

Chapter 3
Track Renewal Works on Indian Railways

3.1 Highlights

- **The budgetary control mechanism was inadequate as seen from the savings over some zonal railways and excess expenditure over others during the same financial year for the last five years both under DRF and SRSF.**
(Para 3.8.1)
- **Railway incurred more expenditure than estimated on execution of the works under SRSF so far. There were delays in completion of works and there was also a possibility that the completion of the remaining works may spill over to the subsequent years as against the targeted year 2006-07.**
(Para 3.8.2)
- **Though the sanctions under DRF were far below the proposals sent by the zonal railways, there was an increasing trend in the number of outstanding works. While on the one hand, Railway Board could not sanction a large number of works due to funds constraints, on the other hand, even the works, which had been sanctioned, could not be completed on time.**
(Para 3.8.3)
- **Lack of comprehensive planning by the Railways resulted in wasteful expenditure on track renewal works on sections which were identified for gauge conversion.**
(Para 3.8.4)
- **Inability of the Railways to effectively deal with the shortage of bridge timbers resulted in these works going on for long periods and consequent loss of productivity on account of speed restrictions. Bridges continue to be weak links affecting the safe running of trains.**
(Para 3.8.5)
- **Sub-optimal utilisation of track machines not only resulted in slow progress of track renewal works but also adversely affected the objective of the Railways to shift over to mechanised renewals.**
(Para 3.8.6)
- **The improvement in track parameters was not commensurate with the large number of track renewal works undertaken by the Railways.**
(Para 3.8.7)
- **Deficiencies in planning and inadequacies in contract management practices such as delays in finalisation of tenders and extensions granted to the contractors in a routine manner led to delays in completion of works and time and cost overrun. Changes in scope of work due to various reasons also led to faulty execution of works and**

consequent cost increase, thereby putting a strain on already scarce resources. The deficiencies in planning and execution of works also had an impact on the quality of work done.

(Para 3.9.1)

- **Credits for released materials were assessed unrealistically affecting resource planning and availability of stores for execution of works on time. There were variations in the quality and the quantity of store items utilised vis-à-vis established and prescribed standards. Inadequate stores management led to delays in supply of store items such as rails, sleepers, fittings etc., resulting in delays in completion of works.**

(Para 3.9.2)

- **Deficiencies in maintenance of records led to ineffective monitoring both in terms of quantum of expenditure as well as extent of work done. These also raised the risk of mis-management of resources especially costly store items such as rails, sleepers etc.**

(Para 3.9.3)

3.2 Gist of recommendations

- Railways need to strengthen their budgetary control mechanism to ensure optimal utilisation of scarce resources.
- Railways need to provide adequate funds for execution of the remaining track renewal works under SRSF in order to complete them by 31 March 2007. Further, the execution of works where the progress is poor needs to be speeded up.
- Railways should ensure that further arrears in DRF are arrested. Monitoring of works needs to be done to complete the sanctioned works within a stipulated time frame so as to derive maximum benefit.
- Railways must ensure that the status of gauge conversion proposals on the stretches should be considered before finalising the proposals for track renewal works on MG/NG.
- Railways need to take urgent steps to find alternatives for the wooden sleepers to ensure that the tracks on bridges are duly renewed and the safety of trains is not compromised.
- Railways need to ensure better utilisation of track machines through better planning and identification of stretches where renewal works are to be carried out. Further, provision of blocks needs to be given higher priority.
- Railways should ensure completion of works within a set time frame so that speed restrictions are removed at the earliest and benefits due from track renewal works can be derived.
- Railways should ensure that proper planning, co-ordination and execution of works is carried out by following the laid down norms as well as best project management practices. The monitoring and supervision of works execution at every stage needs to be strengthened to ensure not only quality but also timely completion of the works. Railways should adopt a

system of comparison of rates across zonal railways and any wide variations should be avoided.

- Railways should ensure that material for timely execution of works is made available just as premature procurement resulting in block up needs to be avoided. Utilisation of stores and accountal, particularly of released material, is an area which needs to be addressed on priority in view of the increasing value of scrap.
- Railways should lay emphasis on proper maintenance of records to ensure correct accountal and effective monitoring at all levels.

3.3 Introduction

Indian Railways has a route kilometerage of 63,465 kms⁸. The Permanent way (P-way) is the main infrastructure of the rail network for haulage of trains. Running of trains causes wear and tear of P-way (i.e. track) and when the existing old track structure is unable to run rolling stock efficiently, track renewals are required to be carried out. Track renewals involve replacement of existing rails or sleepers, separately or together with new or second hand serviceable material. The relative importance of the line governs the type of material used for replacement. Track renewal works with new materials are called primary renewals and the ones with second-hand released serviceable material are called secondary renewals. Some important types of track renewal works are Complete Track Renewals (CTR) in which the complete track i.e. rails, sleepers and ballast are changed, Through Rail Renewal (TRR) in which only rails are changed, Through Sleeper Renewal (TSR) in which only sleepers are replaced and Through Bridge Timber Renewal (TBTR) wherein wooden sleepers of bridges are replaced.

3.4 Organisational structure

Policy decisions in respect of track renewals, monitoring of sanctioned track renewal works and procurement of bulk of track material i.e. rails, sleepers etc., rest with Civil Engineering and Track directorates of Railway Board, functioning under the control of Member Engineering. At the zonal railway level, the track renewal works are taken up and executed under the direction of Chief Track Engineers.

3.5 Audit objectives

The performance review of track renewal works was carried out with a view to assess:

- Whether the overall planning and management of funds for track renewal works were geared towards ensuring most effective use of railway resources.
- Whether the Railways ensured timely completion of work following best project management practices.

⁸ 47749 kms BG, 12662 kms MG and 3054 kms NG (Source: Year Book 2004-05)

3.6 Scope, area of coverage and sample selection

The performance review covers a period of five years from 2001-02 to 2005-06. In order to assess the system of finalisation of track works programme, fixing of targets, monitoring of achievements vis-à-vis the targets and allotment of funds to various zonal railways, macro data was analysed in respect of all on-going track renewal works over various zonal railways. A sample of 653 track renewal works including CTR, TSR, TRR and TBTR and some other works completed in the past three years and on-going works both under Special Railway Safety Fund (SRSF)⁹ and Depreciation Reserve Fund (DRF)¹⁰ were selected for detailed examination in order to assess whether the works had been carried out in the most economic and efficient manner.

Contracts pertaining to these works, planning and justification, budget allotment and funds utilisation, execution through contracts, procurements and monitoring were reviewed in zonal railways for collection of audit evidence in support of audit conclusions. The audit findings from the review of selected works corroborate the picture emerging from the macro analysis of the track renewal works on Indian Railways.

The methodology of sample selection and zonal railway wise details of number of works selected in sample are enclosed in **Annexure XXVII**.

3.7 Acknowledgement

The audit plan including the audit objectives were discussed by Principal Directors of zonal railway Audit Offices in meetings with the respective General Managers/Chief Track Engineers/Financial Adviser and Chief Accounts Officer in the entry and exit conferences. The co-operation of the Ministry of Railways as well as zonal railways during the meetings and in the course of audit is acknowledged. Audit recommendations were discussed by Deputy Comptroller and Auditor General (Railways) with the Chairman Railway Board and other Board Members after issue of the report to the Ministry of Railways in November 2006.

3.8 Track renewal works on Indian Railways

During the last five years, Indian Railways spent an average of Rs.2,762 crore per year on maintenance of track and track renewal works. As a percentage of the total capital expenditure, the amount spent on track renewal works, however, has been approximately 18 per cent. Funds for track renewals are normally provided from DRF and Open Line Works-Revenue (OLWR).

Due to the Railways' inability to generate the required levels of resources internally for replacement/renewals of over-aged assets, huge arrears for renewals/replacement of over aged assets had accrued (2000-01). Arrears on account of track renewals amounted to 16,538 CTR kms¹¹ as on 1 April 2001. These arrears were considered to be potential safety hazards in railway

⁹ Green book 2006-07

¹⁰ Pink book 2005-06

¹¹ Report of the Select Committee on identification of projects for funding from SRSF (October 2001).

Chapter 3 Track Renewal Works on Indian Railways

operations. To liquidate these arrears, a Special Railway Safety Fund (SRSF) with a corpus of Rs.17,000 crore was set up in October 2001 for execution of safety related works i.e. track, bridges, signalling gear (including communication related block working) and rolling stock within a time frame of six financial years i.e. by 2006-07. The SRSF was sourced from funds provided by the Central Government as well as by levy of a special surcharge on passenger traffic. Out of Rs.17,000 crore, a sum of Rs.7,670 crore (including inflation at the rate of 12.5 per cent) was earmarked for clearance of arrears of track renewals.

