no check measurements had been done by the Divisional Officers in 10 test checked divisions. Thus, in the absence of check measurement, the possibility of excess payment due to inaccuracies in measurement cannot be ruled out.

The Government had accepted the facts. It was stated (September 2017) that detailed inquiry would be taken up to ensure test checks as per codal provisions.

3.6.8.2 *Lack of quality monitoring*

As per the guidelines of CRF, there should be a quality monitoring system at the State level consisting of experts and supporting staff. They should devise Quality Assurance (QA) system to spot non-conformities.

Audit observed that EE/ SE/ CE who visited the project sites also did not issue any inspection notes for ensuring quality workmanship as per para 2.2.9 of OPWD code. In the absence of above arrangement, execution of works observing quality parameters was not assured.

The Government stated (September 2017) that the reports on quality of works were reviewed by the Chief Engineer and Government periodically to address quality issues.

The reply was not acceptable since no inspection note of Regional Officer/EE/SE and CE was made available in the test checked divisions.

3.6.8.3 *Refund of security deposit before defect liability period*

At the time of drawal of agreement, the contractor has to deposit one *per cent* of bid amount as initial security deposit. Para 3.5.20 of OPWD Code stipulated that security deposit is refundable after six months or such period specified in the agreement from the date of satisfactory completion of the

In the absence of check measurement by EEs, inaccuracies in measurement cannot be ruled out.

Due to non issue of inspection notes by higher authorities, quality parameters was not assured.

Refund of security deposit before payment of final bills/expiry of defect liability period led to undue benefit to contractors for ₹ 3.19 crore.

work, provided the contractor's final bill has been paid. As per Detailed Tender Call Notice forming part of the agreement, defect liability period was one year from the date of completion of the work.

Audit observed that in 19 works, security deposit of ₹ 3.19 crore had been refunded to the contractors prior to payment of final bills/before the expiry of defect liability period. The bills were not finalised due to delay in sanction of extension of time and deviations. This led to undue financial benefit to the contractors. Thus, the department would have no scope for recovery in case of bad performance and for imposing penalty.

The Government stated (September 2017) that necessary action would be initiated against the defaulting officers on receipt of information from them.

3.6.8.4 Differential cost not recovered

Non recovery differential cost for steel and bitumen of ₹ 4.68 crore led to undue benefit to the contractors.

As per condition of contract, the prices to be paid in respect of steel and bitumen should be adjusted for increase or decrease in price.

Audit observed that differential cost for steel and bitumen utilised in the works amounting to ₹ 4.68 crore was not recovered in 11 road works. However, there was reduction in prices of steel and bitumen as detailed in *Appendix 3.6.12*. Reasons were not on record.

The Government stated (September 2017) that necessary action would be initiated against the defaulting officers on receipt of information from them. However, the reply was silent as regards recovery of differential cost.

3.6.8.5 Plantation of trees not monitored

No plantation works had been done by the DFOs.

As per IRC guidelines, trees uprooted during widening of roads are to be compensated by planting of trees. Road side tree plantation was required to be made for landscaping and also for environmental control.

Audit observed that sanctioned estimates of eight⁶¹ works provided for plantation of 25410 trees against uprooting of 2541 trees. The Divisional Officers deposited (August 2010/August 2016) ₹ 1.45 crore with Divisional Forest Officers (DFO) concerned. No plantation works had, however, been done and the DFOs had also not submitted the utilization certificates.

The Government had accepted the factual position. The Government had also stated (September 2017) that the EEs were being instructed to obtain utilisation certificates from DFOs and ensure completion of plantation work.

3.6.8.6 Delay in completion of works

Due to lack of monitoring, 28 works were delayed for completion.

Time being the essence of any project, the Department was to ensure that the projects were completed in time. As per condition 2(a) of the contract, the contractor shall pay compensation amount equal to half *per cent* per day

⁶¹ (i) Improvement and Widening of road from Ravi talkies to Tankapani road 0/0 to 1/8 km, (ii) Upgradation of Ghatagaon Harichandanpur road from 0/0 to 15/0 km, (iii) Improvement to Karanjia Thakurmunda Satkosia Anandpur road from 0/0 to 10/0 km, (iv) Improvement to Jagannathpur-Berhampur Phulbani road from 112/0 to 117/0 km, (v) Improvement to Jagannathpur-Berhampur Phulbani road from 120/0 to 128/0 km, (vi) Improvement to Jagannathpur-Berhampur Phulbani road from 117/0 to 120/0 km, (vii) Improvement and Widening to Bhubaneswar Chandaka (MDR) from 6/25 to 17/25 km and (viii) Widening and Improvement to Nayagarh Khandapada road from 0/0 to 16/0 km

subject to maximum of 10 *per cent* on the contract value for delays in completion of the projects or failure to achieve the stipulated progress as per milestone.

The progress of works in test checked divisions showed that 28 works were not completed as per schedule. Further, compensation amounting to ₹ 23.86 crore were also not imposed on contractors. The records maintained did not disclose the reasons for the delay. The contract conditions stipulated that either the Engineer or the contractor can require the other to attend a management meeting to discuss issues or constraints in execution of work to resolve them. No such meetings had however been held. The delay in completion of projects ranged from 60 to 1188 days. The above facts indicated lack of seriousness in timely completion of projects.

The Government stated (September 2017) that necessary action would be initiated against the defaulting officers on receipt of information from them.

3.6.9 Conclusion

Audit of projects under Improvement of Roads and Bridges with CRF/ACA showed that the projects were selected in deviation from scheme guidelines. As a result, eight roads executed under CRF were not directly connected to places of important market centers, economic zone, agriculture region, tourist centers. Similarly, 42 roads executed under ACA were not connected to any place of tourist importance or cultural heritage.

The Department could complete 58 *per cent* of projects sanctioned under CRF. The projects were commenced without ensuring availability of required land, shifting of utility services and forest clearance. As a result there were delays in completion of projects.

The guidelines insisted on construction of road projects as per IRC specifications and estimates were to be prepared as per provisions of Odisha Public Works Code, Schedule of Rates and Analysis of Rates. There were however several instances of deviations leading to avoidable extra expenditure.

Government of India released only 47 *per cent* of the sanctioned cost under CRF due to under utilisation of funds by GoO. Differential cost of steel and bitumen utilised in works was not recovered leading to undue benefit to the contractors. Internal control and monitoring mechanism were not adequate. As a result, 28 projects were delayed inordinately.

3.7 Undue benefit to contractors

Adoption of average lead distance instead of shortest lead for transportation of stone products inflated the estimates. It led to undue benefit of ₹ 25.61 crore to the contractors.

Odisha Public Works Department (OPWD) Code (Para 3.4.10) stipulated that the Divisional Officer is to certify that he has personally visited the spot and prepared the estimate using Schedule of Rates (SoR) and providing for the most economical and safe way of executing the work.

Chief Engineer (CE), Design, Planning, Investigation and Roads (DPI and Roads), Odisha sanctioned seven road projects⁶² under three Roads and Buildings Divisions⁶³ for ₹ 341.37 crore. The works were awarded to seven contractors at a cost of ₹ 323.62 crore between June 2010 and January 2016 for completion between June 2012 and June 2017. As of March 2017, two works were completed and other five works were in progress with expenditure of ₹ 349.48 crore including escalation charges of ₹ 39.99 crore. Estimates of the above works *inter alia* provided for transportation of 12.86 lakh cum of stone products from approved quarries. The stones were for execution of Granular Sub Base (GSB), Wet Mix Macadam (WMM), Bituminous Macadam (BM), Semi Dense Bituminous Concrete (SDBC), Cement Concrete and stone packing.

Audit observed from the sanctioned estimates of the works that for sourcing the stone products average lead distances ranging from 29 to 102 km were provided. The shortest lead distances to nearby quarries as certified by Engineers concerned were ranging from seven to 55 km. The average lead was adopted on the plea that the nearest quarries were not able to meet the requirement of works. Audit further observed that before preparation of estimates, certificate of adequate quantity of materials not being available from the nearest quarries had not been obtained from Revenue Authorities.

Thus, the provision of excess lead between 14 and 60 km for the above seven road projects inflated the transportation cost ranging from ₹ 109.50 to ₹ 411 per cum. For transportation of 12.86 lakh cum of stone-products estimated cost of the projects was inflated by ₹ 27.24 crore. With the tender premium the undue benefit extended to the contractors worked out to ₹ 25.61 crore. Of the above amount, ₹ 25.20 crore had already been passed on to the contractors as detailed in ***Appendix 3.7.1***.

The Government stated (September 2017) that average lead was proposed for want of availability of sufficient crushed stone products in the nearby crusher of the project. Hence the Executive Engineers/ Superintendent Engineers, concerned had recommended for average lead. Further, unforeseen problems like machinery break down, labour unrest, scarcity of materials from a single quarry were also considered. They act as a barrier for smooth supply of crusher stone products by a single crusher. Further, estimate was an approximate cost of the project and the realistic estimate made it workable from the point of view of the execution.

The reply was not tenable since average lead was adopted in the estimates without verifying the availability of materials from the Revenue authorities. Further as per the terms and conditions of contract, arranging the materials was the responsibility of the contractors. Provision of higher lead for want of availability of sufficient materials was not in accordance with the provisions of the contract.

⁶² (i) Widening to two lane and improvement of Bhawanipatna-Gunupur-Kasipur-Rupkona road (S-44), (ii) Widening to two lane and improvement of JKpur-Muniguda-Bhawanipatna Border Road (SH-6), (iii) Improvement to two lane of VRC (Boudh-Kiakata-Rairakhol) road, (iv) Widening and strengthening of existing lane from 183/300 to 188/200 km of Kuchinda-Bamara road, (v) Widening and strengthening of existing lane from 188/800 to 194/200 km of Kuchinda-Bamara road, (vi) Widening and strengthening of existing lane from 176 to 183 km of Kuchinda-Bamara road and (vii) Widening and strengthening of existing lane from 171 to 174 km of Kuchinda-Bamara road.

⁶³ Rayagada (R & B) Division, Sambalpur (R&B) Division No-I & II.

3.8 *Extra cost due to inclusion of inadmissible overhead charges on cost of conveyance of stone products.*

Incorrect inclusion of conveyance charges to prime cost for calculating overhead charges and contractor's profit led to extra cost of ₹ 11.36 crore

Government of Odisha (GoO) in Works Department published (2006) Analysis of Rates (AoR) prescribing admissible cost elements to be considered to arrive at item rate of various works. For the items of works mentioned in AoR, Schedule of Rates (SoR) is published every year in consideration of increase in cost of materials, machinery and labour. Estimates for public works are to be prepared on the basis of AoR 2006 and prevailing SoR. The rates of material as per SoR are basic rates excluding cost of conveyance, royalty and other local taxes. The AoR 2006 provides for overhead charges (OHC) and contractors profit on each item of work at prime cost⁶⁴. After adding OHC and contractors' profit, cost of conveyance of materials and royalty must be added at the end to arrive at final item rate.

The two Divisions⁶⁵ estimates for ₹ 262 crore were sanctioned between December 2009 and November 2012 for three road projects⁶⁶. Audit observed that the sanctioned estimates of the above works provided for transportation of 9.45 lakh cum of stone products. They were for execution of Granular Sub Base, Wet Mix Macadam, Bituminous Macadam, Semi Dense Bituminous Concrete, Cement Concrete etc.

Audit review of the item rates of the above works showed that in contravention of Analysis of Rates, conveyance charges were first added to prime cost and then overhead charges at eight/ten *per cent* and contractors profit at 10 *per cent* were worked out on that inflated amount. Further, one *per cent* labour cess was calculated on overhead charges and contractor's profit thus worked out. This resulted in an overall inflation of the estimated cost by ₹ 11.01 crore.

The tender for the works were invited on such inflated estimates. The same was awarded for ₹ 252.43 crore between July 2010 and April 2013 for completion between January 2013 and April 2015. As of March 2016, the above works were in progress and the contractors were paid for ₹ 302.11 crore. As of March 2017, the contractors had utilised 9.64 lakh cum of stone products. ₹ 11.36 crore had already been passed on to the contractors for the above quantity.

The Government stated (September 2017) that the estimates were prepared as per the provisions/ stipulations of the Analysis of Rates 2006 of GoI/ Ministry of Road Transport and Highways (MoRTH).

⁶⁴ Cost of materials, machinery and labour

⁶⁵ Parlakhemundi Roads & Buildings Division and NH Division, Keonjhar

⁶⁶ (i) Widening of two lane and improvement of Parlakhemundi-R.Udayagiri-Mohana Road, (ii) Widening of two lane and improvement of Gunupur-Kasinagar Road and (iii) Widening and strengthening from 0/0 to 14/0 km of NH-20

The reply was incorrect as the Analysis of Rates required computation of overhead charges, contractor's profit and labour cess as a percentage of prime cost, before computing the cost of conveyance.

3.9 *Avoidable cost due to unwarranted/excess provision of bituminous items*

Unwarranted provision of Bituminous Macadam and excess provision of Semi Dense Bituminous Concrete were made in deviation from IRC Specifications. It led to avoidable cost of ₹ 65.38 crore.

Indian Road Congress (IRC) specifications stipulated that the pavement thickness/design of roads depends on load bearing capacity of the soil, expressed in terms of California Bearing Ratios⁶⁷ (CBR) and on the basis of projected number of commercial vehicles which would ply over the road, calculated as Million Standard Axles (msa). As per IRC: 37-2001, for traffic intensity of one msa with CBR value ranged from two to five *per cent*, the pavement composition should comprise Granular Sub-base, Granular base and bituminous surfacing. Further bituminous surfacing consists of 20 mm wearing course (Premix Carpet/Semi Dense Bituminous Concrete) and no binder course should be provided.

The records of Malkangiri Roads & Buildings (R&B) Division were reviewed. They showed (October 2016) that during 2010-11, seven⁶⁸ road works for widening and improvement were under execution with assistance from GoI, MoRTH.

Audit observed from the estimates/sanctioned notes of MoRTH that all the seven roads were with traffic of one msa and the CBR value of the roads ranged from two to five *per cent*. Against the requirement of 20 mm SDBC, the EE provided 25 mm to 30 mm SDBC. Further Bituminous Macadam (BM) of 50 mm to 60 mm was also provided although there was no requirement for BM. Thus unwarranted provision of BM and excess provision of five to 10 mm of SDBC inflated the estimates by ₹ 66.63 crore as detailed in the *Appendix 3.9.1*.

Based on such inflated estimates, tenders were invited. The works were awarded to four⁶⁹ contractors between December 2010 and November 2011 at a cost of ₹ 363.12 crore for completion between January 2013 and May 2014. As of March 2017, only one work was completed and remaining six works were in progress as the Department could not hand over the hindrance free site in time. The contractors were paid ₹ 288.71 crore. The extra cost due to inflated estimate worked out to ₹ 65.38 crore taking into account tender premium quoted by the bidders.

⁶⁷The California Bearing Ratio (CBR) is a penetration test for evaluation of the mechanical strength of natural ground, sub grades and base courses beneath new carriageway construction. .

⁶⁸ (i) Improvement to MalkangiriMottu Road from 102/0 to 149/0 km, (ii) Widening and Improvement to JKMM Road from 149/0 to 202/7 km (iii) Widening and Improvement to CJP Road from 0/0 to 29/5 km,(iv) Improvement to Malkangiri Balimela Road from 0/0 to 29/2 km, (v) Improvement to Balimela Junction to Tunnel, (vi) Widening and improvement of KP Road from 0/0 to 30/0 km and (vii) Improvement to GSM road from 0/0 to 45/353 km.

⁶⁹(i) Patil Construction, (ii) M/s Raghava Constructions, (iii) IVRCL Ltd and (iv) KCL-AMRCL.

The Government stated (September 2017) that the traffic density in terms of msa for 15 year design life was re-assessed which were more than 5 MSA for four roads (Sl. No. 1, 2, 5 and 7 of the *Appendix 3.9.1*). The design requirement of BM for these roads for both binder layer and wearing course did not exceed specifications. The Government accepted the factual position for other three roads. It was stated that thicker layers of BM had been provided as these roads were located in strategic area. This would help in safe and easy movement of vehicular traffic of law enforcing agencies like CRPF/Police personnel for maintaining law and order.

The reply was not acceptable. The extra thickness of SDBC and extra layer of BM was not required since the assessed traffic intensity was one msa and CBR value was ranging from two to five *per cent*.

3.10 Avoidable cost due to provision of surface dressing

Provision was made for surface dressing over and above the pavement design stipulated by Indian Roads Congress specifications. It led to avoidable cost of ₹ 12.08 crore.

Mention was made in para 3.14 of Report of the Comptroller and Auditor General of India on Economic Sector for the year ended March 2016 regarding extra expenditure due to unwarranted provision of surface dressing for ₹ 17.02 crore in 10 road works of two roads and buildings⁷⁰ divisions. Audit scrutiny of records in 19 road projects under five divisions showed the following.

Chief Engineer, Design, Planning, Investigation & Roads (DPIR) had sanctioned estimates of 19 road projects under five Divisions⁷¹ for ₹ 534.91 crore. The works were awarded at ₹ 522.56 crore between July 2010 and December 2016 for completion between January 2013 and August 2018. As of March 2017, all the works were in progress with expenditure of ₹ 498.32 crore on the basis of actual measurement.

As per Indian Roads Congress (IRC) specifications, pavement layers are to comprise Granular Sub Base, Granular Base and Bituminous Surfacing. Further the bituminous surfacing shall consist of either a wearing⁷² course or a binder⁷³ course with a wearing course depending upon the traffic to be carried.

Audit observed that the estimates of the above works provided for Semi Dense Bituminous Concrete (SDBC) as a wearing course and Bituminous Macadam as binder course. A wearing course as per pavement design stipulated by the IRC specifications was already provided. Over and above, the estimates provided another wearing course for 18.39 lakh square meter in the form of surface dressing. The above unwarranted provision led to avoidable extra cost of ₹ 12.08 crore.

⁷⁰ Rayagada and Malkangiri (R&B) Divisions

⁷¹ (I) Paralakhemundi (R&B) Division, (ii) Keonjhar NH Division, (iii) Sambalpur (R&B) Division No-II, (iv) Ganjam (R&B) Division No-II and (v) Jharsuguda (R&B) Division.

⁷² The most commonly used wearing courses are surface dressing, open graded premix carpet, mix seal surfacing, semi-dense bituminous concrete and bituminous concrete

⁷³ Binder Course-Bituminous Macadam and Dense Bituminous Macadam

The Government stated (September 2017) that to avoid disturbances of WMM layer one side of the road was provided with surface dressing over which traffic was allowed.

The reply was not acceptable. The condition in detailed tender call notice stipulated that traffic management and maintenance of the stretch of road during the period of execution would be done by the contractor at his own cost. As such, the contractor was to manage the traffic after execution of WMM at his own cost. Hence the provision of surface dressing by the Department led to avoidable extra cost of ₹ 12.08 crore. Of this amount, ₹ 9.25 crore had already been paid to the contractor for execution for 14.14 lakh square meter of surface dressing.

3.11 Undue benefit to contractors

Undue provision was made for extra lead charges from mixing plant to worksite for transportation of stone products. It inflated the estimated cost by ₹4.77 crore and led to undue payment to contractors.

As per note below the chapter on road works of the State Analysis of Rates, 2006 in case of items where wet mix plant⁷⁴ and hot mix plant⁷⁵ are used, the total distance for transportation of materials from quarry to work site should not exceed the distance from quarry to plant site plus distance from plant to work site to carry mixed materials.

