

Chapter 3

Compliance Audit

Chapter 3: Compliance Audit

PUBLIC WORKS (ROADS) DEPARTMENT

3.1 Wasteful expenditure

Execution of a road work with inadequate crust thickness resulted in early damage of the road rendering the expenditure of ₹ 4.54 crore wasteful.

Guidelines for the Design of Flexible Pavements (IRC 37-2001) of the Indian Roads Congress (IRC) stipulate designing of the crust thickness of a road considering Design traffic⁴⁶ and California Bearing Ratio⁴⁷ (CBR) value of the sub-grade⁴⁸. Any deviation to these guidelines may contribute to faulty designing of a road pavement and cause premature damage.

Chief Engineer, Public Works (Roads) accorded (November 2007) technical sanction of the widening and strengthening of Kotasur-Ramnagar Road⁴⁹ with a provision of 360 mm crust thickness⁵⁰. The work was awarded (November 2007) to a contractor at a cost of ₹ 4.51 crore for completion by November 2008. The work was completed in March 2010 at a cost of ₹ 4.07 crore (including expenditure of ₹ 3.92 crore on bituminous work).

Scrutiny of records revealed the following:

- Bituminous work of the entire stretch of the road was damaged soon after (June 2010) completion of the work.
- It was reported (June 2010) by the Assistant Engineer that damage was due to failure of sub-grade since crust thickness provided in the project (360 mm) was inadequate and it was required to be 625 mm based on the CBR and traffic census.
- Executive Engineer proposed re-construction of the road after proper investigation of the sub-grade soil with the help of expert group.
- The Department took three years to assign the study to the Expert Group *i.e.* Road and Building Research Institute (RBRI), Public Works (Roads). RBRI investigated the condition of the road and recommended (July 2014) its reconstruction with 680 mm crust thickness based on CBR value of 3.67 *per cent* and *msa* value of 7.72.

Audit observed that though the Project Report of the work taken up in November 2007 envisaged 485 mm of crust thickness, the work was awarded with provision of 360 mm crust thickness in violation of the IRC guidelines.

⁴⁶ Cumulative traffic during the design life of the road in terms of million standard axle (*msa*).

⁴⁷ The California bearing ratio is a penetration test for evaluation of the mechanical strength of road sub-grades and base courses.

⁴⁸ Sub-grade is the compacted earth under the road pavement.

⁴⁹ Stretch of the road from 0.000 kmp to 17.250 kmp.

⁵⁰ Bituminous and non-bituminous layers of road.



Dilapidated condition of the Kotasur-Ramnagar Road

The division had to incur ₹ 62.11 lakh on repairs of road between 2010-11 and 2012-13, but the road could not be made trafficable and public transport had to be stopped.

Thus, due to consideration of inadequate crust thickness, the road became dilapidated soon after completion of the work, rendering expenditure of ₹ 4.54 crore⁵¹ on bituminous works and maintenance of the road wasteful, besides affecting traffic movement on the road.

The Department accepted (December 2014) that the specification adopted in the road work was too meagre to withstand the traffic load.

PUBLIC WORKS (ROADS) DEPARTMENT AND SUNDARBAN AFFAIRS DEPARTMENT

3.2 Unfruitful expenditure

Failure of the departments to arrange land for approaches led to unfruitful expenditure of ₹ 12.37 crore incurred on incomplete bridges.

As per PWD code (Rule 258) except in case of emergent work such as repair of breaches, etc., no work should be started on land which has not been duly made over by the responsible civil officers. Proper planning of bridge work requires synchronization of construction of bridge and approach roads. Scrutiny of records of three test checked divisions under Sundarban Affairs Department (SAD) and Public Works (Roads) Department (PWRD) revealed that although bridge works along with approach roads commenced (between September 2004 and September 2009), these could not be completed (August 2014) partly due to delay in initiating land acquisition proposals as detailed in following paragraphs:

⁵¹ ₹ 3.92 crore on bituminous item and ₹ 0.62 crore on road maintenance.

3.2.1 Bridge at Boalghata



Bridge at Boalghata without approach road

Executive Engineer (EE), Civil Engineering division – III, SAD awarded (August 2006) construction of Reinforcement Cement Concrete (RCC) bridge along with the approach road across river Bidyadhari at Boalghata in North-24 Paraganas district to a contractor at a cost of ₹ 2.48 crore for completion by July 2008. The structural portion of the bridge was completed in October 2010 at a cost of ₹ 1.99 crore and the reasons for delay were attributed to local disturbances, delayed availability of government materials etc. Approach roads on both sides of the bridge could not be taken up due to non-acquisition of required land. The contract was terminated in December 2012 as department failed to hand over required land for approach road.

Audit scrutiny revealed that although the work was sanctioned in 2003 and work order was issued in August 2006, proposal for acquisition of land for approach road was sent to Land Acquisition (LA) Collector by the EE in January 2009. Scrutiny further revealed that LA department returned (between January 2009 and January 2012) the proposals on several occasions to the EE, SAD for various wanting information and documents⁵². Notification was published in Gazette (December 2013) for acquisition of land, but the department could not obtain physical possession of the required land (April 2014). Thus, due to delay in initiating LA proposal, work of approach road of the bridge could not be taken up till date. The bridge which was completed at a cost of ₹ 1.99 crore could not be put to use even after four years of its completion.

3.2.2 Bridge at Bakshipurghat

Superintending Engineer, State Highway Circle-III awarded (September 2004) the work of construction of bridge and approach road over river Jalangi at Bakshipurghat in the district Murshidabad to a contractor at a cost of ₹ 7.80 crore for completion by March 2007. Construction of bridge was taken up (September 2004) before



Bridge at Bakshipurghat without approach road

⁵²Non-furnishing of detail mouza maps with LA Plan, information about alignment of plots to be acquired, delay in depositing fund for LA acquisition etc.

taking physical possession of the land and the bridge was completed (without approaches) in January 2010 at a cost of ₹ 4.88 crore. The land required for approach road was handed over to the department by the LA collector only in August 2010, but construction of approach roads could not be taken up as physical possession of the land was not possible due to some local hindrance. The department, however, did not overcome these problems and the contract was terminated (May 2011) as the contractor was unwilling to execute the work for constructing the approach road on the ground that eight years had elapsed since submission of tender.

Thus the Department spent ₹ 4.88 crore on a bridge that could not be utilised for the last four years for want of approach roads.

3.2.3. Bridge at Radhanagar

The work of construction of bridge with approach road over river Jalangi at Radhanagar Ghat was approved in March 2006 at a cost of ₹ 11.43 crore. However, the work commenced in September 2009, was scheduled for completion by August 2011, without possession of the land being taken for approach roads. As on March 2014, the construction work of bridge was partly



completed and ₹ 5.50 crore was paid to the contractor for the part work. Audit observed that SE, SHC-III submitted land acquisition proposal to the LA Collector required for the approach road only in October 2011, after a lapse of five years from the date of obtaining administrative approval. Further steps for acquisition of the land were pending

Incomplete bridge at Radhanagar Ghat

(February 2014).

Thus, delayed and faulty planning on the part of the Department resulted in unfruitful expenditure of ₹ 12.37 crore incurred on the above three bridges.