Thus, presently, the track renewal works are undertaken through two sources of funding, DRF and SRSF. A large portion of the arrears of track renewal works as on 1 April 2001 were shifted to SRSF and fresh arisings from 2001 onward were to be funded by DRF.

Audit review of the budget and funds management of track renewal works, process of finalisation of final works programme, age profile of the works in progress as well as achievement of targets for track renewal works over various zonal railways revealed that:

- Under SRSF, the expenditure exceeded the budgeted amounts in all the years from 2001-02 to 2005-06 despite upward revision. However, under DRF there were savings in the year 2002-03 and 2003-04 despite revision of the budget estimates. Over all the years, there were savings over some zonal railways and excess expenditure on a few others during the same financial year, indicative of inadequate budgetary control.
- Though a substantial amount of arrears under SRSF were cleared by 31 March 2006, the Railways, incurred more expenditure than estimated on execution of the works so far. There were also delays in completion of works with the possibility that the completion of the remaining works would spill over to the subsequent years, as against the targeted year 2006-07.
- The sanctions under DRF were far below the proposals sent by the zonal railways and there was an increasing trend in the number of works over various zonal railways. Further, arrears under DRF had started accumulating due to delays in completion of works in hand.
- Deficient planning by the Railways resulted in wasteful expenditure on track renewal works on sections which were identified for gauge conversion. In a number of cases track renewal works were taken up within four to seven years of completion of gauge conversion works due to deficiencies in the execution of gauge conversion works.
- Inability of the Railways to effectively deal with the shortage of bridge timbers by arranging for procurement of adequate number of steel sleepers or suitable alternatives resulted in non-completion of bridge timber renewal works and consequent loss of productivity on account of speed restrictions. As a result, bridges continued to be weak links affecting the safe running of trains.

Report No.6 of 2007 (Railways)

- Track machines were not utilised optimally, thereby adversely affecting the objective of shifting over to mechanised renewals, a qualitatively better method.
- The improvement in track parameters was not commensurate with the large number of track renewal works undertaken by the Railways. Delays in completion of works also resulted in a number of speed restrictions on various zonal railways affecting the railway operations.

3.8.1 Inadequate budgetary control mechanism

The budgeted and revised estimates (BE and RE) as well as actual expenditure on track renewal works under DRF and SRSF for the past five years were as under:

(Figures in rupees of crore)

Year	DRF			Excess/ savings w.r.t. RE	SRSF			Excess/ savings w.r.t. RE	Total			Excess/ savings w.r.t. RE
	BE	RE	Actual Expn.		BE	RE	Actual Expn.		BE	RE	Actual Expn.	
1	2	3	4	5	6	7	8	9	10	11	12	13
2001-02	2050.00	771.99	778.38	6.39	0.00	1084.48	1106.59	22.11	2050.00	1856.47	1885.06	28.59
2002-03	1427.50	1139.42	838.48	-300.94	1276.00	1462.62	1657.45	194.83	2703.50	2602.05	2495.93	-106.12
2003-04	1198.00	1199.05	1169.87	-29.18	1407.00	1417.96	1611.58	193.62	2605.00	2617.00	2781.46	164.46
2004-05	1250.00	1277.75	1464.53	186.78	1320.00	1715.48	1979.27	263.79	2570.00	2993.23	3443.81	450.58
2005-06	1585.00	1869.73	2146.51	276.78	1038.00	1020.30	1059.47	39.17	2623.00	2890.03	3205.98	315.95

Under DRF during 2002-03 and 2003-04, the amounts budgeted for track renewal works could not be spent and there were savings even after revision of the budget estimates. In 2004-05 and 2005-06, the expenditure was more than the revised estimate despite upward revision.

On the other hand, under SRSF the expenditure exceeded the budgeted amounts in all the years despite upward revision of budgeted amounts in 2001-02 to 2004-05. Only during 2005-06, there was no upward revision. The pattern of expenditure indicates that the Railways did not give as much attention to the works sanctioned under DRF as to the works sanctioned under SRSF.

A comparison of actual expenditure and the final grants during the past five years on various zonal railways revealed that while there were savings on a few railways, expenditure incurred exceeded the final grant in a few others. For instance, during 2005-06 under DRF, savings ranged from 4.53 per cent (Rs.5.17 crore) in NR to 30.90 per cent (Rs.62.36 crore) in WCR. On the other hand, during the same year excess expenditure was incurred which ranged up to 36.52 per cent (Rs.33.14 crore) in NEFR.

Similarly, during 2005-06 under SRSF, savings ranged from 4.03 per cent (Rs.7.38 crore) in NR to 43.20 per cent (Rs.99.92 crore) in NWR and excess expenditure was up to 18.96 per cent (Rs.13.10 crore) in WCR.

Savings on some railways and excesses on a few others during the same year was indicative of inadequate budgetary control. The savings and excesses were mainly on account of zonal railways' inability to execute the works as

planned. The deficiencies in execution are discussed separately in paragraph 3.9.

Recommendation

Railways need to strengthen their budgetary control mechanism to ensure optimal utilisation of scarce resources.

3.8.2 Execution of works under SRSF

Funds under SRSF were provided to wipe off the arrears completely by the year 2006-07. However, it was seen that though a substantial amount of arrears were cleared by 31 March 2006, the Railways incurred more expenditure than estimated on execution of these works so far owing to deficient project management practices and delays in completion of works. Further, there was a possibility of a spill over to the subsequent years, as against the targeted year 2006-07 as brought out in the following paragraphs.

3.8.2.1 Excess expenditure on works under SRSF

The Railways started with arrears of 16,538 CTR kms being the accumulation of arrears up to 31 March 2001. An amount of Rs.7,670 crore (including inflation at the rate of 12.5 per cent) was provided under SRSF for clearance of these arrears up to 2006-07. Thus, provision for funds was made at an average rate of Rs.0.464 crore per CTR km.

As against 16,538 CTR kms, the Railways had executed 14,221 CTR kms up to 31 March 2006. A length of 1,429 CTR kms is yet to be executed by various zonal railways and 888 CTR kms will not be required to be carried out as gauge conversion is proposed in these sections. Further, as against Rs.7,670 crore allotted for wiping off arrears under track renewal works, the Railways had already spent Rs.7,414.26 crore up to 31 March 2006 at the rate of Rs.0.521 crore per km. In other words, 96 per cent of the budgeted amount was spent on executing 86 per cent of the work. Thus, up to 31 March 2006, the Railways had spent Rs.810.60 crore more than the projected amount in execution of 14,221 CTR kms. The excess expenditure was a result of deficient project management practices over various zonal railways as discussed in the subsequent paragraphs of this report.

In addition, there were wide variations in the amounts spent per CTR km over various zonal railways as detailed in following table:

Report No.6 of 2007 (Railways)

Zonal Railway	Actual expenditure incurred from 2001-02 to 2005-06 (Rs. in crore)	CTR kms executed from 2001-02 to 2005-06	Unit rate per CTR km
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
Central	694.56	594.83	1.168
South Eastern	728.29	686.82	1.06
Eastern	603.04	799.57	0.754
South Central	669.25	1012.07	0.661
Western	860.94	1328.27	0.648
North Eastern	243.31	384.59	0.633
Northeast Frontier	266.95	428.35	0.623
Southern	529.42	971.00	0.545
Northern	1074.04	2226.52	0.482
South Western	65.35	154.57	0.423
North Western	365.21	1032.92	0.354
West Central	360.86	1020.76	0.354
East Central	293.3	842.35	0.348
East Coast	240.25	723.00	0.332
South East Central	238.05	1113.75	0.214
North Central	181.44	901.63	0.201
Total	7414.26	14221	0.521(Avg.)

The actual unit rate per CTR km ranged from Rs.0.201 crore per CTR km on NCR to Rs.1.168 crore per CTR km on CR. The average for the Railways as a whole was Rs.0.521 crore per CTR km.

The routes on railway network are categorised on the basis of future maximum permissible speed. A test check of actual unit rates in completed works under SRSF on broad gauge (BG)/metre gauge (MG) covering different types of routes on various zonal railways revealed that:

- The unit rates for Primary CTR of BG section for route 'A' varied from Rs.0.45 crore on NCR to Rs.0.863 crore on WCR.
- Similarly for 'B' route, the actual unit rate for Primary CTR of BG section varied from Rs.0.376 crore on NWR to Rs.0.847 crore on SR.
- The unit rates for Primary CTR of BG section on 'E' route ranged from Rs.0.65 crore on ER to Rs.0.979 crore on NR.
- Further, Secondary CTR rates for MG section varied from Rs.0.293 crore on NER to Rs.0.490 crore on ECR.