Estimates for widening and improvement of three road projects were sanctioned by Chief Engineer, (DPI & Roads) for ₹ 261.99 crore (between December 2009 and November 2012). The works were awarded between July 2010 and April 2013 to three contractors by the Executive Engineers of Roads and Buildings (R&B) Divisions, Parlakhemundi and National Highway(NH) Division, Keonjhar at a cost of ₹ 252.43 crore. They were due for completion between January 2013 and April 2015. As of March 2017, the works were in progress and the contractors had been paid ₹ 302.11 crore. It included escalation charges of ₹ 46.73 crore on the basis of actual measurement of quantities executed.

The above works, *inter alia*, involved transportation of 5.59 lakh cum of stone products from quarries to plant. It was meant for use in preparation of Wet Mix Macadam (WMM), Bituminous Macadam (BM) and Semi Dense Bituminous Concrete (SDBC). Then the above mixed materials were to be transported to various work sites. The estimates for the works provided for lead charges for distances ranging from 44 to 118 km for transportation of stone products from quarries to work sites. In addition, lead charges were included in the item rates for distances ranging from 3.5 to 13 km for transportation from mixing plant to work sites. However, transportation costs were to be limited to sums worked out on the basis of AoR. **(Table no. 3.5).**

⁷⁴Wet mix plant: - The plant where the stone chips of various dimensions including stone dust are mixed up. Its output wet mix macadam is for construction of Base course.

⁷⁵Hot mix plant: - The plant where stone chips of various dimensions were mixed up with bitumen. It is for construction of wearing course (Bituminous macadam and semi dense bituminous concrete).

Table No. 3.5: Details of undue benefit to contractors due to provision of extra lead charges from mixing plant to worksite

Name of the Work	Estimated cost (₹ in crore)	Agreement Value (₹ in crore)	Payment made (₹ in crore)	Total lead provided in estimate (in km)	Actual lead allowed in AoR (in km)	Excess lead (in km)	Excess payment already made (₹ in lakh)
Widening of two lane and improvement Parlakhemundi-R: Udayagiri-Mohana Road	141.2	153.91	192.79	124	111	13	315.46
Widening of two lane and improvement of Gunupur-Kasinagar Road.	84.08	68.13	79.18	128	118	10	147.40
Widening and strengthening from km 0/0 to 14/0 km of NH-20	36.71	30.3	30.14	47.5	44	3.5	13.79
Total	261.99	252.34	302.11				476.65 lakh or 4.77 crore

Thus, extra lead charges between ₹ 27.40 and ₹ 99.80 per cum from mixing plant to various work sites included in the item rates inflated the estimated cost by ₹ 4.77 crore (*Appendix 3.11.1*). Award of work based on such inflated estimated cost resulted in extra cost to work and undue benefit of ₹ 4.77 crore to contractors.

The Government in reply stated (September 2017) that provision of a rate in the estimate did not bear extra expenditure for the project as competitive bids were invited. Further bid was finalised in favour of L1 bidder. Any change in estimated rate influence only the estimated cost but position of L1 remained unaltered.

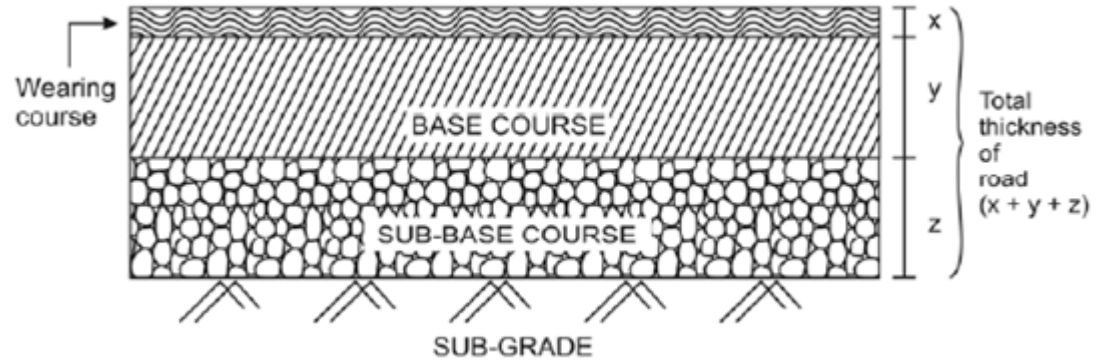
The reply was not acceptable since invitation of bid was based on inflated estimated cost which usually results in higher bids.

3.12 Avoidable Cost on provision of capping layer of sand

Unwarranted provision of capping layer of sand in deviation from IRC specifications led to avoidable cost of ₹ 7.55 crore.

Regarding avoidable extra expenditure of ₹ 14.56 crore in 26 works of 15 Roads and Buildings Divisions, mention was made in para 3.13 and 3.18 of Report of the Comptroller and Auditor General of India on Economic Sector for the year ended March 2014 and March 2015 respectively. Audit scrutiny of records in other six divisions showed the following.

According to the norms of Indian Road Congress (IRC), pavement layer of a road consists of sub base course which may include granular sub base (GSB), base course and wearing course laid in successive layers over sub grade surface as shown in the diagram below.



Thickness of pavement of road is designed depending on load bearing capacity of the road. Load bearing capacity is worked out on two factors, i.e, California Bearing Ratio (CBR) representing the strength of sub grade soil, and the projected number of commercial vehicles which would ply on the road calculated as Million Standard Axles (msa). Para 3.2.3 of the IRC states that the pavement designs are given for sub grade CBR values ranging from 2 per cent to 10 per cent and design traffic ranging from 1 msa to 150 msa. Para 4.2.1.5 of the IRC guidelines states that the sub grade soil should have CBR value of two per cent. Where the CBR value of sub grade soil is less than two per cent, the design should be based on sub grade CBR value of two per cent and a capping layer of 150 mm thickness of materials with minimum CBR of 10 per cent shall be provided in addition to the sub base.

Audit reviewed estimates for improvement/ widening of 12 road works costing ₹ 198.09 crore in six divisions (between October 2014 and December 2016). The works were awarded for ₹ 187.11 crore. The work would be completed between April 2016 and August 2018.

Audit observed that the CBR value of sub grade soils in all the 12 works were more than the required two per cent (i.e. three to eight per cent). This indicated adequate load bearing capacity. The divisions however provided unwarranted capping layer of sand with thickness ranging from 115 mm to 450 mm. The unwarranted provision of capping layers of sand inflated the estimate by ₹ 8.12 crore. With the tender premium/discount the extra cost worked out to ₹ 7.55 crore as detailed in *Appendix 3.12.1*.

The Government stated (September 2017) that extra thickness of sand was provided to compensate less thickness of granular sub base thereby saving in cost. The Government further stated that extra thickness of sand was provided for raising formation of the road to avoid submergence/overlapping during monsoon which would act as drainage layer.

The reply was factually incorrect since the layer of sand was provided in addition to an adequate sub base layer and thickness of Granular Sub base has not been reduced. As such there was no saving in cost. Further, the drainage layers were required only under shoulders of the road at sub grade level and not for the entire width of the road as per para 5.5 of IRC: 37 guidelines.

3.13. Avoidable expenditure on use of morrum and sand instead of earth

Construction of sub-grade of roads with morrum and sand at higher cost in lieu of earth in deviation of IRC specifications led to extra expenditure of ₹ 13.09 crore

Indian Road Congress (IRC) specifications 37-2001 (Para 3.4.1) stipulated that sub-grade constructed for road formation should be well compacted. For the sub-grade, earth available on project area or borrow earth is to be used. Use of materials like morrum or sand which is costlier than earth is in deviation from OPWD code (para 3.4.10) which insists on most economical way of executing the works.

In four Roads & Building divisions,⁷⁶ four road works⁷⁷ were awarded for ₹ 92.35 crore between September 2009 and November 2013. This was to be completed between March 2011 and May 2015. Three works had already been completed. The construction of new embankment and road at submersible portion of Bolangir Kantabanji Bangomunda Chandutora (BKBC) road under Kantabanji (R&B) Division was in progress. The total expenditure on the above works as of March 2017 was ₹ 87.14 crore.

Review of estimates of the above works showed that as per the design of roads, 13.65 lakh cum of earth was required for formation of sub-grade. Against the requirement of 13.65 lakh cum of earth, the estimates provided for 6.30 lakh cum of earth at rates varying from ₹ 107.50 to ₹ 165.10 per cum. For the remaining quantity, provision was made for 0.78 lakh cum of morrum at rates varying from ₹ 377.50 to ₹ 614 per cum and 6.57 lakh cum of sand at rates varying from ₹ 160.70 to ₹ 491.90 per cum. The undue provisions of morrum and sand against earth resulted in extra cost of ₹ 12.66 crore. As of March 2017, with tender premium ₹ 13.09 crore had already been passed on to the contractors. In the preface report of the estimate, the department did not mention that the required quantity of earth was not available. Without proper justification, the provision was made for sand and morrum for utilisation in the works at higher cost.

The Government in reply stated (September 2017) that capping layer was provided for stabilisation of road. It was also stated as the naturally occurring local sub-grade soil had poor engineering properties and low strength in terms of CBR. The Government further stated that the good quality of earth was not available and provision of sand was not for sub grade but towards high embankment in respect of BKBC road.

The reply was not acceptable since as per IRC: 37 (para 4.2.1.5) guidelines drainage layer of sand was recommended only in case of CBR value of the sub-grade was less than two *per cent*. The CBR value of the sub-grade was, however, eight *per cent* in Puri bye pass road indicating adequate load bearing capacity. Further as per the conditions of the contract it was the responsibility of the contractor to arrange required earth for the work.

⁷⁶ (i) Puri (R & B) Division, (ii) Bhubaneswar (R & B) Division No.I (iii) Cuttack (R & B) Division No.I and (iv) Kantabanji (R&B) Division.

⁷⁷ (i) Construction of Puri bye pass road from NH 203- Malatipatpur, (ii) Construction of road by the side of Pettanullah, (iii) Widening and strengthening of the Kuakhia right embankment, and (iv) Construction of new embankment and road at submersible portion of BKBC road.

3.14 Excess provision of pavement thickness led to extra cost

Provision of pavement thickness in excess of IRC specification led to extra cost of ₹ 13.16 crore.

Indian Road Congress guidelines (IRC: 37-2001) specified design of flexible pavements, keeping in view load bearing capacity of sub-grade soil expressed in California Bearing Ratio (CBR) and cumulative traffic to be carried expressed in Million Standard Axles (msa). The IRC guidelines prescribed pavement design as per CBR of sub-grade soil for cumulative traffic ranging from 1 to 150 msa. The pavement to be provided consists of Granular Sub Base (GSB), Granular Base (GB) and Bituminous Surfacing (BS).

Chief Engineer (DPI & Roads) sanctioned estimates for ₹ 348 crore in respect of five road projects for strengthening and improvement/widening to two-lane. The roads were under five⁷⁸ R&B Divisions. The works were awarded for ₹ 298.87 crore between August 2012 and December 2016 to be completed between August 2015 and May 2018. As of March 2017, the works were in progress and the contractors had been paid ₹ 88.77 crore.

Audit observed from the estimates that the CBR of sub-grade soil ranged from four to eight *per cent*. The cumulative traffic ranged from three to eight msa. As per IRC specifications, the required thickness of the pavements consisting of GSB, GB and BS ranged from 515 to 620 millimeter (mm). Against the above requirement, the Executive Engineers (EEs), without any justification, had provided pavement thickness ranging from 535 to 685 mm. This resulted in excess provision between 5 and 100 mm and this inflated the estimated cost by ₹ 15.65 crore. Considering bids received with less/more than the estimated cost, the extra cost worked out to ₹ 13.16 crore (*Appendix 3.14.1*).

The Government stated (September 2017) that the work was to be executed according to the sanction, terms and condition of funding agency i.e GoI/ Ministry of Road Transport and Highways. The above provisions were considered. So there was no extra cost on provision of pavement thickness.

The fact, however, remained that the excess thickness of pavements between 5 and 100 mm was provided in the estimate in deviation from the IRC specifications. This resulted in extra cost.

FINANCE DEPARTMENT

3.15 Response to Audit

Timely response to audit findings is one of the essential attributes of good governance as it provides assurance that the Government takes its stewardship role seriously.

Principal Accountant General (E&RSA), Odisha conducts periodical inspection of Government departments and their field offices. It test checks the

⁷⁸ (i) Paralakhemundi (R&B) Division, (ii) Baragada (R&B) Division, (iii) Mayurbhanja (R&B) Division, (iv) Nayagarah (R&B) Division and (v) Dhenkanal (R&B) Division

transactions and verifies the maintenance of important accounting and other records as per prescribed rules and procedures. These inspections are followed by Inspection Reports (IRs) sent to the Heads of offices and the next higher authorities. Defects and omissions are expected to be attended to promptly and compliance reported to the Principal Accountant General. A half-yearly Report of pending IRs is sent to the Secretary of each department to facilitate monitoring of the audit observations and their compliance by the departments. Apart from the above standing mechanism, Audit Committee Meetings, consisting of representatives of administrative departments, the office of the Principal Accountant General (E & RSA) and representative from Finance Department are also held. They are meant for settlement of outstanding IRs and paragraphs after detailed deliberation and verification of records.

A review of IRs issued up to March 2017 pertaining to 12 departments showed that 9,219 paragraphs relating to 2,944 IRs were outstanding at the end of June 2017. Of these, 1,046 IRs containing 2,213 paragraphs are outstanding for more than 10 years (*Appendix 3.15.1*). Even first reply from the Heads of offices which was to be furnished within one month had not been received in respect of 319 IRs issued up to March 2017. Year-wise position of the outstanding IRs and paragraphs is detailed in *Appendix 3.15.2*.

Serious irregularities commented upon in these IRs have not been settled as of June 2017 (*Appendix 3.15.3*). Number of paragraphs and amount involved in these irregularities are categorised below.

Table No. 3.5: Category of paragraphs

<i>(₹ in crore)</i>			
<i>Sl. No.</i>	<i>Broad objective heads</i>	<i>Number of paragraphs</i>	<i>Amount</i>
1	Rules and regulations not complied with	150	1,277.17
2	Audit against propriety/expenditure without justification	62	721.94
3	Persistent/pervasive irregularities	105	506.52
4	Failure of oversight/governance	15	42.91
	Total	332	2,548.54

3.15.1 Follow-up action on earlier Audit Reports

Serious irregularities observed in audit are included in the Reports of the Comptroller and Auditor General that were presented to State Legislature. According to the instructions of the Finance Department (December 1993/June 2016), the Administrative Departments are required to furnish explanatory notes on transaction audit paragraphs, reviews/performance audits, etc. included in the Audit Reports within three months of their presentation to the State Legislature.

Audit observed that for Audit Reports (2007-08 to 2014-15), nine⁷⁹ out of 12 departments, which were commented upon, did not submit explanatory notes

⁷⁹ Agriculture, Cooperation, Energy, Fisheries and Animal Resources Development, Forest & Environment, Industries, SD&TE, Water Resources and Works Departments.

on paragraphs. Further four⁸⁰ departments did not submit explanatory notes on performance audits as of March 2017.

Table No. 3.6: No. of Performance Audit/Thematic Audit/Paragraphs for which explanatory notes were not submitted

<i>Year of Audit Report</i>	<i>Total number of Performance Audit/Thematic Audit/Paragraphs</i>	<i>Individual paragraphs/reviews</i>		<i>Number of paragraphs/reviews for which explanatory notes were not submitted (March 2017)</i>	
		<i>Individual paragraphs</i>	<i>Performance Audits/Thematic Audit</i>	<i>Individual paragraphs</i>	<i>Reviews</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
2007-08	27	23	04	07	00
2008-09	21	19	02	02	00
2009-10	20	19	01	04	01
2010-11	13	10	03	02	02
2011-12	18	16	02	04	00
2012-13	13	12	01	02	00
2013-14	15	13	02	01	00
2014-15	23	21	02	13	02
Total	150	133	17	35	05

Source : As per records of the PAG (E&RSA)

There were 35 individual transaction audit paragraphs and 05 reviews on which compliance had not been submitted to the Odisha Legislative Assembly (OLA). Departments largely responsible for not submitting explanatory notes were Energy, Fisheries and Works Department.

3.15.2 Response of departments to Recommendations of the Public Accounts Committee

PAC Reports/Recommendations are the principal medium by which Legislature ensures financial accountability of the Executive. The OLA Secretariat issued (May 1966) instructions to all State Government departments to submit ATNs on suggestions and recommendations made by PAC within six months of presentation of PAC Reports to the Legislature. The above instructions were reiterated by Finance Department of Government in December 1993 and by OLA Secretariat in January 1998. Time limit for submission of ATNs has since been reduced from six to four months by OLA (April 2005).

⁸⁰ Agriculture, Cooperation, Energy, Fisheries and Animal Resources Development.

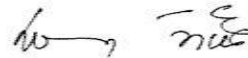
Out of 730 recommendations relating to Audit Report (Economic Sector) made by the PAC⁸¹, final action on 42 recommendations was awaited (March 2017).



