Chapter 4 - Execution and monitoring of Railway Electrification Projects

4.1 Project execution methodology

RE projects in Indian Railways are executed through the following project execution methodologies:

a. **Conventional methodology with/without Stores Contracts** – In this methodology, Department-wise contracts are awarded for execution of separate activities of the project like Overhead Electrification (OHE), Traction Substation (TSS), Supervisory Control and Data Acquisition (SCADA), Electrical General, Signal, Telecom, Civil Engineering contracts for construction of service buildings, residential quarters etc. The important stores are processed, indented and supplied by Indian Railways to the contractor. A variation to this is Department-wise award of contracts with stores procurement also included. This methodology involves multiple contracts within a project as well as within departments of CORE.

b. **Turnkey/Quasi Turnkey Contracts** – In this methodology, a single contract is awarded for all works including stores. This is a commonly used methodology in RVNL. The engineering part involving preparation of Detailed Estimate is prepared by officials of CORE and through consultants for RVNL. A variation of turnkey used in CORE in some projects is to award a composite contract with stores for OHE, TSS, SCADA with or without General Electrical works. The remaining activities like Signal, Telecom, General Electric works (where it is not a part of the Composite Contract), Civil Engineering contracts for construction of buildings, residential buildings etc. are awarded through separate multiple contracts. This is termed as quasi turnkey methodology in this report.

c. **EPC Contracts** – Engineering, Procurement and Construction (EPC) projects wherein all activities of a project are awarded to a single contractor.

Project execution methodologies are determined by the implementing agencies. RVNL prepared detailed estimates by engaging consultants and adopted turnkey methodology for project execution, whereas CORE prepared the detailed estimate through its officials and used conventional without stores, conventional with stores and quasi-turnkey methodologies for project execution.

The conventional contracts without stores require skill set with an organisation for engineering, contracting, store procurement, inventory management, monitoring of contracts etc. towards the common project activities. This requirement is reduced in conventional contracts without stores and further reduced in quasi-turnkey contracts. There is a further reduction in requirement of skill sets in turnkey. EPC contracts require minimum in-house skills.

It was seen that RVNL used turnkey project execution methodology consistently. However, CORE followed different project execution methodologies for different projects without carrying out any cost benefit analysis.

Out of 28 selected projects for CORE, the project execution methodologies used were conventional without stores in 11 projects, conventional with stores in four projects, quasi-turnkey in 10 projects and turnkey in two projects. RE project Barauni-Katihar-Guwahati was divided into four groups which were executed through different project execution methodologies, one through conventional without stores, one through quasi-turnkey and two through turnkey. Two groups in this project were executed by CORE and one each were through conventional without stores and quasi turnkey, while the other two were executed by RVNL through turnkey methodology.

In six out of eight projects, RVNL used turnkey as project execution methodology whereas one project was on quasi-turnkey basis. The project execution methodology of one project of RVNL was yet to be decided, as the detailed estimate was not approved so far.

Annexure 4.1

It was observed that

- No analysis of benefit of in-house procurement of stores with cost implication of manpower, inventory management, optimal utilisation of material, scrap management, stock piling etc. was carried out by CORE.
- The time cost of money involved in supply of stores procured and paid by railway was not assessed as a cost by CORE.
- There were multiple contracts in all projects and time taken in deciding contractors varied and was not synchronized for completion of projects in time.
- The D&G establishment component provision remained at 8.37 *per cent* irrespective of the project execution methodology adopted by CORE. Similar provision for D&G (non-establishment components) remained at 1.35 *per cent* of estimated cost.
- There was absence of project scheduling and monitoring mechanism which is the minimum requirement where multiple contracts are entered into. The time

scheduling processes like CPM/PERT for the project were not used at CORE as well as RVNL at the project level.

- Various requirements for the contractors for execution through various methodologies in terms of manpower, machines, financial resources and monitoring mechanisms were not framed. The estimated benefit of different methodologies in terms of time, manpower requirement for CORE, time cost of money involved, quality issues and corresponding implication on cost (in terms of financial bid) were not carried out at CORE.
- No prioritization was done by the Railway Board amongst projects approved by it, taking into account their financial and operational benefits.

In their reply, Railway Board stated (March 2017) that they have prepared an 'Action Plan' for Electrification wherein is has been decided to electrify 90 *per cent* of BG routes of IR i.e. 24,400 RKM by 2020-21. They further stated that RE projects are generally financially remunerative and as per the approved Action Plan the execution of these projects will be carried out on fast track basis without any prioritizing them on operational & financial basis. They further stated that presently executing agencies decide the methodology of project execution of RE projects. EPC contract methodology has only recently been adopted by CORE in two tenders. As such after gaining adequate experience the EPC mode of contracting system will be used in majority of future RE projects.

RVNL, in their reply stated (March 2017) that Clause 8.3 of GCC clearly provide for submission of detailed time programme by the contractor adopting project management tools. However, audit has pointed out the requirement for use of programme monitoring software and tools by project executing agencies viz. CORE and RVNL.

It is recommended that

6. ***The projects should be prioritized on the basis of the expected financial and operational benefits and project execution methodology such as Engineering, procurement and commissioning (EPC), or turnkey may be used as far as feasible as this would enhance accountability of the contractor, minimize co-ordination issues and make monitoring of the projects easier.***

7. ***Monitoring of projects should be given due importance. Project scheduling tools and time and resource optimization techniques such as CPM/PERT should be provided for in the DPRs.***

4.2 Processing of tenders

Once the project execution methodology is finalized, various tenders are processed and accepted by the accepting authority. This involves preparation of a tender document comprising of General Conditions of Contract (GCC) and Special Conditions of Contract (SCC). The estimated cost of the project is a part of the tender document. A notice inviting tender (NIT) is issued which prescribes the earnest money deposit (EMD) requirement, eligibility conditions for the contractor, scope and time of work, bidding process in particular single envelope bid or double envelope bid, date of opening of tender, conditions of GCC/ SCC, etc.

The tenders are opened on the prescribed date and subjected to examination by executing department of the implementing agency, vetting by finance department of implementing agency, tender evaluation by the prescribed tender committee (including representative of the finance department) and acceptance by the competent authority. A letter of acceptance (LoA) is issued containing the terms for execution of a binding agreement. This is followed by execution of a binding agreement. The objective of tender process is to assess the capability (Turnover/resources), work experience (previous work), financial solvency (soundness involving review of turnover, balance sheet, work load, etc.) and performance assessment of past works of the bidder. The objective is also to assess his capability to execute the contract in time and obtaining a competitive bid for the execution of the tender. The reasonability of price in a bid is determined on basis of Last Accepted Rates (LAR) of similar previous tenders. These LAR are periodically updated. The activities in tender evaluation where significant time is taken are verification of eligibility requirements of the bidders and determination of applicable rates of Last Accepted Rates (LAR). The former is used to assure Railways of the capability of the bidders and latter to be used for assessing the reasonability of rates offered by the bidders. The cost estimates for EPC mode cannot be compared to LAR's of other methodologies of project execution in view of difference in responsibilities of Railway Administration and its contractors in various project execution methodologies.