This substantiates that there were wide variations in the rates of execution for similar types of work across the zones. While marginal variations across zones are acceptable, the almost 100 per cent variation brings out the inadequate control over expenditure at the apex level.

During discussion (December 2006) the Railway Board admitted that unit rate of CTR works amongst zonal railways was varying, but not to the extent indicated by audit. They accepted that the same may be due to error in compilation and booking of expenditure by the new zones. They added that there were related works other than CTR such as TBTR, TTR etc., the quantum of which was not shown separately. The same cannot be agreed to in

Chapter 3 Track Renewal Works on Indian Railways

audit, as only seven per cent of works were TBTR works and there were no TTR works transferred to SRSF. These being a small number would not affect the average unit rate substantially. Moreover, the admission that variation could be due to accounting errors calls for improved managerial control.

For executing the remaining 1,429 CTR kms, the Railways were left with an amount of Rs.255.74 crore under SRSF. At the average rate of Rs.0.521 per CTR km the Railways would need an amount of Rs.744.51 crore at the very least for completing execution of these works. Thus, there was a shortfall of Rs.488.77 crore to complete the works on hand. This is substantiated by the throw forward of Rs.766.73 crore for completing the residual works as brought out in the next paragraph. If the Railways were required to undertake works for 888 CTR kms also as per the initial planning, the requirement of funds would have increased further.

In 2006-07, the Railways have budgeted for Rs.391 crore against the requirement of Rs.744.51 crore and thus some portion of these works would spill over to the next year. Further, to provide for this shortfall the Railways will have to either go back to Central Government for additional provision under SRSF and/or continue the surcharge unless they compromise on the other works planned under SRSF.

3.8.2.2 Delays in completion of works under SRSF

An age analysis of works in progress under SRSF is detailed below:

Age	No. of works under SRSF as per GB 2006-07	Total anticipated cost (Rs. in crore)	Actual expenditure incurred upto 31.3.2006 (Rs. in crore)		Throw forward (Rs. in crore)
			booked under DRF	booked under SRSF	
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
> 3 yrs and < 4 yrs	112	1144.85	4.22	731.56	409.07
> 4 yrs and < 5 yrs	186	1585.55	47.41	1251.94	286.20
5 yrs and above	258	2569.93	391.95	2106.52	71.46
Total	556	5300.33	443.58	4090.02	766.73

It was observed that of the total works in progress, 258 works were taken up more than five years back. Normally a track renewal work takes around two to three years for completion. For the works in progress as against the total anticipated cost of Rs.5,300.33 crore, the Railways had incurred Rs.4,533.60 crore so far (March 2006) and required another Rs.766.73 crore at the very least to complete them as per the estimates at present. The actual requirement is likely to go up given the higher rate of per unit execution in the zonal railways.

An attempt was made to analyse the reasons for delays in completion of these works. Of the works in progress at present, there were 85 works where the physical progress was less than 50 per cent. Of these, at least half the works showed dismal progress of ten per cent or less though taken up three to ten years back. A test check of 36 of these works on NR, NWR, SR, ECoR and WR revealed that the main reasons for delay in completion of these works

Report No.6 of 2007 (Railways)

were non-availability of rails, cancellation of original work orders, non-invitation of tenders, delay in finalisation of tenders, delays in sanction of revised estimates, failure of the contractor to execute the work etc. On these 36 works, though the Railways had spent 47 per cent of the anticipated cost of Rs.167.42 crore, the physical progress was less than ten per cent.

Thus, the delays in completion of these SRSF works further substantiates the fact that by not completing these works on time the Railways are spending much more than what is required on execution of these works. Since these are the works which were in arrears as far back as in 2001, the failure to complete these works at the earliest would further compromise the safety and operational efficiency of trains.

Railway Board during discussions (December 2006) stated that most of the works under SRSF had been completed. However, some works were going to spill over to 2007-08, as these were to be completed with secondary materials which would be available only after completing the works with new materials. The argument put forth is not correct, as out of total 129 works likely to spill over to 2007-08 (as per Green Book 2006-07), only 58 track renewal works (45 per cent) were being done with secondary materials. Moreover, the Railways themselves have stated that selection of works is on need basis and these works should have been completed long back. The audit contention, thus, is correct that railways failed to complete the track renewal works under SRSF in the stipulated time frame.

Recommendation

Railways need to provide adequate funds for execution of the remaining track renewal works under SRSF in order to complete them by 31 March 2007. The execution of works where the progress is poor needs to be speeded up.

3.8.3 Execution of works under DRF

After shifting most of the old arrears to SRSF, fresh arisings were to be taken up through DRF. An analysis of the system of sanctioning works under DRF and their execution shows an increase in the outstanding number of works under DRF over various zonal railways as brought out below.

3.8.3.1 Shortfalls in the sanction of works under DRF

The objective of creating an SRSF was to catch up with the arrears as well as clear the fresh arisings on an annual basis through DRF. However, in the last five years, precedence was given to works which were in arrears up to 2000-01. Fresh arisings to be taken up under DRF were given lower preference.

A review of the system of selection of works for track renewals showed that proposals for track renewal are initiated at the divisional levels based on age cum condition of the track. These are further pruned down at the zonal level and only the selected works are sent to the Railway Board for sanction. However, there is a further pruning down at the Railway Board level also, largely on resource considerations.

An analysis of works sanctioned and included in the Final Works Programme (FWP) vis-à-vis works proposed by the zonal railways in their respective

Chapter 3 Track Renewal Works on Indian Railways

Preliminary Works Programme (PWP) as collected from respective zonal railways revealed that on an average only 56 per cent of the works proposed by the zonal railways were finally sanctioned by the Railway Board. Thus, the actual number of works where track required attention was far larger than the finally sanctioned or planned works. The position of proposals sent by zonal railways and proposals approved by the Railway Board over the past three years is shown below:

Year	Proposals sent by ZR	Proposals approved by RB	Proposals not sanctioned (in CTR kms)
	(in CTR kms)		
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>
2003-04	3701.60	2774.93	926.67
2004-05	5504.68	2628.09	2876.59
2005-06	5379.73	2194.41	3185.32

Thus, 3,185.32 kms, at the very least, were due for track renewal but not taken up for want of Railway Board's sanction. This figure would increase if the works proposed and dropped at the zonal level were also to be considered.

Further, there were wide variations in the percentages of proposals approved over various zonal railways. For instance, in CR out of 131 proposals for track renewals submitted at the divisional level, only 85 proposals were proposed by the zonal railway and of these only 30 works were sanctioned by the Railway Board in 2005-06. An analysis of proposals and sanctions over zonal railways revealed that:

- In respect of seven zonal railways (SR, SECR, SCR, NR, SER, ECoR and NEFR) less than 50 per cent of the proposals were approved during the past three years.
- The percentage of proposals approved ranged from 40 per cent for 'D' routes to 79 per cent for 'A' routes during the past five years.
- The percentage of proposals approved was higher in 'B' and 'E' routes than 'D Spl' and 'E Spl' routes, though these were high mineral loading routes. (ECoR)
- According to the Railway Board, the main reasons for not approving the works as per the proposals of the zonal railways were scarcity of resources and the already existing shelf of track renewal works on zonal railways. However, it was seen that the fund balance under DRF has been steadily increasing during this period and stood at Rs.4,141.11 crore as on 31 March 2006.

Given the approximate arising of 2,600 kms per year, the lesser sanction of works and also the delays in carrying out the already sanctioned DRF works on the Railways resulted in an increase in the arrears of DRF works on many zonal railways shown as follows:

Report No.6 of 2007 (Railways)

Year	No. of outstanding works as on 1 April under DRF	New works added during the year	No. of works as per Works Programme	
			Number of works completed during the year	Closing balance at the end of the year
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
2002-03	966	353	105	1214
2003-04	1214	515	128	1601
2004-05	1601	476	180	1897
2005-06	1897	531	110	2318
2006-07	2318	501		-- ¹²

Increase in number of works under DRF over the years shows that if the pace of execution of works is not increased, the Railways may have to resort to an SRSF like situation in the near future. The Railways during discussions (December 2006) stated that with the introduction of heavier axle loading the expected fatigue life of track and other structural items will be shortened. They have also stated that cost factors will go up due to the introduction of management consultants etc. This supports the audit contention that the increase in arrears of DRF works is a serious issue and needs to be tackled on priority.