Bhubaneswar
The

(Yashodhara Ray Chaudhuri)
Principal Accountant General (E&RSA)
Odisha

Countersigned



New Delhi
The

(Rajiv Mehrishi)
Comptroller and Auditor General of India

⁸¹ from the 1st Report of 10th Assembly (1990-95) to 5th Report of 14th Assembly (2009-14)

Appendices

Appendix 2.1.1

(Refer paragraph 2.1.13.1 at page 17)

Details of extra cost due to manual excavation instead of mechanical excavation

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of earthwork in estimate (in cum)	Rate Provided for earth excavation by manual means (in ₹)	Rate admissible for mechanical means (in ₹)	Excess rate Provided in estimate (in ₹)	Amount of extracost (in ₹)	Tender premium (percentage)	Excess rate after tender premium (in ₹)	Undue benefit to contractors including tender premium (in ₹)	Up to date expenditure (₹ in crore)	Quantity executed (in cum)	Extra amount already paid including tender premium (in ₹)
1	Rehabilitation, extension and modernisation of minor canals of Taladanda canal system from RD 11.780 km to 41.935 km (Mahanadi South Division, Cuttack)	2.30	2.74	49163	32.25	14.25	18	884934	48.70	26.77	1315896.86	2.5	49163	1315896.86
2	Improvement to Genguti right embankment from NH5A Haripur to Chandia from RD 12.00 to 27.930 km	14.94	17.29	456383	53.76	14.25	39.51	18031692.3	16.87	46.18	21073638.83	10.88	448377.86	20703998.79
3	Improvement to Chitrotpala left and Nuna right embankment from Mandia to Godhan via Parakula and K Narayanpur with upgradation of communication facility	5.85	6.88	191280	53.76	14.25	39.51	7557472.80	18.67	46.89	8968452.97	4.4	176679.83	8283901.85

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of earthwork in estimate (in cum)	Rate Provided for earth excavation by manual means (in ₹)	Rate admissible for mechanical means (in ₹)	Excess rate Provided in estimate (in ₹)	Amount of extracost (in ₹)	Tender premium (percentage)	Excess rate after tender premium (in ₹)	Undue benefit to contractors including tender premium (in ₹)	Up to date expenditure (₹ in crore)	Quantity executed (in cum)	Extra amount already paid including tender premium (in ₹)
4	Improvement to Nuna Karandia right embankment from RD 00 to 37.50 km including protection to scoured bank.	14.65	16.88	490673.34	53.76	14.25	39.51	19386503.70	16.33	45.96	22553010.46	11.55	387388.06	17805668.78
5	Improvement to Chitrotpala left embankment from RD 00 to RD 48.00 km including protection to scoured bank	12.61	14.34	547886	53.76	14.25	39.51	21646975.90	14.93	45.41	24878869.36	11.59	481057.04	21844243.60
6	Protection to scoured bank at village Natara (near Kendupatna) on Chitrotpala left	0.92	1.04	3249.72	53.76	14.25	39.51	128396.43	14.48	45.23	146988.24	1.04	0	0.00
7	Improvement to Mahanadi left embankment in between Chakragarh to Mancheswar including protection to scoured bank.	12.93	13.66	264012.6	55.2	14.25	40.95	10811316	6.51	43.62	11515132.64	8.61	170308.33	7428141.72
8	Improvement to Genguti right embankment from Jaipur to Benapur (Mahanadi North Division, Cuttack)	6.88	7.66	177612.9	55.2	14.25	40.95	7273248.26	12.15	45.93	8157112.98	4.09	138720.33	6370919.03

Audit Report (Economic Sector) for the year ended March 2017

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of earthwork in estimate (in cum)	Rate Provided for earth excavation by manual means (in ₹)	Rate admissible for mechanical means (in ₹)	Excess rate Provided in estimate (in ₹)	Amount of extracost (in ₹)	Tender premium (percentage)	Excess rate after tender premium (in ₹)	Undue benefit to contractors including tender premium (in ₹)	Up to date expenditure (₹ in crore)	Quantity executed (in cum)	Extra amount already paid including tender premium (in ₹)
9	Raising & Strengthening of CE 44(A) Nuna left embankment from Bilabalarampur to Marsaghai (RD 51.20 km to 62.00 km) under NABARD Assistance	14.87	17.16	349641.4	53.76	14.25	39.51	13814331.70	16.52	46.04	16096459.31	9.91	0	0.00
10	Raising & Strengthening to Dasmouzi Gherry (left wing from RD 00 km to RD 8.900 km and right wing from RD 00 km to RD 10.250 km) on river Nuna including Restoration to 13 Nos of old damaged spurs and launching apron under NABARD Assistance	9.92	11.82	340837	53.76	14.25	39.51	13466469.90	20.38	47.56	16210936.43	9.84	323396.75	15381440.85
11	Raising & Strengthening to Chitrotpala right embankment from RD 28.590 to 65.150 km including restoration of 6 Nos. of old damaged spurs and launching apron under NABARD Assistance (Kendrapara Irrigation Division)	14.61	17.49	497504.39	53.76	14.25	39.51	19656398.40	20.88	47.76	23760654.45	20.49	618196.31	29524862.89

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of earthwork in estimate (in cum)	Rate Provided for earth excavation by manual means (in ₹)	Rate admissible for mechanical means (in ₹)	Excess rate Provided in estimate (in ₹)	Amount of extracost (in ₹)	Tender premium (percentage)	Excess rate after tender premium (in ₹)	Undue benefit to contractors including tender premium (in ₹)	Up to date expenditure (₹ in crore)	Quantity executed (in cum)	Extra amount already paid including tender premium (in ₹)
12	Raising & strengthening of river embankments of Devi left & Biluakhai right in 22 mauza island	6.65	7.5	261368	53.76	14.25	39.51	10326649.70	13.97	45.03	11769282.64	8.01	260910.33	11748673.97
13	Protection to Talada Island and Tarasahi gherry on Devi left embankment	16.12	19.88	183452	53.76	14.25	39.51	7248188.52	24.93	49.36	9055161.92	18.88	133312.12	6580265.31
14	Renovation of spurs at Daleighai of Kathajodi left embankment from RD 7.80 km to 14.60 km (Jagatsinghpur Irrigation Division)	12.67	13.80	10234.6	53.76	14.25	37.65	385332.69	9.92	41.38	423557.69	13.33	9522.45	394085.45
15	Restoration to Chakua Marthapur OAE on Patia left from Chakua to Marthapur	1.39	1.28	40099.28	33.15	14.25	18.90	757876.392	-18.62	15.38	616759.81	1.28	40099.28	616759.81
16	Construction of drainage sluice at the outfall point of Chhinda-Kharasuan at RD 10.41km of Sribantapur-Khanditara OAE	4.82	5.03	8243	33.15	14.25	18.90	155792.70	2.43	19.36	159578.46	4.93	9015	174523.82

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Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of earthwork in estimate (in cum)	Rate Provided for earth excavation by manual means (in ₹)	Rate admissible for mechanical means (in ₹)	Excess rate Provided in estimate (in ₹)	Amount of extracost (in ₹)	Tender premium (percentage)	Excess rate after tender premium (in ₹)	Undue benefit to contractors including tender premium (in ₹)	Up to date expenditure (₹ in crore)	Quantity executed (in cum)	Extra amount already paid including tender premium (in ₹)
17	Restoration to Nasidpur-Hamzapur TRE & Badanarra TRE on Sagadia Nallah left	4.57	4.74	21984.80	53.76	14.25	39.51	868619.44	6.52	42.09	925253.44	4.61	20064.97	844455.37
18	Improvement to CE No.13A on Ganda left from Jokadia to Jajpur road (RD 00 to 5000m)	4.51	4.04	39287	33.15	14.25	18.90	742524.30	-9.40	17.12	672727.02	4.43	46102	789422.99
19	Improvement to CE No.26(A) from Bhuban to Kaima Bridge and Budhalinga Majhipada OAE from Rampur to Kadampal on Kelua right	3.35	3.61	118422	32.26	14.25	18.01	2132780.22	6.98	19.27	2281648.28	3.47	118422	2281648.28
20	Restoration to CE No.27A on Brahmani right from Manjuripada to Malahatta (RD 00 to 2720m) (Jaraka Irrigation Division)	2.97	2.50	21369	56.12	14.25	41.87	894720.03	-14.99	35.59	760601.50	2.50	21846.34	777591.79
	TOTAL	167.53	189.34	4072703				156170223.3			181341723	156.34	3452582	152866501.2

Appendix 2.1.2

(Refer paragraph 2.1.13.2 at page 18)

Details of undue payment due to adoption of excessive hire charges of Dozer

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Eexcess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
1	Restoration to FPE at Habaleswar left embankment of Baitarani river at RD 6.700 km. (RIDF-XX)	-14.99	334.85	263.17	113475.00	140.60	121.00	19.60	2224110.00	16.66	18.91	102134.90	17.02
2	Improvement to flood protection embankment on Baitarani left from village Anandpur to Tarava Bareswar (RIDF-XX)	6.49	1215.33	995.85	254666.23	140.60	121.00	19.60	4991458.11	20.87	53.15	276848.53	57.78
3	Bank protection work including raising & strengthening of right side of river Baitarani from Khaparakhai to Panchupalli (RIDF-XX)	4.95	1578.57	896.30	300012.77	140.60	121.00	19.60	5880250.29	20.57	61.71	10523.19	2.16
4	Improvement to OAE No.5a(B) on Baitarani left from Moreigaon to Balipur from RD 00 km to 19.400 km. (RIDF-XX) Baitarani Irrigation Division, Salapada	-12.72	1279.68	892.63	595284.20	140.60	121.00	19.60	11667570.32	17.11	101.83	545049.32	93.24

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
5	Protection to scoured bank on Baitarani left from Mamadula to Tala Astak under NABARD Assistance (RIDF-XX)	-14.99	843.95	387.45	295356.00	194.60	175.00	19.60	5788977.60	16.66	49.21	179631.90	29.93
6	Protection to scoured bank on OAE No. 12(abcd)B on Baitarani left near Village Dasandhikula and Dasandhikul Gherry under NABARD(RIDF-XX)	-10.25	482.86	369.28	100027.74	194.60	175.00	19.60	1960543.70	17.59	17.60	91805.25	16.15
7	Protection to scoured bank on Baitarani left from Gandhighat to Sundarpur under NABARD Assistance RIDF Jajpur Irrigation Division, Jajpur	-14.99	756.25	316.47	136892.00	194.60	175.00	19.60	2683083.20	16.66	22.81	84677.55	14.11
8	Protection to Bairatani left from Biridi to NH-5 at Akhuapada	-12.50	1566.48	454.69	272663.90	194.60	175.00	19.60	5344212.44	17.15	46.76	263672.00	45.22
9	Protection to scoured bank on Baitarani left from Sathibankuda to Bodak under NABARD Assistance (RIDF-XX)	-14.99	707.66	522.48	118245.00	194.60	175.00	19.60	2317602.00	16.66	19.70	92365.75	15.39

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
10	Restoration to scoured bank on Kochila right from Ramarakul Hasanabad under NABARD Assistance (RIDF-XX)	-11.70	1309.91	463.52	309799.00	194.60	175.00	19.60	6072060.40	17.31	53.62	224389.00	38.83
11	Protection to scoured bank on Baitarani left from Anandapur to Gourangapur Escape under NABARD Assistance (RIDF-XX)	-14.99	733.01	510.59	248017.76	194.60	175.00	19.60	4861148.10	16.66	41.32	209992.00	34.99
12	Improvement to communication facility of C.E. No. 5A from RD 6.550 km to 23.050 km on Budha Kharasua left from Budha ghat to Singhpur.	-14.99	997.99	659.29	451319.20	194.60	175.00	19.60	8845856.32	16.66	75.20	382101.86	63.67
13	Raising and Strengthening and protection to Kharsuan right embankment Tantighai to Mahamadjamapur under NABARD Assistance (RIDF-XX)	-11.77	722.85	573.61	213484.00	194.60	175.00	19.60	4184286.40	17.29	36.92	207791.40	35.93

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
14	Restoration to scoured bank on Kochila left from Athagharria to Pangata under NABARD Assistance (RIDF-XX)	-14.99	1271.71	626.24	354534.00	194.60	175.00	19.60	6948866.40	16.66	59.07	244413.00	40.72
15	Renovation of Jajpur Main canal from RD 00 to 10.144 km. (Working RD 00 to 3.150 km Reach-I)	-7.90	851.95	491.65	25400.00	194.55	174.95	19.60	497840.00	18.05	4.59	14412.14	2.60
16	Renovation of Jajpur Main canal from RD 00 to 10.144 km. (Working RD 3.150 km to 6.300 km Reach-II)	-7.70	846.74	831.05	23922.00	194.55	174.95	19.60	468871.20	18.09	4.33	23358.20	4.23
17	Renovation of Jajpur Main canal from RD 00 to 10.144 km. (Working RD 6.300 km to 10.144 km Reach-III)	9.50	1194.70	939.84	31468.00	194.55	174.95	19.60	616772.80	21.46	6.75	24994.15	5.36
18	Renovation of distributary No. 2 of Jajpur Main canal under C.L.S.R.P. (Working RD 17.500 km to 24.180 km) Jajpur Irrigation Division, Jajpur	4.75	800.45	106.35	74642.00	194.55	174.95	19.60	1462983.20	20.53	15.32	24086.00	4.95

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Eexcess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
19	Improvement to the embankment top road on old Marahata Bundha in Kanika block under IRC&IS	7.75	484.56	335.07	55249.79	194.60	175.00	19.60	1082895.88	21.12	11.67	62881.57	13.28
20	Improvement to road on Gopalpur Akhadasahi OAE embankment from RD 964m to 12200m in Mahakalapada Block under IRC&IS	-5.65	619.83	564.02	193615.60	194.60	175.00	19.60	3794865.76	18.49	35.80	186348.13	34.46
21	Improvement to road on Dangamal Dalkhai saline embankment from RD 0.800 km to 8.300 km with construction of 2 Nos. of sluice in Rajnagar Block under IRC&IS	-11.06	397.26	283	30546.36	194.60	175.00	19.60	598708.66	17.43	5.32	24196.73	4.22
22	Improvement to road over Aul Ring Bundha for a length of 10.940 km (working length 13.840 km) in Aul Block under IRC&IS Aul Embankment Division, Aul	-4.95	866.10	522.19	264328.00	194.60	175.00	19.60	5180828.80	18.63	49.24	209570.66	39.04
23	Improvement to left bank of Kendrapara Canal from RD 44.00 to 56.00 km with communication facility from Gahaga to Kalapada	-3.60	572.90	440.2	67496.75	194.60	175.00	19.60	1322936.30	18.89	12.75	67005.50	12.66

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
24	Restoration & Protection to Kodakan gherry and Paika left embankment including construction and repair of spurs and launching apron and construction of drainage sluice near Nilachal Bazar	6.00	2563.18	1936.87	66251.95	194.60	175.00	19.60	1298538.22	20.78	13.76	79482.78	16.51
25	Raising and strengthening to CE No.34(b)A Brahmani right from RD 68.330 to 76.400 km	8.70	1315.26	827.35	174420.33	194.60	175.00	19.60	3418638.47	21.31	37.16	174064.02	37.08
26	Raising and strengthening to CE No.34(b)A Brahmani right from RD 76.400 to 80.500 km	9.98	651.35	248.33	111592.35	194.60	175.00	19.60	2187210.06	21.56	24.05	97665.07	21.05
27	Raising and strengthening to CE No.34(b)A Brahmani right from RD 62.15 to 68.330 km Kendrapara Irrigation Division, Kendrapara	4.95	1076.47	309.47	235155.95	194.60	175.00	19.60	4609056.62	20.57	48.37	142572.70	29.33
28	Flood protection to Gop Branch canal and Kushabhadra left embankment from RD 00 to 38.50 km (Andilo to Nimapara)	-14.99	778.10	666.18	277285.61	194.60	175.00	19.60	5434797.94	16.66	46.20	239693.40	39.94

Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
29	Improvement to service road on Kakatpur Branch canal from RD 29.30 km to 36.10 km under IRC & IS	3.50	256.64	247.85	19516.10	194.60	175.00	19.60	382515.56	20.29	3.96	20233.39	4.10
30	Improvement to service road of Puri Main canal from RD 00 to 16.00 km IRC & IS	-10.51	855.15	897.15	74945.00	194.60	175.00	19.60	1468922.00	17.54	13.15	74945.00	13.15
31	Protection to Daya right embankment alongwith communication facility from village Aragarh to Tirumal	-14.99	724.35	458.23	192300.00	194.60	175.00	19.60	3769080.00	16.66	32.04	155883.43	25.97
32	Protection and strengthening of Daya right embankment alongwith communication facility from RD 10.00 to 16.00 km	-13.50	574.93	282.96	125296.64	194.60	175.00	19.60	2455814.14	16.95	21.24	125296.64	21.24
33	Strengthenig of Daya right embankment alongwith communication facility from village Kakudia to Railway Crossing RD 18.00 to 23.60 km Prachi Irrigation Division, Prachi	-5.90	508.42	415.24	128003.00	194.60	175.00	19.60	2508858.80	18.44	23.61	106493.79	19.64

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Sl. No	Name of the work /Division	Tender premium (In Percentage)	Agreement amount (₹in lakh)	Up to date expenditure (₹in lakh)	Agreement quantity (in cum)	Rate provided (in ₹)	Rate admissible (in ₹)	Excess rate (in ₹)	Excess amount (in ₹)	Excess rate after tender premium (in ₹)	Extra Cost after tender premium (₹ in lakh)	Quantity executed (in cum)	Extra expenditure already incurred (₹ in lakh)
34	Improvement to service road on left bank of Disty No-10 from RD 00 km to 3.220 km	-5.10	271.73	233.21	26268.98	194.60	175.00	19.60	514872.01	18.60	4.89	20280.26	3.77
35	Improvement to service road on left bank of Disty No-13 from RD 4.730 km to 12.330 km Irrigation Division, Jagatsinghpur	7.00	428.79	162.25	42944.00	194.60	175.00	19.60	841702.40	20.97	9.01	37900.15	7.95
36	Protection to Bhagabanpur gherry on Kelua right under RIDF-XXI	0.03	381.80	322.99	58365.00	197.40	177.10	20.30	1184809.50	20.31	11.85	54209.11	11.01
37	Improvement to Kelua left embankment from Narasinghpur to Niraghata and Rahapada to Mohanpur	-11.20	545.02	166.7	145631.97	194.70	175.10	19.60	2854386.61	17.40	25.35	60719.47	10.57
38	Restoration to right bank of HLC range II on Kharasuan left from RD 00 to 11020 mtr under RIDF-XX Jaraka Irrigation Division, Jaraka	-7.52	658.11	658.08	122205.50	194.60	175.00	19.60	2395227.80	18.13	22.15	122205.50	22.15
	Total-		32024.89	20277.80	6330627.68				124121158.01		1140.40	5063893.44	909.42

Appendix 2.1.3

(Refer paragraph 2.1.13.3 at page 18)

Details of extra cost due to adoption of higher capacity crane

Sl. No	Name of the work	Estimated cost (₹ In lakh)	Agreement value (₹ In lakh)	Up to date expenditure (₹ In lakh)	Quantity (in cum)	Rate taken for loading/rehandling per cum (in ₹)	Rate admissible per cum (in ₹)	Extra cost per cum (in ₹)	Total extra cost (₹ in lakh)	Tender premium (In percentage)	Excess rate after tender premium (in ₹)	Extra cost including tender premium (₹ in lakh)	Quantity executed (in cum)	Extra amount already paid including tender premium (₹ in lakh)
1	Restoration and protection to damaged bank at Chandrabali village near Kirtania fishery jetty	1266.29	1126.8	1120.62	53371.20	2371.90	2127.32	244.58	130.54	-11.02	217.63	116.15	53081.00	115.52
2	Restoration and protection to left bank of Subarnarekha near village Gobarghata Bairataadi to Madhabpur for 2014-15	395.55	345.57	327.12	10151.00	2216.90	1974.87	242.03	24.57	-12.63	211.46	21.47	10140.24	21.44
3	Restoration and protection to left bank of river Subarnarekha near village Manikchak, Sekhbad and Jhabeswarpur(Jaleswar Town)	538.53	475.52	310.30	11704.02	2056.20	1812.37	243.83	28.54	-11.70	215.30	25.20	8910.85	19.19
4	Restoration and protection work Kankadapal for the year 2015-16	351.42	298.74	289.10	9604.14	2218.00	1975.18	242.82	23.32	-24.75	182.72	17.55	10278.08	18.78

Sl. No	Name of the work	Estimated cost (₹ In lakh)	Agreement value (₹ In lakh)	Up to date expenditure (₹ In lakh)	Quantity (in cum)	Rate taken for loading/rehandling per cum (in ₹)	Rate admissible per cum (in ₹)	Extra cost per cum (in ₹)	Total extra cost (₹ in lakh)	Tender premium (In percentage)	Excess rate after tender premium (in ₹)	Extra cost including tender premium (₹ in lakh)	Quantity executed (in cum)	Extra amount already paid including tender premium (₹ in lakh)
5	Restoration of two Nos. of old damaged spur including construction of launching and packing on right bank of river Subarnarekha near village Mankidia	256.28	217.84	217.84	8183.47	2215.10	1974.87	240.23	19.66	-15.03	204.12	16.70	8348.70	17.04
6	Restoration and protection work on left bank river Subarnarekha at village Kumbhigadi near Bhusandeswar temple. Balasore Irrigation Division	251.37	213.69	97.98	6896.06	2332.90	2102.87	230.03	15.86	-14.99	195.55	13.49	3157.81	6.18
7	Restoration and protection to scoured bank on Devi Right embankment from RD 73.00 km to 74.00 km near village Bainapada	306.78	322.09	322.09	8177.20	1677.80	1533.78	144.02	11.78	0.88	145.29	11.88	8177.20	11.88
8	Protection to Kusabhadra Left Embankment from RD 38.500 Km to 57.00km under RIDF-XX	867.52	737.48	725.10	9611.79	1654.20	1434.30	219.90	21.14	-14.99	186.94	17.97	9609.78	17.96

