

Chapter III

Project management

3.1 Execution of works

The Authority invites bids for award of work for construction, maintenance and tolling in respect of BOT-Toll projects and for construction and maintenance in the case of BOT-Annuity projects. The work is awarded to the Concessionaire on the basis of competitive bidding. The Authority also appoints Independent Consultant (IC) to supervise the work executed by the Concessionaire; ensure compliance with quality specifications and time schedules; approve any proposals for change of scope and issue completion certificates. The concession agreements stipulate that the Concessionaire could commence work on an appointed date being the date on which the financial closure was achieved and commence commercial operations on obtaining a completion or provisional completion certificate from the IC. After the issue of provisional completion certificate, a punch-list of items was required to be prepared which includes certain minor items of work to be completed even though the road was opened to traffic. The Concessionaire was bound to complete the punch-list items within a stipulated period and obtain final completion certificate. Also, the Concessionaire was required to submit to the IC his work programme, proposed design/drawings, periodical progress reports, the work plans under Critical Path Method (CPM)/Project Evaluation Review Technique (PERT) chart of project monitoring, quality assurance plan, 'as-built' drawings, maintenance plan/manual, different test reports, etc., during the construction as well as operation and maintenance period.

3.2 Appointment of Independent Consultant prior to commencing of work by the Concessionaire.

As per the terms of the concession agreement, the Authority was required to appoint an IC prior to the commencement of work by the Concessionaire. Of the eight projects reviewed in audit, it was observed that in respect of Palsit-Dankuni project, the Concessionaire commenced (May 2002) construction work well before commencement date (25 October 2002) and at the same time requested (May 2002) the Authority to approve the mix proportions of fly-ash and sand. The Authority allowed the Concessionaire to commence work before the appointment of IC, who was appointed in September 2002. Further, the Concessionaire used a different mix proportion of fly-ash and sand for embankment than what was approved. This mix design was comparatively new in India and therefore, required a strict quality control under the supervision of IC.

The Authority stated that the Concessionaire commenced the work at his risk and cost.

The reply is not tenable as the Authority allowed the Concessionaire to take up this work prior to the appointment of the IC which was the primary supervising agency.

3.3 Completion certificate

As mentioned in para 3.1, the IC could issue a provisional completion certificate subject to execution of punch-list items by the Concessionaire. The final completion certificate was to

be issued only after execution of the punch-list items. While reviewing the records of the selected projects, the following deficiencies in this regard were noticed.

3.3.1 The IC issued provisional completion certificate for Tada-Nellore project on 20 February 2004. Thereafter, the Authority, on the basis of the recommendations of the Variation Committee,* directed the IC (October 2005) to issue final completion certificate from 12 July 2005 to the project as a whole, de-linking 30 items of work relating to facilities at the toll plazas, rest areas, truck lay-bye, etc., from the scope of work due to various reasons including problems in land acquisition. Audit observed (October 2007) that although these items were not executed by the Concessionaire, the Authority neither worked out the cost of these items, nor recovered any damages for non-execution of these items, thereby extending undue benefit to the Concessionaire.

The Authority stated that the items of positive and negative variations were under scrutiny of the IC and the outcome would be intimated to Audit in due course.

3.3.2 In Satara-Kagal project, the IC issued the completion certificate without conducting the final tests to assure the quality of construction as required under clause 16.3 of the concession agreement.

The Authority stated that the Concessionaire continuously conducted tests for quality assurance during project implementation and hence IC did not insist on the final tests. The reply is not tenable as the final tests were required as per the concession agreement and the same were not dispensed with in other projects despite periodic testing.

3.4 *Submission of documents by the Concessionaire*

As stated earlier, the Concessionaires have to furnish various quality compliance documents during and after completion of the project. Audit observed that the Concessionaire failed to produce certain important quality compliance documents in the following cases.

3.4.1 As per the terms of agreement in respect of Delhi-Gurgaon project, the Concessionaire was required to construct road facility according to the approved designs in conformity with Government specifications. As per the reports of IC (November 2006), 87 quality related and 19 traffic and safety/environmental related non-conformity reports (NCRs) were pending for want of remedial action by the Concessionaire. The Concessionaire's quality team was not fully functional and was found under-staffed (November 2006). Even after 38 months of commencement of construction, the Concessionaire had not appointed a qualified/experienced team leader to ensure operational efficiency in the execution of project.

The Authority stated that the rectifiable NCRs pending as on the date of provisional completion certificate (January 2008) have been included in the punch-list items which have to be complied with within 120 days as per the concession agreement. But the fact remained that these NCRs were pending since November 2006 indicating deficient performance by the Concessionaire.

* *Variation Committee is an internal Committee of the Authority constituted to finalise the rates for non BOQ items and the extension of time for completion of projects.*

3.4.2 In Satara-Kagal and Tambaram-Tindivanam projects, the Concessionaire failed to furnish to the Authority 'as-built' drawings reflecting the highway project as actually designed and constructed on completion of the project.

The Authority stated that the 'as-built' drawings had since been received. However, the fact remains that these drawings were obtained after a delay of more than a year in both the cases and that too after audit pointed out such lapse.