3.8.3.2 Delays in completion of works under DRF

As per the Works Programme 2005-06, 2,428 track renewal works (including 531 new works) of various kinds were under execution over various zonal railways under DRF. This included 590 CTR works, 378 TRR works, 310 TSR works and 1,150 other works. A review of the expenditure incurred on these works and financial progress made so far revealed that 860 works were more than three years old.

The table below shows the details:

Age	No. of works under DRF as per PB 2005-06	Total anticipated cost (Rs. in crore)	Actual expenditure incurred upto 31.3.2006 (Rs. in crore)	Throw forward (Rs. in crore)
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
> 3 yrs and < 4 yrs	312	1420.96	938.18	482.78
> 4 yrs and < 5 yrs	237	1250.11	764.33	485.78
> 5 yrs and above	311	1709.03	1302.12	406.91
Total	860	4380.10	3004.63	1375.47

The execution of these works alone requires a throw forward of Rs.1,375.47 crore despite having been sanctioned by Railway Board more than three years back. The physical progress in respect of 220 works out of these was below 50 per cent; progress in 85 works being below 10 per cent. Another 59 works had not been commenced by the zonal railways (June 2006). The reasons were mainly non-availability/delay in supply of material including rails and sleepers, failure of contractors, delays in preparation/revision/sanction of estimates, material modification etc. These are dealt with in greater detail in paragraph 3.9.

¹² Figures for 2006-07 not yet available

A test check of 33 works over various zonal railways revealed that though an amount of Rs.49.15 crore (29 per cent) had already been spent on these works against the anticipated cost of Rs.168.34 crore, the physical progress was below ten per cent indicating that the current estimates would require further upward revision.

Thus, while on the one hand Railway Board could not sanction a large number of works due to funds constraints, on the other hand, even the works, which had been sanctioned, could not be completed within the allotted time frame.

Recommendation

Railways should ensure that further arrears in DRF are arrested. Monitoring of works needs to be done to complete the sanctioned works within a stipulated time frame so as to derive maximum benefit.

3.8.4 Wasteful expenditure due to lack of planning of gauge conversion and track renewal works

As brought out in preceding paragraphs, the extent of track requiring attention is much more than what was finally taken up for execution. The main constraints were the scarcity of resources coupled with the capacity limitations of the individual zonal railways. Delays in completion of works were also attributed to non-availability of material such as sleepers, ballast, rails and fittings. Given this, it is important that the Railways utilise the existing resources optimally. Long term planning and targeting of priority works takes on greater importance. In line with this, in February 1992, Railway Board issued instructions to the zonal railways not to make investments of any kind on upgradation or development of sections which were slated for gauge conversion.

However, audit noticed that a large number of track renewal works were undertaken both under DRF and SRSF on sections, which were identified for gauge conversion. While some of these track renewal works were taken up within two to nine years of identifying the sections for gauge conversion, there were also cases of other sections identified for gauge conversion immediately or within four years of taking up track renewal works. There were 51 such works over eleven zonal railways covering a length of 925.85 CTR kms. An expenditure of Rs.127.20 crore was incurred up to March 2006 on these works. **(Annexure XXVIII)**

- Under DRF, there were 24 such track renewal works covering a length of 309 CTR kms where sections were identified for gauge conversion. Of these, 11 works were frozen after incurring an expenditure of Rs.21.35 crore on track renewal works. Further, eight works were still in progress and an expenditure of Rs.14.63 crore has been incurred so far. In five other works, track renewal works were sanctioned though no expenditure was made (June 2006).
- Similarly, under SRSF, 27 works covering a length of 549.83 CTR kms were taken up of which four works were dropped after incurring an amount of Rs.7.78 crore, ten works were frozen after incurring an expenditure of Rs.41 crore and 12 works were in progress on which Rs.41.46 crore had been spent so far (June 2006). In one case in ECoR, an

Report No.6 of 2007 (Railways)

expenditure of Rs.4.92 crore had been incurred so far and no other details were available.

- Out of these, in nine cases the track renewal works were undertaken within a period of two to four years after taking a decision to undertake gauge conversion. In five cases, the decision for gauge conversion was taken up within two years of taking up the track renewal works. In two cases, the decisions to undertake the track renewal works and gauge conversion were taken in the same year by WR.
- Further, 41 cases on seven zonal railways (NWR, NEFR, SWR, SCR, NR, SER and WR) were also noticed where track renewal works were taken up within four to seven years after completion of gauge conversion works. The necessity of taking up track renewal works so soon after gauge conversion indicates that the quality of work at the time of gauge conversion was substandard. This led to extra expenditure on track renewal works on these sections.

Railway Board also decided to delete/not undertake works covering 888 CTR kms out of 1,638 CTR kms under SRSF on eleven zonal railways in respect of 62 works. By the time the Railways took the decision to delete/not undertake 888 CTR kms, 63 per cent portion of some of these track renewal works had already been completed. Thus, deficient planning by the Railways has not only resulted in wasteful expenditure on track renewal works on sections which were identified for gauge conversion, but has also resulted in depletion of limited SRSF funds. These sections could have been managed through maintenance repairs or casual renewals if so warranted for operational reasons. During discussion (December 2006), Railway Board stated that pending gauge conversion the condition of the track where warranted, would have to be attended to in order to ensure safety. However, this does not explain adequately the necessity to first take up the track renewal works and freeze them midway.

Recommendation

Railways must ensure that the status of gauge conversion proposals on the stretches should be considered before finalising the proposals for track renewal works on MG/NG.

3.8.5 Slow progress of Through Bridge Timber Renewal (TBTR) works

Bridge timber renewal is an important item in the track renewal works. Being overaged, wooden sleepers require replacement and are necessary to ensure safe running of trains on bridges. Supreme Court imposed a complete ban (May 1999) on procurement as well as use of wooden sleepers by Indian Railways. Later, on the request of the Railways, Supreme Court lifted the ban partially and allowed use of wooden sleepers to the extent of 20,000 cum wooden sleepers per annum for use in girder bridges and special layouts made of imported wood. However, since the year 2002, tenders floated for procurement of wooden sleepers were discharged thrice and the Railways were unable to procure wooden sleepers to meet their requirements. On the other hand, even after a lapse of six years extended field trials were in

progress for testing the performance of composite sleepers, the Railways were yet to take a decision on a suitable replacement for bridge timber sleepers.

As on 31 March 2006, 81 speed restrictions were imposed on various bridges as a measure of safety. The cost of these speed restrictions for just one year adds upto Rs.280.26 crore. Some of these restrictions had been imposed quite a few years back. A test check of seven speed restrictions over NCR, NR, SER, ECR, WR, CR and SWR revealed that these speed restrictions on various bridges were continuing for very long periods ranging from two to four years.

A review of the progress of replacement of bridge timbers for the last three years revealed that the targets continued to be far lower than the requirements and the achievements against these targets were even lower. In fact, there was a downward trend in the last two years and during 2005-06 only 29.6 per cent of the bridge timbers due for replacement could be replaced. The reasons for such serious shortfalls were attributed to short supply of steel channels compounded by delays in finalisation of tenders and execution of contracts.

Sixteen TBTR works were test checked in audit. Out of these five works were shifted to SRSF in 2001-02. So far, only one work has been completed and the remaining four are under progress five to seven years after their sanction by Railway Board. These works were on routes 'A', 'B' and 'E' over SECR, SER, SCR and ECR. In SER, most of the routes were carrying iron-ore traffic.

Thus, the inability of the Railways to effectively deal with the shortage by arranging for procurement of adequate number of steel sleepers or suitable alternatives has resulted in renewal works going on for long periods. Consequently, there has been not only a loss of productivity on account of speed restrictions but these bridges continue to be the weak links affecting the safe running of trains.

Recommendation

The Railways need to take urgent steps to find alternatives for the wooden sleepers to ensure that the tracks on bridges are duly renewed and the safety of trains is not compromised.