Sl. No	Name of the work	Estimated cost (₹ In lakh)	Agreement value (₹ In lakh)	Up to date expenditure (₹ In lakh)	Quantity (in cum)	Rate taken for loading/rehandling per cum (in ₹)	Rate admissible per cum (in ₹)	Extra cost per cum (in ₹)	Total extra cost (₹ in lakh)	Tender premium (In percentage)	Excess rate after tender premium (in ₹)	Extra cost including tender premium (₹ in lakh)	Quantity executed (in cum)	Extra amount already paid including tender premium (₹ in lakh)
9	Raising and strengthening with slope protection work by providing launching and packing of Jharling- Belanga saline embankment from RD 22.00 km to 29.00 km under ADB assistance	1070.05	1321.54	1197.86	4787.20	1714.85	1607.11	107.74	5.16	23.92	133.51	6.39	4056.26	5.42
10	Protection to Bhargabi Left Embankment from 19.00 km to 34.00 km	643.99	600.17	548.80	5045.60	1464.80	1340.98	123.82	6.25	2.40	126.79	6.40	4833.52	6.13
11	Construction of high level spur at RD 80.50 km, 80.200 km and 80.800km of Devi Right embankment near Sathiabati	698.17	593.45	593.45	19371.60	1614.50	1411.35	203.15	39.35	-12.45	177.86	34.45	19371.60	34.45
12	Bank protection to left bank of Kushabhadra River near village Tikina, khalakatapatna & Protection to Ramchandi Temple	370.61	329.46	329.46	10247.58	1603.20	1474.70	128.50	13.17	-8.06	118.14	12.11	10245.26	12.10
13	Raising and strengthening of Kusabhadra Right embankment from RD.41 to 56 km.Nimapara Irrigation Division	1286.47	1059.62	429.89	5097.00	1712.60	1513.08	199.52	10.17	-14.99	169.61	8.65	0.00	0.00

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Sl. No	Name of the work	Estimated cost (₹ In lakh)	Agreement value (₹ In lakh)	Up to date expenditure (₹ In lakh)	Quantity (in cum)	Rate taken for loading/rehandling per cum (in ₹)	Rate admissible per cum (in ₹)	Extra cost per cum (in ₹)	Total extra cost (₹ in lakh)	Tender premium (In percentage)	Excess rate after tender premium (in ₹)	Extra cost including tender premium (₹ in lakh)	Quantity executed (in cum)	Extra amount already paid including tender premium (₹ in lakh)
14	Restoration to Kathajodi Right Embankment near village Brahmanigaon	1012.09	1149.60	0.00	20554.00	1675.00	1448.60	226.40	46.53	13.59	257.17	52.86	0.00	0.00
15	Flood Protection to Gop Branch canal & Kushabhadra left embankment at Bhanra under RIDF	563.74	483.26	483.26	11025.00	1689.00	1448.60	240.40	26.50	-14.28	206.07	22.72	11025.00	22.72
16	Protection and communication facility to right flood bank of river Mahanadi near Sanamundali from RD 00 to 1900 mtr under RIDF.Prachi Irrigation Division	695.45	591.20	621.40	10731.00	1689.00	1448.60	240.40	25.80	-14.99	204.36	21.93	14009.00	28.63
	Total	10574.31	9866.03	7614.27	204557.86				448.33			405.90	175244.30	337.44

Appendix 3.1.1

(Refer paragraph 3.1 at page 31)

Details of interest on delayed payment of Net Present Value not realised

Sl. No.	Name of the Division	Name of the lessee	Amount of NPV paid (in ₹)	Date of issue of demand notice	Due date of payment	Date of payment	period of delay (in days)	Total interest due @ 9 per cent per annum (in ₹)	Interest paid	Balance due (in ₹)
1	Angul	Bharatpur Open Cast Mining for 70.94 Ha.	22204220	6/19/2010	7/18/2010	8/7/2013	1115	6104640	0	6104640
2		Mahanadi coal field ltd(MCL)OCM in Hingula OCP expansion phase iii in Chhendipada and Talcher Tahasil of district Angul for 440.53 Ha.	413657670	2/10/2015	3/11/2015	3/31/2015	20	2039956	0	2039956
3	Cuttack	M/s Jindal Stainless Ltd.	46939786	5/20/2015	6/19/2015	8/31/2015	73	844916	0	844916
4	Jharsuguda	Diversion of 1300.935 ha of under ground mining of Mahanadi Coalfield Ltd (MCL)	58303209	2/26/2014	3/27/2014	4/16/2014	20	287523	0	287523
5		Ib Property Colliery 75.570 ha (NPV) (within 1300.935 ha)	2796029	6/4/2010	7/3/2010	7/27/2010	24	16546	0	16546
6			20857381	6/4/2010	7/3/2010	8/17/2010	45	231431	0	231431
7		Rampur colliery 370.979 ha (NPV) (within 1300.935 ha)	58525679	6/4/2010	7/3/2010	7/27/2010	24	346344	0	346344
8			29077971	6/4/2010	7/3/2010	8/17/2010	45	322646	0	322646
9		Belpahar OCP 174.354 ha (NPV)	109145604	6/14/2010	7/13/2010	8/7/2010	25	672815	0	672815
10		Lajkura OCP 159.18 ha (NPV)	49823340	9/27/2014	10/26/2014	1/12/2015	78	958246	0	958246
11		Gondghora colliery (NPV) Diversion of 58.032 ha underground & 5.043 ha surface area	17759148	6/4/2010	7/3/2010	7/27/2010	24	105095	0	105095

Sl. No.	Name of the Division	Name of the lessee	Amount of NPV paid (in ₹)	Date of issue of demand notice	Due date of payment	Date of payment	period of delay (in days)	Total interest due @ 9 per cent per annum (in ₹)	Interest paid	Balance due (in ₹)
12		Gondghora colliery (NPV) Diversion of 58.032 ha underground & 5.043 ha surface area	7511262	6/4/2010	7/3/2010	8/17/2010	45	83344	0	83344
13		NW Block Gandghora colliery (NPV)(Forest land 335.409 ha)	157474525	6/4/2010	7/3/2010	7/27/2010	24	931904	0	931904
14	Chandaka (WL)	Fire Clay mining of M/s Tata Refractories Ltd., Belapahar	42705000	6/16/2010	7/15/2010	8/2/2010	18	189540	0	189540
TOTAL			1036780824				18 to 1115	13134946	0	13134946

Appendix 3.2.1
(Refer paragraph 3.2 at page 32)
Details of timber and poles not disposed

Sl. No	Name of the Division	No. of cases	Volume in cft. (Size)	Rate (in ₹)	Money value (in ₹)	Volume of Logs (cft)	Rate (in ₹)	Money value (in ₹)	No. of Poles	Rate (in ₹)	Money value (in ₹)	Fire wood (Stack)	Rate (in ₹)	Money value (in ₹)	Total Money value (in ₹)
1	Athagarh	19	14.476	317	4588.892	72.992	244	17810	245	32	7840				30239
									182	55	10010				10010
									2	45	90				90
2	Cuttack	11	69.37	317	21990.290	117.66	244	28709	5	45	225				50924
									90	32	2880				2880
3	Dhenkanal	39	91.978	317	29157.026	510.087	244	124461	4	45	180				153798
									6	55	330				330
									91	32	2912				2912
4	Athamallik	18	7.002	317	2219.634	242.519	244	59175	180	32	5760				67154
									40	55	2200				2200
5	Angul	69	164.5195	317	52153	587.288	244	143298	66	32	2112				197563
									204	55	11220				11220
									15	42	630				630
6	Phulbani	10	13.8	317	4375	108.49	244	26472	4	45	180				31026
7	Subarnapur	49	51.291	317	16259	319.405	244	77935	434	32	13888				108082
									100	45	4500				4500
									173	55	9515				9515
8	Khordha	54	429.5815	317	136177	906.23115	244	221120	0	0	0				357298
9	Sambalpur	36	206.001	317	65302	215.314	244	52537	44	55	2420				120259

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Sl. No	Name of the Division	No. of cases	Volume in cft. (Size)	Rate (in ₹)	Money value (in ₹)	Volume of Logs (cft)	Rate (in ₹)	Money value (in ₹)	No. of Poles	Rate (in ₹)	Money value (in ₹)	Fire wood (Stack)	Rate (in ₹)	Money value (in ₹)	Total Money value (in ₹)
10	Bargarh	39	141.632	317	44897	754.557	244	184112	2180	32	69760				298769
11	Jharsuguda	7	73.67	317	23353	75.79	244	18493	40	32	1280				43126
12	Chandaka	27	0	317	0	391.987	244	95645	75	45	3375				99020
13	Satkosia (WL) Angul	20	163.55	317	51845	275.273	244	67167	0	0	0				119012
14	Ghumsur (N)	6	0	317	0	92.23	244	22504	0	0	0				22504
15	Rourkela	87	3026.074	317	959265	100.18	244	24444	78	32	2496				986205
16	Ghumsur (S)	21	136.88	317	43391	221.54	244	54056	0	0	0				97447
17	Baripada	250	318.9	317	101091	871.97	244	212761	309	55	16995	127.5	385	49088	379934
18	Bonai	11	5.035	317	1596	424.9346	244	103684	0	0	0	48	385	18480	123760
19	STR, Baripada	44	98.05	317	31082	0	244	0	4	55	220	1	385	385	31687
20	Rayagada	61	180.29	317	57152	583.356	244	142339	17	32	544				200035
21	Karanjia	18	52.23	317	16557	57.78	244	14098	41	55	2255				32910
22	Nayagarh	68	111.91	317	35475	200.957	244	49034	376	45	16920	0.895	385	345	101774
23	Keonjhar	16	120.88	317	38319	535.81	244	130738	0	0	0				169057
24	Parlakhemundi	12	0	317	0	269.9759	244	65874	0	0	0				65874
25	Kalahandi (S)	15	55.0913	317	17464	253.6872	244	61900	7	32	224				79588
26	Sundargarh	7	12.01	317	3807	129.86	244	31686	0	0	0				35493
27	Koraput	18	522.6229	317	165671	172.545	244	42101	2	32	64				207836
28	Balliguda	19	57.296	317	18163	966.5259	244	235832	129	32	4128				258123
	TOTAL	1051	6124.14		1941352	9458.9448		2307983	5143		195153	177.395		68297	4512785

Log and size = (6124.14cft + 9458.945 cft) = 15583.08 cft

Appendix 3.3.1

(Refer paragraph 3.3 at page 33)

Details of extra cost on purchase of Gabion

Sl. No.	Name of the Division	Year of purchase	Total amount paid (in ₹)	Quantity purchased (in numbers)	Rate per gabion paid (in ₹)	Rate of gabion as per norm (in ₹)	Excess amount paid per gabion (in ₹)	Total excess amount paid (in ₹)
1	Jharsuguda	2015-16	58800	56	1050	253	797	44632
			809551	809	1000.6811	253	747.68109	604874
2	Rourkela	2015-16	10023295	6992	1433.5376	253	1180.5376	8254319
3	Baripada	2015-16	3054500	1974	1547.3658	175	1372.3658	2709050
4	Rayagada	2015-16	1069010	1042	1025.9213	175	850.92131	886660
		2016-17	620500	590	1051.6949	253	798.69492	471230
5	Malkangiri	2015-16	1015562	1270	799.65512	175	624.65512	793312
		2016-17	1340000	2000	670	253	417	834000
		2016-17	1400000	2000	700	253	447	894000
6	Koraput	2013-14	400000	500	800	175	625	312500
		2014-15	495000	550	900	175	725	398750
		2015-16	1473100	1574	935.89581	253	682.89581	1074878
		2016-17	532000	560	950	253	697	390320
	Total		22291318	19917				17668525

Appendix 3.4.1

(Refer paragraph 3.4 at page 34)

Details of avoidable extra cost on cement concrete

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
1	Construction of water courses including all structures under WUA11 of Golamunda Distributary	157.36	133.78	13.37	5581.78	4345.90	2249.79	648.88	1600.91	6957387
2	Construction of water courses including all structures under WUA-02 of Golamunda Distributary.	128.83	109.51	104.44	4186.91	4259.00	1750.54	486.73	1263.81	5382574
3	Construction of water courses including all structures of Dumerguda S/M and Kandamal S/M under WUA-09 of Golamunda Distributary.	82.44	70.08	55.85	3645.00	4345.90	1092.55	423.73	668.82	2906619
4	Construction of water courses including all structures from RD 2130 m to 2580 m of Panjia Disty. under WUA-09 of Golamunda Distributary.	81.52	69.30	46.68	3730.00	4345.90	1135.24	433.61	701.63	3049203
5	Construction of water courses including all structures from RD 3060M to RD 3690M of Panjia Distributary under WUA-09 of Golamunda Distributary.	87.77	74.61	74.62	3915.00	4345.90	1180.81	455.12	725.69	3153782
6	Construction of water courses including all structures from RD 22980 m to 23825 m of Golamunda Distributary of Kernunda S/M, RD 60 m to 1748 m of Panjia Distributary under WUA-09 of Golamunda Distributary.	83.06	70.61	70.61	3580.00	4345.90	1833.13	416.18	1416.96	6157945

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
7	Construction of water courses including all structures under WUA-12 of Golamunda Distributary.	79.30	67.41	54.90	3690.00	4356.80	1121.39	428.96	692.43	3016768
8	Construction of field channel including all structures from RD 14080m to 18650m of Golamunda Distributary. under WUA-07	73.16	62.19	55.62	2895.00	4418.60	792.54	336.54	456.00	2014865
9	Construction of field channel including all structures of Kirkakani S/N-I, S/M-II, S/M-III and S/M-IV, Tipiguda S/M and Banjipadar S/M-I off-taking from Golamunda Distributary under WUA-07	83.68	71.13	68.81	3730.00	4418.60	1124.17	433.61	690.56	3051297
10	Construction of field channel including all structures of Luhagaon S/M from RD 180 m to 975 m and 2T & FC-2T(FC-1R) of Kanagaon S/M-II under WUA-06 of Golamunda Distributary.	79.49	67.57	35.48	2830.00	4386.10	726.71	328.99	397.72	1744451
11	Construction of field channel including all structures from RD 20225 m to 20780m and Kirkakani Minor off-taking from RD 17780m of Golamunda Distributary under WUA-07	90.26	76.73	69.15	3740.00	4418.60	1054.73	434.78	619.96	2739333
12	Construction of field channel including all structures of Luhagaon Minor (LHGM) -1L, 25L under WUA-06 of Golamunda Distributary.	79.4	67.49	35.40	2910.00	4386.10	875.76	338.29	537.47	2357408
13	Construction of water courses including all structures under WUA-08 of Golamunda Distributary.	275.00	233.78	217.21	12436.62	4345.90	3537.34	1445.76	2091.58	9089810

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
14	Construction of field channel of Golamunda Distributary under WUA No.17.	303.08	257.65	257.65	10345.00	4449.90	4890.92	1202.61	3688.31	16412627
15	Construction of field channel including all structures under WUA-23 of Golamunda Distributary.	368.21	313.01	313.00	13715.00	4561.80	4485.57	1594.37	2891.20	13189082
16	Construction of field channel of Golamunda Disty. Under WUA No. 03.	187.06	159.02	159.00	8870.00	4341.20	2597.55	1031.14	1566.41	6800110
17	Construction of field channel under WUA-18 of Golamunda Distributary.	327.26	278.21	278.18	13760.00	4460.70	4809.37	1599.60	3209.77	14317821
18	Construction of field channel including all structures of Chilpa S/M-I from RD 850m to 1450m under WUA No. 1	50.86	43.24	13.75	2665.00	4299.80	828.06	309.81	518.25	2228387
19	Construction of field channel including all structures of outlet No. 27L to 33L & 5R WUA No. 10 of Golamunda Distributary.	68.92	58.59	58.57	3605.00	4425.20	1087.40	419.08	668.32	2957444
20	Construction of field channel including all structures of Golamunda Distributary under WUA No. 14(B)	30.16	25.64	19.88	1440.00	4427.70	446.40	167.40	279.00	1235328
21	Construction of field channel including all structures of Amtha Minor from RD 360 m to 2644 m under WUA No. 20 of Golamunda Distributary	70.09	59.58	59.57	3010.00	4546.40	913.72	349.91	563.81	2563294
22	Construction of field channel including all structures of Golamunda Distributary from RD 00 m to 590 m and Chilpa S/M-I 00 m to 200 m under WUA No. 1	69.24	58.86	41.30	3615.00	4299.80	1104.00	420.24	683.76	2940015

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
23	Construction of field channel including all structures of Amtha Minor from RD 00 m to 360 m under WUA No. 20 of Golamunda Distributary	71.91	61.13	61.13	3490.00	4546.40	1108.33	405.71	702.62	3194380
24	Construction of field channel including all structures of Farang S/M-II from RD 465 m to 787 m under WUA No. 20 of Golamunda Distributary	80.08	$\frac{68.07}{68.05}$	68.05	2910.00	4546.40	862.88	338.29	524.59	2385007
25	Construction of field channel including all structures of outlet No. 24L, 25L, 26L & 4R of WUA No. 10 of Golamunda Distributary	72.96	62.01	62.01	3565.00	4425.20	1076.56	414.43	662.13	2930052
26	Construction of field channel including all structures of Farang S/M-II from RD 00 m to 465 m under WUA No. 20 of Golamunda Distributary	86.79	73.78	70.09	3275.00	4546.40	948.45	380.72	567.73	2581133
27	Construction of field channel including all structures of Golamunda Distributary from RD 40350 m to 40760 m and Farang S/M-I under WUA No. 20 of Golamunda Distributary	139.02	118.18	44.73	5540.00	4546.40	1596.76	644.03	952.74	4331514
28	Construction of field channel including all structures of Sandhikulihari S/M-I, II off taking RD 3455 m of Golamunda Distributary under WUA No. 1	50.72	43.12	29.19	2630.00	4299.80	841.19	305.74	535.45	2302339

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
29	Construction of field channel including of all structure of Golamunda Distributary under WUA No. 14(A)	88.07	74.87	40.90	3345.00	4427.70	829.25	388.86	440.39	1949931
30	Construction of field channel including all structures of outlet No. 6R to 11L of WUA No. 10 of Golamunda Distributary.	76.71	65.21	53.33	3770.01	4425.20	1135.84	438.26	697.58	3086915
31	Construction of field channel including of all structure of Golamunda Distributary under WUA No. 14(C)	59.74	50.78	35.13	2630.00	4427.70	750.20	305.74	444.46	1967947
32	Construction of field channel including all structures under WUA No. 5 of Golamunda Distributary	129.00	109.67	26.20	6925.00	4450.30	1918.15	805.03	1113.12	4953712
33	Construction of field channel including all structures of Golamunda Distributary under WUA No. 13(B)	65.65	55.81	0.00	3065.00	4427.70	901.95	356.31	545.64	2415947
34	Construction of filed channel includng of all strcutures of Golamunda Distributary under WUA No. 13(A)	73.06	62.10	18.11	3890.00	4427.70	935.48	452.21	483.27	2139764
35	Construciton of field channel including all structures from RD 1200 m to RD 2640 m of Tipiguda Minor under WUA No 04 of Golamunda Distributary	60.90	51.77	33.03	3090.00	4435.30	932.97	359.21	573.76	2544787

Sl. No.	Name of the Work	Estimated cost (₹ in lakh)	Agreement value (₹ in lakh)	Expenditure	Length (in metre)	CC M-15 rate (in ₹)	CC M-15 Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Extra cost (in ₹)
36	Construciton of field channel including all structures from RD 2810 m to RD 3570 m of Tipiguda Minor and RD 243 m to RD 630 m of Gataguda S/M under WUA NO. 04 of Golamunda Disty.	59.04	50.19	15.75	2690.00	4435.30	892.88	312.71	580.17	2573217
37	Construction of fileld channle including all structures from RD 384 m to 1156 m of Rama Krishana S/M and RD 560 m to RD 1200 m of Tipiguda minor under WUA NO. 04 of Golamunda Disty.	59.77	50.80	33.84	2845.00	4435.30	918.90	330.73	588.17	2608705
	Total	4029.57	3357.41	2694.53	171555.3		55287.48	19943.31	35344.174	156230916
										132811901