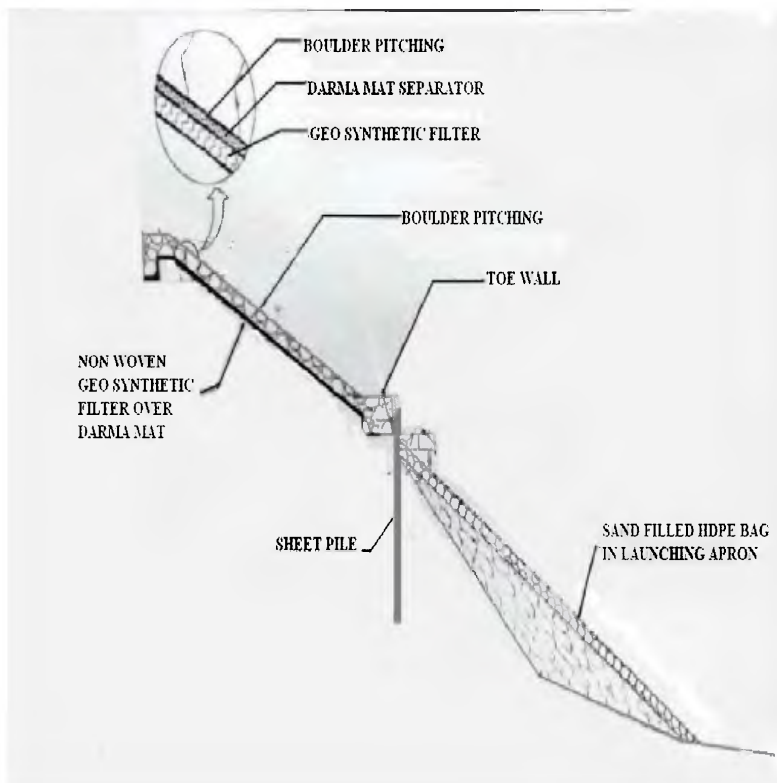
The Department stated (December 2014) that it had decided (August 2014) henceforth not to construct any bridge without acquiring land.

IRRIGATION DEPARTMENT

3.3 Wasteful expenditure

Executive Engineer did not follow the provisions of IS code in river bank protection work which resulted in pre-mature damage of the work rendering the expenditure of ₹ 4.31 crore wasteful.

Indian Standard Code 14262:1995⁵³ lays down guidelines for planning and design of river bank protection works. River banks are protected by stone pitching to make them stable and strong enough to resist erosion. To prevent sliding and failure of revetment on slope, toe of the revetment is required to be protected in form of toe wall, sheet pile or launching apron⁵⁴.



Executive Engineer, Nadia Irrigation Division awarded (October 2012) the work of protection to the eroding left bank of river Bhagirathi at Uday-Chandrapur (3600 metre length) to three contractors at a total cost of ₹ 6.45 crore to be completed by April 2013. The work *inter alia* included pitching of boulder (0.380 metre thick) over geo synthetic filter, protection of boulder pitching by construction of toe wall by boulder sausage and dumping of nylon crates bag filled with sand in the launching apron. The work was completed in June 2013 at a cost of ₹6.46 crore.

Audit scrutiny revealed that a stretch of 750 metre of the protective work was washed out completely between August and September 2013. The concerned EE reported (September 2013) that the failure was due to movement of launching apron material below toe-wall. Director, Central Design Office (CDO), Irrigation and Waterways Department carried out inspection

⁵³ For Planning and Design of Revetment.

⁵⁴ Layers of stones along the slope of the scour (the removal of material from the bed of a channel by flowing water) to provide a strong layers to prevent further scooping out of the river bed material.

⁵⁵ Galvanized wire net caging filled with boulders with adequate weight and size.

(November 2013) of the entire stretch to find out the cause for damage and suggested some remedial measures to avoid further damages. The division, however, did not take any remedial measure. Site inspection (February 2014) by Superintending Engineer, North Irrigation Circle-II revealed that erosive action of the river was continuing and two third of the protection work had already been severely damaged.

Scrutiny of records revealed following deficiencies which resulted in premature damage of the protection work:

- Audit observed that as per IS Code⁵⁶ when firm strata is not available at a reasonable depth below the river bed, toe protection in form of sheet piles⁵⁷ is recommended. The division, however, constructed toe wall with boulder sausage without adequate support. CDO observed that failure of slope pitching was triggered due to settlement of toe boulders as toe wall did not get adequate support from the apron and was supported on an elevated and unstable sloped surface.
- Launching apron is projected from toe wall into the river, so as to prevent scour⁵⁸ at toe and consequent fall of slope pitching. As per the code, stones in the apron should be designed to launch along the slope of the scour and provide a strong layer that may prevent further scooping out of the river bed materials. Audit observed that launched apron with nylon crated sand bags of length 16.97 m was considered in the estimate against the required length of 28.13 m (considering actual scour depth observed). Thus, the whole of the scoured face was not adequately protected and left open to erosion which could not prevent further scouring and resulted in slippage of toe wall. CDO in its reports also observed that thickness of apron was extremely minimal at the junction of toe wall and suggested that thickness of apron should be sufficient and as per the IS code.
- Audit also observed that as per the IS Code⁵⁹, a graded filter (like gravel/metal/crust rock/sand) of 150 to 300 mm thickness should be provided below the revetment to prevent failure by sucking action of high velocity flow⁶⁰. But in the present work, filter material laid beneath the boulders was woven type geo-synthetic membrane⁶¹ and “darma-mat”⁶² was used as separator between filter and boulder. CDO also observed that close proximity of filter material and boulder pitching had not been achieved due to presence of ‘darma mat’ which was stiff and of non-flexible material.

⁵⁶ Para 5.3 of IS code 14262: 1995.

⁵⁷ Sheet piles are made up of reinforced cement concrete or steel or bamboos.

⁵⁸ The removal of materials from the bed of a river by flowing water.

⁵⁹ Para 3.7 IS 14262: 1995.

⁶⁰ An increase in the speed of the fluid occurs simultaneously with a decrease in pressure. This differential pressure will result in sucking action.

⁶¹ A geo-synthetic membrane which is used to allow smooth percolation of water from the river side to the country side and vice versa without allowing any loss of soil from the banks, thus preventing erosion.

⁶² It is laid between geo-textile filter and boulder pitching to prevent mechanical rupture of geo-fabric filter.

Thus, non-observance of IS code in river bank protection work resulted in damage to the work done rendering the expenditure of ₹ 4.31⁶³ crore wasteful. Further, as erosion of the river still persists, delay in initiating palliative action may aggravate damages and entire stretch of the river remain vulnerable to erosion.

The Department stated (June 2014) that the affected zone of work is at the extreme bend curvature of the meandering river and naturally susceptible to scour and the damages are due to factors beyond human control. But IS code 8408:1994 prescribes construction of Groynes/Spurs⁶⁴ for training the river and to keep the flow away from bank. Further, the concerned Executive Engineer also proposed construction of spur for the restoration work. Besides, the bend curvature of the river ought to have been taken into consideration at the designing stage itself.

**AGRICULTURE MARKETING, ANIMAL RESOURCES
DEVELOPMENT, MICRO AND SMALL SCALE ENTERPRISES AND
TEXTILES, POWER AND NON-CONVENTIONAL ENERGY
SOURCES, PUBLIC ENTERPRISES, PUBLIC WORKS, SCIENCE
AND TECHNOLOGY AND TRANSPORT DEPARTMENTS**

3.4 Loss of revenue due to poor cash management

Eight Autonomous Bodies and Public Enterprises Department had lost opportunities to earn additional interest of ₹ 24.23 crore between 2005-06 and 2013-14 due to poor fund management.