3.8.6 Need for better utilisation of track machines

Track machines such as Plausser quick relaying system (PQRS), Utility track vehicles (UTVs), T-28 and Track relaying trains (TRT) are used for the purpose of facilitating faster laying of tracks. Their optimal use could hasten the pace of track renewal works. A review of utilisation of these machines on various zonal railways during 2003-04 to 2005-06 revealed that on 13 zonal railways the average utilisation of track machines was below 50 per cent with average utilisation as low as 11 per cent on NER. Under-utilisation of track machines was attributed to reasons such as non-availability of blocks, not planning of blocks, repair and breakdown etc. An analysis of the reasons for non-utilisation over the past three years is given as follows:

Report No.6 of 2007 (Railways)

Year	No. of days machines available	No. of days machines utilised	No. of days machines not utilised				
			Traffic blocks not available	Block not planned	POH/Repair/Break down	Other reasons	Total
1	2	3	4	5	6	7	8
2003-04	22452	7552	494	8444	929	5033	14900
2004-05	23843	9106	548	7691	1165	5333	14737
2005-06	26999	9466	597	8753	1844	6339	17533
Total	73294	26124	1639	24888	3938	16705	47170

As can be seen, though the track machines were available, blocks were not planned for at all on 53 per cent of the days. Even where blocks had been specifically requested, these were not provided by the operating department for 1,639 days. Further, factors such as POH, repair and break down further contributed to the downtime of the machines. The utilisation of track machines has decreased drastically by 19 per cent in the last one year. This not only resulted in slow progress of track renewal works, but also adversely affected the objective of the Railways to shift over to mechanised renewals.

On NR, due to deficient planning of track renewal works, the targets set for use of track machines could not be met as the stretches available for track renewal during the last three years were scattered and of shorter lengths. This could have been avoided had the track renewal works been planned at the initial stages itself in longer stretches with use of machines in mind.

Recommendation

Railways need to ensure better utilisation of track machines through better planning and identification of stretches where renewal works are to be carried out. Further, provision of blocks needs to be given higher priority.

3.8.7 Effect of arrears in track renewals

Retention of over-aged track not only involves increased cost of maintenance, but also affects the safety of the travelling public. A number of speed restrictions have been imposed by the zonal railways on account of poor track structure. The number of speed restrictions on account of track structure for the last three years was reviewed. While there were additions and deletions, the overall decrease was not commensurate with the extent of track renewal works carried out. As on 31 March 2006, there were 297 speed restrictions in place over various zonal railways. The number of speed restrictions was on a higher side on SCR and NEFR. Some of these speed restrictions have been in place for a number of years. Each speed restriction has a cost attached to it and prolonged imposition would also have an impact on the finances in addition to the operational impacts. As per the study carried out by SCR¹³, the cost implications on account of speed restrictions on SCR alone were Rs.1,345.94 crore.

¹³ Results of the special study undertaken by Traffic Costing Cell, SCR in 2002-03 and 2003-04

Recommendation

Railways should ensure completion of works within a set time frame so that speed restrictions are removed at the earliest and benefits due from track renewal works can be derived.

3.9 Review of selected works

A sample of 653 track renewal works including 446 works in progress and 207 completed works under SRSF and DRF was selected for detailed examination in audit. Further, contracts awarded against these works were reviewed to assess the efficacy of planning, execution, contract and stores management and monitoring by zonal railways and Railway Board.

The details of works reviewed were as follows:

Status of work	Total number of works	DRF	Length in CTR kms	Total anticipated cost of the works (Rs. in crore)	SRSF	Length in CTR kms	Total estimated cost of the selected works (Rs. in crore)
1	2	3	4	5	6	7	8
In progress	446	279	4138.11	2983.86	167	4388.81	2509.51
Completed	207	87	1247.57	733.99	120	2135.97	1287.33
Total	653	366	5385.68	3717.85	287	6524.78	3796.84

The study of selected track renewal works and contracts brought out deficiencies in planning, execution, contract and stores management as well as inadequacies in maintenance of records and ineffective monitoring. It was observed that:

- Deficiencies in planning and inadequacies in contract management practices such as delays in finalisation of tenders and extensions granted to the contractors in a routine manner led to delays in completion of works and time and cost overrun. Further, changes in scope of work due to various reasons also resulted in faulty execution of works and consequent cost increase, thereby putting a strain on the already scarce resources. In addition, there were wide variations in the rates of various items of works as well as stores items procured amongst the zonal railways which indicated inefficient management of resources. The deficiencies in planning and execution of works also had an impact on the quality of work done.
- Credits for released materials were assessed unrealistically affecting resource planning and availability of stores for execution of works on time. There were variations in quality and quantity of store items utilised vis-à-vis established and prescribed standards. Inadequate stores management led to delays in supply of store items such as rails, sleepers, fittings etc., resulting in delays in completion of works.
- Deficiencies in maintenance of records led to ineffective monitoring both in terms of quantum of expenditure as well as extent of work done. Non-maintenance/improper maintenance also raised the risk of mis-management of resources, especially costly store items such as rails, sleepers etc.

3.9.1 Planning and contract management practices

The macro analysis of the works under SRSF and DRF had indicated delays in completion as brought out in paragraph 3.8 of this report. A micro analysis of the selected works substantiates this as brought out below. An age wise analysis of track renewal works in progress reviewed in audit showed the following:

Age	Works in progress
< 1 yr	32
> 1yr & < 2 yrs	65
> 2 yrs & < 3 yrs	70
> 3 yrs & < 4 yrs	108
> 4 yrs & < 5 yrs	77
>5 yrs & < 10 yrs	90
> 10 yrs	1
Total	443

- Of 443 selected works in progress, 276 works were sanctioned by Railway Board prior to 2003-04 i.e. these works were more than three years old. Out of these, 91 works were more than five years old. Thus, as against a norm of two to three years for completion of track renewal works, the execution of these works was badly delayed and the Railways were not able to complete them with in the stipulated time frame.
- Of the 276 works going on for three years or more, in eight cases, work had not commenced at all (NR-4 works and WR-4 works). However, an amount of Rs.29.50 crore had already been booked against these works. Further, in 39 cases the physical progress was below 50 per cent.
- Of the 207 completed works reviewed, 110 works took more than three years for completion against a norm of two to three years.

Time taken for completion	No. of works
10 years or more	2
9 years	3
8 years	6
7 years	10
6 years	21
5 years	25
4 years	43

In 40 works, as against the original estimated cost of Rs.289.52 crore, the actual cost incurred was Rs.47.41 crore more, resulting in a cost overrun of 16.37 per cent as against the original estimated cost.

- The justification in respect of the selected works was reviewed. Fifty eight per cent of the works (379 out of 653) were taken up purely on 'condition' basis i.e. where the track structure needed immediate attention. It was seen that though of these, 171 works were sanctioned by Railway Board before 2002-03, the physical progress of 27 works was less than 70 per cent. Seventy seven works were completed with a time overrun ranging up to 79 months. Two works in WR were yet to start. Thus, despite justifying these works on condition basis the Railways were lax in executing them.

- Similarly, while taking up 359 works, justification was given in terms of future traffic prospects. Of these also, 90 works were more than five years old. Thus, the Railways were not able to derive projected benefits out of these works as a result of delays in completion.

Deficiencies were noticed in planning, finalisation of tenders, extensions to the contracts, execution of the works and award of rates for various items of work as brought out in the succeeding paragraphs. These had an impact on the quality of track renewal works.

3.9.1.1 Deficiencies in planning

Systematic and meticulous planning and execution of work as per the plan is essential for achieving quality, economy and timely completion of works. Review of selected works revealed that there were deficiencies in overall planning of track renewal works by various zonal railways.

Zonal railways are required to prepare a detailed Project Report for every sanctioned work. These reports should cover areas like details of work, existing track structure, classification of track materials, proposed track structure, existing/ proposed gradient profile, method of execution, formation, ballast, transportation of P-way materials, traffic blocks, monitoring mechanism etc. It was observed that out of 576 works (for which information was made available to audit), zonal railways did not prepare the project reports in 345 works (60 per cent). While seven zonal railways had not prepared project reports at all, NCR and CR did not prepare them in 84 per cent and 78 per cent cases respectively. On NR, project reports were not prepared properly in 43 per cent cases. Non-adherence to laid down provisions, led to faulty execution of various works as brought out in subsequent paragraphs.

Inadequate planning resulted in change in the scope of works during execution. The lack of coordination amongst the Railways also contributed to mismatched standards of track affecting operations.