Appendix 3.6.1

(Refer paragraph 3.6.3.1 at page 38)

Details of Other District Roads taken up with 5.5 meter pavement width

Sl. No.	Name of the work	Length of the road taken up under ACA and CRF (in kilometer)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Width as per IRC (in meter)	Width provided (in meter)	Excess width (in meter)	Excess cost (₹ in crore)
1	Improvement to Lalei to Khandadhar Waterfall road from 6/0 to 15/0 km	9	13.48	13.2	3.75	5.5	1.75	4.29
2	Upgradation of SH 10A Jangra road from 0/0 to 6/69 km	6.69	6.11	5.85	3.75	5.5	1.75	1.94
3	Construction of Kuanrmunda Purunapani-Nuagaon road via Karoshiria from 11/744 to 16/0 km	4.256	3.13	2.81	3.75	5.5	1.75	1.00
4	Upgradation of Koira-Tensa-Barsuan-Kaleiposh road from 24/0 to 27/35 km (Rourkela R&B Division)	3.35	6.41	6.41	3.75	7	3.25	2.98
5	Upgradation of Satakutunia Patna road from 13/608 to 18/0 km	4.392	3.32	3.32	3.75	5.5	1.75	1.06

Sl. No.	Name of the work	Length of the road taken up under ACA and CRF (in kilometer)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Width as per IRC (in meter)	Width provided (in meter)	Excess width (in meter)	Excess cost (₹ in crore)
6	Construction of Barbil-Kiriburu road from 8/0 to 12/45 km (Keonjhar R&B Division)	4.45	3.09	3.01	3.75	5.5	1.75	0.98
7	Upgradation of NH 5 to Bahabalpur road from 0/55 to 5/65 km	5.1	1.65	1.65	3.75	5.5	1.75	0.53
8	Upgradation to Pritipur Nandipur road from 0/6 km to 5/3 km	4.7	2.49	2.49	3.75	5.5	1.75	0.79
9	Improvement to NH-200 to Ashokjhar road via Sukindagarh from 2/61 to 6/55 and 6/7 to 9/47 km	6.71	2.53	2.53	3.75	5.5	1.75	0.81
10	Upgradation of Expressway Phuljhar Chhak to Bangarkota river embankment via Tolkani and Gobardhanpur road from 0/00 to 4/545 km	4.545	2.73	2.97	3.75	5.5	1.75	0.87
11	Upgradation of Sukinda-Hatibari road from 4/4 to 10/155 km	5.755	1.64	1.64	3.75	5.5	1.75	0.52

Sl. No.	Name of the work	Length of the road taken up under ACA and CRF (in kilometer)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Width as per IRC (in meter)	Width provided (in meter)	Excess width (in meter)	Excess cost (₹ in crore)
12	Upgradation of Rambag Chhatrapada Biripata road from 10/8 to 17/0 km (Panikoili R&B Division)	6.2	3.96	1.48	3.75	5.5	1.75	1.26
13	Improvement of Lephripada-Balisankara 49/275 to 50/95 km (Sundargarh R&B Division)	1.675	2.03	2.03	3.75	5.5	1.75	0.65
14	Improvement to Suleipat-Badampahar-Jhaldungri road from 0/00 to 2/455 and 10/14 to 11/15 km	3.465	3.43	3.12	3.75	5.5	1.75	1.09
15	Construction of Jashipur-Raruan road from 2/0 to 5/96 km (Rairangapur R&B Division)	3.96	3.63	3.63	3.75	5.5	1.75	1.16
16	Improvement to Balangir-Arjunpur-Tusura-Deogaon road from 25/0 to 28/20 km	3.2	1.75	1.75	3.75	5.5	1.75	0.56
17	Construction of road from NH-57 to Sonapur-Shardhapali PWD road	0.81	1.23	1.23	3.75	5.5	1.75	0.39

Sl. No.	Name of the work	Length of the road taken up under ACA and CRF (in kilometer)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Width as per IRC (in meter)	Width provided (in meter)	Excess width (in meter)	Excess cost (₹ in crore)
18	Improvement to Patherchepa-Bhainsa via Sibtala road from 5/11 to 17/2 and 17/55 to 17/94 km	12.48	2.53	2.53	3.75	5.5	1.75	0.81
19	Improvement to Sahajbahal-Bhimitikira-Siali road from 0/45 to 5/45 km (Bolangir R&B Division)	5	3.14	3.14	3.75	5.5	1.75	1.00
20	Improvement to Pokharibandh-Lanjigarh road from 0/0 to 2/75 km (Kalahandi R&B Division)	2.75	2.84	2.84	3.75	5.5	1.75	0.90
21	Improvement to Panchada-Dasmantapur-Giriliguma road from 14/2 to 19/2 km (Koraput R&B Division)	5	2.72	2.14	3.75	5.5	1.75	0.87
	Central Road Fund							
22	Widening and strengthening of Suakati-Dubuna road from 12/5 to 31/0 km (Keonjhar R&B Division)	18.5	38.38	11.26	3.75	7	3.25	17.82
		121.988	112.22	81.03				42.25

Appendix 3.6.2

(Refer paragraph 3.6.5.3 at page 44)

Details of savings due to receipt of bids by more than 10 per cent less than the estimated cost

Sl. No.	Name of the work	Date of commencement/ Stipulated date of completion	Estimated cost (₹ in crore)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Tender premium (in percentage)	Savings (₹ in crore)
1	2	3	4	5	6	7	8
	ACA						
1	Improvement to Lephripada-Balisankara road from 49/275 to 50/95 km	08.08.2013/ 07.02.2014	2.45	2.03	2.03	-17.3	-0.42
2	Improvement to Gariamal-Bamara road from 8/5 to 11/7 km	20.10.2011/ 19.04.2012	2.45	2	2	-18.6	-0.46
3	Improvement to Suleipat-Badampahar-Jhaldungri road from 0/0 to 2/445 km	10.04.2013/ 09.03.2014	4	3.43	3.12	-11.7	-0.47
4	Improvement to Balangir-Arjunpur-Tusura-Deogaon road from 25/0 to 28/0 km	12.12.2011/ 11.11.2012	1.96	1.75	1.75	-10.9	-0.21
5	Construction of road from 47/75 km NH-57 to Sonapur-Shardhapali PWD road	01.11.2011/ 30.04.2012	1.47	1.23	1.32	-16.2	-0.24
6	Improvement to Barapudgia-Bhutiabahal road from 4/69 to 8/13 km	16.12.2011/ 15.09.2012	1.18	1.05	1	-11.11	-0.13
7	Improvement to Patherchepa-Bhainsa via Sibtala road from 5/11 to 17/2 and 17/55 to 17/94 km	12.12.2011/ 11.10.2012	2.92	2.53	2.53	-13.3	-0.39
8	Widening of Thakurmunda-Dongadiha-Podadiha-Udala-Mantri-Baisanga-Rupsa road from 37/6 to 40/6 km	04.06.2013/ 03.05.2014	3.33	2.79	2.79	-16.1	-0.54
9	Widening of Pratapur-Khunta-Jaipur road from 18/0 to 22/787 km	12.08.2013/ 11.05.2014	2.94	2.43	2.43	-17.3	-0.51

Sl. No.	Name of the work	Date of commencement/ Stipulated date of completion	Estimated cost (₹ in crore)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Tender preimum (in percentage)	Savings (₹ in crore)
10	Construction of Dharmagarh-Golamunda-Sinapali road from 37/36 to 38/535 and 39/0 to 42/14 km	21.10.2013/ 20.06.2014	2.94	2.55	2.29	-13.3	-0.39
11	Construction of Sagar-Jalaput road from 0/0 to 1/0 and 1/8 to 4/5 km	30.10.2013/ 29.06.2014	2.94	2.56	2.38	-13.1	-0.39
12	Upgradation of Satakutunia Patna road from 13/608 to 18/0 km	22.11.2012/ 21.10.2013	3.88	3.32	3.32	-14.6	-0.57
13	Construction of Barbil-Kiriburu road from 8/0 to 12/45 km	10.10.2013/ 09.09.2014	3.43	3.09	3.01	-10	-0.34
14	Upgradation of NH 5 to Bahabalpur road from 0/55 to 5/65 km	08.08.2013/ 07.02.2014	1.95	1.65	1.65	-15.6	-0.30
15	Upgradation Pritipur to Nandipur road from 0/6 to 5/3 km	08.08.2013/ 07.02.2014	2.93	2.49	2.49	-15.2	-0.45
16	Improvement to NH-200 to Ashokjhar road via Sukindagarh from 2/61 to 6/55 and 6/7 to 9/47 km	28.01.2013/ 27.07.2013	2.9	2.53	2.53	-12.9	-0.37
17	Upgradation of Kuakhia-Baruan Bari Kalamatia road from 0/325 to 7/0 km	13.05.2013/ 12.04.2014	3.4	2.91	2.91	-14.5	-0.49
18	Upgradation of Sukinda-Hatibari road from 4/4 to 10/155 km	08.08.2013/ 07.02.2014	1.96	1.64	1.64	-16.1	-0.32
19	Upgradation of Rambag Chhatrapada Biripata road from 10/8 to 17/0 km	04.02.2015/ 03.01.2016	4.41	3.96	1.48	-10.13	-0.45
	CRF						-7.43
1	Improvement to Karanjia-Thakurmunda-Satkosia-Anandapur road from 0/0 to 10/0 km	09.10.2013/ 08.01.2015	16.63	14.1	12.62	-15.2	-2.53
2	Widening and Strengthening of Ampani-Dharmagarh road from 28/855 to 41/305 km	19.12.2016/ 18.06.2018	29.14	25.92	0	-11.05	-3.22

Sl. No.	Name of the work	Date of commencement/ Stipulated date of completion	Estimated cost (₹ in crore)	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Tender preimum (in percentage)	Savings (₹ in crore)
3	Widening and Strengthening of Suakati-Dubuna road from 12/5 to 31/0 km	20.09.2016/ 19.05.2018	45.15	38.38	11.26	-14.99	-6.77
4	Widening and Strengthening of Kuanra-Banspal road from 6/0 to 14/4 km	14.09.2016/ 13.12.2017	23.72	20.16	8.61	-14.99	-3.56
5	Widening and Strengthening of Kanjipani-Kuntala road from 0/0 to 21/0 km	20.09.2016/ 19.05.2018	45.19	38.42	13.33	-14.99	-6.77
	Total		213.27	182.92	88.49		-22.85

Appendix 3.6.3

(Refer paragraph 3.6.6.1 at page 45)

Details of unwarranted provision of capping layer of sand resulted in extra cost

Sl. No.	Name of the work	Agreement cost (₹ in crore)	CBR value of the sub-soil (in percent)	Traffic density (in msa)	Required GSB as per IRC code (in mm)	GSB Provided			Lesser/equal GSB layer provided in the work			Sand provided				Extra cost involved (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Up to date quantity executed (in cum)	Up to date payment made (in ₹)	Up to date payment made including tender premium (in ₹)
						Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)						
1	Widening of Pratapur-Khunta-Jaipur road from 18/0 to 22/787 km	2.43	4	3	280	225	4759.04	55	1163.54	1315265.6	200	6130.45	226.5	1388546.93	73281.30	-17.3	60603.64254	5862.46	1327847.19	1098129.63	
2	Widening of Thakurmunda-Dongadiha-Podadiha-Udala-Mantri-Baisinga-Rupsa road from 50/77 to 55/1 km (Mayurbhanj R&B Division)	4.12	4	3	280	300	2033.89	-20	-135.592667	-266633.49	150	4114.84	261.8	1077265.11	1343898.60	-5.97	1263667.853	4137.96	1083317.93	1018643.85	
3	Improvement to Balangir-Arjunpur-Tusura-Deogaon road from 25/0 to 28/2 km	1.75	7	2	150	175	1050	-25	-150	-136365	150	2475	205.72	509157	645522	-10.9	575160.102	2509.32	516217.31	459949.62	

Sl. No.	Name of the work	Agreement cost (₹ in crore)	CBR value of the sub-soil (in percent)	Traffic density (in msa)	Required GSB as per IRC code (in mm)	GSB Provided			Lesser/equal GSB layer provided in the work			Sand provided				Extra cost involved (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Up to date quantity executed (in cum)	Up to date payment made (in ₹)	Up to date payment made including tender premium (in ₹)
						Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)						
4	Construction of road from NH-57 to Sonapur-Shardhapali PWD road	1.23	7	6	190	200	972	-10	-48.6	-59092.254	300	2430	173.66	421993.8	481086.05	-16.2	403150.1133	3062.81	531887.58	445721.80	
5	Improvement to Barapudgia-Bhutiabahal road from 4/69 to 8/13 km	1.05	5	2	215	200	786.36	15	58.977	44832.546	150	3047.15	276.03	841104.815	796272.268	-11.11	707806.4194	2993.51	826297.18	734495.56	
6	Improvement to Patherchepa-Bhainsa via Sibtala road from 5/11 to 17/2 and 17/55 to 17/94 km (Bolangir R&B Division)	2.53	6	3	190	150	2146.5	40	572.4	472939.78	150	4293	288.62	1239045.66	766105.88	-13.3	664213.8014	4380.93	1264423.72	1096255.37	

Sl. No.	Name of the work	Agreement cost (₹ in crore)	CBR value of the sub-soil (in percent)	Traffic density (in msa)	Required GSB as per IRC code (in mm)	GSB Provided			Lesser/equal GSB layer provided in the work			Sand provided				Extra cost involved (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Up to date quantity executed (in cum)	Up to date payment made (in ₹)	Up to date payment made including tender premium (in ₹)
						Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)						
7	Construction of Kukurbhukha-Laxmiposh-Bihar-Boarder road from 6/0 to 10/0 km	2.65	6	5	210	225	3136.04	-15	-209.069333	-266103.45	150	6798.44	205.39	1396331.59	1662435.04	-9.1	1511153.451	6575.75	1350593.29	1227689.30	
8	Improvement to Gariamal-Bamara road from 8/5 to 10/6 km (Sundargarh R&B Division)	2	2	10	460	460	5836.95	0	0	0	150	2192.4	211.03	462662.172	462662.17	-18.6	376607.008	3736.78	788572.68	641898.16	
9	Construction of Suleipat-Badampahar-Jhaldunguri road from 0/0 to 2/445 and 10/14 to 11/15 km (Rairangpur R&B Division)	3.43	6	7	230	150	1026.27	80	547.344	753117.98	150	2699.81	376.9	1017558.39	264440.41	-11.7	233500.884	2573.27	969864.33	856390.20	

Sl. No.	Name of the work	Agreement cost (₹ in crore)	CBR value of the sub-soil (in percent)	Traffic density (in msa)	Required GSB as per IRC code (in mm)	GSB Provided			Lesser/equal GSB layer provided in the work			Sand provided				Extra cost involved (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Up to date quantity executed (in cum)	Up to date payment made (in ₹)	Up to date payment made including tender premium (in ₹)
						Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)						
10	Upgradation of Satakutunia Patna road from 13/608 to 18/0 km (Keonjhar R&B Division)	3.32	6	8	240	300	6310.65	-60	-1262.13	-1876787.3	75	407.07	239.2	97371.144	1974158.45	-14.6	168593.132	531.07	127031.94	108485.28	
11	Improvement to Dharmagarh Golmunda Sinapali road from 37/36 to 38/535 and 39/0 to 42/14 km (Kalahandi R&B Division)	2.55	6	2	175	150	1084.5	25	180.75	167284.13	200	5061	211.45	1070148.45	902864.32	-13.3	782783.3698	5756.66	1217245.76	1055352.07	
	Central Road Fund																				

Sl. No.	Name of the work	Agreement cost (₹ in crore)	CBR value of the sub-soil (in percent)	Traffic density (in msa)	Required GSB as per IRC code (in mm)	GSB Provided			Lesser/equal GSB layer provided in the work			Sand provided				Extra cost involved (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Up to date quantity executed (in cum)	Up to date payment made (in ₹)	Up to date payment made including tender premium (in ₹)
						Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Amount (in ₹)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)	Amount (in ₹)						
12	Improvement such as 2 lanning of Khalikote-Boirani-Aska-Ballipadar-Bellaguntha road from 0/0 to 3/2 and 4/4 to 27/0 km (Ganjam R&B Division No.II)	26.41	8	6	160	150	8979.98	10	598.665333	1071371.5	150	21925.03	530.74	11636490.4	10565118.9	-6.8	9846690.854	626.49	332503.30	309893.08	
13	Widening and improvement of Nayagarh-Khandapada road from 1/0 to 16/0 km (Nayagarh R&B Division)	17.35	5	4	240	250	10355.74	-10	-414.2296	-779546.97	150	11904.52	339.27	4038846.5	4818393.47	-8.1	4428103.598	14286.85	4847099.60	4454484.53	
	Total	70.82					48477.92					73478.71		25196522	24756239		22539372	57033.86	15182901.8	13507388.5	

Appendix 3.6.4

(Refer paragraph 3.6.6.2 at page 45)

Details of avoidable cost due to unwarranted provision of surface dressing

Sl. No	Name of the work	Estimated cost (₹ in crore)	Date of commencement/ Stipulated date of completion	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Surfacing dressing provided (in Sqm)	Rate (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Total extra cost (in ₹)
1	Improvement to Lephripada-Balisankara road from 49/275 to 50/95 km (Sundargarh R & B Division)	2.45	08.08.2013/ 07.02.2014	2.03	2.03	11550	78.4	905520	-17.3	748865.04
2	Widening of Karanjia-Thakurmunda-Satkosia-Anandapur from 30/0 to 31/902 and 34/7 to 42/04 km (Rairangpur R & B Division)	4.85	20.03.2013/ 19.02.2014	4.58	4.58	7394	67.5	499095	-5.6	471145.68
3	Upgradation of Sukinda-Hatibari road from 4/4 to 10/155 km (Panikoili R & B Division)	1.96	08.08.2013/ 07.02.2014	1.64	1.64	10359	71.6	741704.4	-16.1	622289.99
4	Construction such as Widening of Deogaon Mandar road from 6/0 to 12/16 km	4.37	01.11.2012/ 30.09.2013	3.87	3.87	16834.13	68	1144720.84	-11.5	1013077.9
5	Improvement to Kaimati-Joranda road from 0/0 to 6/4 km (Dhenkanal R & B Division)	3.38	18.11.2011/ 17.10.2012	3.12	3.13	22664	60.5	1371172	-7.7	1265591.8

6	Upgradation of Satakutunia Patna road from 13/608 to 18/0 km (Keonjhar R & B Division)	3.88	22.11.2012/ 21.10.2013	3.32	3.32	12440.5	67.73	842595.065	-14.6	719576.19
7	Improvement to Ravi Talkies to Tankapani road from 0/0 to 1/04 km (Bhubaneswar R & B Division No. I)	2.45	19.02.2014/ 18.08.2014	2.05	2	1377	81.95	112845.15	-16.5	94225.7
	Central Road Fund									
8	Improvement to Karamdihi-Talsara-Lulkidihi road from 43/0 to 52/0 km (Sundargarh R & B Division)	15.68	08.08.2013/ 07.11.2014	16.26	16.24	32282.25	78.25	2526086.063	3.7	2619551.2
9	Widening and Improvement of Hatibari-Biramitrapur-Raiboga-Salangabahal Bihar Boarder road from 0/0 to 10/0 km (Rourkela R & B Division)	16.94	19.06.2015/ 18.05.2016	16.13	15.88	43771.07	83.43	3651820.37	-4.77	3477628.5
10	Improvement such as 2 lanning of Khalikote-Boirani-Aska-Ballipadar-Bellaguntha road from 0/0 to 3/2 and 4/4 to 27/0 km (Ganjam R & B Division No. II)	28.34	26.12.2016/ 25.08.2018	26.41	1.25	75697	56.76	4296561.72	-6.8	4004395.5
	Total	84.3		79.41	53.94	234368.95		16092120.6		15036348