Introduction

One of the objectives of audit of cash management is to see that surplus funds are optimally utilised for generation of revenue. Audit of 10 Autonomous Bodies⁶⁵ (ABs) and Public Enterprises Department (PED) revealed the following:

Opportunity to earn additional interest not availed

“Auto Sweep” facility is offered by all the leading banks which give the twin advantage of both the Savings Bank (SB) account and Fixed Deposit (FD) account. Any amount lying unspent in the SB account above a pre-defined threshold limit is automatically transferred to the FD account, helping to earn higher interest compared to the interest earned from the SB account. In case the balance left in the SB account is not sufficient to meet the liability, the latest amount swept would be prematurely closed and transferred to the SB account to meet the requirement.

⁶³ 2/3 of ₹ 6.46 crore.

⁶⁴ Is constructed at right angles to the riverbank and projected into the river for attracting or deflecting the flow of the river towards or away from the riverbank.

⁶⁵ West Bengal State Export Promotion Society, West Bengal State Marketing Board, West Bengal Biodiversity Board, West Bengal Pollution Control Board, Hooghly River Bridge Commissioners, West Bengal Renewal Energy Development Agency, West Bengal Khadi and Village Industries Board, Commissioners of Rabindra Setu, Paschim Banga Go-sampad Bikash Sanstha and West Bengal State Council of Science and Technology.

Audit scrutiny revealed that eight⁶⁶ out of 10 test checked ABs did not avail auto sweep facility and thereby could not earn higher interest on the available funds. Scrutiny of bank accounts maintained by the eight ABs during the period 2005-06 to 2013-14 revealed that a substantial amount was kept idle in SB/Current accounts. Audit calculated loss of interest of ₹ 19.32 crore in respect of 16 bank accounts operated by the ABs assuming minimum rate of interest of six per cent in sweep facility. Audit calculated loss of interest at the rate of two per cent⁶⁷ in case of savings account and six per cent⁶⁸ in case of current account on the minimum balance left in the bank accounts.

At the instance of audit four ABs⁶⁹ had since converted the bank accounts into sweep accounts. Remaining four ABs have not responded (February 2015) inspite of two reminders in September and October 2014.

Loss of interest earning

Public Enterprises Department (PED) is the nodal department for managing State Public Sector Enterprises (PSEs). PED in September 2003 opened a SB account with a nationalised bank to manage the grant received from the Department for International Development (DFID) United Kingdom, State Government's contribution, receipts against disinvestment of shares, sales of assets of closed enterprises and interests etc.

With a view to earn better return on the substantial amounts lying in the SB account, PED invested (17 January 2008) ₹ 58 crore in term deposit scheme of a nationalised bank from the available balance of ₹ 64.007 crore (as on 16 January 2008). The sum was repeatedly invested (term deposit) in the same bank and a sum of ₹ 101.78 crore matured on 9 February 2011. The Secretary, PED directed (February 2011) re-investing the amount again in term deposit scheme. Scrutiny, however revealed that the matured amount was transferred (23 March 2011) to the saving account and kept idle without re-investing in the term deposit. Finally, the department, after more than two years, invested (5 April 2013) ₹ 110 crore in the term deposits⁷⁰ for the period of one year from its available balance of ₹ 113.29 crore in the SB accounts.

⁶⁶ *West Bengal State Export Promotion Society, West Bengal State Marketing Board, Hooghly River Bridge Commissioners, West Bengal Renewal Energy Development Agency, West Bengal Khadi and Village Industries Board, Commissioners of Rabindra Setu, Paschim Banga Go-Sampad Bikash Sanstha, West Bengal State Council of Science and Technology.*

⁶⁷ *Difference of rate of interest offered in sweep account (six per cent) and savings (four per cent) is two percent.*

⁶⁸ *Difference of rate of interest offered in sweep account (six per cent) and current (zero) is six per cent.*

⁶⁹ *West Bengal State Export Promotion Society, Hooghly River Bridge Commissioners, West Bengal Renewal Energy Development Agency, West Bengal State Council of Science and Technology*

⁷⁰ *Five deposits in multiple of ₹ 20 crore at the rate of 9 per cent and two deposits in multiple of ₹ 5 crore at the rate of 7.60 per cent.*

Thus, due to delay in investing the surplus fund in term deposit, huge amount was kept in the SB account for two years, thereby, PED lost the opportunity to generate revenue of ₹ 4.92 crore⁷¹ as interest on the available fund lying in its bank account.

The matter was reported to the Department in August 2013 followed by two reminders in September and October 2014, reply was yet to be received (February 2015).

TRANSPORT DEPARTMENT

3.5 Avoidable expenditure

HRBC failed to collect service tax from the recipients of their services and had to incur avoidable expenditure of ₹ 1.26 crore along with a liability of ₹ 4.50 crore.

As per Finance Act 1994 (Section 68 of Chapter V), every person/organisation providing taxable service to any person/organisation shall pay ST at prescribed rate in such a manner and within such period as may be prescribed. The Act (Section 69 and 70) stipulates that every person liable to pay ST shall make an application for registration.

Hooghly River Bridge Commissioners (HRBC), a statutory organisation established in 1969 for construction of Vidyasagar Setu, was engaged in different infrastructural development works during the last three decades or so. HRBC also provides taxable service under ST like 'Technical Testing and Analysis service'⁷², 'Sale of space or time for advertisement service'⁷³, 'Renting of Immovable Property service'⁷⁴ and 'Construction and Renovation of Commercial/ Industrial Building' through different clients (*i.e.* recipients of the service). These services were included in the list of taxable services

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| Period | Principal amount | Prevailing interest rate term deposit | Interest on savings account | Difference of rate of interest | Loss of interest |
|---------------------------------|------------------|---------------------------------------|-----------------------------|--------------------------------|------------------|
| 1 st Qtr of 2011-12 | 800000000 | 5.75 | 4 | 1.75 | 3500000 |
| 2 nd Qtr of 2011-12 | 803500000 | 7.00 | 4 | 3.00 | 6026250 |
| 3 rd Qtr of 2011-12 | 809526250 | 7.00 | 4 | 3.00 | 6071447 |
| 4 th Qtr of 2011-12 | 815597697 | 7.00 | 4 | 3.00 | 6116983 |
| 1 st Qtr of 2012-13 | 821714680 | 7.30 | 4 | 3.30 | 6779146 |
| 2 nd Qtr of 2012-13 | 828493826 | 7.30 | 4 | 3.30 | 6835074 |
| 3 rd Qtr of 2012-13 | 835328900 | 7.30 | 4 | 3.30 | 6891463 |
| 4 th Qtr. Of 2012-13 | 842220363 | 7.30 | 4 | 3.30 | 6948318 |
| Total | | | | | 49168681 |

⁷² Testing of concrete cube, testing of coarse aggregate and fine aggregates, testing of reinforcing bars, testing of bricks, testing of Ph value of water, testing of strength of soil, non-destructive testing of civil engineering materials etc. on the samples supplied by various agencies.

⁷³ Providing advertising rights to different advertising agencies for display of hoardings and kiosks at various bridges and fly-over under its jurisdiction.

⁷⁴ Renting of its immovable properties, namely spaces on the fourth and the fifth floor of its office buildings and nine acres of vacant land under via-duct of Vidyasagar Setu (Howrah side) to Kolkata Metro Rail Corporation Limited (KMRCL) and right to use Vidyasagar Setu to various parties for shooting film.

between July 2003 and June 2007. However, since April 2012, services rendered by government or a local authority had been excluded from the list of taxable services.