- In 18 cases test-checked material modifications to the scope of the existing works resulted in the reduction/increase in the original scope of these works. The sanction of the competent authority was not obtained in 13 of these cases. Such mid-stream changes in scope of work result in either excess expenditures or block up of scarce resources, particularly in view of the fact that all works were not sanctioned due to resource constraints.
 - Of these 18 cases, in five cases the scope of work was increased due to reasons such as addition of extra distance, as compared to the original sanction (SCR), use of a higher standard of rails and sleepers (NEFR) and enhancement of quantity of ballast (ECR). This resulted in increase in cost of these works by Rs.7.55 crore.
 - Further, in 13 cases, the scope of work was reduced due to reasons such as proposal of gauge conversion of the section (SR, SWR, NCR) and complete track renewal converted to sleeper renewal only as rails were found in serviceable condition (SR) though any work should be proposed and estimates prepared only after verification of actual conditions.

Report No.6 of 2007 (Railways)

- The Chikjajur-Bellary section was identified for BOXN traffic for iron ore movement in SWR. In a portion of the section under Hubli division, track renewal work was executed with second hand material in December 2004. At the same time, in an adjacent portion of the section under Mysore division, track renewal work was executed with new material. Lack of co-ordination between the two divisions, thus, resulted in adopting different track standards in two adjacent stretches of the same line. The route cannot be used for high axle load traffic till the secondary material used in a part of the line is replaced by new material at an additional cost of Rs.2.22 crore.
- In another case, in the Garwa Road-Chopan section of ECR, it was observed that sleeper density sanctioned was higher (1,660/km instead of 1,540/km) than the laid down norms. This section had a speed restriction of 90 km/hr due to inherent geographical conditions and increase of speed on this route up to 160 kms/hr (for which the higher density was a pre-requisite) was not possible.
- Dharmavaram-Pakala section on SCR was to be reclassified from route R2 to R3 due to lesser traffic density. However, this was not done and track renewal works on the section were undertaken and a higher density of sleepers was laid resulting in avoidable expenditure of Rs.2.22 crore on sleepers.
- In order to make the Chikjajur-Chitradurga-Rayadurga section on SWR, suitable for higher speed and hauling of BOXN wagons, the requirement of ballast cushion was estimated as 38,841 cum. However the provision in estimate was made for only 25,000 cum. By not providing the additional ballast cushion, the benefits of higher speed as well as running of BOXN wagons could not materialise.

3.9.1.2 Delays in finalisation of tenders

A number of deficiencies were noticed in the contract management of track renewal works by the zonal railways affecting timely and efficient execution of these works. The tenders were finalised with substantial delays and extensions were granted to the contractors in a routine manner leading to delay in completion of these works. As a result, even important works taken up on 'condition' basis or on the basis of future traffic prospects were going on for long periods.

Procurement of Pre-stressed Concrete sleepers (PSC) required for track renewal and gauge conversion etc. is centralised at Railway Board. As per procedure office order of 1988, contracts should be placed within a period of 76 days from the date of opening of the tender. A review of three tenders for procurement of PSC sleepers/turnout sleepers in 2000 and 2002 revealed that as against the stipulated time period, Railway Board took 169 to 458 days from the date of opening of tenders to place orders.

Further, zonal railways also had laid down stipulated time periods for finalisation of tender and placement of orders and award of contracts. Review of position of time taken in finalization of tenders revealed that in 32 per cent tenders (452 out of 1,425 tenders) the time taken from opening of tenders to

Chapter 3 Track Renewal Works on Indian Railways

the award of contracts exceeded the stipulated norms. The delay in finalisation of tenders ranged from 94 to 829 days. Further, various zonal railways delayed finalisation of tenders beyond the original validity period offered by the firms which ranged from one to 600 days in 310 tenders. On SWR, NR and ECR, more than 50 per cent of the tenders were finalised beyond the permissible time as detailed below:

Zonal Railway	Total No. of tenders	Period stipulated as per norms	No. of tenders where the time taken from opening of tender to award of contract exceeded the stipulated norm	Percentage	Maximum time taken (no. of days)
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>
South Eastern	184	120/90 + 7	61	33	829
Southern	119	90/120	52	44	335
South Western	25	90	19	76	320
Western	95	90 to 240	17	18	262
North Western	60	90	4	7	148
South East Central	64	90 to 138	21	33	227
Metro	10	120	4	40	94
Northern	97	60 to 90	51	53	516
North Central	33	90	13	40	189
Central	280	90/120	20	7	293
North Eastern	27	90	10	37	338
East Central	101	180/240	77	76	704
South Central	109	90	27	25	178
East Coast	93	60 to 90	42	45	337
Northeast Frontier	46	90/120	11	24	377
Western	82	120/90	23	28	237
Total	1425		452		

Thus, non-adherence to time schedules stipulated for finalisation of tenders was one of the important reasons for delay in commencement and completion of works.

3.9.1.3 Deficiencies in execution

Deficiencies in execution of works, coordination between departments/units and incorrect sequencing of works also resulted in delays and extra expenditure as brought out below:

- In 140 cases (59 completed and 81 works in progress), upward revision of the original estimated cost of the work had to be carried out with cost increase of Rs.200.65 crore (13 per cent). Of these, 39 per cent alone were due to time overrun resulting in higher expenditure. The remaining cases of revision were necessitated due to various other reasons such as defective estimation, variation in scope etc.
- While revising the estimates, the Railways did not obtain permission of the competent authority in respect of 7 works (WR-3 works and one work each in SR, NWR, ECoR and NWR). There were delays in preparation and sanction of estimates by 120 to 300 days in respect of eight out of 21 works reviewed in ECoR.

Report No.6 of 2007 (Railways)

- The work of end cropping and welding (ECW) on the Gangadharpur – Khallikot section along with Through Weld Renewal was awarded in 1999 and completed in 2003. However, as poor execution by the contractor resulted in large scale weld failures (66 during March 2003 to April 2006) Through Rail Renewal in patches had to be undertaken at a cost of Rs.0.76 crore in a stretch of 28 kms in the section where ECW had been executed. Thus, due to defective execution, the railway had to bear a loss of Rs.20.08 crore on account of speed restriction (up to November 2005) and extra expenditure of Rs.0.28 crore on end cropping of corroded rails.
- Ballast is required for making up of deficiencies in the existing cushion as well as to increase the ballast cushion. As per instructions of Indian Railways Permanent Way Manual, the new ballast to increase cushion should be dumped on track at the final stages of deep screening work. In SCR, three cases were noticed where the required sequence of supply and dumping of ballast at the final stage of deep screening was not followed as a result of which, neither the required ballast cushion was achieved nor the deficit of ballast was made good. The speed restrictions on the sections were continuing due to deficit ballast on track.
- In SWR, in respect of three works it was seen that though the estimates provided for painting of rails to prevent corrosion, the item was not included in the agreements. In respect of one work no provision was made in the estimate for this item. Thus painting of rails was not carried out at all resulting in possible deterioration by corrosion and shortening of life of the rails besides potential safety hazard, as iron-ore traffic was also carried on these sections.
- In respect of one Through Rail Renewal work on SWR, provision for sleepers, rail fastenings, ballast and modification to BFR wagons, overhauling of Flash Butt Welding Plant and replacement of BRH wagons worth Rs.6.14 crore were included in the estimate of the work, though these had nothing to do with rail renewals.

3.9.1.4 Extensions granted to contractors in a routine manner

In 77 per cent of the contracts (1,001 out of 1,297), extensions were granted to the contractors by various zonal railways on various grounds. Though stipulated time period for completion of works under these contracts was in the range of 30 to 1,095 days, zonal railways granted up to even 12 extensions in a work to the contractors. As a result, the total period of the contracts was unduly extended overshooting the target dates by a number of years. The reasons for these extensions were analysed and it was found that more than 50 cent of the total extensions, were granted purely due to lapses on the part of the Railways. It was seen that:

- In 559 contracts, extensions were granted to the contractors on the Railways' account due to reasons such as non-availability of P-way material, non-availability of blocks, and enhancement in scope of work by the Railways etc. These extensions had an adverse impact on the progress of 363 track renewal works.

Chapter 3 Track Renewal Works on Indian Railways

- In 210 contracts, extensions were granted due to the contractors' incapability to undertake the works thereby affecting the progress of works in 173 works.
- In 182 contracts, the reasons attributed were both on account of the Railways and the contractors.
- Though 32 contracts were terminated at the risk and cost of the contractor, in half of these cases the contract had not been awarded at the risk and cost of the defaulting contractor (June 2006).
- It was also seen that though excess time over and above the stipulated period was taken for negotiations in most of the cases, reduction in rates of tenders could be achieved only in 36 per cent of the cases in SER.

Repeated and routine extensions to the contractors due to lapses on part of the Railways substantiates the fact that the Railways did not plan the works properly and also did not coordinate with other departments for timely availability of blocks and p-way material which resulted in delays in completion of works.