4.2.1 Time taken in various stages of tender processing

The details of time taken from issue of NIT after sanction of detailed estimates, acceptance of tenders, issue of letter of acceptance and execution of binding agreement by CORE as well as RVNL was assessed in audit for 36 selected projects. It was observed that

- The time taken for the issue of NIT after sanction of detailed estimates was up to 3177 days in 24 projects (it was issued up to 233 days before finalization of detailed estimate in nine projects) in respect of tender issued by CORE and up to 915 days in 12 tenders in 7 projects in respect of RVNL. The time taken was 3177 days in Barabanki-Gorakhpur-Barauni project, 2905 days in Barauni-Katihar-Guwahati project, 2179 days in Ujjain-Indore and Dewas-Maksi project, 2135 days in Tiruchirapalli-Madurai project, 2100 days in Varanasi-Lohta-Janghai project and 2003 days in Shakurbasti-Rohtak project. This shows that, NIT was issued before approval of the detailed estimate by CORE authority in nine projects. It was seen that time being the essence of project was compromised and tenders were not processed against objective of completion of project in time.
- Time taken for issuance of Letter of the Acceptance (LOA) from sanction of detailed estimate was in the range of three to 3255 days at CORE, whereas RVNL took 96 days to 1141 days from the sanction of detailed estimate. Agreement of the contracts was executed by CORE and RVNL authorities with successful bidders up to 798 days and 204 days respectively from the date of issue of LOA.

Annexure 4.2 to 4.5

It was further seen that practices such as e-tendering which help in reducing tender processing period significantly[15] were yet to be adopted in CORE or RVNL. The activities involving assessment of contractors' capabilities at various levels (executing department, finance vetting, and evaluation by Tender Committee (TC)) and verification of claims of the bidders is done in sequence and no procedure to carry out these activities in parallel was prescribed/followed. As a result, a lot of time was being taken to complete the assessment.

4.2.2 Number of contracts awarded per project

The number of contracts awarded in the 36 selected RE Projects were seen. It was observed that

- To execute a project, up to 116 tenders were issued by CORE. 116 contracts were awarded in Barabanki-Gorakhpur-Barauni project, 53 in Itarsi-Katni-Manikpur-Chheoki project, 46 in Barauni-Katihaar-Guwahati project, 30 in Khana-Sainthia-Pakur project, and 29 in Ujjain-Indore and Dewas-Maksi project. On an average 20 and 24 tenders were issued for the two categories of projects, viz. 8 work in

[15] Railway Board letter no. 2004/CE I/Misc./MR's Instructions dated 21.06.2004

progress and 14 completed projects respectively. This indicates that over the years the number of contracts awarded per project continued to be very high.

- While, CORE awarded a large number of contracts to execute a project, RVNL issued only up to four tenders to execute a project. The time taken was 3255 days in Barabanki-Gorakhpur-Barauni project, 2978 days in Barauni-Katihar-Guwahati project, 2667 days in Tiruchirapalli-Madurai project, 2295 days in Ujjain-Indore and Dewas-Maksi project, 2190 days in Varanasi-Lohta-Janghai project and 2108 days in Shakurbasti-Rohtak project.
- Total 506 and 11 contracts were awarded for total 27 and 7 projects by CORE & RVNL respectively for execution of projects. For 27 projects executed by CORE, there were up to 116 tenders for implementation of a single project, for seven projects executed by RVNL, up to four contracts were awarded. In the absence of use of time scheduling processes like CPM/PERT, keeping track of execution of such large number of contracts was also difficult and delays in one or more contracts affected execution of work in other contracts.
- In 19 RE Projects, out of 29 ongoing and completed RE Projects test checked, where the number of tenders issued were more than five; the minimum contract values ranged between ₹ one lakh to ₹ 1.2 crore with a mean of ₹ 24 lakh and maximum value ranged between ₹ 3.16 crore to ₹ 165 crore with a mean of ₹ 45.14 crore.

A large number of small contracts create challenges in regard to monitoring and synchronization of works of different contracts. It also impacts the ease of monitoring, accountability of contractors and coordination issues.

Annexure 4.4 to 4.6

It is recommended that

8. ***E-tendering should be implemented and various activities of tender evaluation should be done in parallel.***
9. ***Large number of tenders require closer monitoring and handling of coordination issues on account of multiplicity of tenders. Therefore, a project should be executed in a way that the number of tenders are minimized.***
10. ***Timelines for various activities in tender processing may be prescribed so as to complete tender evaluation process within a reasonable time. Last Accepted Rates (LAR) should be up dated by maintaining appropriate database.***

Railway in their reply stated (March 2017) that the recommendation of Audit for fast track process of tenders is acceptable and separate set of instructions will be issued to executing agencies after examining the issue in consultation with Civil Engineering (General) Directorate of Railway Board. They further stated that e-tendering has been implemented for tenders of CORE after 24 March 2017.

4.3 Assessment of capability of contractor to execute the project work

Railway Board have laid down the following instructions for assessing the capability of the contractor to execute a work:

- Assessment of turnover and work experience[16],
- Assessment of past performance of the contractor[17]
- List of personnel, organization, plant & machinery available and proposed to be used for the work[18]; and
- Financial soundness (solvency) involving assessment of turnover, volume of workload, balance sheet, etc.[19]

Thus, assessment of capability of a contractor's entails assessing his turnover, resources, work experience, past performance and financial soundness (solvency through examination of balance sheet, work load, turnover, etc.). The practice being followed in CORE and RVNL was reviewed in audit. It is observed that

- In CORE assessment of resources, turnover and work experience as part of eligibility requirement was carried out in tenders above ₹ 50 lakh. However, no assessment of past performance and financial soundness was done in tenders irrespective of money value. Out of 508 contracts awarded in respect of 28 RE Projects, in 474 contracts information was made available to audit. Of these 149 contracts (31 *per cent*) were below ₹ 50 lakh, where no assessment of resources, turnover, work experience, performance and financial soundness was done in absence of any prescribed eligibility conditions.

- In RVNL, the resources, turnover, work experience and financial soundness in term of net positive cash flow from works and liquidity was seen while finalizing the contractor. However, the past performance of the contractor was not incorporated in the assessment process for contractors.

