

PUBLIC WORKS DEPARTMENT

2.6 Development of roads in Left Wing Extremism affected areas under the Special Programme of Government of India

2.6.1 Introduction

With the objective of improving connectivity in Left Wing Extremism (LWE) areas of the State under a special programme, the Government of India (GoI) approved (February 2009) the Road Requirement Plan (RRP). The Ministry of Road Transport and Highways (MORT&H) was entrusted with the responsibility of developing roads under this special programme. The MORT&H set up LWE division under the Chief Engineer for sanctioning and implementing the above programme through respective State Public Works Departments (PWD).

Under this special programme, 53 works comprising length of 2021.73 kilometres (Kms) were sanctioned for ₹ 2897.09 crore in Chhattisgarh during 2009-14. The development of the above roads under the programme was scheduled to be completed by March 2015. However, till March 2014, the physical progress was 618.34 km (31 *per cent*) and financial progress was ₹ 805.04 crore (27 *per cent*).

2.6.2 Organisational set-up

The Public Works Department (PWD) is responsible for execution and supervision of these works in the State of Chhattisgarh. The PWD is headed by the Principal Secretary (PS) at Government level. Engineer-in-Chief (E-in-C) is the administrative head of the PWD and is assisted by five Chief Engineers (CE), 12 Superintending Engineers (SE) and 46 Executive Engineers (EE).

The LWE works are being executed by nine Divisions in nine districts (Bastar, Bijapur, Dantewada, Kanker, Kondagaon, Narayanpur, Rajnandgaon, Surguja and Sukma). The map showing LWE affected districts in Chhattisgarh State is depicted below.



LWE affected areas of the State indicated in shades

2.6.3 Audit Objective

Audit of the road works sanctioned and being executed was conducted in order to assess whether-

- the roads included in the scheme are as per actual requirement;
- execution of projects was carried out economically, efficiently, effectively;
- all the relevant rules and norms were followed while executing the projects.

2.6.4 Audit scope and methodology

During Audit, we examined (April-July 2013 and August 2014) records relating to development of roads under the special programme in the offices of E-in-C and Executing Divisions. For detailed scrutiny, we reviewed the records of eight divisions (out of nine Divisions executing LWE works) and examined 32 works out of total number of 39 works executed under LWE programme during 2009-14. An entry conference with the Principal Secretary (PS), PWD was held (May 2013) to discuss the objective, scope and methodology of audit. Request for holding an exit conference has been sent to the PS, response of the same is awaited (December 2014).

The audit criteria was derived from Administrative Approval (AA), Technical Sanction, detailed estimates, Notice Inviting Tender/contract documents, Provisions of Works Department (WD) Manual, Schedule of Rates (SORs), Specifications for Road and Bridge works issued by Ministry of Road Transport and Highways (MORT&H) and Indian Road Congress (IRC).

2.6.5 Funding pattern

The PWD, GoCG is responsible only for execution and supervision of LWE projects and expenditure on these works is being incurred directly by GoI through Engineer Liaison Officer (ELO), National Highways of the State.

The year-wise expenditure on these roads during 2009-14 is as given below:

Table-2.6.1 : Details of Expenditure

(₹ in crore)

Year	Sanction	Expenditure
2009-10	1251.36	Nil
2010-11	1254.92	163.00
2011-12	180.58	265.00
2012-13	210.23	265.00
2013-14	Nil	112.04
Total	2897.09	805.04

(Source: Information furnished by Engineer-Liaison-Officer)

It is evident from the Table 2.6.1 that despite sanction of projects worth ₹ 2897.09 crores, only ₹ 805.04 crore could be spent in five years indicating slow progress of the works.

2.6.6 Implementation and execution of the project

Status of Works

Fifty three road works covering 2021.73 km were included in the special programme between 2009 and 2014. Out of these, agreements were signed for execution of 39 road works covering 1463.13 km, 11 road works could not be started due to non-participation of contractors/participation of single bidders and no process was initiated in case of three road works.

Against the 39 agreement works, 14 road works covering 428.05 km (21 *per cent* of sanctioned roads) could be completed (March 2014) involving an expenditure of ₹ 348.47 crore (22 *per cent* of the total agreement amount of ₹1600.30 crore) and the rest 25 road works awarded to different contractors were in progress (March 2014) which ranged from five to 98 *per cent* and expenditure of ₹ 451.80 crore was incurred against the tender value of ₹ 1455.11 crore.

Scrutiny of records revealed the following:

2.6.6.1 Slow progress in execution of road works

The works proposed under Road Requirement Plan were divided into three categories by the State Government on perception criteria.