Appendix 3.6.5

(Refer paragraph 3.6.6.3 at page 46)

Details of extra cost due to unwarranted provision of semi dense bituminous concrete and bituminous macadam

Sl. No	Name of the work	Required bituminous layer as per IRC	Bituminous layer provided	As per IRC provision					Cost in DPRs					Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including tender premium (in ₹)
				Items	Unit	Quantity	Rate (in ₹)	Amount (in ₹)	Items	Unit	Quantity	Rate (in ₹)	Amount (in ₹)			
1	Construction such as Widening to Charbahal Chilakpur road (MDR-120) from 2/2 km to 6/2 and 7/5 to 7/925 km	PC- 20mm	SDBC-25mm	PC	sqm	24337.5	122.65	2984994.375	SDBC	cum	608.44	7832.57	4765648.9			
				Seal coat	sqm	24337.5	46.09	1121715.375	Tack coat	sqm	24337.5	9.18	223418.25			
				Total				4106709.75	Primer	sqm	24337.5	25.31	615982.13			
										Total				5605049	1498339.52	6.8
2	Improvement to Bhawanipatana Gunupur Kasipur road from 13/0 to 17/75 km (Kalahandi R&B Division)	PC-20mm	SDBC-25mm BM 50mm	PC	sqm	21043	122.65	2580923.95	SDBC	cum	649.83	6776.61	4403644.5			
				Seal coat	sqm	21043	46.09	969871.87	BM	cum	1052.15	5118.73	5385671.8			
				Total				3550795.82	Tack coat	Sqm	25993	7.17	186369.81			
									primer	Sqm	21043	19.73	415178.39			
									Surface dressing	Sqm	1656	59.67	98813.52			
					Total					10489678	6938882.15	6.2	7369092.84			
3	Upgradation of NH-5 to Bahabalpur to road from 0/55 to 5/65 km (Panikoili)	PC-20mm	SDBC-25mm	PC	sqm	24750	122.65	3035587.5	SDBC	cum	618.75	7858.6	4862508.8			
				Seal coat	sqm	24750	46.09	1140727.5	BM	cum	1305	5876.8	7669224			
									Tack coat	Sqm	24750	9.1	225225			

Sl. No	Name of the work	Required bituminous layer as per IRC	Bituminous layer provided	As per IRC provision					Cost in DPRs					Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including tender premium (in ₹)
				Items	Unit	Quantity	Rate (in ₹)	Amount (in ₹)	Items	Unit	Quantity	Rate (in ₹)	Amount (in ₹)			
	R&B Division)								primer	Sqm	10250	24.9	255225			
									Surface dressing	Sqm	0	0	0			
									Total				13012183	13012182.8	-15.6	10982282.24
4	Construction of Sagar Jalaput road from 0/0 to 1/0 km and 1/800 to 4/5 km (Koraput R&B Division)	PC-20mm	SDBC-25mm	PC	sqm	20350	122.65	2495927.5	SDBC	cum	509	8262.03	4205373.3			
				Seal coat	sqm	20350	46.09	937931.5	BM	cum	0	0	0			
									Tack coat	Sqm	20350	9.46	192511			
									primer	Sqm	0	0	0			
									Surface dressing	Sqm	20350	73.03	1486160.5			
									Total				5884045	5884044.77	-13.1	5113234.91
5	Upgradation of Lalai SH-10A to Khandadhar Waterfall from 6/0 to 15/0 km (Rourkela R&B Division)	PC-20mm BM 50mm	SDBC-25mm BM 50mm	PC	sqm	50490	122.65	6192598.5	SDBC	cum	1262.25	9710.35	12256889			
				BM	cum	2524.5	7309.49	18452807.51	BM	cum	2524.49	7309.49	18452734			
									Tack coat	Sqm	50490	10.69	539738.1			
									primer	Sqm	50053.54	29.4	1471574.1			
									Surface dressing	Sqm	0	0	0			
									Total				32720936	32720935.9	-7.11	30394477.33
								Grand total						60054385		55459313.92

Appendix 3.6.6

(Refer paragraph 3.6.6.4 at page 46)

Details of avoidable cost due to excess provision of granular sub base and bituminous macadam

Sl. No.	Name of the work	Estimated cost (₹ in crore)	Agreement cost (₹ in crore)	Expenditure incurred (₹ in crore)	CBR value of the sub-soil (in percentage)	Traffic density (in msa)	Required GSB as per IRC code	GSB Provided		Excess GSB layer provided in the work			
								Thickness (in mm)	Thickness (in mm)	Quantity (in cum)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)
1	Widening and improvement of Bargarh-Bhatli-Ambabana road from 0/0 to 18/0 km (Bargarh R&B Division)	18.23	16.77	16.62	7	17	230	300		70	0		
						Coarse	130	150	12655.09	20	1687.3453	1568.03	2645808.1
						Close	100	150	2525.57	50	841.85667	1258.09	1059131.5
2	Widening and Improvement to Dharmagarh-Golamunda-Sinapali road from 0/0 to 2/0 and 16/0 to 24/0 km	19.08	19.97	20.23	6	5	210	300					
						Coarse	110	135	13354	25	2472.963	1597.39	3950286.3
						Close	100	100	5087	0	0	1444.77	0
						BM	67	75	5610	8	598.4	6973.96	4173217.7
3	Widening and Strengthening of Ampani-Dharmagarh road from 0/0 to 11/812 km	37.73	34.49	0	8	5							
						GSB	150	200	25200	50	6300	2171.04	13677552
4	Widening and Strengthening of Ampani-Dharmagarh road from 28/855 to 41/305 km (Kalahandi R&B Division)	29.14	25.92	0	8	5							
						GSB	150	200	26643	50	6660.75	1927.34	12837530
5	Widening and Strengthening of Sinapali-Ghatipada road from 49/09 to 69/95 km	41.23	38.8	2.39	8	5	150	200	46927.19	50	11731.798	1752.43	20559154

Sl. No.	Name of the work	Estimated cost (₹ in crore)	Agreement cost (₹ in crore)	Expenditure incurred (₹ in crore)	CBR value of the sub-soil (in percentage)	Traffic density (in msa)	Required GSB as per IRC code	GSB Provided		Excess GSB layer provided in the work			
								Thickness (in mm)	Thickness (in mm)	Quantity (in cum)	Thickness (in mm)	Quantity (in cum)	Rate (in ₹)
6	Widening and Strengthening of Sinapali-Ghatipada road from 69/95 to 92/674 km (Khariar R&B Division)	42.9	36.86	1.09	8	5	150	200	51171.75	50	12792.938	1621.6	20745027
7	Upgradation of Satakutunia Patna road from 13/608 to 18/0 km (Keonjhar R&B Division)	3.88	3.22	3.32	6	8	240	300	6310.65	60	1262.13	1487	1876787.3
	Total	188.31	172.81	40.33					189173.6		44348.18		81524494

Appendix 3.6.7

(Refer paragraph 3.6.6.5 at page 47)

Details of avoidable extra cost due to excess provision of SDBC deviating IRC norms

Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	CBR in (percentage)	MSA	Thickness of SDBC provided (in mm)	Thickness of SDBC as per norms (in mm)	Excess thickness (in mm)	SDBC amount (in ₹)	Excess SDBC amount (in ₹)	Extra cost including tender premium (in ₹)
1	Construction such as Widening to Charbahal-Chilakpur road from 2/2 to 6/2 & 7/5 to 7/925 km	3.11	3.11	3	1	25	20	5	4765648	953129.6	1017942
2	Construction of Dharmagarh-Golamunda-Sinapalli road from 37/36 to 38/535 and 39/0 to 42/14 km	2.55	2.29	6	2	25	20	5	3983722	796744.4	690777.4
3	Construction such as Widening to Bhawanipatna-Gunupur-Kasipur road from 32/0 to 35/5 km	3.15	3.15	8	2	25	20	5	3786752	757350.4	814909
4	Improvement to Bhawanipatna-Gunupur-Kasipur road from 13/0 to 17/75 km (Kalahandi R&B Division)	3.09	3.09	8	2	25	20	5	4403644	880728.8	935334
5	Construction of Sagar-Jalaput road from 0/0 to 1/0 and 1/8 to 4/5 km	2.56	2.38	4	1	25	20	5	4205373	841074.6	730893.8
6	Improvement to Kunduli-Kutiya road from 7/0 to 13/9 km (Koraput R&B Division)	2.82	2.82	5	2	25	20	5	5182620	1036524	995063

Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	CBR in (percentage)	MSA	Thickness of SDBC provided (in mm)	Thickness of SDBC as per norms (in mm)	Excess thickness (in mm)	SDBC amount (in ₹)	Excess SDBC amount (in ₹)	Extra cost including tender premium (in ₹)
7	Upgradation of NH 5 to Bahabalpur road from 0/55 to 5/65 km	1.65	1.65	4	1	25	20	5	4862508.8	972501.75	820791.5
8	Upgradation to Pritipur Nandipur road from 0/6 to 5/3 km	2.49	2.49	4	2	25	20	5	5244965	1048993	889546.1
9	Upgradation of Expressway Phuljhar Chhak to Bangarkuta river embankment via Talkani and Gobardhanpur road from 0/0 to 4/545 km	2.73	2.97	4	2	25	20	5	4083075	816614.9992	757002.1
10	Upgradation of Kuakhia-Baruan Bari Kalamatia road from 0/325 to 3/0 km	2.91	2.91	3	3	25	20	5	8826635.7	1765327.141	1509355
11	Upgradation of Sukinda-Hatibari road from 4/4 to 10/155 km	1.64	1.64	4	2	25	20	5	6691212	1338242.4	1122785
12	Upgradation of Rambag Chhatrapada Biripata road from 10/8 to 17/0 km (Panikoili R&B Division)	3.96	1.48	2	2	25	20	5	8093924.9	1618784.97	1454802
	Total	32.66	29.98							12826016.1	11739201

Appendix 3.6.8

(Refer paragraph 3.6.6.7 at page 48)

Details of avoidable expenditure due to undue provision of dry lean concrete

Sl. No.	Name of the work	Estimated Cost (₹ in crore)	Agreement Value (₹ in crore)	Expenditure incurred (₹ in crore)	CBR in (percentage)	MSA/ CVPD	Quantity provided (in cum)	Rate per Cum (in ₹)	Amount (in ₹)	Tender premium in (percentage)	Extra expenditure including tender premium (in ₹)
	ACA										
1	Improvement to Suleipat-Badampahar-Jhaldungri road ODR from 0/0 to 2/445 and 10/14 to 11/15 km (Rairangapur R & B Division)	4.00	3.43	3.12	6	7/350	844.422	3234.94	2731654.505	-11.70	2412050.93
2	Improvement to Dharmagarh Golamunda Sinapali road from 37/36 to 38/535 and 39/0 to 42/14 km (Kalahandi R & B Division)	2.94	2.55	2.29	6	2/235	385	3132.26	1205920.1	-13.30	1045532.73
3	Upgradation of Expressway Phuljhar Chhak to Bangarkata river embankment via Tolkani and Gobardhanpur from 0/0 to 5/545 km (Panikoili R & B Division)	2.94	2.73	2.97	4	2/121	439.5	3185.75	1400137.125	-7.30	1297927.11
4	Upgradation of Ghatagaon-Harichandanpur road from 0/0 to 15/0 km (Ghatagaon R & B Division)	19.26	17.17	16.5	6	5/351	322.32	3599.77	1160277.866	-10.87	1034155.66

Sl. No.	Name of the work	Estimated Cost (₹ in crore)	Agreement Value (₹ in crore)	Expenditure incurred (₹ in crore)	CBR in (percentage)	MSA/ CVPD	Quantity provided (in cum)	Rate per Cum (in ₹)	Amount (in ₹)	Tender premium in (percentage)	Extra expenditure including tender premium (in ₹)
	CRF										
5	Improvement to Nayagarh-Khandapada road from 1/0 to 16/0 km (Nayagarh R & B Division)	18.88	17.35	16.36	5	4/282	298.25	3671.13	1094914.523	-8.10	1006226.45
6	Improvement to Dharmagada Golamunda Sinapali road from 0/0 to 2/0 km and 16/0 to 24/0 km (Kalahandi R & B Division)	19.08	19.97	20.23	6	5/297	1002	3566.94	3574073.88	4.71	3742412.76
7	Improvement to Karamdihi-Talsara-Lukidihi road from 43/0 to 52/0 km (Sundargarh R & B Division)	15.68	16.26	16.24	5	5/192	241.5	3616.21	873314.715	3.70	905627.36
	Total	82.78	79.46	77.71			3532.99		12040292.71		11443933.00

Appendix 3.6.9

(Refer paragraph 3.6.6.8 at page 48)

Details of extra expenditure due to provision of GSB/WMM without deduction of existing crust

Sl. No.	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Upto date expenditure incurred (₹ in crore)	Quantity provided (in cum)	Length (in meter)	Excess width provided in overlaying portion (in meter)	Excess thickness provided (in meter)	Quantity (in cum)	Rate per cum (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost (in ₹)	Existing crust (in mm)
	CRF													
1	Widening and Improvement to Dharmagarh Golamunda Sinapali road from 0/0 to 2/0 and 15/0 to 24/0 km	19.08	19.97	20.23	19944.00	10670.00	3.66	0.210	8200.96	1597.39	13100134.69	4.71	13717151.03	210
2	Widening and Strengthening of Ampani Dharmagarh road from 0/0 to 11/812 km	37.73	34.49	0	25200.2	11438	3.75	0.200	8578.50	2171.04	18624266.64	-8.60	17022579.71	275
3	Widening and Strengthening of Ampani Dharmagarh road from 28/855 to 41/305 km (Kalahandi R&B Division)	29.14	25.92	0	26643.3	12093	3.75	0.200	9069.75	1927.34	17480491.97	-11.05	15548897.60	275
4	Widening and Strengthening of Sinapali Ghatipada road from 49/09 to 69/95 km	41.23	38.8	2.39	46927.19	20691	3.5	0.200	14483.70	1752.43	25381670.39	-5.9	23884151.84	275
5	Widening and Strengthening of Sinapali Ghatipada road from 69/95 to 92/674 km (Khariar R&B Division)	42.9	36.85	1.09	51171.75	22562.5	3.5	0.200	15793.75	1621.6	25611145.00	-9.36	23213941.83	275

Sl. No.	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Upto date expenditure incurred (₹ in crore)	Quantity provided (in cum)	Length (in meter)	Excess width provided in overlaying portion (in meter)	Excess thickness provided (in meter)	Quantity (in cum)	Rate per cum (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost (in ₹)	Existing crust (in mm)
	WMM													
6	Widening and Improvement to Hatibari Biramitrapur Raiboga Salangabahal Bihar Border road from 0/0 to 10/0 km (Rourkela R&B Division)	16.94	16.13	15.88	23103.06	12506.02	3.66	0.1	4577.20	1565.7	7166527.24	-4.77	6824683.89	250
7	Upgradation of Dhangidisole-Deuli Baghra Morada road from 26/4 to 30/5 km under ACA	4.4	4.1	4.1	5890.99	4100	3.66	0.15	2250.90	2290.87	5156519.28	-6.8	4805875.97	300
8	Upgradation of Thakurmunda Dangadiha Podadiha Udala Manatri Baisinga Rupsa road from 50/77 to 55/1 km under ACA (Mayurbhanj R&B Division)	4.39	4.12	4.13	5072.87	4310	3.66	0.15	2366.19	2093.81	4954352.28	-5.97	4658577.45	300
	Total										117475107.49		109675859.32	

Appendix 3.6.10
(Refer paragraph 3.6.7 at page 49)
Details of undue benefit due to excess burrow earth utilised in the work under CRF

Sl. No.	Name of the work	Earth required for filling as per calculation (in cum)	Total quantity of sand, morrum, GSB, WMM etc. available (in cum)	Balance quantity required for filling (in cum)	Quantity of Earth available from cutting (in cum)	Balance quantity required from burrow earth (in cum)	Quantity of Earth burrowed (in cum)	Excess quantity burrow earth (in cum)	Rate per cum (in ₹)	Amount (in ₹)	Total extra cost (in ₹)
1	Widening and Strengthening of Ampani-Dharmagarh road from 0/0 to 11/812 km	301921.59	55642.96	246278.63	38154	208124.63	245207.78	37083.15	132.97	4930946.5	4506885.1
2	Widening and Strengthening of Ampani-Dharmagarh road from 28/855 to 41/305 km (Kalahandi R&B Division)	241858.00	57172.90	184685.10	22409	162276.10	203371.09	41094.99	132.97	5464400.8	4860584.5
3	Widening and Strengthening of Suakati-Dubuna road from 12/5 to 31/0 km	166382.58	90699.44	75683.14	36090.4	39592.74	107113.59	67520.85	132.96	8977572.2	7631834.1
4	Widening and Strengthening of Kuanra-Banspal road from 6/0 to 14/4 km (Keonjhar R&B Division)	54833.55	40665.43	14168.12	33579.93	0.00	16865	16865.00	132.96	2242370.4	1906239.1
5	Widening and Strengthening of Sinapali-Ghatipada road from 69/95 to 92/674 km	403283.63	108882.39	294401.24	49417.14	244984.10	347809.27	102825.17	132.97	13672663	12392902
6	Widening and Strengthening of Sinapali-Ghatipada road from 49/09 to 69/95 km (Khariar R & B Division)	323364.84	100154.78	223210.06	28482.62	194727.44	270980.64	76253.20	132.97	10139388	9541164.1
	Total	1491644.19	453217.90	1038426.29	208133.09	849705	1191347	341642.4		45427341	40839609

Appendix 3.6.11

(Refer paragraph 3.6.7 at page 49)

Details of extra cost towards transportation of excavated earth

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of excavated earth (in cum)	Rate provided for transportation of one kilometer (in ₹)	Total (in ₹)	Tender premium (in percentage)	Total extra cost (in ₹)
	ACA							
1	Construction of Sagar-Jalaput road from 0/0 to 1/0 and 1/8 to 4/5 km	2.94	2.56	2775	28.74	79753.5	-13.1	69305.792
2	Improvement to Panchada-Dasmantapur-Giriliguma road from 14/2 to 19/2 km	2.91	2.72	2402.41	28.74	69045.2634	-6.7	64419.231
3	Improvement to Panchada-Dasmantapur-Giriliguma road from 17/2 to 17/88 km	0.72	0.72	448.8	28.74	12898.512	0.3	12937.208
4	Construction such as Widening of Vizag-Jeypore road from 149/5 to 153/5 km (Koraput R&B Division)	4.37	4.32	9660	28.74	277628.4	-1.2	274296.86
5	Construction such as Widening to Charbahal-Chilakpur road from 2/2 to 6/2 & 7/5 to 7/925 km	2.91	3.11	3867.19	28.74	111143.041	6.8	118700.77

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of excavated earth (in cum)	Rate provided for transportation of one kilometer (in ₹)	Total (in ₹)	Tender premium (in percentage)	Total extra cost (in ₹)
6	Construction of Dharmagarh-Golamunda-Sinapali road from 37/36 to 38/535 and 39/0 to 42/14 km	2.94	2.55	7844.43	28.74	225448.918	-13.3	195464.21
7	Construction such as Widening to Bhawanipatna-Gunupur-Kasipur road from 32/0 to 35/5 km	2.93	3.15	3450.3	28.74	99161.622	7.6	106697.91
8	Improvement to Bhawanipatna-Gunupur-Kasipur road from 13/0 to 17/75 km	2.91	3.09	4572.19	28.74	131404.741	6.2	139551.83
9	Improvement to Pokharibandh-Lanjigarh road from 0/0 to 2/75 km (Kalahandi R&B Division)	2.94	2.84	2852.76	28.74	81988.3224	-3.33	79258.111
	CRF							
1	Widening and Improvement to Dharmagarh-Golamunda-Sinapali road from 0/0 to 2/0 and 16/0 to 24/0 km	19.08	19.97	9428	30.04	283217.12	4.71	296556.65