Scrutiny revealed that HRBC had received ₹ 28.64 crore during October 2006 to September 2011 from different clients for rendering the above services, but did not collect any ST from clients and also did not register with ST Authority. In response to an investigation made (August 2011) by Director General of Central Excise Intelligence (DGCEI), HRBC registered (January 2012) with the ST Authority and deposited ₹ 1.26 crore in March 2012 as self-assessment ST. On the basis of the investigation ST Authority ordered (August 2013) HRBC to pay ST of ₹ 1.92 crore for the period between October 2006 and September 2011 along with interest of ₹ 1.92 crore for delayed payment of ST and penalty of ₹ 1.92 crore for suppressing value of taxable service.

Audit observed that HRBC during the period between October 2006 and September 2011 did not incorporate any enabling provision in the contracts for collecting ST amounts from the service providers. As a result, management could not recover the ST from the clients.

The Department accepted the audit observation and stated (October 2014) that currency of the contracts had ended when the claim of tax was raised and as a result the same could not be realised from the agencies.

Thus, due to non-inclusion of enabling provision for recovery of ST from the service recipients, HRBC had to incur avoidable expenditure of ₹ 1.26 crore and shouldered a liability of ₹ 4.5 crore⁷⁵ which was also avoidable.

FOREST DEPARTMENT

3.6 Loss of revenue

Failure of the Forest department to introduce levy of transit pass fee on collection of boulders and river bed materials resulted in loss of revenue of ₹ 1.75 crore, thereby, undermining the objective of welfare of the forest dwellers residing in National Parks/Wildlife Sanctuaries.

Rule 5 of West Bengal Forest Produce Transit Rules, 1959 (WBTR-1959) stipulated that fees for transit passes in respect of different items of forest produce moved from the forest areas of West Bengal may be levied in accordance with rates as may be prescribed by the Conservator of Forests from time to time.

Audit scrutiny revealed that although, there was a system of collection of royalty on boulders/river bed materials and entry fee on trucks carrying those materials, no transit pass fee was collected on boulders extracted from the rivers falling under the jurisdiction of five wildlife divisions⁷⁶ violating the

⁷⁵ ₹ 5.76 crore - ₹ 1.26 crore i.e. total claim of service tax authority including interest and penalty amount already deposited as self-assessment.

⁷⁶ Buxa Tiger Reserve (East), Buxa Tiger Reserve (West), Wildlife Division-I, II and III.

provisions of WBTR-1959. Scrutiny of records of five divisions revealed that 18.08 lakh cum of boulders and river bed materials were extracted from National Parks and Wildlife Sanctuaries during the period between 2006-07 and 2013-14. However, after audit observation (July 2013) Field Director/Buxa Tiger Reserve introduced (August 2013) a system of collection of transit pass fee from areas under Buxa Tiger Reserve (East) and Buxa Tiger Reserve (West) divisions for transit of boulders/river bed materials at the rate of ₹ 50.00 per truck load. The rate was later (October 2013) revised to ₹ 10.00 per cum by FD/BTR. No such order was issued for other three wildlife divisions till date (July 2014). The three divisions replied (April to May 2014) that fees were not levied in absence of any order fixing the rates from the concerned Conservator of the Forest.

Further one of the conditions for lifting boulders/ sand from riverbeds as per Hon'ble Supreme Court's order was that they would be treated as forest produce and their transit would be governed by the WBTR-1959 and that the entire proceeds received were to be used exclusively for the welfare of the forest dwellers residing inside the National Parks/Wildlife Sanctuaries.

Thus, non-imposition of transit pass fee on boulders/river bed materials by treating it as forest produce resulted in loss of revenue of ₹ 1.75 crore⁷⁷. Further, the objective of welfare of the forest dwellers residing in the National Parks/Wildlife Sanctuaries through different development activities from the revenue so generated was also compromised.

The department stated (November 2014) that as per audit observation, transit pass fee was introduced (September 2014) in three other wildlife divisions also.

IRRIGATION AND WATERWAYS DEPARTMENT

3.7 Implementation of Teesta Barrage Project

3.7.1 Introduction

Teesta Barrage Project (TBP) a major multipurpose project on the river Teesta in Jalpaiguri district was taken up by Irrigation and Waterways Department (I&WD) in the year 1975 with the objective of irrigating 9.22 lakh ha Culturable Command Area⁷⁸ (CCA) in six⁷⁹ districts of North Bengal and generation of hydropower of 1000 MW, besides flood moderation and navigation in three phases in different stages and sub-stages as shown in the table no. 3.7.1.

⁷⁷ 1807743 cum X ₹ 10 - ₹ 528150 (₹ 497720 and ₹ 30430 collected by BTR/East and BTR/West respectively from August 2013 till March 2014).

⁷⁸ The area which can be irrigated by a scheme and is fit for cultivation.

⁷⁹ Coochbehar, Darjeeling, Jalpaiguri, Malda, North Dinajpur and South Dinajpur.

Table 3.7.1: Status of Teesta Barrage Project

| | | Target | | Present Status |
|-----------|--|------------------------------------|---------------------------------------|----------------------|
| Phase-I | Irrigation of 9.22 lakh ha area | Stage-I-CCA of 5.46 lakh ha area | Sub-Stage-I-CCA of 3.42 lakh ha area | Under implementation |
| | | | Sub-Stage-II CCA of 2.04 lakh ha area | Not yet commenced |
| | | Stage-II-CCA of 2.23 lakh ha area | | |
| | | Stage-III-CCA of 1.53 lakh ha area | | |
| Phase-II | Hydroelectricity generation and flood moderation | | | Abandoned |
| Phase-III | Navigation | | | |

In 2009 it was declared a 'National Project' by the Government of India with completion date March 2015, on the request of the State Government, attracting funding from GoI at 90 per cent compared to 25 per cent that prevailed earlier. The cost estimate had been revised to ₹ 2988.61 crore in 2008 before declaring it a National Project and was again revised to ₹ 8427.12 crore in March 2013. The project completion date was finally rescheduled to March 2017. Till March 2014, total spending on the project was ₹ 1532.63 crore. Audit observed that after 2009-10 fund flow was steady, however, there were savings of ₹ 1494.86 crore over the period from 2009-10 to 2013-14 under Capital Head.

Audit examined implementation of the project during the last five years (2009-10 to 2013-14).

3.7.2 Organisational Structure

TBP is under the jurisdiction of the Irrigation and Waterways Department (I&WD), Government of West Bengal (GoWB) headed by Additional Chief Secretary. The Project is headed by one Chief Engineer (CE) assisted by seven Superintending Engineers (SEs) in charge of seven circles⁸⁰ and 22 Executive Engineers (EEs) in charge of each of its 22 divisions. Of the 22 divisions, 10 divisions⁸¹ are engaged in the execution of the TBP and the remaining 12 divisions⁸² are concerned with providing support to the executing divisions by way of surveying, designing, monitoring etc.

⁸⁰ Mahananda Barrage Circle (MBC), Teesta Barrage Circle (TBC), Teesta Canal Circle (TCC), North Bengal Mechanical and Electrical Circle (NBMEC), Resource Circle, Teesta Design Circle (TDC) and Teesta Dam Canal Project Investigation Circle.

⁸¹ Mahananda Barrage Division (MBD), Mahananda Canal Division (MCD), Teesta Canal Division-I (TCD-I), TCD-II, TCD-III, Teesta Barrage Division (TBD), Teesta Left Bank Division (TLBD), Teesta Irrigation Division (TID), Mahananda Link Canal Division (MLCD) and Teesta Canal Headquarter Division (TCHQD).