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[16]Railway Board letter no.94/CE-I/CT/4 dated 17.10.2002 and letter no. 90/CE-I/CT/27dated 17.08.95
[17]Railway Board letter no.85/WI/CT/23-GCC dated 31.01.86
[18]Railway Board letter no.94/CE-I/CT dated 22.10.2001 and Railway Board letter no. 90/CE-I/CT/27 dated 17.08.95
[19]Railway Board letter no. 2007/CE.I/CT/18 dated 28.09.2007, letter no. 90/CE-I/CT/27 dated 17.08.95, letter number 68-B (C)-PAC/IV/23/20 dated 25.10.1968 and letter no.94/CE.I/CT/4 (Pt. II) dated 19.11.2003

While accepting tender, position of work experience and turnover of the firm were assessed in most of the tenders by CORE and RVNL. But, assessment of solvency/financial soundness of the firm were not seen to have been made by CORE. It is also seen that assessment of the workload of the firm on the ability to complete the work was not made by the tender committees of CORE, whereas it was considered during assessment by RVNL. The past performance of the bidders was also not assessed in both CORE and RVNL while evaluating the bids.

In the absence of comprehensive assessment of the capability of the contractors, in a large number of works contracts, the work got delayed.

It is recommended that

11. ***Assessment of contractors includes evaluation of technical resources (personnel/machine), work experience, past performance, turnover, financial resources (solvency) etc. The working capital commitment should be reflected in the agreement with the contractor including mode of ensuring availability of working capital. It will be a good idea to integrate instructions issued by Railway Board for assessing the eligibility of the contractors from time to time and issue a set of comprehensive instructions so that gaps or overlaps if any in the existing instructions issued from time to time can be addressed.***

During the Exit Conference, RVNL stated (March 2017) capability/bid capacity of the contractor is done in RVNL. They stated that if a firm has existing commitment beyond its capacity based on its peak output in last five years, the firm is bypassed. CORE stated that the Tender Committee did not evaluate the performance of the contractor due to lack of process for the same. However, audit stated that the same has been prescribed by the Railway Board and should be followed.

Railway Board in their reply stated (March 2017) that the recommendation on Audit regarding assessment of capability of contractor to execute the project work will be examined in Board's office in consultation with Civil & Finance Directorate and in light of the existing provisions and accordingly, if need be, suitable instructions will be issued. They further stated that the recommendation of Audit regarding work experience and turnover assessment practice to be made compliant to the prescribed directives of Railway Board will be examined separately in consultation with Civil and Finance Directorate of Railway Board.

4.4 Finalization of contract document

Clause 8 of the GCC provides for execution of agreement within seven days after issue of Letter of Agreement and prescribes forfeiture of EMD, if agreement is not executed within the prescribed seven days. GCC Clause 16 (4) (a) provides for execution of agreement after submission of Performance Guarantee, which can be submitted up to 60 days after issue of LOA. The provisions of GCC applicable to CORE, thus have conflicting provisions. The provision at RVNL involved execution of agreement within 28 days after issue of Letter of Acceptance.

Contract was yet to be awarded in respect of one new project being executed by RVNL and information for one project executed by CORE was not available. Review of 517 contracts in the remaining 34 projects revealed that

- The condition of execution of agreement within seven days after issue of Letter of Agreement was not being followed in CORE. Review of 470 contracts (out of 506 contracts in 27 projects) revealed that agreements were executed beyond the prescribed period in 457 contracts. EMD of ₹ 17.55 crore required to be forfeited in these contracts was not forfeited.
- The agreements in CORE were executed up to 798 days after issue of Letter of Acceptance. The time taken was 798 days in Ujjain-Indore and Dewas-Maksi project, 661 days in Barabanki-Gorkhpur-Barauni project, 387 in Krishnanager-Lalgola project, 376 in Barauni-Katihar Guwahati project and 374 days in Shakurbasti-Rohtak project. The delays in execution of agreements had a consequential impact on the execution and completion of the work.
- Similarly in RVNL, agreements were signed beyond the prescribed period of 28 days in 9 out of ten contracts in seven projects. Agreements were signed up to 204 days subsequent to the issue of Letter of Acceptance and approximately ₹ 10.61 crore of Earnest Money Deposit was not forfeited. The time taken was 204 days in Amla-Chindwara-Kalumna project and 175 days in Chappra-Balia-Varanasi project.

Annexure 4.7 to 4.10

It is recommended that

12. General Conditions of Contract/Special Conditions of Contract terms should be practical and balanced and their strict implementation should be ensured. Conflicting Provisions in GCC for execution of binding agreement should be

reconciled. Delays in execution of agreement with the contractors should be minimized and agreements should be executed within the prescribed period.

Railway Board in their reply stated (March 2017) that the issue will be examined separately in consultation with Civil and Finance Directorate in Railway Board.

4.5 Project Implementation

4.5.1 Time and cost overrun

It was seen in Audit that there are delays in finalisation of tenders and awarding contracts to contractors. There are also numerous extensions granted to the contractors on various accounts. This leads to delays in completion of the projects as well as increase in the estimated cost of the projects. The time and cost overrun in respect of the 29 selected projects reviewed in audit were as follows:

Table 4.1 - Time and cost overrun in respect of completed projects and projects where work is in progress

S. no	*Project*	*Status*	*Original date of completion*	*Actual date of completion*	*Time over run (months)*	*Original detailed estimate cost (₹ in crore)*	*Actual expenditure up to March 2016 (₹ in crore)*	*Cost overrun (₹ in crore)*	*Whether Balance activity pending*	*Physical progress (%)*	*% of cost over run*	*Loss of projected savings (₹ in crore)*
1	*Bhubaneswar-Kottavalasa*	Completed	Mar-01	Dec-04	45	315.65	322.03	6.38	Yes	98	2.02	NAV
2	*Krishnanagar-Lalgola*	Completed	Mar-07	Nov-07	8	63.84	99.93	36.65	No	100	57.41	56.34
3	*Karepalli-Bhadrachalam-Manuguru*	Completed	Sep-07	Nov-09	26	57.54	88.11	30.57	NAV	98	53.13	15.2
4	*Andal – Ukhra Pandabeswar*	Completed	Mar-07	Nov-10	44	40.47	71.48	31.01	No	95	76.62	23.28
5	*Ujjain-Indore and Dewas-Maksi*	Completed	Feb-10	Jan-13	35	67.62	72.21	4.59	Yes	95	7.53	38.03
6	*Tiruchchirappalli-Madurai*	Completed	May-09	Feb-14	57	92.38	155.51	63.13	Yes	95	68.34	165.35
7	*Barabanki-Gonda-Gorakhpur-Chhapra-Barauni*	Completed	Mar-10	Nov-16	80	679.96	934.91	255	Yes	75	37.50	875.22
8	*Shakurbasti-Rohtak*	Completed	Mar-13	Jan-13	-2	69.83	78.55	8.72	Yes	99	12.49	0
9	*Jhansi-Kanpur including Ait Jn.- Konch Branch line of NCR and Kanpur*	Completed	Mar-11	Sep-12	18	155.73	151.65	-4.67	Yes	70	-3.00	64.40