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of excavated earth (in cum)	Rate provided for transportation of one kilometer (in ₹)	Total (in ₹)	Tender premium (in percentage)	Total extra cost (in ₹)
2	Widening and Strengthening of Ampani-Dharmagarh road from 0/0 to 11/812 km	37.73	34.49	38154	30.04	1146146.16	-8.6	1047577.6
3	Widening and Strengthening of Ampani-Dharmagarh road from 28/855 to 41/305 km (Kalahandi R&B Division)	29.14	25.92	22409	30.04	673166.36	-11.05	598781.48
4	Widening and Strengthening of Suakati-Dubuna road from 12/5 to 31/0 km	45.15	38.38	36090.4	30.04	1084155.62	-14.99	921640.69
5	Widening and Strengthening of Kuanra-Banspal road from 6/0 to 14/4 km	23.72	20.16	33579.93	30.04	1008741.1	-14.99	857530.81
6	Widening and Strengthening of Kanjipani-Kuntala road from 0/0 to 21/0 km (Keonjhar R&B Division)	45.19	38.42	64297.5	30.04	1931496.9	-14.99	1641965.5
7	Improvement to Vizag-Jeypore road from 138/5 to 149/5 km	16.57	15.54	40428.85	30.04	1214482.65	-6.2	1139184.7

Sl. No	Name of the work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Quantity of excavated earth (in cum)	Rate provided for transportation of one kilometer (in ₹)	Total (in ₹)	Tender premium (in percentage)	Total extra cost (in ₹)
8	Improvement to Vizag-Jeypore road from 163/0 to 173/0 km	18.9	17.05	12753.18	30.04	383105.527	-9.8	345561.19
9	Improvement such as providing two lane flexible carriage way for Koraput-Laxmipur-Rayagada road from 30/0 to 40/0 km (Koraput R&B Division)	20.44	18.8	66292.06	30.04	1991413.48	-8	1832100.4
10	Widening and Improvement of Hatibari-Biramitrapur-Raiboga-Salangabahal Bihar Boarder road from 0/0 to 10/0 km (Rourkela R&B Division)	16.94	16.13	15430.12	30.04	463520.805	-4.77	441410.86
	Total	298.43	269.92	376736.12		11267918		10182942

Appendix 3.6.12

(Refer paragraph 3.6.8.4 at page 52)

Details of non-deduction of differential cost of steel and bitumen

Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Base year	Base year price per tonne of bitumen (in ₹)	Item of work	Bitumen quantity required for execution of one cum/sqm (in tonne)	Quantity executed in cum/SQM of bituminous works	Quantity of bitumen required (in MT)	Year of decrease in price	Rate per tonne (in ₹)	Difference per MT (in ₹)	Total differential cost to be recovered (in ₹)
1	Widening and strengthening to Dharmagarh Golamunda Sinapali road from 0/0 to 2/0 and 16/0 to 24/0 km under CRF	19.97	20.23	January 2014 VG-30	49515	BM	0.072	5342.62	386.97	December 15 VG-30	31647	17868	6914307.89
				VG-30	49515	SDBC	0.115	1842.88	212.64	VG-30	31647	17868	3799451.01
				SS-I	40455	Primer coat	0.060	71093.62	42.66	SS-I	25705	14750	629178.54
				RS-I	38670	Tack coat	0.020	71093.62	14.22	RS-I	26476	12194	173383.12
				SAIL	48525	Steel	1.05	149.323	156.79	SAIL	40250	8275	129743.02
2	Construction such as Widening to Charbahal Chilkpur road from 2/2 to 6/2 and 7/5 to 7/925 km under ACA	3.1	3.1	September 2012 VG-30	44483	BM	0.072	0.00	0.00	December 14 VG-30	44977	-494	0.00
				VG-30	44484	SDBC	0.115	609.68	70.35	VG-30	44977	-493	0.00
				SS-I	35067	Primer coat	0.060	24387.00	14.63	SS-I	34847	220	0.00
				RS-I	35067	Tack coat	0.020	24387.00	4.88	RS-I	36359	-1292	0.00
				SAIL	53125	Steel	1.05	26.96	28.31	SAIL	48525	4600	130216.80
3	Construction to Dharmagarh Golamunda Sinapali road from 37/36 to	2.55	2.29	April 2013 VG-30	47410	BM	0.072	0.00	0.00	March 15 VG-30	36971	10439	0.00
				VG-30	47410	SDBC	0.115	496.92	57.34	VG-30	36971	10439	598540.06
				SS-I	37958	Primer coat	0.060	19877.00	11.93	SS-I	28563	9395	112046.65

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Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Base year	Base year price per tonne of bitumen (in ₹)	Item of work	Bitumen quantity required for execution of one cum/sqm (in tonne)	Quantity executed in cum/SQM of bituminous works	Quantity of bitumen required (in MT)	Year of decrease in price	Rate per tonne (in ₹)	Difference per MT (in ₹)	Total differential cost to be recovered (in ₹)
	38/535 and 39/0 to 42/14 km under ACA			RS-I	39315	Tack coat	0.020	19877.00	3.98	RS-I	29830	9485	37706.67
				SAIL	50406	Steel	1.05	60.185	63.19	SAIL	45350	5056	319510.13
4	Improvement to Pokhribandha Lanjigarh road from 0/0 to 3/1 km under ACA	2.84	2.84	October 13 VG-30	50597	BM	0.072	852.50	61.75	September 15 VG-30	33995	16602	1025116.64
				VG-30	50597	SDBC	0.115	426.25	49.18	VG-30	33995	16602	816530.95
				SS-I	39181	Primer coat	0.060	17050.00	10.23	SS-I	27602	11579	118453.17
				RS-I	40883	Tack coat	0.020	17050.00	3.41	RS-I	27365	13518	46096.38
				SAIL	48525	Steel	1.05	15.05	15.80	SAIL	42475	6050	95605.13
5	Improvement such as providing 2 lane carriageway of Koraput Laxmipur Rayagada road SH-4 from 30/0 to 40/0 km under CRF (balance work)	18.8	18.8	April 2013 VG-30	44843.33	BM	0.072	5557.53	402.53	March 16 VG-30	25633	19210.33	7732770.59
				VG-30	44843.33	SDBC	0.115	1852.55	213.76	VG-30	25633	19210.33	4106318.32
				SS-I	35391.36	Primer coat	0.060	74095.35	44.46	SS-I	22016	13375.36	594631.19
				RS-I	36748.44	Tack coat	0.020	74095.35	14.82	RS-I	21553	15195.44	225182.29
				SAIL	49550	Steel	1.05	130.419	136.94	SAIL	40275	9275	127011.80
6	Improvement of Vizag Jeypore road MDR-52 from 138/75 to 149/5 km under CRF	15.54	16.11	April 2014 VG-30	44843.33	BM	0.072	3744.39	271.21	December 15 VG-30	31647	13196.33	3578926.09
				VG-30	44843.33	SDBC	0.115	1872.19	216.02	VG-30	31646	13197.33	2850912.23
				SS-I	35391.36	Primer coat	0.060	71709.35	43.03	SS-I	25705	9686.36	416761.55
				RS-I	36748.44	Tack coat	0.020	74887.85	14.98	RS-I	26476	10272.44	153856.19

Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Base year	Base year price per tonne of bitumen (in ₹)	Item of work	Bitumen quantity required for execution of one cum/sqm (in tonne)	Quantity executed in cum/SQM of bituminous works	Quantity of bitumen required (in MT)	Year of decrease in price	Rate per tonne (in ₹)	Difference per MT (in ₹)	Total differential cost to be recovered (in ₹)
				SAIL	49550	Steel	1.05	109.45	114.92	SAIL	40250	9300	1068779.25
7	Improvement to Vizag Jeypore road from 163/0 to 173/0 km under CRF	17.05	16.21	Janu-14 VG-30	40694	BM	0.072	5762.77	417.40	June 15 VG-30	38811	1883	785959.36
				VG-30	40694	SDBC	0.115	1920.91	221.64	VG-30	38811	1883	417354.58
				SS-I	38670	Primer coat	0.060	76665.00	46.00	SS-I	31766	6904	317577.10
				RS-I	40456	Tack coat	0.020	76837.00	15.37	RS-I	30591	9865	151599.40
				SAIL	48000	Steel	1.05	57.25	60.11	SAIL	44650	3350	201376.88
8	Improvement to Kunduli Kutiya road from 7/0 to 13/9 km under ACA	2.82	2.82	January 14 VG-30	46248	BM	0.072	0.00	0.00	September 2016 VG-30	27427	18821	0.00
				VG-30	46248	SDBC	0.115	645.00	74.42	VG-30	27427	18821	1400716.54
				SS-I	46248	Primer coat	0.060	35811.00	21.49	SS-I	22621	23627	507663.90
				RS-I	46248	Tack coat	0.020	25811.00	5.16	RS-I	23075	23173	119623.66
				SAIL	46248	Steel	1.05	102.96	108.11	SAIL	36250	9998	1080863.78
9	Upgradation of Thakurmunda Dasngadiha Podadiha Udala Manatri Baisinga Rupsa road (MDR) from 50/77 to 55/1 km under ACA	4.12	4.13	October 2014 VG-30	49108	BM	0.07243	1219.63	88.34	June 2016 VG-30	28400	20708	1829299.18
				VG-30	49108	SDBC	0.11538	609.82	70.36	VG-30	28400	20708	1457094.33
				SS-I	37501	Primer coat	0.06000	24392.50	1463.55	SS-I	22986	14515	212434.28
				RS-I	39287	Tack coat	0.02000	24393.50	487.87	RS-I	23608	15679	76493.14
				SAIL	49825	Steel	1.05	139.09	146.04	SAIL	40350	9475	138377.16

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Sl. No.	Name of the work	Agreement amount (₹ in crore)	Expenditure incurred (₹ in crore)	Base year	Base year price per tonne of bitumen (in ₹)	Item of work	Bitumen quantity required for execution of one cum/sqm (in tonne)	Quantity executed in cum/SQM of bituminous works	Quantity of bitumen required (in MT)	Year of decrease in price	Rate per tonne (in ₹)	Difference per MT (in ₹)	Total differential cost to be recovered (in ₹)
10	Upgradation of Dhangidisolie Duli Baghda Maroda road from 26/4 to 30/5 km under ACA	4.1	4.1	October 14 VG-30	49572.9	BM	0.07243	1127.50	81.66	December 2015 VG-30	31647	17925.9	1463915.49
				VG-30	49572.9	SDBC	0.11538	560.99	64.73	VG-30	31646	17926.9	1160401.19
				SS-I	38168.61	Primer coat	0.06000	22440.00	1346.40	SS-I	25705	12463.61	167810.05
				RS-I	39894.74	Tack coat	0.02000	22440.00	448.80	RS-I	26476	13418.74	60223.31
				SAIL	0	Steel	1.05	128.52	134.95	SAIL	40250	-40250	-543157.65
11	Construction such as widening of Thakurmunda Dongadiha Podadiha Udala Mantri Baisinga Rupsa road (MDR-70) from 37/6 to 40/6 km under ACA	2.79	2.79	April 2013 VG-30	44329.07	BM	0.07243	971.25	70.35	January 2015 VG-30	45168	-838.93	-59016.74
				VG-30	44329.07	SDBC	0.11538	485.63	56.03	VG-30	45168	-838.93	-47008.79
				SS-I	36186.56	Primer coat	0.06000	16399.90	983.99	SS-I	34501	1685.56	16585.81
				RS-I	49020	Tack coat	0.02000	19424.90	388.50	RS-I	36164	12856	49945.30
				SAIL	49020	Steel	1.05	146.04	153.34	SAIL	46950	2070	31741.79
Total		93.68	93.42										46798908.69

Appendix 3.7.1

(Refer paragraph 3.7 at page 53)

Details of undue benefit to contractors due to adaption of average lead

Sl. No	Name of the work	Est cost (₹ in crore)	Agt value (₹ in crore)	Shortest Lead (in km)	Lead taken (in km)	Excess lead (in km)	Lead cost (in ₹)	Description of item	Quantity (in Cum)	Multi plying factor	Materials (in cum)	Extra cost (in ₹)	Tender premium (in percentage)	Total excess expenditure including Tender premium (in ₹)	Payment made (₹ in crore)	Quantity executed	Quantity transported	Excess payment already made	Escalation Charges (₹ in crore)
1	Widening to two lane improvement of J.K. Pur - Muniguda-Bhawanipatna Boarder road from 0/00 to 49/5 km of SH-5 and 37/00 to 68/00 of SH-6	116.14	121.87	15	29	14	109.5	GSB	169798	1.28	217341	23798888	4.93	24972173	144.29	191045	244537.6	28096967	21.82
							109.5	WMM	142981	1.32	188735	20666474	4.93	21685331		149309	197087.9	22645072	
							109.5	BM	28556	1.41	40264	4408903.6	4.93	4626262.6		29526	41631.66	4783409	
							109.5	SDBC	14382	1.46	20997.7	2299250.3	4.93	2412603.4		15036	21952.56	2522312.9	
							109.5	CC	41422	0.9	37279.8	4082138.1	4.93	4283387.5		46496	41846.4	4808082.3	
						109.5	Stone	14245	1	14245	1559827.5	4.93	1636727		9812	9812	1127382.6		
2	Widening to two lane and improvement from 97/120 km to 134/960 km of Bhawanipatna-Gunupur-Kashipur-Rupkona Road(SH. No.44)	53.1	50.86	7	44	37	289.39	GSB	78421	1.28	100379	29048644	-4.23	27819886	61.56	81027	103714.6	28744366	10.53
							289.39	WMM	60881	1.32	80362.9	23256225	-4.23	22272487		61525	81213	22508086	
							289.39	BM	13504	1.41	19040.6	5510170.8	-4.23	5277090.6		13426	18930.66	5246609.8	
							289.39	SDBC	6752	1.46	9857.92	2852783.5	-4.23	2732110.7		6689	9765.94	2706618.6	
							289.39	CC	16411	0.9	14769.9	4274261.4	-4.23	4093460.1		18152	16336.8	4527724.6	
						289.39	Stone	5167	1	5167	1495278.1	-4.23	1432027.9		4486	4486	1243289.5		
3	Widening to two lane of Vijayawada-Ranchi Corridor from 6/700 to 34/350 km (Boudha-Kiakata-Rairakhol road), from 65/100 to 101/875 km	122.86	103.45	55	102	47	246.99	GSB	145291	1.28	185972	45933343	-15.8	38675875	106.96	133210	170508.8	35459961	7.64
							246.99	WMM	90880	1.32	119962	29629316	-15.8	24947884		85327	112631.6	23423504	
							246.99	BM	22498	1.49	33522	8279603.7	-15.8	6971426.3		21590	32169.1	6690065.5	
							246.99	SDBC	10948	1.46	15984.1	3947907.9	-15.8	3324138.5		10762	15712.52	3267663.3	

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Sl. No	Name of the work	Est cost (₹ in crore)	Agt value (₹ in crore)	Shortest Lead (in km)	Lead taken (in km)	Excess lead (in km)	Lead cost (in ₹)	Description of item	Quantity (in Cum)	Multi plying factor	Materials (in cum)	Extra cost (in ₹)	Tender premium (in percentage)	Total excess expenditure including Tender premium (in ₹)	Payment made (₹ in crore)	Quantity executed	Quantity transported	Excess payment already made	Escalation Charges (₹ in crore)
	(Naktideul to Aunli Road)						246.99	CC	29748	0.9	26773.2	6612712.7	-15.8	5567904.1		45935	41341.5	8597609	
							246.99	Stone	4724	1	4724	1166780.8	-15.8	982429.4		4548	4548	945827.46	
4	Widening and strengthening of existing single lane carriageway to two lane carriageway from 183/300 to 188/200 km of Kuchinda-Bamara road(SH-24)	10.31	9.52	33	83	50	370	GSB	12481	1.28	15975.7	5911001.6	-7.7	5455854.5	6.1	8479	10853.12	3706449	
							370	WMM	8813	1.32	11633.2	4304269.2	-7.7	3972840.5		6875	9075	3099203.3	
							370	BM	1690	1.49	2518.1	931697	-7.7	859956.33		490	730.1	249336.45	
							370	SDBC	859	1.46	1254.14	464031.8	-7.7	428301.35		0	0	0	
5	Widening and strengthening of existing single lane carriageway to two lane from 188/200 to 194/200 km of Kuchinda-Bamara road (SH-24)	14.96	13.83	42	86	44	307.6	GSB	14735	1.28	18860.8	5801582.1	-5.1	5505701.4	6.69	11162	14287.36	4170657.5	
							307.6	WMM	10816	1.32	14277.1	4391642.1	-5.1	4167668.4		4408	5818.56	1698509.8	
							360.7	BM	2075	1.49	3091.75	1115194.2	-5.1	1058319.3		480	715.2	244816.04	
							307.6	SDBC	1052	1.46	1535.92	472448.99	-5.1	448354.09		0	0	0	
							307.6	CC	6128	0.9	5515.2	1696475.5	-5.1	1609955.3		4160	3744	1092920	
							307.6	Stone	212	1	212	65211.2	-5.1	61885.429			610	610	178066.56
6	Widening and strengthening of existing single lane carriageway to two lane from 176 to 183 km of Kuchinda-Bamara	13.67	13.88	27	81	54	360.7	GSB	17902	1.28	22914.6	8265281.8	1.58	8395873.2	13.69	17408	22282.24	8164191.8	
							360.7	WMM	12606	1.32	16639.9	6002019.1	1.58	6096851		12446	16428.72	6019467.6	
							360.7	BM	2417	1.49	3601.33	1298999.7	1.58	1319523.9		2418	3602.82	1320069.9	
							360.7	SDBC	1225	1.46	1788.5	645111.95	1.58	655304.72		1268	1851.28	678307.25	

Sl. No	Name of the work	Est cost (₹ in crore)	Agt value (₹ in crore)	Shortest Lead (in km)	Lead taken (in km)	Excess lead (in km)	Lead cost (in ₹)	Description of item	Quantity (in Cum)	Multi plying factor	Materials (in cum)	Extra cost (in ₹)	Tender premium (in percentage)	Total excess expenditure including Tender premium (in ₹)	Payment made (₹ in crore)	Quantity executed	Quantity transported	Excess payment already made	Escalation Charges (₹ in crore)
	road(SH-24)						360.7	CC	4257	0.9	3831.3	1381949.9	1.58	1403784.7		5938	5344.2	1958109.9	
							360.7	Stone	255	1	255	91978.5	1.58	93431.76		481	481	176237.95	
7	Widening and strengthening of existing single lane carriageway to two lane from 171 to 174 km of Kuchinda-Bamara road (SH-24)	10.33	10.21	20	80	60	411	GSB	8180	1.28	10470.4	4303334.4	1.11	4351101.4	10.19	8859	11339.52	4712274.7	
							411	WMM	5867	1.32	7744.44	3182964.8	1.11	3218295.7		5859	7733.88	3213907.4	
							411	BM	1125	1.49	1676.25	688938.75	1.11	696585.97		1123	1673.27	695347.6	
							411	SDBC	578	1.46	843.88	346834.68	1.11	350684.54		562	820.52	340977.01	
							411	CC	4913	0.9	4421.7	1817318.7	1.11	1837490.9		5713	5141.7	2136695.6	
							411	Stone	1055	1	1055	433605	1.11	438418.02		1848	1848	767958.76	
	Total	341.37	323.62								1285494	272434399		256139386	349.48		1292607	251968056	39.99