⁸² Teesta Mechanical Division (TMD), Teesta Barrage Electrical Division (TBED), Teesta Resource Division-I (TRD-I), Teesta Resource Division-II (TRD-II), Teesta Design Division-I (TDD-I), TDD-II, TDD-III, Teesta Design and Planning Division (TDPD), Teesta Canal Investigation Division (TCID), Teesta Dam Investigation & Design Division (TDIDD), Teesta quality Control Division (TQCD) and Teesta Monitoring and Evaluation Division (TMED).

3.7.3 Scope and Methodology of Audit

The audit was conducted during March to June 2014 which covered the activities under the project for the period from 2009 to 2014 in respect of 22 offices of EEs, seven offices of the SEs, offices of the CE (TBP) and CE (South and Budget). Besides, information on TBP was also collected from offices of the Teesta Basin Organisation (TBO), Central Water Commission (CWC) and Additional Director of Agriculture, North Bengal Range, Department of Agriculture. An Entry conference was held in April 2014 with Additional Chief Secretary of I&WD wherein audit objectives, scope, criteria and methodology of audit were explained. Audit findings were discussed with the Secretary of the Department in December 2014 and Departmental responses have been incorporated in this report.

3.7.4 Audit Objectives

The objectives of audit were to examine and assess whether the Sub-Stage-I to irrigate 3.42 lakh ha CCA was achieved. The examination covered whether;

- project was implemented economically and efficiently;
- objectives of the project were achieved and
- monitoring and evaluation of the project was adequate and effective.

3.7.5 Audit Criteria

The main sources of audit criteria were:

- Project Report of TBP
- Accelerated Irrigation Benefit Programme (AIBP) guidelines
- Guidelines for implementation of National Projects
- Circular and instructions issued by CWC and I& WD
- Land Acquisition Act 1894

Audit findings

3.7.6 Implementation of Project

Poor progress

Sub Stage-I envisaged construction of three barrages (Teesta at Gazoldoba, Mahananda at Fulbari and Dauk at Chopra), five main canals⁸³ (210.88 km), 53 distributaries, 106 cross drainage structures, 33 regulators and fall structures (including three power falls), 230 bridges on canals, 2281.48 km branch canal to ensure irrigation in 3.42 lakh ha of CCA and create irrigation

⁸³ Teesta Mahananda Link Canal (TMLC), Mahananda Main Canal (MMC), Dauk Nagar Main Canal (DNMC), Nagar Tangon Main Canal (NTMC) and Teesta Jaldhaka Main Canal (TJMC).

potential ⁸⁴ (IP) for 5.27 lakh ha. It was originally (1973) scheduled for completion by 1990. The Head Works including Teesta Barrage (Main), Mahananda Barrage (Pick-up), Dauk Barrage (Pick-up), and the Right Bank Main Canal, *i.e.* Teesta Mahananda Link Canal (TMLC) and Mahananda Main Canal (MMC) were completed before 2009. The progress of construction work from 2009-10 (when the Project was declared a National Project) till March 2014 is shown in table 3.7.2.

Table 3.7.2: Progress of construction of Teesta Barrage Project from 2009-10 onwards

| Component | Length in km | Progress as of March 2009 in km (in per cent) | Progress as of March 2014 in km (in per cent) | Progress since 2009 (in km) |
|--|----------------|---|---|-----------------------------|
| Main Canals | | | | |
| Dauk Nagar Main Canal (DNMC) | 80.20 | 47.93(60) | 64.96(81) | 17.03 |
| Nagar Tangon Main Canal (NTMC) ⁸⁵ | 42.40 | 0(0) | 0(0) | Nil |
| Teesta Jaldhaka Main Canal (TJMC) | 30.312 | 28.19(93) | 30.31(100) | 2.12 |
| Branch Canals | | | | |
| TMLC | 332.27 | 191.10(58) | 312.33(94) | 121.23 |
| MMC | 303.29 | 124.17(41) | 221.40(73) | 97.23 |
| DNMC | 768.93 | 155.68(20) | 384.47(50) | 228.79 |
| NTMC | 385.56 | 0(0) | 0(0) | Nil |
| TJMC | 491.43 | 13.69(3) | 172.00(35) | 158.31 |
| Total Length | 2281.48 | 484.64 (21.24) | 1090.20 (47.78) | 605.56 |

(Source: Monitoring reports of CWC & Monitoring Division reply)

TBP authorities had worked out (in the revised cost estimate of 2013) total cost overrun of ₹ 5438.51 crore compared to the 2008 estimates of which ₹ 3819.65 crore (70 per cent) increase was attributed to price rise, ₹ 1484.08 crore (27 per cent) to inadequate provision, ₹ 106.76 crore (two per cent) to inadequate investigation and ₹ 28.03 crore (one per cent) to other miscellaneous reasons.

Reasons for slow progress of the work have been discussed in the following paragraphs:

3.7.6.1 Delay in acquisition of land

Land acquisition had been a major impediment for the progress of the TBP. Land acquisition for TBP was done by Land and Land Reforms Department (L & LR) on demand from the TBP Authorities under Land Acquisition Act-I of 1894. Total requirement of land for TBP (Sub-Stage-I) was estimated at 8375.12 ha (1973). After declaring TBP as National Project in 2009 only 23.94 ha land was acquired by the project. Till March 2014, only 5092.07 ha

⁸⁴ The total gross area proposed to be irrigated under different crops during a year by a scheme. The area proposed to be irrigated under more than one crop during the same year is counted as many times as the number of crops grown and irrigated. In TBP it was considered to be 1.54 times of CCA.

⁸⁵ This has not been featured as prioritised components for completion by March 2015.

of land was acquired. Proposal for acquiring 1199.58 ha of land was yet to be approved since September 2012. Proposal for acquiring 22.25 ha of land was pending with L & LR department as discussed below. I&WD did not initiate any action for acquiring the remaining 2061.73 ha of land required for completion of the project.

Audit has noticed the following lapses on the part of TBP authority / I & WD / L & LRD in the process of land acquisition:

- Three committees⁸⁶ formed to resolve the problems of land acquisition did not meet during the period 2009-14.
- As per section 11A of Land Acquisition Act 1894 the collector shall make an award within a period of two years from the date of publication of the declaration and if no award is made within that period, the entire proceeding for the acquisition of the land shall lapse. Audit observed that in six test checked divisions⁸⁷ out of ten divisions, 36 proposals for acquiring 183.99 ha of land were sent to L & LR department during the period from 1996-97 to 2009-10. The proposals lapsed due to non-provision of funds by I&WD and delay in publication of gazette notification by L&LR department. Only two divisions initiated fresh proposals for four cases (2.75 ha). As a result, construction of five distributaries, 19 minors and one sub-minors could not be completed till March 2014.

3.7.6.2 Contract Management

Audit observed that in four test checked divisions⁸⁸ number of works commenced during 2007-08 and 2012-13 suffered from poor progress and unjustified time extension as discussed below:

- After finalisation of tenders, work orders were to be issued immediately for timely completion of work. Audit noticed that 24 works having total contract value of ₹ 56.16 crore were delayed for periods ranging between eight months and 49 months due to delay in issue of work orders for no reasons on record.
- The contractors were required to commence work immediately after receipt of work orders and the department was required to take timely action like, imposing compensation for delay under clause 2, forfeiture of security deposit and recession of contracts under clause 3, or granting extension of time on reasonable ground if applied by the contractors under clause 5, if there was any delay in commencement on the part of the contractors. Audit observed that in 10 contracts with total contract value of ₹ 3.37 crore, works were commenced late by the contractors. The delays ranged between two months and 49 months. Department took no action against the erring contractors under clause 2, 3 and 5 of the standard form

⁸⁶ a) Local level coordination Committee headed by Commissioner (Jalpaiguri) to solve local issues related to acquisition of land, b) State Level Coordination Committee headed by the Minister (I&WD) to deal with problems beyond scope of local level Committee, c) High Power Steering Committee headed by the Chief Minister.