Category-I: Roads where the agencies may be able to carry out the construction without much security arrangement.

Category-II: Roads where agencies may face some sort of problem and need some protection for carrying out the work.

Category-III: Roads where there is high risk of security and execution activities need special protection from the State Government.

Number of roads under different category is given in the table below.

Table 2.6.2: Category wise status of selected work

Type of category	Total road works proposed	Road works completed	Road works in progress	Road works in tender stage	Balance road work where no process yet started
Category- I	19	12	7	--	--
Category- II	9	2	7	--	--
Category-III	25	--	11	11	3
Total	53	14	25	11	3

(Source: Information furnished by Engineer-in-Chief)

It can be seen from the above table, out of total number of 19 road works selected under Category-I, only 12 works could be completed by the department. Balance seven works which were to be completed by 2011-12 remained incomplete even after two-three years of commencement. The percentage of progress of these seven works ranged between 21 and 97 *per cent*.

Out of these, in two works (Wadrafnagar-Janakpur-Balangi road and Bishunpur-Surajpur-Odgi road) the delay was due to slow progress by the

contractor, in one case (Balarampur–Chando-Samri Road) the slow progress was due to burning of plant and machinery by the *naxalites* and in case of other work (High level bridge at Balrampur-Chando-Samri road) work order was issued in March 2014, which was 40 months after receipt of sanction (November 2010), as the finalisation of tender could be done after twelve bids. No specific reason for delay could be ascertained in remaining three works.

In Category-II, out of nine road works, two road works were completed and seven works are under progress. These seven works were to be completed by 2012-13, however, the progress as of March 2014 ranged between 16 and 48 *per cent*. The reason for slow progress in respect of three works was due to burning of plant and machinery by *naxalites*. In one case (Chotebetia-Rengawahi-Tarawaki road) the delay was due to pending forest clearance. Out of remaining three, in case of two roads the delay was due to slow progress by the contractor and in one case (Jagdulpur-Konta road, New NH-30 Jeeram-Tongpal) no reason for delay could be ascertained from the records.

In Category-III road works, the progress in respect of nine roads ranged from five to 51 *per cent* and progress of two other roads was more than 80 *per cent*. Eleven works were at the tender stage as no agency participated in the bidding process even after issue of several bids and in respect of three other road works, the tenders was not yet finalised.

Thus, the department could not complete the roads selected under Category-I and II within the stipulated period of contract even though security perception was not of higher risk. The progress of Category-III road works was slow, which resulted in failure to improve connectivity in the LWE affected areas.

2.6.6.2 Non-recovery of mobilisation advances from the contractors

As per Clause-32 (part–III) of the agreement, every contractor is eligible to get 10 *per cent* of contract amount as interest free mobilization advance and five *per cent* as equipment advance. In turn an unconditional bank guarantee needs to be submitted by contractor against these advances. As per clause 33 of the agreement, the advance is to be repaid with percentage deductions from the interim payment certified by the Engineer under the contract. Deductions is to be commenced in the next Interim Payment Certificate following that in which the total of all such payments to the contractor has reached not less than 20 *per cent* of the contract price or six months from the date of payment of first instalment of advance, whichever is earlier, provided that the advance is to be completely repaid prior to the expiry of the original time for completion.

Scrutiny of records of EE, PWD (Building & Road), Dantewada and Bhanupratappur revealed that in five agreement works an amount of ₹ 17.06 crore towards mobilisation advance and under one agreement, equipment advance of ₹ 2.48 crore was paid to the contractors. However, within the original time for completion of these works, mobilisation advance of ₹ 9.06 crore and equipment advance of ₹ 1.09 crore only was recovered from the contractors which was against the contract provision mentioned above. The balance amount of ₹ eight crore (mobilisation advance) and ₹ 1.39 crore

(equipment advance) remained unrecovered beyond the original contract period as detailed in **Appendix-2.6.1**. In addition, in one agreement, the bank guarantee of ₹ 38.82 lakh provided by the contractor (agreement no.4/DI, 2010-11) against the mobilisation advance was also not renewed beyond its expire date.

This not only was against the provision of contract, it also had resulted in extension of undue benefit to the contractor.

On these being pointed out (August 2014) the EEs of Dantewada and Bhanupratappur divisions stated that due to *naxalite* incidents and heavy rain, the progress of the works was hampered. As such, the recovery of the advances is being made in proportion to the progress of the work. The EE, Bhanupratappur Division also stated that the bank guarantee were not forfeited in public interest.