Table 4.1 - Time and cost overrun in respect of completed projects and projects where work is in progress

S. no	Project	Status	Original date of completion	Actual date of completion	Time over run (months)	Original detailed estimate cost (₹ in crore)	Actual expenditure up to March 2016 (₹ in crore)	Cost overrun (₹ in crore)	Whether Balance activity pending	Physical progress (%)	% of cost over run	Loss of projected savings (₹ in crore)
	Anwarganj - Kalyanpur											
10	Madurai-Tuticorin-Vanchimaniyachi-Nagercoil	Completed	Dec-11	Dec-14	36	175.45	249.35	73.9	Yes	92	42.12	376.55
11	Varanasi-Lohta-Janghai-Unchahar incl. Phaphamau-Allahabad	Completed	Mar-13	Dec-15	33	151.49	197.86	46.37	Yes	95	30.61	175.02
12	Mathura-Alwar	Completed	Mar-13	Mar-15	24	119.83	79.63	-40.2	Yes	99	-33.55	27.61
13	Ghaziabad-Moradabad	Completed	Mar-14	Jan-16	22	151.9	143.67	-8.23	Yes	100	-5.42	26.47
14	Daund - Manmad	Completed	Mar-12	Jan-16	46	216.18	267.1	50.92	No	96	23.55	17.79
15	Gooty - Dharmavaram-Yelhenka – including Dharmavaram – Sri Satya Sai PrashanthiNilayam Penukonda	Completed	Aug-13	July 16	35	228.37	285.15	56.78	Yes	90	24.86	28.10
16	Roza-Sitapur-Burhwal	Completed	Mar-14	Nov-16	32	131.98	153.67	21.69	Yes	80	16.43	80.14
17	Alwar-Rewari	Completed	Mar-14	Mar-16	24	118.48	123.62	5.14	Yes	95	4.34	14.19
18	Barauni-Katihar-Guwahati	In progress	Mar-12	NAV	NAP	821.53	697.37	-124	Yes	20	-15.09	496.06
19	Shoranur – Kannur-Mangalore-Panambur	In progress	Jun-14	--	NAP	371.52	394.38	22.86	Yes	80	6.15	94.09
20	Gondia-Ballarshah	In progress	Oct-14	--	NAP	203.88	140.47	-63.4	Yes	50	-31.10	57.92
21	Khana-SainthiaPakur including Pandabeswar-Sainthia	In progress	Mar-14	NAP	NAP	299.5	304	-4.50	Yes	79	-1.50	169.45
22	Garhwa Road-Chopan-Singrauli	In progress	Dec-14	--	NAP	252.75	146.3	106.45	Yes	40	42.11	38.9
23	Andal-Sitarampur	In progress	Mar-15	--	NAP	78.98	59.07	-19.9	Yes	50	-25.21	6.722

Table 4.1 - Time and cost overrun in respect of completed projects and projects where work is in progress

S. no	*Project*	*Status*	*Original date of completion*	*Actual date of completion*	*Time over run (months)*	*Original detailed estimate cost (₹ in crore)*	*Actual expenditure up to March 2016 (₹ in crore)*	*Cost overrun (₹ in crore)*	*Whether Balance activity pending*	*Physical progress (%)*	*% of cost over run*	*Loss of projected savings (₹ in crore)*
24	*Guntkal-Bellary-Hospet*	In progress	Sep-14	NAP	NAP	226.68	7.49	-219	Yes	10	-96.61	159.18
25	*Amla-Chindwara-Kalumna*	In progress	Mar-15	NAP	NAP	255.04	234.79	-20.3	Yes	90	-7.95	NAV
26	*Itarsi-Katni-Manikpur-Cheoki-including Satna-Rewa*	In progress	Mar-15	NAV	NAP	861.34	508.59	-353	Yes	55	-40.98	NAV
27	*Titlagarh – Sambalpur - Jharsuguda*	In progress	Mar-17	NAP	NAP	280.81	96.73	-184	Yes	20	-65.52	NAV
28	*Jakhal -dhuri-Ludhiana*	In progress	Feb-18	NAP	NAP	149.53	0.77	-149	Yes	1	-99.64	NAP
29	*Chhapra-Ballia-Varanasi-Allahabad*	In progress	Mar-18	NAP	NAP	415.15	129.79	-285	Yes	30	-68.64	NAP
				Total	**562**							**3006**

As can be seen from the data above,

- In respect of 17 completed projects,
  - Except one project, which was completed within the targeted time period, in 16 projects, there was a time overrun of 8 months to 77 months in completing the project. On an average, these 16 projects got delayed by 35.12 months.
  - In 14 projects out of these, there was a cost overrun of 2.02 *per cent* to 76.62 *per cent*. In 12 out of these projects, there were balance activities yet to be completed.
- In respect of 12 projects where works were still in progress (as on Dec 2016),
  - In 10 projects, the targeted date of completion was over 21 months to 57 months back and the physical progress of work was below 90 *per cent*. (one *per cent* in a project and 90 *per cent in another project*)
  - In three projects, the physical progress was between 79 *per cent* and 90 *per cent and* cost overrun of 6.1 *per cent* has already been incurred in one of these three projects.

Delay in completion of projects led to substantial time and cost overrun as seen by audit in the selected projects. Delays in completion also led to non-achievement of projected savings. The date of completion has elapsed in 26 projects. In respect of 21[20] projects, projected savings of ₹ 3006 crore could not be achieved due to delay in completion of the projects. There would also be financial cost in terms of interest on investment during the period of delay.

In their reply, RVNL stated (March 2017) that reasons for delays are due to associated doubling/gauge conversion projects, non-availability of blocks, delays in clearances in approvals, frequent changes in specifications and other reasons, most of them being beyond the control of RVNL.

4.5.2 Extensions granted for execution of projects

Implementation of work under the tender for the project starts after the execution of the binding agreement. Period of completion is provided in the contract. Clause 17A and 17B of GCC provides for extension of period of completion on various grounds.