⁸⁷ TCHQ, TLB, MB, TCD-I and II, MCD.

⁸⁸ TCD-I, II, III and TCHQ.

of contract agreements and also did not provide any specific reply to audit observation.

- As per clause 5 of standard forms⁸⁹ of contract and Schedule of Rates, the contractors were entitled for extension of time for completion of work only in those cases where works were delayed due to non-receipt of departmental materials, land acquisition and public interference. Audit observed that time extensions were granted in three works having total contract value of ₹ 7.65 crore without any specific justifications/reasons on record. Besides, time extensions were granted in 10 works having contract value of ₹ 10.91 crore for periods ranging from 21 months to 67 months on the ground of problem of labours engaged by contractors. These extensions of time were granted contrary to the terms and conditions of the contract.

3.7.6.3 Operational deficiencies

The infrastructure created in the project could not be fully made use of for supply of water for irrigation purpose. In this respect, Audit observed the following:

Non-improvement of discharge capacity of canals due to partial and incomplete de-siltation work

Superintending Engineer, Teesta Barrage Circle (the circle which is responsible for overlooking the functioning of the TMLC) stated (February 2010) that the design discharge of the TMLC was 438 cumec which was reduced to only 150 cumec due to silt formation. To enhance the discharge capacity to 222 cumec, an attempt was made (November 2010) to de-silt it from 0 km to 5.235 km out of total length of 25.75 km at a cost of ₹ 2.41 crore. Audit observed that after desiltation of this patch, discharge had not improved beyond 153 cumec. The TBP Authority had decided (February 2014) to de-silt the entire canal again to increase the discharge capacity to 220 cumec at a cost of ₹ 32.21 crore. Thus, partial desiltation of the canal carried out at cost of ₹ 2.41 crore was not effective. Management agreed that there was partial desilting and stated that it was useful for preventing spilling over the adjoining areas. The reply does not address the audit observation that the effective carrying capacity of the canal remained much reduced and there was no improvement in discharge capacity of the canal after the desilting works were undertaken.

Threat to Teesta barrage pond and TMLC

DPR of TBP did not keep provision for supply of water to Siliguri Municipal Corporation (SMC) having population of 5.10 lakh as per 2011 census. However, TBP authority decided (2009) to supply 4.98 million cumec of water to the SMC annually in the revised estimate of 2008. SMC draws water from Mahananda Barrage pond which in turn receives water from Teesta Barrage through TMLC.

TMLC was constructed during 1980's and requires regular repair and maintenance. But repair and maintenance of the canals requires stoppage of

⁸⁹West Bengal Form No. 2911(i) issued by I&WD.

water. However, water through TMLC could not be stopped due to requirement of water by SMC. As a result, repair and maintenance of the canal could not be taken up since 2009. Chief Engineer, TBP stated (December 2013) that pond water level of Teesta Barrage should be maintained at 114.30 m as per recommendation of High Power Technical Committee. But, in order to facilitate pumping of water for SMC, pond water level at Teesta Barrage was kept at 115.10 m thereby endangering the Teesta Barrage gates by overtopping and is also a violation of the recommendation of the Committee.

Department accepted the audit observation.

3.7.7 Achievement of the project objectives

3.7.7.1 Utilisation of irrigation potential

Audit compared the irrigation potential (IP) created and utilised during the five years 2009-14 as show in table no. 3.7.3.

Table No 3.7.3: Year wise status of irrigation potential created and utilised (in ha)

| Year | Target | Achievement | Percentage of achievement | Irrigation Potential created | Irrigation Potential utilised | Percentage of utilisation |
|--------------|---------------|--------------|---------------------------|------------------------------|-------------------------------|---------------------------|
| 2009-10 | 10000 | 5230 | 52 | 153050 | 60060 | 39 |
| 2010-11 | 39900 | 15220 | 38 | 168270 | 60060 | 36 |
| 2011-12 | 45600 | 25220 | 55 | 193490 | 74710 | 39 |
| 2012-13 | 36798 | 1810 | 5 | 195300 | 42403 | 22 |
| 2013-14 | 8247 | 1720 | 21 | 197020 | 58965 | 30 |
| Total | 140545 | 49200 | | | | |

(Source: Departmental records)

It can be seen from the table that against the targeted IP of 5.27 lakh ha of Sub Stage-I of Phase-I, TBP Authority had created IP of only 1.97 lakh ha (37 per cent) till March 2014. Audit observed that even utilisation of such low irrigation potential created was low (ranging between 22 per cent and 39 per cent). As per CWC guidelines⁹⁰, the reason for any gap between IP created and utilised was to be identified, analysed and remedial measures recommended for bridging this gap so that the objectives of project as envisaged at project formulation stage could be achieved. Audit observed that low utilisation of irrigation potential was due to non-completion of canals, distributaries and minors, field channels, lack of water availability, change in cropping pattern etc. The factors which could have been addressed/considered by the project authorities are discussed in the following paragraphs.

3.7.7.2 Change in cropping pattern

From monitoring report of CWC (June 2009) audit observed that gradual change in land use pattern was observed in the TBP command area over the years. Number of small tea gardens are coming up or have already come up in areas in all the districts which were earlier considered as part of command area for supplying irrigation water. In reply to specific audit queries for changes in land use and cropping pattern, the District Agriculture authorities and

⁹⁰On water use efficiency of irrigation projects.

Executive Engineer, Mahananda Canal Division, I&WD also accepted (July 2014) the facts. Though, the need to assess such areas both in its present scenario and also in coming days was indicated in the CWC Monitoring Report in June 2009 the department did not so far carry out any survey on land use pattern while finalising revised estimate in 2008 and 2013. Joint physical verification by audit party with the representative of the TBP authorities and reply to audit queries revealed that seven distributaries constructed at a cost of ₹ 3.68 crore could not be put to use as the beneficiaries of the CCA had over the years switched over to tea and pineapple cultivation requiring no water from the canal.

3.7.7.3 Inadequate water for irrigation in river Teesta

As per reading of water discharge upstream of Teesta Barrage taken by Teesta Barrage Division, the availability of water in Teesta was 81 cumec during lean season of 2009-14. This was less than the requirement of 144 cumec water for irrigating CCA of 3.42 lakh ha under Sub Stage-I in Rabi season as informed to audit by the same division in reply to audit query. Chief Engineer, TBP in a report (March 2013) also stated that requirement of water in lean season (January to March) for irrigating 3.42 lakh ha would be ranging between 120 cum and 172 cum. He further stated that on completion of Sub Stage-I, there would be loss of Irrigation Potential (IP) of 1.02 lakh ha, 1.64 lakh ha and 1.39 lakh ha in the months of January, February and March respectively due to shortage of water in river Teesta.

The Department stated (December 2014) that there was no shortage of water in Rabi season if Boro⁹¹ crop was not brought under the purview of the project and further stated that the same was also not considered in the approved estimates of 2008. But TBP was conceived mainly to provide irrigation in the Rabi season *i.e.* when Boro crop is cultivated and the TBP authorities had considered the Boro crop also in the revised estimates of 2008 and 2013.