The reply is not acceptable as stipulated period of contract was fixed after considering the period of rainy season. Besides, the area being *naxalite* affected was well known to the contractors before entering the contract. Therefore, non-recovery of the advances timely, as per agreement clause, was an extension of undue benefit to the contractors.

Action of the department should be guided by the clauses of the agreement. The work should be completed within the stipulated time and in case of hindrance in execution, effective decision should be taken promptly. In any case, mobilization advance must be recovered within the stipulated period.

2.6.6.3 Application of tack coat over freshly laid bituminous surface resulted in avoidable extra expenditure of ₹ 4.99 crore

As per clause 503.1 of MORT&H specifications, tack coat shall consist of application of a single coat of low viscosity liquid bituminous material to an existing bituminous road surface preparatory to the superimposition of a bituminous mix. MORT&H specification (Clause 503.4.3) also specifies that where the material to receive an overlay is a freshly laid bituminous layer and the overlay is completed within two days that has not been subjected to traffic, or contaminated by dust, a tack coat is not mandatory.

We observed that the provision for widening of the roads from single to two lanes and application of tack coat over freshly laid bituminous surface was made in the sanctioned estimates of 13 roads. Further, scrutiny revealed that at the time of execution of road work, the bituminous layers Bituminous Macadam(BM) were laid separately in each lane leaving the other lane for passage of traffic. However, the second layer of bituminous course (SDBC)¹ was laid after two days of earlier bituminous course (BM). Since the traffic was already diverted through other lane of the road while laying first layer of bituminous course, the second layer of bituminous course could have been laid simultaneously within two days period. Thus, improper planning in execution of road works resulted in avoidable application of tack coat over freshly laid

¹ Semi Dense Bituminous Concrete

bituminous surface, which resulted in extra expenditure of ₹ 4.99 crore, as detailed in *Appendix-2.6.2*.

On this being pointed out in audit, the EE of Ramanujganj and Surajpur divisions replied that the tack coat work was executed as per sanctioned estimates, whereas, the EE, Dantewada division replied that due to high intensity of traffic and contamination of dust, additional tack coat was applied.

The reply is not acceptable as the road work was executed by diverting traffic to the adjacent lane and the second layer of bituminous course (SDBC) could have been laid simultaneously with the first layer (BM) within two days. Thus, in view of MORT&H specification, the application of additional tack coat was avoidable.

2.6.6.4 Execution of work beyond specification resulted in extra cost of ₹47.28 lakh

As per provisions of Indian Road Congress (IRC-37) specification, for designed traffic up to five Million Standard Axles (MSA) and for sub-grade soil of six *per cent* California Bearing Ratio (CBR), the composition of bituminous items for crust should be 50 mm of Dense Bituminous Macadam (DBM) and 25 mm of Semi Dense Bituminous Concrete (SDBC).

Scrutiny of records of work of Dhanora- Mahadabri Lohattar Road (agreement No 6 DL/2010-11) in Rajnandgaon district revealed that crust was designed by the EE with provision of 75 mm thick bituminous items, where the required thickness of SDBC was showed as 25 mm and no specific item for the remaining 50 mm thick bituminous course was mentioned. Against the proposal of EE, MORT&H sanctioned the work with provision of 75 mm BM and 25 mm SDBC and the work was accordingly executed. However, as required under IRC-37 specifications, for 4.8 MSA design traffic and six *per cent* CBR for sub sub-grade soil, the road was to be designed with 50 mm DBM and 25 mm SDBC items.

Similarly, scrutiny of records of work of Dhanora - Moorumgaon Road (agreement No 14 DL/2010-11) in Rajnandgaon district revealed that the crust was designed with the provision of DBM (50 mm) and SDBC (25 mm) as required under specifications of IRC-37 for 4.8 MSA designed traffic and six *per cent* CBR value of the sub-grade soil. However, the design was changed by the MORT&H with the provision of 75 mm Bituminous Macadam (BM) and 25 mm SDBC and was accordingly executed.

Thus, the design of road works contrary to the specification and subsequent execution had resulted in extra expenditure of ₹ 47.28 lakh, besides execution of work costing ₹ 3.58 crore not as per specification (*Appendix-2.6.3*).

On being pointed out in audit, the EE stated that the BM (75 mm) was executed as per technical sanction and there was no extra cost.

The reply is not acceptable as crust design prepared by the EE was in accordance with the provision of IRC-37, where provision of 25 mm SDBC and 50 mm DBM was correctly proposed. However, change in the

specification without appropriate reason had resulted in avoidable extra cost and execution of work not as per specification.

Specifications and provisions relating to execution should be strictly adhered in order to complete the works in an economic, efficient and effective manner.