- Clause 17A (i) relates to extension on grounds of any modification which materially increases the magnitude of work. Payment of price variation is involved under this clause.
- Clause 17A (ii) relates to extension on grounds of act or neglect of Railway employees or by other contractor employed by the Railway
- Clause 17A (iii) relates to extension on grounds of delay by the Railway to hand over the contractor possession of lands or to give necessary notice to commence the work or to provide necessary drawings or instruction or any other delay caused by Railway
- Clause 17 B relates to extensions for reasons attributable to the contractor. As per the clause, the time for the execution of the work or part of the works specified in the contract documents shall be deemed to be the essence of the contract and the works must be completed not later than the date(s) as specified in the contract. Under this clause, liquidated damages (LD) and token penalty may be levied for extensions due to default on part of contractor to fulfill his obligation under the contract. On such extension the Railway will be entitled without prejudice to any other right and remedy available on that behalf, to recover from the contractor as agreed damages and not by way of penalty a sum equivalent to ½ of 1 *per cent* of the contract value of the works for each works or part of the work. For the purpose of this Clause, the contract value of the works shall be taken as value of work as per contract agreement including any

[20]Information about loss of projected saving in one completed project and three works in progress where projected date of completion had elapsed was not available. One project was completed within schedule date of completion

supplementary work order/contract agreement issued. Provided also, that the total amount of liquidated damages under this condition, shall not exceed the under noted percentage value or of the total value of the item or groups of items of work for which a separate distinct completion period is specified in the contract.

(i) For contract value up to ₹ 2 lakh – 10 *per cent* of total value of the contract

(ii) For contracts valued above ₹ 2 lakh - 10 *per cent* of first ₹ 2 lakh and 5 *per cent* of balance.

4.5.2.1 517 contracts were awarded by CORE/RVNL in 36 selected projects. Audit reviewed 481 contracts and observed that

- Extensions were granted to the contractors in a routine manner. Of the 481 contracts reviewed in audit, in 419 contracts, extensions were granted.

Annexure 4.9 and 4.10

- For 21 projects executed by CORE, the original period of completion was 3954 months. Total 2026 extensions for 8190 months were granted by CORE. The information was not available in one of these 21 projects. More than 100 extensions were granted in four projects which included Barabanki-Gorakhpur-Barauni project (581 extensions in 113 contracts), Barauni-Katihar-Guwahati (216 extensions in 46 contracts), Khana-Sainthia-Pakur (184 extensions in 22 contracts) and Ujjain-Indore and Dewas-Maksi (171 extensions in 29 contracts). The extensions granted increased the time of execution of the contracts by more than two times. Out of total 506 contracts of CORE, the information was not available in case of 132 contracts. Of 374 contracts, 210 contracts were completed and 164 contracts were in progress. Of these, only 16 contracts were completed within the original date of completion, 22 contracts were terminated by CORE, seven contracts were under arbitration and 14 contracts were under enquiry of Vigilance Department of CORE.

Annexure 4.11 and 4.12

- For six projects executed by RVNL, the original period of completion was 281 months. Total 30 extensions for 208 months were granted by RVNL in three projects. The extensions granted increased the period of execution of the contracts by almost 74 *per cent.* One contract was completed out of total 11 contracts of RVNL and that too after extensions. The remaining 10 contracts were in progress.

Annexure 4.13 and 4.14

4.5.2.2 It was observed that the clauses under which extensions were granted were either not mentioned while granting them or where mentioned on account of the contractor, provisions of levy of liquidated damages were not used to exercise control over execution of the project as discussed below:

- Clause 17 B states that 'competent authority while granting extension to the currency of contract may also consider levy of token penalty, as deemed fit based on the merit of the case. Provided further, that if the Railway is not satisfied that the works can be completed by the contractor and in the event of failure on the part of the contractor to complete the work within further extension of time allowed as aforesaid, the Railway shall be entitled without prejudice to any other right or remedy available in that behalf, to appropriate the contractor's Security Deposit and rescind the contract under Clause 62 of these Conditions, whether or not actual damage is caused by such default.'

  A review of extensions granted by the railways to the contractors in selected 36 projects showed that Railway Administration was using the provision of levy of token penalty under Clause 17 B of GCC *in lieu* of levy of LD, and not in addition to levy of LD as the rules provide. The levy of LD is mandatory under Clause 17(B), as the rule clearly states that 'Further, competent authority while granting extension to the currency of contract under Clause 17 (B) of GCC may also consider levy of token penalty, as deemed fit based on the merit of the case'. From the language used it is evident that the levy of token penalty is in addition to LD and not an alternative to levy of LD on the contractor. The matter was discussed during the Exit Conference (Dec 2016) and GM, CORE agreed to get the matter examined legally.

- Further, while granting extension to the contractors it is mandatory to mention the clause under which the extension is being granted. The periods of such extensions are also required to be monitored. During the review of 517 contracts of 36 projects, it was seen that GCC clause was mentioned only in 612 out of 2056 extensions granted by CORE and 14 out of 30[21] extensions granted by RVNL. Of these, only in 107 cases of CORE and two cases of RVNL, extensions were granted on contractors' account.

[21] Information was not made available for six extensions in Gooty-Dharmavaram-Yelhenka including Sri Stay Si Prashanthi Nilayam-Penukonda Project

- Out of 2086 extensions granted to various contractors by CORE and RVNL, 1446 extensions (69 *per cent*) were granted without mentioning the clause under which these were allowed.
- It was also seen that maximum LD that can be levied under Clause 17B have been prescribed. Thus, any extension beyond this maximum period for levy of LD should be reviewed carefully by the Railway administration, before granting further extensions as it points to repeated failure on part of contractor to adhere to his/her obligations. Such cases should be considered for termination under Clause 17B and Clause 62 of GCC. During Exit conference (December 2016) Railway officials stated that if LD were to be imposed, the capacity and motivation of contractors would be compromised and it would be difficult to get the work completed. Termination of contracts was also stated to be an impractical solution in view of limited availability of bidders and time taken to process fresh tenders. It was also stated that certain activities particularly of civil contracts relating to construction of residential buildings and other activities of Civil Engineering Department do not affect the target which for Railway Electrification is sanction by CRS. It was further stated by Railway administration that extension in date of completion does not impact cost as Price Variation Clause (PVC) is not applied to the extensions and Price Variation is not given to the contractors in most cases.