3.7.8 Monitoring and Quality control

CWC in its monitoring reports (2009) suggested restructuring of existing organisation by making one CE responsible for all constructional works and another CE for planning, co-ordination, budget/finance, quality control and monitoring and evaluation so as to ensure quality control and monitoring independent of the construction wing.

A monitoring and evaluation division for TBP is located at Siliguri. The division prepared monthly and quarterly progress reports and quarterly statement of expenditure. The quality control and monitoring had not been made independent as it was under the same CE who was also looking after the construction work.

⁹¹ *The Boro rice is commonly known as winter rice. The term Boro is Bengali originated from the Sanskrit word "Boro" which refers to a cultivation from November to May (Rabi Season) under irrigated condition.*

A high level Project Monitoring Committee was constituted in April 2011 to review and monitor the progress of the project monthly and also to expedite land acquisition. Against the requirement of holding 36 meetings (between September 2011 and April 2014), only two meetings (September 2011 and November 2011) were held by the Committee till April 2014.

As per the guidelines for implementation of National Project, State Government shall establish adequate number of quality control laboratories in the project areas to maintain quality of works, while sampling and testing of materials to be used will be carried out in accordance with relevant Bureau of Indian Standard (BIS) codes.

A quality control division and four sub-divisions thereunder function from Siliguri, North Bengal under the control of the CE, TBP. Audit observed that there was shortage of three Assistant Engineers and five sub-Assistant Engineers against the sanctioned strength of four and eight respectively.

3.7.8.1 Follow up of test results

Checking of quality of concrete works is done through the cube test by the quality control division. Sample check of 945 of test results (conducted during 2009-14) of cement concrete revealed that in 144 cases results obtained were negative implying that the concrete works did not reach the desired compressive strength. The adverse reports were communicated to the respective division by the quality control division. However, no record was available in the quality control divisions regarding the necessary follow-up action taken, if any, to rectify the defects.

3.7.8.2 Accounting of Material

Materials required for TBP were centrally procured through two resources divisions under the control of Superintending Engineer, Resources Circle. Test check revealed several cases of departure from sound material accounting principles as follows:

➤ Bin Cards and Priced Stores Ledger

Central Public Works Account Code (Rule 7.2) requires maintenance of Bin cards and priced stores ledger. The balance as per Bin cards are required to be verified periodically with those shown in priced stores ledger. Stock accounts of the divisions are to be closed annually to ascertain profit/loss on account of stores transaction.

Audit observed that the Resources Divisions maintained the Bin Cards without cross verification exposing the stores to the risk of errors and pilferage. Further, stores accounts were not closed since inception (1976-77). The project's account did not, therefore, reflect the profit/loss on account of store transactions.

➤ Verification of Godowns and Stack yards

As per Rule 137 West Bengal Financial Rules, divisional officers are required to have physical verification of stock conducted every year. TBP has 41 stack yards and godowns under its jurisdiction to store materials viz. cements, steel

and bitumen to be used in the work. Audit observed that out of 41 go-downs⁹² and stack-yards⁹³, physical verification was conducted twice in one stack yard (2009 and 2013) and once in another stack yard (2009) against requirement of annual verification in each godown /stack yard during the period from 2009-10 to 2013-14.

Instances of theft of cement, steel, pipes etc. valuing ₹ 94.62 lakh were reported in the CAG's Report⁹⁴ for the year ending 1999 from Odlabari stack yard. Shortage of 200.08 MT of Steel materials was again noticed by Audit in Fulbari and Islampur stack yard from the physical verification report (May 2012) of Executive Engineer, Teesta Resources Division-I. Electrical goods worth ₹ 0.49 lakh were pilfered (October 2012) from store room of Gazoldoba Advance Colony under Teesta Electrical Division as reported. Again, shortage of 43.929 MT of steel materials was noticed during physical verification in September 2013 which was reported to have been pilfered. Despite repeated instances of shortages and theft, there was laxity in conducting physical verification of materials in stack yards and godowns as required.

3.7.9 Conclusion

The implementation of Sub-Stage-I of TBP did not progress as expected even after declaration of the project as a National Project in 2009 despite steady flow of fund. The progress of the project was affected due to land problems and deficiencies in contract management. Huge gap between irrigation potential created and irrigation potential utilised was due to incomplete canals and change in cropping pattern etc. Project also got affected due to reduction of discharge capacity of canals because of silt formation, less availability of water in lean season, reduction of CCA due to change in cropping pattern etc. In spite of cases of theft and pilferage, physical verification of stores were not conducted as per codal provision.

⁹² *A covered area for storing materials.*

⁹³ *An open enclosure for storing materials.*

⁹⁴ *Audit Report (Civil) Vol.II, Government of West Bengal for the year ended 31 March 1999.*

PUBLIC WORKS AND PUBLIC WORKS (ROADS) DEPARTMENT

3.8 Violation of Indian Road Congress Guidelines

3.8.1 Introduction

Public Works & Public Works (Roads) Department, West Bengal is responsible for construction and maintenance of the State Highways, District and Other Roads of the State and plays a vital role in the socio-economic development of the State. The Department follows Indian Road Congress (IRC⁹⁵) guidelines⁹⁶ in designing roads which stipulate that thickness of road should be designed on the basis of CBR⁹⁷ value of the sub-grade and projected traffic volume⁹⁸ (to be determined through traffic census) during the design life of the road.

3.8.2 Scope of Audit and Audit coverage

Audit was undertaken with a view to assess whether the road works were designed as per the IRC guidelines to ensure quality and economy in execution of road works. 25 Public Works and Public Works (Roads) divisions were audited between March 2013 and June 2014 to see compliance to the IRC guidelines in designing of road pavement.

3.8.3 Audit objective

The objectives of audit were to examine whether:

- Preliminary investigations viz. traffic census and soil testing of sub-base were conducted as per IRC guidelines.
- Road pavements were designed in conformity with the IRC guidelines.

3.8.4 Audit criteria

- Guidelines for the design of flexible pavement for rural roads with low volume traffic (IRC SP: 72-2007),
- Guidelines for the designing flexible pavements (IRC 37 2001) for roads with high volume traffic.
- Sanctioned Estimates of the works.

⁹⁵The Indian Roads Congress (IRC) is the Apex Body of Highway Engineers in the country. It issues guidelines which are updated annually.

⁹⁶IRC SP: 72-2007 for the roads with traffic volume less than 10 lakh ESAL and IRC 37 2001 for the roads with traffic volume over 10 lakh ESAL.

⁹⁷California Bearing Ratio-is the parameter for evaluation of subgrade strength of soil.

⁹⁸Expressed in million standard axles (msa) and ESAL (Equivalent Standard Axle Load).

3.8.5 Audit findings

Audit observed that 12 divisions⁹⁹ under Public Works and Public Works (Roads) Department, in contravention of the IRC provision, laid unnecessary/extra layer of Bituminous Macadam (BM) while executing road works.

3.8.5.1 Laying of BM on rural roads in disregard to IRC Guidelines

For designing roads with low volume traffic *i.e.* Equivalent Standard Axle Load (ESAL) less than 10 lakh, IRC SP: 72-2007 is the only applicable guideline. The department also follows this guideline in designing roads with low volume of traffic, especially in the rural areas. The guideline clearly stipulates that for designing roads with low volume traffic no bituminous layer, which is relatively expensive, is to be used either as binder course¹⁰⁰ or as wearing course¹⁰¹. However, wearing course with one/ two coat surface dressing or 20 mm thick open-graded Premix Carpet (PC) may be judiciously used where the sub-grade is poor (CBR less than 4 *per cent*), design traffic exceeds 60000 ESAL and annual rainfall exceeds 1000 mm.