3.9.1.5 Wide variations in rates over various zonal railways

An attempt was made in audit to compare the rates of similar items of works under track renewal works as well as the rates at which various stores items were purchased by various zonal railways. While marginal variations are expected due to zonal differences it was observed that there were wide variations in awarded rates over various zonal railways:

- In respect of removing a sleeper, in 2003-04 the rate on WCR was Rs.3.37 per sleeper, whereas the rates were ten time higher on SR (Rs.40 per sleeper).
- In respect of painting of rails during 2005-06, the rates varied from Rs.11.45 per sqm. on WR to as high as Rs.54 per sqm. on ER.
- There were wide fluctuations in the rates for lifting of tracks on SR over even consecutive years. The rate for lifting of track per meter was Rs.59 in 2002-03, Rs.105 in 2003-04 and Rs.41 in 2005-06.
- Similarly, in respect of GFN liners (T-3702) in 2003-04, the rate finalised on SWR was Rs.10.15 per unit whereas it was Rs.16.90 per unit on SR an adjoining railway, one and a half times the rate of SWR.
- In respect of GRSP (T-3711) in 2002-03, the rate finalised by SER was Rs.10.50 per unit, whereas the rate finalised by ER was Rs.18 per unit.

Wide variations in rates of various items of work as well as stores items procured by various zonal railways would result in higher expenditure on track renewal works.

3.9.1.6 Impact on quality of track renewal works

The objective of track renewal works is to improve the track structure in line with traffic carried. Any deficiencies in execution of contracts would result in affecting the quality of track. The trend of rail fractures and weld failures over various zonal railways during the past five years was as follows:

Report No.6 of 2007 (Railways)

Year	Rail fractures	Weld failures
1	2	3
2001-02	2731	5949
2002-03	2228	5676
2003-04	2567	5729
2004-05	2230	4609
2005-06	2173	4069

Though there was an overall improvement in the number of rail fractures and weld failures over the past five years, both the number of rail fractures as well as weld failures showed an upward trend in 2003-04. An inter railway comparison, however, showed that on SR, WR, NCR, SCR and CR, the total number of rail fractures and weld failures were more than the all India average during the past three years. Though, there was a marginal downward trend in the number of rail fractures and weld failures particularly after the execution of SRSF works, increasing arrears under DRF as well as the increased loading patterns of the Railways is likely to lead to increased number of rail fractures and weld failures. This is seen particularly in the case of zonal railways such as NEFR, NER, NCR, SR and ER, where the position of 2005-06 has either shown very minimal improvement or even deterioration over the years. Thus, improvement in track parameters was not commensurate with the large number of track renewal works undertaken by the Railways.

A scrutiny of 26 CTR and TRR works completed in 2002-03, 2003-04 and 2004-05 over various zonal railways revealed that over nine zonal railways, 100 rail fractures and 322 weld failures occurred in the two years immediately after the completion of the track renewal works.

In 19 works, ballast recoupmnt was required in view of insufficient ballast cushion provided by the contractors. On six zonal railways, ballast recoupmnt of 82,372 cum over a stretch of approximately 365 CTR kms was carried out within the next two years indicating deficient execution of works.

Recommendation

Railways should ensure that proper planning, co-ordination and execution of works is carried out by following the laid down norms as well as best project management practices. The monitoring and supervision of works execution at every stage needs to be strengthened to ensure not only quality but also timely completion of the works. The Railways should adopt a system of comparison of rates across zonal railways and any wide variations should be avoided.

3.9.2 Inefficient stores management

A large portion of expenditure on track renewal works comprises stores items such as rail, sleepers, ballast, track fittings etc. A review of the management of stores items in the selected works revealed deficiencies in management of stores items by railway administration leading to delayed supply of stores and consequent delays in completion of works.

3.9.2.1 Shortfalls in realisation of credits for released material (CRRM)

While preparing estimates for the track renewal works, estimates on account of credit for released material are prepared. These estimates should be based on the quantum of released materials which is assessed on the basis of foot to foot survey done by the P-Way Inspectors on their allotted sections. The released materials in serviceable condition are used as second hand materials for works of lesser priority and the un-serviceable released material is sold as scrap. Thus, proper assessment and accountal of released material is important not only from the point of view of booking of the expenditure but also from the point of view of physical recovery of all the materials. Non-realisation of credits for released material and their accountal in the respective works can affect resource mobilisation adversely.

A comparison of budgeted, revised and actual CRRM over the last three years is shown in the table below:

Year	Budget Estimate (BE)	Revised Estimate (RE)	Actual CRRM	Shortfall w.r.t BE	Shortfall w.r.t RE
1	2	3	4	5	6
2003-04	786.00	818.88	702.93	-83.07	-115.95
2004-05	800.00	842.14	681.43	-118.57	-160.71
2005-06	786.00	746.10	573.03	-212.97	-173.07

It was seen that there were consistent shortfalls in meeting the targets of credit recoveries during all the three years. The shortfall ranged from ten per cent to 27 per cent of the budgeted amounts. In 2003-04 and 2004-05, though the revised estimates were increased, the actual CRRM remained short (Rs.83.07 crore in 2003-04 and Rs.118.57 crore in 2004-05) of even the budgeted amounts. In 2005-06, a shortfall of Rs.173 crore was noticed despite downward revision of the estimate. During this year, there were shortfalls in realisation for credit for released materials on all zonal railways except SR.

A review of the position of CRRM on selected works revealed that in 73 per cent (140 out of 191) of the cases, the actual amount of released material was less than the projected amount over various zonal railways. In these 140 works, the actual realised CRRM was Rs.199.25 crore as against the estimated CRRM of Rs.463.40 crore. The total credit for released material in respect of these 140 works was thus short by 57 per cent of the estimated CRRM. The differences were either a consequence of wrong assessments of amounts of released materials or mis-management of released materials. Specific reasons were given as non-drawal of completion reports (CR, NEFR), non-preparation of adjustment vouchers (CR) and faulty estimation based on approximation (CR, NEFR).

As a test check, in respect of 78 works, the quantum of released material such as rails, sleepers and fittings were compared to their original estimates. It was seen that:

- On three zonal railways, more than 50 per cent of shortfall was noticed in respect of rails. The shortfall was as high as 65.2 per cent in ER, 82.7 per cent in NCR and 89.3 per cent in ECR in selected works.

Report No.6 of 2007 (Railways)

- The percentage shortfalls were also more than 50 per cent for sleepers in four zonal railways. The shortfall was as high as 92.8 per cent in WR, 91.34 per cent in NR, 89.4 per cent in CR and 52.5 per cent in ECR.
- In respect of fittings, the shortfall was as high as 77.3 per cent in NR and 74 per cent in ER.
- In NWR, the CRRM was less than 50 per cent of the estimated amount in all the selected cases.
- Two zonal railways (NR, SECR) did not maintain requisite records. In the absence of proper accountal, the reasons for shortfalls were difficult to ascertain.
- As against the prescribed five per cent towards wear and tear while preparing estimates of released material, SWR adopted six and nine per cent in two CTR works, resulting in under-estimation of 88.03 MT of released rails.
- SWR also adopted rates lower than that prescribed by Railway Board for estimating released material resulting in short provision of Rs.14.25 crore in released materials in six works.

Wide variations in the quantum of projected and actually released material results in deficient planning in terms of resources such as funds and stores. In addition, the risk of mis-management of stores not part of any estimate of released material also becomes high.

3.9.2.2 Use of material in deviation of laid down standards

Railways need to plan the requirement of the quality and quantity of the items for use in execution of works. If the planning is done properly and stores are managed prudently, execution of the works could be done as per plan and the laid down norms and the Railways could derive maximum benefits from the works undertaken. Thirty one instances were observed, where there were deviations in the specifications of the material used in track renewal works as compared to the original sanctions.

- In eight cases, sleepers of higher quality/density than prescribed were used and in two cases, lower/quality and density were used. Similarly, despite heavy haul BOXN wagons being run in closed circuit, sleepers of different specifications were used on the Rourkela-Birmitrapur section on SER.
- In nine cases, rails of a lower standard were used. Out of these, in four cases in NCR, 52 kg rails were used in place of 60 kg rails prescribed for A and B routes. In three cases, higher standards of rails than prescribed were used.
- In respect of seven works in SCR, ballast cushion higher than the prescribed standards was used thereby incurring an extra expenditure of Rs.2.41 crore. In one case in ECoR, ballast of a sub-standard quality was used and also procured in excess amounting to Rs.1.08 crore.
- In another four cases, fish plates, elastic rail clips and grooved rubber sole pads were used with a deviant specification (SR and ECoR).