Annexure 4.9, 4.15 and 4.17

Audit is of the view that clauses of GCC should be used to control the execution of project. The clauses are aimed to ensure that extensions are granted for valid reasons, the reasons for extensions are analysed and that 'time being the essence of the contract' is strictly followed for monitoring of the works. However, review of 517 contracts of 36 projects by audit showed that granting of extensions is being done in a routine manner. The details of extensions, non-imposition of LD's/penalties, non-termination, impact on timeliness of projects implementation, impact on cost etc. are detailed below:

4.5.3 Non-levy of liquidated damages for delay in execution of work

For completion of railway electrification projects, 8302 months of extensions were granted in the contracts for 21 projects executed by CORE and out of this only 421 months (five *per cent*) of extensions were assessed by Railway Administration to be attributable to contractor, where LD was leviable. Railway administration either did not properly assess the entity responsible for extension or largely assessed it on railway account for balance 7881 months extension (95 *per cent*). However, LD of ₹ 37.66 lakh only was levied by CORE in four projects. This includes a sum of ₹ 10 lakh LD levied and recovered in Mathura-Alwar project where GCC clause was not mentioned. CORE levied token penalty for those extensions (which were attributable to the contractor and where GCC clause was mentioned) and levied an amount of ₹ 109.44 lakh and ₹ 38.96 lakh in respect of nine completed works and five works in progress respectively.

Annexure 4.15 and 4.16

Similarly, in RVNL, 208 months of extensions were granted for three projects and only 16 months of extensions (7.7 *per cent*) were assessed where LD was leviable. However, LD of ₹ 4.65 crore in two projects and token penalty amounting to ₹ 1.53 crore and ₹ 0.16 crore in respect of one completed work and one work in progress respectively was levied.

Annexure 4.17 and 4.18

Audit reviewed the reasons for extensions granted by the Railways and observed that

- In respect of 13 completed works of CORE, for total period of extensions of 2092.8 months granted on account of the contractor, an amount of ₹ 194.23 crore of LD was leviable on the contractor. The periods of extensions in these projects attributable to contractor ranged between seven and 986 months and on an average extension of 156.28 months were given in these 13 completed projects. As assessed by audit, on an average, LD of ₹ 15.00 crore was leviable on the contractors in these 13 completed projects (ranging from ₹ 0.51 crore and ₹ 123.18 crore).
- Similarly, in respect of seven projects where work was in progress, it was seen that 554.17 months of extensions were granted on account of the contractor with leviable LD assessed by audit as ₹ 56.05 crore. On an average, extension granted per work was 79.17 months and leviable LD was ₹ 8.00 crore in respect of these projects.

Annexure 4.19

- For two completed projects executed by RVNL, 114 months of extensions and LD of ₹ 29.01 crore was attributable to the contractor.

Annexure 4.20

- The reasons for extensions included non-availability of material for foundation, delay in receipt of material, non-completion of TSS, non-deployment of sufficient manpower etc. on contractor account and delay in handing over of land for depot/TSS, yard-remodeling of section, delay of work by Engineering Department, change in scope of work, non-approval of drawing, non-completion of TR line, non-supply of material etc. on Railway account.

Thus, extensions were granted to the contractors in a routine manner. In a large number of cases, the clause of the GCC under which the extensions were granted were also not mentioned. Where extensions were granted due to reasons attributable to the contractors, levy of LD was not being resorted to in most of the cases and only token penalty were imposed and recovered. Therefore, tender processing delays and extensions in a contract are impacting progress of work in various contracts. Time as essence of contract is not appreciated by the Railway administration itself and consequently not communicated to the contractor. The only mechanism available to the Railway administration to emphasize the importance of 'time being the essence of the contract' is through levy of LD, penalty and termination, which are not being used effectively.

4.5.4 Time cost of idle investments due to extensions

Delay in implementation of electrification projects leads to greater time lag in productivity of capital invested. Capital invested without completion has a time cost. Railway finances their projects from the Government of India (Capital account) as well as through borrowings through Indian Railway Finance Corporation. Financial Project Appraisal and monitoring does not include time cost of money on investment during the construction phase and loss of projected savings during execution of the project. Time cost of idle investment has been worked out by audit at 5 *per cent* per annum[22]. Impact of delays is reflected in time cost of idle investment due to extensions for contracts has been reviewed and assessed in respect of 26 (23 of CORE and three of RVNL) out of 36 selected projects. Audit assessed that

- **i.** For the 23 projects (15 completed and 8 work in progress) executed by CORE, an amount of ₹ 923.27 crore of time cost of money during the execution of the projects was involved. The information was not available in two completed projects and one work in progress.
- **ii.** Due to delay in completion of projects, an amount of ₹ 2798.94 crore of the expected projected savings could not be achieved in 19 projects of CORE as detailed below:

[22] Average of the rate of dividend declared by Railway Convention Committee

- In respect of 13 completed projects of CORE, an amount of ₹ 1561.25 crore of projected saving could not be achieved. These projected savings ranged between ₹ 14.19 crore (Alwar-Rewari project) to ₹ 875.22 crore (Barabanki-Gorakhpur-Barauni project), with an average of ₹ 120.09 crore per project. The information was not available in one completed project. One project was completed within prescribed date of completion.
- Similarly, in respect of four works in progress of CORE, an amount of ₹ 272.99 crore of projected savings could not be achieved. The projected savings ranged between ₹ 6.72 crore (Andal-Sitarampur project) to ₹ 169.45 crore (Khana-Sainthia-Pakur project), with an average of ₹ 68.24 crore per project. These projects are still not completed and their loss of projected savings would increase with delay in completion of project. The information was not applicable in one project and not available in one project.

Annexure 4.21

iii. Similarly, for the three electrification projects (two completed – Daund-Manmad and Gooty-Dharmavaram-Yelhenka project and one work in progress – amla-Chindwara-Kalumna project) executed by RVNL, an amount of ₹ 42.59 crore of time cost of money was involved during the execution of the project. An amount of ₹ 176.97 crore of projected savings could not be achieved due to delay in completion of two electrification project executed by RVNL (one completed and one work in progress). The information was not applicable to three projects and not available for one projects.

Annexure 4.22

Substantial delays in completion of the projects, lead to increase in the capital cost of the projects and till the time the project is completed and assets put to use effectively, there is a time cost of money on the capital invested, which is not considered while planning and implementing the project. The delay in completion also leads to loss in projected savings. This loss is not given any consideration while planning a project, determining project execution methodology, selection of contractor and execution of the project by the Railway administration.

It is recommended that

13. ***The mechanism of LD available to the Railway Administration should be effectively enforced so as to ensure timely execution of the project. An expeditious execution of a project may entail higher cost due to mobilization of larger resources of the contractor, but this higher cost may be more than offset by early utilization of block and expected savings from use of electric***

traction. Incentives in the tender process for early completion of project should be provided so as to expeditiously derive financial and operational benefits.