Audit observed that in eight divisions¹⁰², 15 widening and strengthening works of different rural roads with low traffic volume were done where expensive bituminous layers with provision of 50/75 mm BM as binder course in addition to the wearing course (PC) were used. The calculated ESAL of those roads was below the stipulated value of 10 lakh for laying BM.

The Department stated (December 2014) that the roads were located in high rain fall area and 50 mm BM was laid with the perception that ingress of water may damage the road surface if only wearing course was provided. They further stated that a BM layer should be laid as per IRC 37 2001 to prevent ingress of water through black top surface as in South Bengal most of the sub grade soils are clayey.

The reply was, however, not tenable as

- IRC 37 2001 is not applicable on low traffic rural roads; it is only applicable to roads having high volume traffic *i.e.* ESAL more than 10 lakh. Here the ESAL was between 1.12 lakh and 9.88 lakh, *i.e.* less than 10 lakh.

⁹⁹ Barasat Highway Division-II, Burdwan Highway Division-I, Burdwan Highway Division-III, Coochbehar Division (PWD), Darjeeling Highway Division, Malda Highway Division, Midnapore Highway Division-II, Murshidabad Highway Division-II, Nadia Highway Division-I, Nadia Highway Division-II, Tamluk Highway Division, 24 Parganas Highway Division.

¹⁰⁰ The layer below the wearing course to distribute the load to the base courses underneath.

¹⁰¹ The top layer of the road surface and as such is designed to be impervious to the ingress of water.

¹⁰² Burdwan Highway Division-I, Burdwan Highway Division-III, Coochbehar Division (PWD), Malda Highway Division, Midnapore Highway Division-II, Nadia Highway Division-I, Nadia Highway Division-II, Tamluk Highway Division.

- Also, the reason why the department had deviated from the IRC SP: 72-2007 and used IRC SP: 37 2001 was not found on record during course of audit.
- Further, as per the guidelines (SP: 72-2007) 20 mm thick open graded PC on the wearing course serve the purpose of prevention of ingress of water and improvement of riding quality. In the above cases bituminous wearing courses were already done which serves the purpose of prevention of ingress of water. Hence, the binder course was not required.

Thus, expenditure of ₹ 17.92 crore (*Appendix-3.1*) on laying BM as binder course on these rural roads in disregard to specific IRC guidelines was avoidable.

3.8.5.2 Laying of BM on rural roads without preliminary investigation

Audit further noticed that in four other rural roads¹⁰³, projected traffic and sub-grade soil strength were not derived before designing of the road pavement. Though the roads were village roads having low volume of traffic, they were improved with 50 mm BM as binder course in contravention to the IRC guidelines.

The Department stated (December 2014) that BM was provided without conducting any traffic census with a perception for extending the security period up to three years as per tender provision to reduce the maintenance cost. Besides, they stated that due to urgency in preparation of DPRs traffic census was not conducted.

The reply was not tenable as:

- It was not prudent on the part of the department to incur additional expenditure for providing extra layer of expensive BM as binder coarse to reduce the cost of maintenance as maintenance cost during the security period was to be borne by the contractor.
- It was also noticed that rural roads constructed under Pradhan Mantri Gram Sadak Yojana follow the same IRC guidelines (IRC SP: 72-2007) and provide for five years maintenance warranty without laying any bituminous binder course.
- During course of audit no justification was found on record for designing the road pavement without conducting any traffic census due to urgency. Further, the completion of the work was delayed for seven months. Hence argument of urgency does not hold good.

Thus, the necessity of incurring expenditure of ₹ 4.39 crore (*Appendix-3.2*) on laying BM on these low traffic rural roads could not be ascertained.

¹⁰³ Nazirhat-Naxiganj Village Path, Okrabari-Gobrachara Village Path, Sahebganj-Lotkabari Village Path in Coochbehar District and Dighirpur- Muchisa Road.

3.8.5.3 Laying of extra thickness of Bituminous Macadam (BM) in violation of IRC Guidelines

IRC 37 2001 is applicable to the roads with traffic volume over 10 lakh ESAL (msa). While designing such roads BM may be used as binder course provided the value of msa of the road is more than two. IRC 37 2001 also stipulates that thickness of such BM as binder course should follow the recommended formula laid down in the guideline.

Audit scrutiny revealed that in case of three road works in two divisions¹⁰⁴ 75 mm thickness (BM) was provided instead of the recommended thickness of 50 mm in violation of the guidelines. In another three road works in two divisions¹⁰⁵ 50 mm BM was laid although the msa of those roads was only one.

The Department in reply stated (December 2014) that the roads are located in high rain fall area and 50 mm BM was laid with the perception that ingress of water may damage the road surface if only wearing course was provided.

The reply is, however, not tenable as Annexure-5 of IRC 37 2001 recommended that where annual rainfall was high (more than 3000 mm) bituminous wearing course with a 20 mm PC was to be laid to prevent ingress of water. As wearing course with 20 mm PC was laid in all the roads, providing of binder course of 75/ 50 mm BM was not required.

Thus, the department had incurred an avoidable expenditure of ₹ 7.58 crore on extra thickness of BM in contravention to the IRC guidelines (*Appendix-3.3*).

3.8.5.4 Consideration of higher value of Vehicle Damage Factor

The flexible pavement of road is designed on the basis of projected traffic (msa) *i.e.* cumulative number of standard axles which *inter alia* depends on 'Vehicle Damage Factor'¹⁰⁶ (VDF). The IRC guidelines (IRC 37-2001) provided values of VDF on the basis of commercial vehicle per day plying on the road.

Scrutiny of records in three divisions¹⁰⁷ revealed that the inflated value of msa was shown in the estimate of three road works by taking into consideration higher value of VDF against the corresponding number of commercial vehicle per day. As a result, the three road works were provided 50 mm BM binder course. Audit observed that considering actual number of commercial vehicle per day, value of msa would be less than one and laying of BM was not required as per IRC 37 2001.

The Department has not given any specific reply against the audit observation.

Thus, the department had incurred ₹ 3.84 crore on laying of BM which was avoidable (*Appendix-3.4*).

¹⁰⁴ Tamluk Highway Division and Darjeeling Highway Division.

¹⁰⁵ Coochbehar Division (PWD) and 24 Parganas Highway Division.

¹⁰⁶ It is defined as equivalent number of standard axles per commercial vehicle.

¹⁰⁷ Barasat Highway Division-II, Murshidabad Highway Division-II and Darjeeling Highway Division.


3.8.6 Conclusion

The Department did not follow the IRC guidelines in designing of roads with low traffic volume and provided unnecessary/excess layer of Bituminous Macadam in 26 road works. Besides, in four road works department did not conduct traffic survey and sub soil test to design the road pavement. These resulted in avoidable expenditure of ₹ 33.73 crore.

Moreover, in all the above cases during the course of audit no justification/reason of deviation/violation was found on record. Government may consider:

- Review of IRC stipulations/guidelines taking note of the widespread deviations.
- Deviation /violations from/of the extant guidelines, if any, due to exigencies should be recorded with adequate justifications/ reasons.

Kolkata
The 24 MAR 2015


(MAUSUMI RAY BHATTACHARYYA)
Accountant General
(Economic and Revenue Sector Audit),
West Bengal

Countersigned

New Delhi
The 27 MAR 2015


(SHASHI KANT SHARMA)
Comptroller and Auditor General of India