2.6.6.5 Excess payment of ₹ 11.11 lakh due to execution of work without sensor paver finisher

As per general note-15 of Schedule of Rates (SOR), 2009, the BM and SDBC item should be executed with Sensor Paver Finisher² (SPF) to achieve better riding quality and if the SPF is not used, rate of the items should be reduced by three *per cent*.

Scrutiny of records of Rajnandgaon district revealed that in “widening of Dhanora Moorungaon Road and Kahdabri-Lohattar Road” the invoice of SPF was not available. The certified list of Plant and Machinery deployed, as submitted by the contractor, also did not include the SPF. Non-availability of any proof of utilisation of SPF indicated that the same was not used for execution of BM and SDBC. However, the rates of BM and SDBC were not reduced by three *per cent* resulting in excess payment of ₹ 11.11 lakh (**Appendix-2.6.4**).

On being pointed out in audit, the EE, PWD (Building & Road), Rajnandgaon stated that the works were carried out using SPF hence the rates were not reduced.

The reply is not acceptable as the contractor had not submitted proof of availability of SPF for the road work. This was in contravention to Clause 4.5.5 of the contract, according to which contractor was required to own or to have assured ownership of key items of equipment including paver finisher with electronic sensor. Further, the invoice furnished by the contractor in support of ownership of tools and plant indicated availability of mechanical paver finisher instead of SPF.

The provision of schedule of rates should be followed to ensure quality of work.

2.6.6.6 Excess payment of ₹ 1.45 crore towards less use of bitumen and execution of work not as per specification

The SOR-2009 of PWD, GoCG was prepared on the basis of rate analysis based on the Standard Data Book of MORT&H specifications. As per this specification, the density of bitumen for execution of SDBC and BM items should not be less than 2.3 gm/cc and 2.2 gm/cc respectively. As per Clause 507.3.3 of MORT&H specification, the contractor should inform the Engineer-in-charge in writing at least 20 days before the start of the work of the Job Mix Formula (JMF)³. The E-in-C, PWD, GoCG had in September 2011 clarified in an 'amendment' that the consumption of bitumen

² Sensor Paver Finisher is a computerized paver machine which provides better riding quality than Mechanical Paver Finisher

³ Job Mix Formal is the recommended mixture of aggregate gradation, asphalt type and binder content.

should be either with density derived from JMF or as per MORT&H specification, whichever is higher. If the density is found to be lower than that of required standard, the rate should be deducted proportionately for lesser densities of the mix.

We observed from the records of six agreement works (*Appendix-2.6.5*) pertaining to three divisions that in two agreement works, the JMF for SDBC was prepared. Out of this, JMF was prepared according to MORT&H specification in one agreement (14/DL 2010-11), however, work was executed with lesser density mix. In respect of another agreement (11/DL 2010-11), JMF was approved with lesser density mix than as prescribed by MORT&H. Further scrutiny of the measurement books revealed that the density of bitumen utilised in six road works ranged between 2.0 gm/cc to 2.048 gm/cc for BM items and 2.0 gm/cc to 2.23gm/cc for SDBC items. The use of lesser density of mix resulted in execution of bituminous work costing ₹ 27.43 crore below the MORT&H specifications. Further, the payment to contractor was not deducted proportionately despite less consumption of 385 MT bitumen as compared to MORT&H specification, which resulted in excess payment of ₹ 1.45 crore.

On this being pointed out in audit, the EEs of Rajnandgaon and Surajpur stated that the work was executed as per JMF. The EE, Jagdalpur stated that the agreements were executed before the issue of amendment in September 2011.

The reply is not acceptable as the amendment issued by E-in-C was a clarification for the use of bitumen either with density derived from JMF or as per MORT&H specification, whichever is higher and therefore, minimum density of mix as per MORT&H specification was required to be adhered to. Further, the measurement book of EE, Rajnandgaon recorded the use of lesser density mix as compared to JMF. EE, Surajpur did not provide the JMF used in the road work, however, as per measurement book, the use of bitumen was lesser than the prescribed standard.

The department should ensure follow up of various provisions and specification to ensure quality of the work executed.

2.6.7 Conclusion

- The department could complete 31 *per cent* of the sanctioned road works within the five year period defeating the objective of improving connectivity in LWE affected areas. Roads works in the areas having no security risks were also not completed in time indicating lack of concerted efforts of the department.
- Interest free Mobilisation and equipment advances paid to the contractor amounting ₹ 9.39 crore were not recovered within the original contract period as required under contract provisions.
- Execution of works not as per specification resulted in avoidable expenditure on road works. In addition, instances of excess payments to the contractor were also noticed in audit.