14. ***MoU between Railway Board and RVNL should provide for timelines with incentives/penalties for completion of project before time/ with delays.***
15. ***The execution of the project requires significant involvement of the contractor, the implementing agency for Railway Electrification and the concerned Zonal Railways. Thus, a tripartite agreement should be considered between the three to delineate responsibilities and streamline coordination issues between the three parties.***

During Exit Conference (March 2017), CORE assured that clause of GCC under which extensions for date of completion are granted will be mentioned by CORE and necessary instructions would be issued to CPDs for compliance. However, in most of the cases of delays the reasons are attributable to railways as well as contractors. CORE assured that only token penalty will generally not be concurred henceforth and liquidated damages would be imposed under clause 17B of GCC.

During Exit Conference (March 2017), RVNL stated that most of the delays were on account of Railways and beyond the control of RVNL. They further stated that RVNL is a special purpose vehicle for execution of important projects and hence issue of penalty on RVNL should not arise. Audit is of the view that non provision of penalty on RVNL was not consistent with objective of ensuring accountability of executing agencies in implementation of RE Projects. CORE and RVNL however, agreed that a tripartite agreement would assist in timely completion of projects.

Railway Board in their reply stated (March 2017) that Audit recommendation regarding providing incentives in the tender process for early completion of project so as to derive financial and operational benefits optimally will be examined separately in consultation with Civil and Finance Directorates in Railway Board. Railway Board accepted the Audit recommendations for incorporation of timelines in MOU between Railway Board and RVNL for giving incentives for timely completion of projects and imposing penalty for delay in execution of RE projects and stated that the same would be examined in consultation with RVNL and Civil Engineering Directorates. The Audit recommendation regarding 'tripartite agreement between the Zonal Railway, implementing agency and the contractor and to delineate responsibilities and streamline coordination issues between the three parties', was accepted by the Railway Board and they stated that the modalities for its implementation will be decided in due course.

4.6 Project monitoring mechanism

As we have seen, there have been substantial delays in completion of the RE projects. Many of the delays have been due to delays in decision making at various levels of planning, tendering, award of contracts, execution of works and co-ordination between entities within railways (Zonal Railways in particular) and with other government and quasi government entities (mostly state government entities). Railway Board has issued orders/instructions from time to time for strengthening the monitoring mechanism of these projects.

Project Management Consultancies (PMCs) for supervision of projects being executed by Railways is permitted as per Railway Board orders[23] (October 2006) subject to the condition that the cost of PMC contract and actual departmental manpower taken together should not exceed the stipulated D&G charges in the estimates i.e. outsourcing should be expenditure neutral. PMC document of RVNL has been permitted to be used. Railway Board also issued instructions[24]for preparation of databases for list of approved and working contractors in various categories with details regarding status of standing earnest money, performance on completed/ongoing works and other relevant credentials. Database of last accepted rate of all works awarded during last 3-4 years (with special features, if any) and information is also required to be kept of firms with experience in specialized areas of work.

It was seen that these were not being followed at CORE. One of the constraining factors for delay was non-availability of supervisor and other staff. CORE did not resort to use of PMCs for overcoming these constraints. This resulted in delays during project planning and execution.

It is recommended that

16. ***Delays in execution of works may be controlled through better project monitoring. To eliminate delays, project teams should be adequately empowered for various activities during project implementation like approval of variations, approval of layout, drawing, etc. Reasonable time limits may be prescribed for higher hierarchical formations for taking decisions.***
17. ***Technological up gradation is a part of the mission statement for Railway electrification. Accordingly, technological upgradation such as mechanization of work of foundation, stringing of wire from both ends, undertaking of***

[23] Letter no.2006/W-I/General/D.P. Pt. I dated 10.10.2006
[24] Letter no. 2002/CE/I/CT/5 dated 16.01.2003

signaling work (fit for all operations) etc. should be identified and implemented.

During Exit Conference CORE stated that large number of delays occur in procurement of tower wagons, multi utility vehicles like crane mounted on self-propelled rail which are part of rolling stock programme. They opined that these activities should also be assigned to them like RVNL. Audit agreed that these activities need to be considered to a part of detailed estimate of CORE. CORE further stated that non-availability of LAR for EPC contracts would make assessment of offered rate difficult. They stated that at present technical bid is received, evaluated and quantum of work finalized and subsequently financial bid is called from eligible bidders. This reduces competition and railways loses its capacity to achieve completion of projects in schedule time at reasonable price.

Audit stated that preparation of DPR should enable obtaining a price bid along with a technical bid. Further, the changes in the scope of work on account of new technology, fresh specifications/fresh requirement is not entirely an unexpected event. The bid document should provide for mechanism to discover price for these changes in scope of work through identification of changes and discover a time and cost through process similar to an arbitration process involving representatives of bidders, Railway and a mutually acceptable independent and credible entity. Where the changes are large enough to make the original bid redundant before issue of Letter of Acceptance, the price discovery in such cases could be based on Swiss Challenge Methodology where the revised price given by the bidder can be challenged by any other entity with equivalent technical competence and a percentage of tolerance for the challenges (say five per cent) could be prescribed. Alternately, the original bidder could be given on opportunity to match the competitive bid. The technological practices should be considered for upgradation. It could include mechanization of work of foundation, fit for all signalling works, stringing from both sides, use of CCTV, uploading of Videos in measurement and monitoring of work of contractors etc.

Railway Board in their reply stated (March 2017) that from time to time, Railway Board has delegated the power to sanction of detailed estimate and award of works contracts to Zonal Railways. As regard approval of variations of quantities are concerned Board's instructions already exists for empowerment of Zonal Railways. The layout and drawings etc. are being approved at CPD's level.

Railway Board further stated that Audit recommendations on prescribing time period for higher hierarchical formations for decisions, will be examined separately in Railway Board. They added that e-tendering has been implemented by CORE for tenders opening beyond 24 March 2017 and Audit recommendation regarding changing business practices, minimising multiplicity of contracts and using EPC mode of contracting and technological upgradation were acceptable and would be implemented in phases.

4.7 Productivity of deployed human resources

The human resources deployment at CORE involves sanction of work charged posts based on Budget allotment for CORE. A provision in the estimate is made for establishment expenses under Direction & General Charges (D&G) for each electrification project. The D&G charges comprise of establishment component (8.37 *per cent* of estimated cost) and other than establishment component (1.35 *per cent* of the estimated cost). The establishment component is further split in to percentages allocated for each department. The prescribed D & G charges are the maximum permitted for each project and number of posts to be sanctioned (Gazetted and non-Gazetted) are required to be within the permitted percentage charges. Instructions including yardsticks for gazetted posts (based on budgetary allocation) for officials above senior scale have been prescribed by the Railway Board. Audit had highlighted issues relating to D & G Charges in the Audit Report[25]on "Provision and utilization of Direction and General Charges provided in works estimates of construction organization in Indian Railways.