Use of material of higher standard than prescribed resulted in extra expenditure and wastage of scarce resources. On the other hand, use of material of a lower standard than prescribed not only compromises safety but also increases the chances of early renewal and additional expenditure.

3.9.2.3 Inadequate stores management

A number of cases were noticed which pointed towards inadequate stores management over various zonal railways. As pointed out earlier, delays in availability/non-availability of store items were the main reasons for delays in completion of works. On the other hand, mis-management of stores, by procuring more in quantity, not utilising the stores for long periods, booking them to a work and not starting the work etc., were also noticed. The following instances substantiate the fact that though resources were scarce, mis-management of store items by the Railways was a major contributor to delays in completion of works:

- The contract for CTR work on Raiwala-Dehradun section of Moradabad Division, in Northern Railway was awarded in January 2004 with the date of completion as July 2004. On one hand, ballast worth Rs.1.73 crore was procured before actual commencement of the work in 2001-02 and on the other hand, the contractor was granted six extensions on account of railway's failure to provide store items to him for timely completion of the work. Two years after the due date for completion, the work was still in progress.
- A number of cases of short account of stores amounting to Rs.1.52 crore were observed during accounts stock verification of stores in ECoR. Out of this, P-way material worth Rs.0.76 crore was stated to have been sent to engineering units by Section Engineer-P-way, Cuttack for which verified copies of challans were not received. It was found that these materials were not received by the concerned units at all. No report was sent to Railway Board for the loss sustained by the Railways in these cases.
- In respect of five track renewal works on SECR, an expenditure of Rs.1.3 crore and Rs.1.9 crore was booked towards mobilisation of stores items during 2004-05 and 2005-06 respectively. However, these works had not been commenced so far and the stores items remained unutilised.
- Track materials worth Rs.2.7 crore were procured in excess of assessed quantities in respect of seven works on SR. In 13 works, quantities utilised were less than quantities procured blocking up capital worth Rs.4.55 crore.
- Three track renewal works in SCR were delayed due to non-receipt of rails. In respect of one of these works, though the Sleeper Renewal was completed, the Rail Renewal was delayed by more than five years.
- One work of through turnout renewal in Bangalore division of SWR, which was sanctioned five years back, could not be commenced due to non-availability of sleepers.
- Railway Board imported 33,330 Vossloh sleeper/fastening systems from a German firm for use on a trial basis in Waltair Division of ECoR costing Rs.2.58 crore (November 2001). Later on, a decision was taken to insert

Report No.6 of 2007 (Railways)

fastenings only for a stretch of 2 kms instead of 5 kms as a result of which 21,822 fasteners, 300 pads and 5,467 special sleepers valued at Rs.1.68 crore were lying unused on cess since September 2003.

- A TRR work was sanctioned in the Delhi-Ambala-Kalka section of Delhi Division in 1996-97. The same was shown as completed in 2000-01 and deleted from the works programme. In February 2002, Delhi Division again proposed a TRR work which included 9.87 kms of earlier completed stretch on an out-of-turn basis, on consideration of passengers' safety. On being asked by the zonal railway, the divisional authorities admitted that the rails could not be replaced in the stretch as the material was used in other works.

Thus, the poor monitoring of stores procurement and their timely availability has impacted the execution of works.

Recommendation

Railways should ensure that material for timely execution of works is made available just as premature procurement resulting in block up needs to be avoided. Utilisation of stores and accountal particularly of released material is an area which needs to be addressed on priority in view of the increasing value of scrap.

3.9.3 Deficiencies in maintenance of records

Maintenance of records such as material-at-site accounts, register of works, completion reports, progress reports etc., is a pre-requisite for monitoring progress and ensures proper accounting of expenditure and receipt. They help watch utilisation of expensive stores items and avoid chances of mis-appropriation and theft. Non-maintenance/ improper maintenance of prescribed records raises the risk of mis-management of the resources especially costly stores items such as rails, sleepers etc.

A review revealed that non-finalisation of accounts and maintenance of incomplete records by zonal railways led to 122 completed works being shown as works in progress in the works programme. Deficiencies in maintenance of records led to ineffective monitoring both in terms of quantum of expenditure as well as extent of work done.

3.9.3.1 Material at site account (MAS Account)

Rules provide that materials obtained for specific works should be temporarily held under "Material-at-site Account". The adjustment from this suspense account is done after the issue of materials.

Audit observed that:

- MAS accounts were not prepared in 38 per cent of the cases reviewed in audit. While two zonal railways did not maintain MAS account in any of the works reviewed in audit (NWR and Metro Railway), in eleven other zonal railways, MAS Accounts were not prepared in 11 per cent to 82 per cent of the works selected in audit.
- Further, deficiencies like entries made without unit rate or value of the materials (SECR) were noticed. CR did not maintain a separate MAS

account for each work and records in support of utilisation of material/location of MAS accounts.

Due to the above deficiencies, zonal railways could not apply effective check on receipt and utilisation of store items, defeating the purpose of watching material utilisation through MAS accounts.

3.9.3.2 Register of Works

Register of Works is a collective record of expenditure vis-à-vis estimates. It is used to monitor expenditure incurred on the works against the sanctioned estimates. If maintained properly, it can act as an effective tool for budgetary control.

It was observed that:

- Twenty-nine per cent of the cases reviewed in audit did not find place in the Register of Works. While in two zonal railways, all the cases reviewed did not figure in the Register of Works at all (NR and Metro Railway, Kolkata), in ten other zonal railways most of the works did not figure in the Register of Works.
- Further, deficiencies like entries not made as per codal provisions (ER, SER, WR, NWR, NR, CR, EcoR, WCR), credit for released material not reflected (SER, CR), reconciliation not done regularly (SWR, NWR, SCR, CR, WCR) were noticed.

Failure to maintain work-wise data was not only a serious lapse in maintenance of vital financial records, but also indicative of lack of control and monitoring of expenditure and financial progress of works in the zonal railways.

3.9.3.3 Progress Reports

Zonal railways are required to maintain progress reports of works for effective monitoring. It was observed however, that progress reports were not prepared in 20 per cent of the cases reviewed in audit. Financial status was also not indicated in the reports of SER and works wise progress reports were not prepared on CR.

The failure in not maintaining proper progress reports was an impediment in regular monitoring in progress of works and indicative of deficient internal controls.

3.9.3.4 Completion Reports

For all railway projects costing over Rs.1 crore, the completion estimate should be prepared at the end of one of the first three financial half years after the date of completion viz. the date on which the project fulfills the purpose for which it was sanctioned. As per codal provisions, the completion report should be prepared within 18 months after the end of the financial half-year in which the completion estimate is prepared. Unless the completion reports are drawn, the railway administration is not in a position to know the final cost of the work and obtain sanction for the variation in cost.

However, during review of position of works completed during the years 2001-02 to 2002-03 it was observed that:

Report No.6 of 2007 (Railways)

- Completion reports were not drawn in 90 completed works under DRF and 33 completed works under SRSF in 2001-02.
- Similarly in 2002-03 in 60 works under DRF and 58 works under SRSF, completion reports have not been drawn by the zonal railways so far.
- Despite having been completed physically, 122 works, were still appearing in the Works Programme due to non-finalisation of accounts and non-drawal of completion reports.
- In three cases on NR, the details of expenditure were not available due to non-maintenance/inappropriate maintenance of the work registers. Non-finalisation of account of these works had delayed the drawal of completion reports of these works.

Deficiencies in maintenance of records led to ineffective monitoring both in terms of quantum of expenditure as well as extent of work done. Non-maintenance/improper maintenance also raised the risk of mis-management of resources, especially expensive store items such as rails, sleepers etc. More important, the regularisation of any excess expenditure through at least ex-post facto sanctions was precluded.

Recommendation

Railways should lay emphasis on proper maintenance of records to ensure correct accountal and effective monitoring at all levels.

3.10 Conclusion

Though the Railways had taken serious measures to overcome the arrears in track renewal works, the failure to address issues of timely execution of works as well as taking care of the annual accruals has diluted the efforts. This has been further affected by the failure to contain the cost of the works as per the original estimates. Deficient contract and stores management practices have further compromised the quality of the works executed, in addition to delays and depletion of scarce resources. These have also impacted the quality of track defeating the very objective of track maintenance and renewals. Monitoring and control were also weakened by the poor maintenance of requisite records.