Appendix 3.9.1

(Refer paragraph 3.9 at page 56)

Details of avoidable extra cost due to unwarranted/excess provision of Bituminous items

Sl.No	Name of the Work	Estimated cost (₹ in crore)	Agreement Value (₹ in crore)	CBR value (in percent age)	Traffic density in terms of MSA	Description of item	Thick ness required (in mm)	Thick ness provided (in mm)	Excess thickness	Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Rate per cum	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Payment made (₹ in crore)
1	Improvement to Malkangiri Mottu Road from 102/0 to 149/0 km	65.76	62.38	5	1	BM	0	50	50	17187	0	17187.00	5900	101403300	-5.14	96191170.38	59.29
						SDBC	20	25	5	8593.5	6874.8	1718.70	6940	11927778	-5.14	11314690.21	
2	Widening and Improvement to JKMM Road from 149/0 to 202/7 km	87.74	87.41	2	1	BM	0	60	60	22919	0	22919.00	6600	151265400	-0.37	150705718	100.28
						SDBC	20	30	10	11460	7640	3820.00	7200	27504000	-0.37	27402235.2	
3	Widening and Improvement to CJP Road from 0/0 to 29/5 km	33.93	37.28	3.5	1	BM	0	50	50	10532	0	10532.00	6213	65435316	9.89	71906868.75	10.12
						SDBC	20	25	5	5266	4212.8	1053.20	8090	8520388	9.89	9363054.373	
4	Improvement to Malkangiri Balimela Road from 0/0 to 29/2 km	33.4	31.27	5	1	BM	0	50	50	10353	0	10353.00	5200	53835600	-6.39	50395505.16	33.43

Sl.No	Name of the Work	Estimated cost(₹ in crore)	Agreement Value (₹ in crore)	CBR value (in percent age)	Traffic density in terms of MSA	Description of item	Thick ness required (in mm)	Thick ness provided (in mm)	Excess thickness	Quantity provided (in cum)	Quantity required (in cum)	Excess quantity (in cum)	Rate per cum	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)	Payment made (₹ in crore)
						SDBC	20	25	5	5176	4140.8	1035.20	6700	6935840	-6.39	6492639.824	
5	Improvement to Balimela Junction to Tunnel	36.59	34.72	3.5	1	BM	0	50	50	8925	0	8925.00	5900	52657500	-5.13	49956170.25	28.03
						SDBC	20	25	5	4463	3570.4	892.60	6940	6194644	-5.13	5876858.763	
6	Widening and Improvement of KP Road from 0/0 to 30/0 km	37.58	35.57	4.5	1	BM	0	50	50	10660	0	10660.00	5200	55432000	-5.34	52471931.2	42.63
						SDBC	20	25	5	5330	4264	1066.00	7000	7462000	-5.34	7063529.2	
7	Improvement to GSM road from 0/0 to 45/535 km	76.44	74.49	3.5	1	BM	0	50	50	16319	0	16319	6330	103299270	-2.55	100665138.6	14.93
						SDBC	20	25	5	8195	6556	1639.00	8791	14408449	-2.55	14041033.55	
	Total	371.44	363.12											666281485		653846543.5	288.71
						BM	96895	0	96895								
						SDBC	48484	37259	11224.7								

Appendix 3.11.1

(Refer paragraph 3.11 at page 58)

Details of undue benefit to contractors due to provision of extra lead charges from mixing plant to worksite

Sl. No	Name of the Work	Estimated cost (₹ in crore)	Agreement value (₹ in crore)	Description of item	Quantity (in cum)	Multiplication factor	Total quantity (in cum)	Lead charges (in ₹)	Lead charges including OHC, CP and 1% Cess (in ₹)	Total (in ₹)	Quantity executed (in cum)	Total quantity executed (in cum)	Excess payment already made (in ₹)	Payment made (₹ in crore)
1	Widening to two lane and improvement to Parlakhemundi-R-Udayagiri-Mohana Road (SH-34) from O/o to 102/9 km under LWE Scheme	141.2	153.91	WMM	181143	1.32	239108.76	83.2	99.8	23870231.34	181289	239301.48	23889470.6	192.79
				BM	35723	1.42	50726.66	83.2	99.8	5064043.279	35700	50694	5060782.83	
				SDBC	17862	1.46	26078.52	83.2	99.8	2603419.069	17876	26098.96	2605459.59	
2	Widening to two lane and improvement of Gunupur-Kasinagar - Parlakhemundi Road from 25/2 to 102/0 km excluding 40/2 to 48/0 km and 52/8 to 57/0 km (SH-4) under LWE Scheme	84.08	68.13	WMM	110363	1.32	145679.16	64	76.8	11187040.67	110162	145413.84	11166666.1	79.18
				BM	21742	1.42	30873.64	64	76.8	2370858.442	21637	30724.54	2359408.71	
				SDBC	10871	1.46	15871.66	64	76.8	1218821.594	10818	15794.28	1212879.4	
3	Widening of existing single intermediate lane with strengthening from 0/0 to 14/0 km of NH 20 (Erstwhile Km 202/0 to 216/0 km of NH 75/Extn)	36.71	30.39	WMM	26611	1.32	35126.52	22.4	27.4	961589.8901	26611	35126.52	961589.89	30.14
				BM	7964	1.42	11308.88	22.4	27.4	309581.0424	7964	11308.88	309581.042	
				SDBC	2664	1.46	3889.44	22.4	27.4	106473.5756	2664	3889.44	106473.576	
	Total	261.99	252.43				558663.24			47692058.9		558351.94	47672312	302.11

Appendix 3.12.1

(Refer paragraph 3.12 at page 59)

Details of avoidable cost on provision of capping layer of sand

Sl. No.	Name of the work	Estimated cost (₹ In crore)	Agreement value (₹ in crore)	Payment made (₹ in crore)	CBR (in percentage)	M S A	Required thickness (in mm)	Thickness provided (in mm)	Quantity provided (in cum)	Quantity required (in cum)	less (+)/ excess (-) quantity (in cum)	Rate (in ₹)	Less	Capping layer of sand (in mm)	Quantity (in cum)	Rate (in ₹)	Cost (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium
1	Improvement to Kodala-Chunchipada Road from 10/00 to 21/800 km.	13.66	11.61	2.71	8	2	150	150	6780	6780	0	0	0	150	12264	596.17	7311428.88	7311428.88	-14.99	6215445.69
2	Widening & Strengthening of Chhatrapur-Ganjam road (SH-26) to 2-lane from 0/00 to 7/150 km.	10.56	10.54	7.63	8	2	150	250	7591.53	4554.92	-3036.61	1497.57	-4547536	450	15584.4	329.18	5130072.79	9677608.79	-0.1	9667931.18
3	Improvement to Sumandal-Angargaon Road (ODR) from 0/00 to 10/00 km.	10.93	10.29	0	4	2	265	265	5033.73	5033.73	0	0	0	115	5597.65	670.51	3753280.30	3753280.30	-5.8	3555590.04
4	Improvement to Rambha-Khandadeuli Road from 0/00 to 11/00 km.	6.63	6.26	5.71	5	2	215	200	3980	4278.5	298.5	1684.11	502707	150	5970	617.45	3686176.50	3183469.50	-5.5	3008378.68

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Sl. No.	Name of the work	Estimated cost (₹ In crore)	Agreement value (₹ in crore)	Payment made (₹ in crore)	CBR (in percentage)	M S A	Required thickness (in mm)	Thickness provided (in mm)	Quantity provided (in cum)	Quantity required (in cum)	less (+)/ excess (-) quantity (in cum)	Rate (in ₹)	Less	Cap ping layer of sand (in mm)	Quantity (in cum)	Rate (in ₹)	Cost (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium
5	Improvement such as widening and strengthening of Khallikote-Boirani-Ballipadar-Belaguntha Road from 0/00 to 3/200 km and 4/400 to 27/00 km (SH-30).	28.34	26.41	0	8	6	160	150	8979.98	9578.65	598.67	1789.6	1071380	150	21925.03	530.74	11636490.42	10565110.42	-6.8	9846682.91
6	Improvement to Karanjia-Mahadevdeuli Road (ODR) from 0/00 to 15/180 km.	20.88	19.75	12.91	5	5	250	275	12537.52	11397.75	-1139.77	1690.33	1926587	150	13196.91	334.03	4408163.85	2481576.85	-5.4	2347571.7
7	Improvement to Amati - Jhirlapali Road from 0/00 to 7/300 km.	5.03	4.67	4.34	5	1	205	225	5046.96	4598.34	-448.62	2043.5	-916755	150	7766.44	421.7	3275107.75	4191862.75	-7.2	3890048.63
8	Improvement to Laikera-Sahaspur-Bamra Road from 0/00 to 26/500 km.	39.87	42.47	41.9	6	7	250	250	26816	26816	0	0	0.00	150	20360.7	464.47	9456934.33	9456934.33	6.5	10071635.1

Sl. No.	Name of the work	Estimated cost (₹ In crore)	Agreement value (₹ in crore)	Payment made (₹ in crore)	CBR (in percentage)	M S A	Required thickness (in mm)	Thickness provided (in mm)	Quantity provided (in cum)	Quantity required (in cum)	less (+)/ excess (-) quantity (in cum)	Rate (in ₹)	Less	Cap ping layer of sand (in mm)	Quantity (in cum)	Rate (in ₹)	Cost (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium
9	Widening & Strengthening to Borigumma -B- Singhpur-Tarabhatta Road from 14/00 to 24.00 km.	13.12	11.73	5.63	5	3	230	230	4519.62	4519.62	0	0	0.00	150	11170.14	338.1	3776624.33	3776624.33	-10.6	3376302.15
10	Widening & Strengthening to B.Singpur - Muran Dam Road from 0/00 to 13/009 km	11.48	10.03	2.69	8	2	150	150	9043.51	9043.51	0	0	0.00	150	11591.8	457.72	5305798.70	5305798.70	-12.62	4636206.9
11	Improvement to Saradeipur-Nimapara Road from 0/00 to 28/00 km.	16.77	15.65	12.46	4	2	265	275	9443.47	9100.071	-343.39890	1591.7	-546590	150	21079	352	7419808.00	7966398.00	-6.67	7435039.25
12	Improvement such as Widening and Strengthening of Moter-Jaipatna Road (MDR-99) from 5/689 to 26/00 km.	20.82	17.7	0.71	6	7	235	260	17594.9	15903.08	-1691.82	1944.15	-3289146.6	150	17153.21	596.17	10226229.21	13515375.82	-14.99	114894.21
	Total	198.09	187.11	96.69					117367.22	111604.17	5763.05							81185468.67		75520253.23

Appendix 3.14.1

(Refer paragraph 3.14 at page 62)

Details of excess provision of pavement thickness led to extra cost

Sl. No	Name of the Work	Estimated cost (₹ in crore)	Agreement Value (₹ in crore)	Payment made (₹ in crore)	CBR value (in percentage)	msa	Total thickness required as per IRC (in mm)	Thickness provided (in mm)	Description of pavement layer	Required thickness as per IRC (in mm)	Thickness provided (in mm)	Excess/ less provision (in mm)	Total cost (in ₹)	Extra cost (in ₹)	Tender premium (in percentage)	Extra cost including Tender premium (in ₹)
1	Widening of two lane of Vijayawada-Ranchi Corridor from 377/700 to 471/900 km (Berhampur-Taptapani-Rayagada road SH-17 from 67/00 to 150/100 km and Koraput-Laxmipur-Rayagada road SH-4 from 149/00 to 160/100 km in Gajapati and Rayagada district.	181.35	144.66	47.47	4	5	620	685	GSB	285	325	40	211774821	26064593.35	-20.23	20791726.12
									WMM	250	250	0	0	0	-20.23	0
									DBM	60	70	10	154104159	22014879.86	-20.23	17561269.66
									BC	25	40	15	99917472	37469052	-20.23	29889062.78
2	Widening and strengthening of Godabhaga Turum road from 0/220 to 6/050 km & 6/330 to 39/800 km under SHDP.	50.75	44.9	9.02	5	4	570	585	GSB	250	250	0	0	0	-7	0
									WMM	240	250	10	102028479	4081139.16	-7	3795459.419
									DBM/ BM	55	55	0	0	0	-7	0
									SDBC/ BC	25	30	5	61322199	10220366.5	-7	9504940.845
3	Widening and strengthening of Chipat Junction to Baripada Baghra Road (ODR) from 14/00 to 39/00 km Under ISC Scheme.	49.66	43.56	11.98	6	5	535	540	GSB	210	225	15	127390643	8492709.533	-12.29	7448955.532
									WMM	250	235	-15	108621888	-6933312	-12.29	-6081207.955
									DBM	50	50	0	0	0	-12.29	0
									BC	25	30	5	58063339	9677223.167	-12.29	8487892.439
4	Widening and strengthening of Nayagarh-Odagaon-Laukhal road (SH-21) to two lane without paved shoulder from 4/00 to 25/840 km and 26/500 to 31/00 km under SHDP.	40.69	44.4	20.3	5	3	530	535	GSB	230	230	0	0	0	9.1	0
									WMM	225	225	0	0	0	9.1	0
									DBM/ BM	50	50	0	0	0	9.1	0
									SDBC/BC	25	30	5	53064138	8844023	9.1	9648829.093
5	Improvement to Dhenkanal-Kamakhyanagar road (MDR 19) from 0/0 to 29/0 km.	25.56	21.35	0	8	8	515	615	GSB	175	250	75	68117025	20435107.5	-16.45	17073532.32
									WMM	250	265	15	27615844	1563160.981	-16.45	1306021
									DBM	60	60	0	27054520	0	-16.45	0
									BC	30	40	10	58365227	14591306.75	-16.45	12191036.79
Total		348.01	298.87	88.77										156520249.8		131617518

Appendix 3.15.1

(Refer paragraph 3.15 at page 62)

Statement showing Inspection Reports / Paragraphs issued up to 31 March 2017 but not settled by 30 June 2017

Sl. No.	Name of the Department	Reports awaiting settlement (Up to June 2017)		Reports awaiting settlements for more than 10 years		Reports to which even first reply has not been received
		Number of Reports	Number of Paragraphs	Number of Reports	Number of Paragraphs	Number of Reports
1	Agriculture	527	1,757	157	305	28
2	Co-operation	96	428	17	54	11
3	Energy	182	470	42	81	14
4	Forest & Environment	514	1,450	222	624	42
5	Fisheries and Animal Resources Development	453	1,583	148	326	90
6	Industries	16	56	1	1	1
7	MSME	122	528	24	46	30
8	Skill Development & Technical Education	145	586	46	107	28
9	Textile, Handloom & Handicraft	62	254	1	2	24
10	Tourism	22	71	3	5	3
11	Water Resources	468	1,191	236	432	29
12	Works	337	845	149	230	19
Total		2,944	9,219	1,046	2,213	319

Appendix 3.15.2

(Refer paragraph 3.15 at page 62)

Statement showing the year-wise break up of outstanding Inspection Reports / Paragraphs issued up to 31st March 2017 but not settled by June 2017

<i>Year</i>	<i>Number of Inspection Reports</i>	<i>Number of Paragraphs</i>
1984-85	1	1
1985-86	3	6
1986-87	3	3
1987-88	3	4
1988-89	2	9
1989-90	11	25
1990-91	7	8
1991-92	15	25
1992-93	27	41
1993-94	21	40
1994-95	22	50
1995-96	28	57
1996-97	42	84
1997-98	32	67
1998-99	37	88
1999-00	59	109
2000-01	72	207
2001-02	72	179
2002-03	80	173
2003-04	129	288
2004-05	135	269
2005-06	148	283
2006-07	153	332
2007-08	143	312
2008-09	153	395
2009-10	192	455
2010-11	237	696
2011-12	75	193
2012-13	216	777
2013-14	145	520
2014-15	174	739
2015-16	245	1,199
2016-17	262	1,585
Total	2,944	9,219

Appendix 3.15.3
(Refer paragraph 3.15 at page 62)

Statement showing serious irregularities noticed and reported in Inspection Reports

<i>Sl. No.</i>	<i>Name of the objection</i>	<i>Number of Paragraphs</i>	<i>Amount (₹ in Lakh)</i>
A. Non-Compliance with rules and regulations			
1	Infructuous/ Unfruitful/ Avoidable/ Extra liability/Excess expenditure	110	36,112.63
2	Inadmissible/irregular payment	13	84,859.44
3	Advance payment/less recovery of advance	27	6,744.48
Sub total (A)		150	1,27,716.55
B. Audit against propriety / expenditure without justification			
4	Excess payment to firms/contractors	16	6,930.48
5	Loss, misappropriation and shortage of stores	6	1,175.54
6	Undue financial aid to contractors/firms	40	64,087.48
Sub total (B)		62	72,193.5
C. Persistent and pervasive irregularities			
7	Idle store/surplus/unserviceable store/blockage of Government money	41	25,572.60
8	Retention of un-disbursed amount	1	400
9	Demurrage/penalty	14	2,802.37
10	Short/non realisation of Government dues	49	21,877.12
Sub total (C)		105	50,652.09
D. Failure of oversight / governance			
11	Irregular purchase/Non-accountal of stock/Non-adjustment of cost of materials	2	507.87
12	Non-recovery of dues from firms/contractors and others	10	3,348.95
13	Under utilisation of departmental machinery	3	434.08
Sub total (D)		15	4,290.9
Grand total (A+B+C+D)		332	2,54,853.04

Glossary of Abbreviations

A

ACA	Additional Central Assistance
AoR	Analysis of Rates
ATN	Action Taken Note
ATR	Action Taken Report

B

BBDT	Benkelman Beam Deflection Technique
BM	Bituminous Macadam
BS	Bituminous Surfacing

C

CBR	California Bearing Ratio
CE&BM	Chief Engineer & Basin Manager
CCA	Cultivable Command Area
CCE	Chief Construction Engineer
CE	Chief Engineer
CRF	Central Road Fund
CVC	Central Vigilance Commission
CVPD	Commercial Vehicle Per Day

D

DFO	Divisional Forest Officer
DLC	Dry Lean Concrete
DoWR	Department of Water Resources
DPI&R	Design, Planning, Investigation and Road
DPR	Detailed Project Report
DTCN	Detailed Tender Call Notice

E

EE	Executive Engineer
EIC	Engineer-in-Chief
EMD	Earnest Money Deposit

F

FRSD	Forest Resources Survey Division
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G

GB	Granular Base
GoI	Government of India
GoO	Government of Odisha
GSB	Granular Sub Base

I

ISBN	International Standard Book Number
IRC	Indian Roads Congress

L

LD	Liquidated Damage
LDPE	Low Density Polyethylene

M

MDR	Major District Road
MLD	Million Litres Daily
MoEF	Ministry of Environment and Forest
MoU	Memorandum of Understanding
MoRT&H	Ministry of Road Transport and Highways

N

NH	National Highway
NITI	National Institute for Transforming India
NPV	Net Present Value

O

OCC	Odisha Construction Corporation
ODR	Other District Road
OFDC	Odisha Forest Development Corporation
OLA	Odisha Legislative Assembly
OPWD	Odisha Public Works Department

P

PAC Public Accounts Committee
PSU Public Sector Undertaking

Q

QA Quality Assurance

R

R&B Roads and Buildings
RIDF Rural Infrastructure Development Fund
RD Road

S

SDBC Semi Dense Bituminous Concrete
SE Superintending Engineer
SH State Highway
SoR Schedule of Rates
SQMC State Quality Monitoring Cell

U

UC Utilisation Certificate

W

WMM Wet Mix Macadam

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