The details of D&G charges on establishment matters were reviewed in respect of 28 selected projects executed by CORE and it was observed that

- In 14 projects the details such as provision and/or expenditure on D&G charges were not maintained/made available to Audit.
- In remaining 14 projects, against the total provision of ₹ 247.93 crore for D&G charges, an expenditure of ₹ 415.61 crore was incurred. Total excess expenditure on D&G charges for 11 projects (comprising of 9 completed and two work in progress) was ₹ 202.75 crore. The expenditure on D&G charges was less than the provision in three projects viz. Gondia-Balharshah, Garhwa Road-Chopan-Singrauli and Jharsuguda-Sambalpur-Titlagarh RE projects.

[25]Chapter 3 of Report no 24 of 2015 (Railways) Volume II of Comptroller & Auditor General of India

- Railway Administration had rectified the process of sanction of D&G charges with effect from 2016-17 based on internal audit carried out in CORE. It was seen that 82 numbers of posts against RE estimates were being operated in other Zonal Railways and Railway Board which cannot be operated and hence has led to classification of revenue expenditure as capital expenditure besides unauthorized operation of posts against RE estimates.
- In RVNL, the establishment expenses are given separately as management charges at fixed percentage of the expenditure (currently 8.5 *per cent* of the expenditure /estimated cost).
- The productivity of deployed manpower has been taken as expenditure on works to expenditure on establishment within a project. The productivity of Human Resource deployment in nine completed projects varied between 3.92 and 11.53 with mean value of 6.35 and median value of 5.13 against the benchmark of productivity on human resources deployment of 9.72.

Besides, the cost of work charged post as per Para 776 of Indian Railway Finance Code, Volume I is required to include leave salary, contribution towards passes, pension, etc. which is not being reflected in the expenditure on establishment component of D&G charges booked in an electrification project. The pension liability is to be assessed on actuarial valuation as per Para 339 of Indian Railway Finance Code, Volume I. The productivity of deployed manpower has been taken as expenditure on works to the expenditure on establishment within a project. The inclusion of leave salary, contribution towards passes, pension, etc. as a charge in D&G expenses would further reduce the productivity of deployed manpower. A significant reason for low productivity is delays in execution and completion of the project.

In view of provision of Management Fee of 8.5 *per cent* for RVNL, D&G charges of 0.25 *per cent* for zonal railways and inclusion of Project Management Consultancies in the project expenditure, for projects executed through RVNL, the productivity of deployed manpower in these projects could not be assessed in comparison to CORE (due to differential practices in the two entities). **Annexure 4.23**

It is recommended that

18. ***The productivity of human resources of CORE/RVNL deployed can be improved by upgrading skill set of the officials in areas of time scheduling techniques like PERT/CPM) and procurement methodologies.***

During Exit Conference (March 2017) CORE stated that efforts are being made to control the D&G charges which has been curbed to a considerable extent.

Railway Board in their reply stated (March 2017) that the recommendation of Audit is acceptable and provisions already exist in D&G charges of the estimate. As such executing agencies are already empowered to decide on enhancing the productivity of deployed human resources.

4.8 Utilisation of blocks including costing of blocks

A 'block section' means that portion of the running line between two block stations[26] on to which no running train may enter until 'Line Clear' has been received from the block station at the other end of the block section. To undertake works on sections, a 'block' is provided by Operating Department to the implementing agency, which is to be utilized for execution of work. During this time, the traffic on the section is suspended partly/completely as per requirement.

The utilization of block is related to project execution methodology applied by the implementing agency, nature of section to be electrified (new line, doubling, double line and single line) and involved contractors and personnel of the Railway administration. Block is a scarce resource, which is provided to the implementing agency for Railway Electrification by the concerned Zonal Railway. Availability of blocks and utilization by the implementing agency and the contractors is one of the critical areas for completion of the RE Project within prescribed cost and time. Data of the Block Utilization for Route Kilometre (RKM) of route electrified was studied in respect of the selected projects by audit.

It was observed that

- No benchmark for utilization of block has been prescribed by the Railway administration for RE Projects. Since utilization of block is not benchmarked, actual utilisation of blocks is also not monitored.
- For the 11 projects executed by CORE, block utilization per RKM in different RE projects ranged between 248 minutes and 1401 minutes with mean value of 794 minutes (based on information of block utilisation per RKM in different projects) and median value of 779 minutes. The block time utilized for the entire 1912 RKM in these 11 projects was 18834 hours.

[26] Block stations are those at which the Loco Pilot must obtain an authority to proceed, under the system of working, to enter the block section with his train. Non-block stations are stopping places, which are situated between two consecutive block stations, and do not form the boundary of any block section.

- The average block time utilised per RKM in respect of the 11 projects was 591.02 minutes.
- Block utilization details of RE projects executed by RVNL were not made available.

Annexure 4.24

It is recommended that

19. Making available a block for any project involves foregoing of potential earning from block utilization. Therefore, Railway Board should prescribe suitable benchmark for block utilization and use it for incentivizing/penalizing the contractors.

During Exit Conference (December 2016 and March 2017) CORE, RVNL and Zonal Railways agreed with the audit recommendation. Railway Board in their reply stated (March 2017) that the matter regarding utilization of blocks including costing of blocks and further incentivizing/penalizing with respect to the prescribed benchmark for utilization, will be examined in consultation with Civil, Traffic and Finance Directorate of Railway Board.

4.9 Management of obligation of railways /CORE

The uncertainties in the contract should be minimum both for the contractor and Railway Administration to ensure timely completion of the work. Any uncertainty in the contract document ultimately impacts the projects and railways in terms of delays in completion, potential of higher financial bid by the contractors for all subsequent bids. It is in the interest of railways to fix a timeline for various activities to be performed by the railway administration for its obligations under the contract. This should include bill payment period. Railway Board (September 1992) also issued instructions[27] for fixing time for processing of the bills for payment right from the stage of measurement in various offices. The requirement for the contractor to get the details of his executed work incorporated in the records of the implementing agency is also an area of concern.

It was seen that no time limits were prescribed in CORE for various stages of processing of bills for payment, right from the measurement stage.

[27]Letter no.74-W/O/Part XVIII (Railway) dated 17.09.1992

It is recommended that

20. Timelines for various activities from measurement of work executed to passing of bills may be prescribed and liabilities of personnel responsible for delays should be assigned.

During Exit Conference, CORE agreed with the Audit recommendation. Railway Board in their reply stated (March 2017) that instructions will be issued in due course to executing agencies for prescribing timeliness for various activities from measurement to passing of bills. As regards holistic project monitoring they stated that the recommendation will be examined in Railway Board.