3.5 Quality of works executed

As mentioned in paragraph 1.8, Audit took assistance of the Central Road Research Institute (CRRI) for assessing the quality of project execution. The scope of work of CRRI included scrutiny of DPRs, concession agreements, agreements with ICs and technical inspection of six road projects to ensure whether the quality of construction was as per prescribed standards and specifications indicated in the DPR. The results of quality checks conducted by CRRI on the six projects are summarised in the following paragraphs. These results are to be viewed in the light of the fact that five out of these six projects (except Delhi-Gurgaon) were completed between October 2004 and May 2006 and traffic is plying on these roads ever since.

3.6 Assessment of pavement surface condition by visual inspection

The basic purpose of evaluating the pavement surface condition, based on visual inspection is to find out the extent, magnitude and severity of distresses of various types. Pavement surface condition data is used as one of the indicators to identify the structural and functional deficiencies. The pavement surface condition was generally found to be satisfactory in all six projects. However, certain observations on visual inspection of the six projects are summarised in *Annexure-2*.

The Authority stated that the comment of CRRI in respect of Tuni-Anakapalli highway was general in nature wherein it was stated that cracks and shoving have been observed at few places which was normal for an operational flexible pavement due to spillage of diesel oil, accidents, etc. The Authority further stated that such defects were being repaired on regular basis. In respect of Tambaram-Tindivanam highway, the Authority stated that the minor deficiencies pointed out by CRRI had been rectified by the Concessionaire.

3.7 Roughness test

Roughness of a road is a key functional characteristic-lower the roughness value better would be the riding quality. Increase in roughness also significantly increases the maintenance cost of both vehicles and pavement. As per IRC specifications (IRC-SP:16-2004), roughness value of less than 2000 mm/Km. is indicative of 'good' condition of the road and for a value of 2000-3000 mm/Km., the condition of a road is considered to be 'average'. In its concession agreements, the Authority prescribed two levels of roughness viz. 'Desirable' and 'Acceptable'. In four* of six concession agreements, the roughness level of less than 2000 mm/Km. was termed as 'desirable' and a roughness level between 2000 and 3000 mm/Km. as 'acceptable.' For the Delhi-Gurgaon and Jaipur-Kishangarh

* Panagarh-Palsit, Tambaram-Tindivanam, Tuni-Anakapalli and Satara-Kagal

projects, the desirable levels were indicated as less than 2100 mm/Km. and 2500 mm/Km. respectively while the acceptable levels were indicated as less than 3000 mm/Km. and 3500 mm/Km., respectively. As is evident, the parameters for roughness levels were considerably relaxed in Jaipur-Kishangarh project.

CRRI conducted roughness test in six projects as specified in IRC:SP:16-2004 and the results of the same are given in **Annexure 3**. In all the 932 locations tested, 'acceptable' levels of roughness had been achieved. In fact, in 348 out of these 932 locations, the 'desirable' levels of roughness had also been achieved.

However, it was observed in audit that:

- (i) The Authority did not fix uniform levels of roughness while defining the 'acceptable' and 'desirable' levels in the six projects test-checked as discussed above. The Authority stated that a range for roughness had been indicated in the concession agreement in order to make an attempt to achieve 'desirable' results. The reply is not tenable as in most of the locations tested, the roughness value was only at the 'acceptable' level. Therefore the justification for prescribing two levels i.e. 'acceptable' and 'desirable' was purposeless.
- (ii) There were inconsistencies in the terms and conditions of maintenance in the concession agreements. The concession agreements of the six projects test-checked by CRRI laid down the requirement that a renewal coat of bituminous concrete/asphaltic concrete shall be laid every five years after initial construction or when the roughness value exceeded the 'acceptable' levels during the service life of the road at any time, whichever was earlier. However, the concession agreement for Jaipur-Kishangarh and Delhi-Gurgaon clearly stipulated that the renewal coat should bring down the roughness value to the 'desirable' level whereas the concession agreements of the remaining four projects stipulated that the remedial measures should bring down the roughness value to the 'acceptable' level. Such inconsistencies were indicative of lack of clarity within the Authority of the intended riding quality of roads.
- (iii) As per Operation and Maintenance requirements under the concession agreement, the Concessionaire was required to measure road roughness value at least twice in a year by a properly calibrated Bump Integrator Device, before and after the monsoon i.e. in June and November every year. Audit observed that the Concessionaire did not comply with this requirement in Tada-Nellore project. The Authority stated that the Concessionaire measured road roughness value once in a year since December 2003.

3.8 Structural evaluation using deflection study

The structural condition of a road is evaluated by Benkleman Beam Deflection (BBD) Test. High values of deflections indicate that the road is structurally weak, whereas, low value deflections points to a structurally sound road. In the concession agreements for the six selected road projects, the Authority specified 0.5 mm as 'desirable' deflection and 0.8 mm as 'acceptable' deflection. The results of deflection studies conducted on the six selected projects by CRRI are given in **Table 7**.

Table 7: Results of deflection study

Sl.No.	Name of the project (Direction)	No. of sections checked	Deflection (in mm)		
			<0.5	0.5-0.8	>0.8
1.	Tindivanam-Tambaram	9	-	6	3
	Tambaram-Tindivanam	8	-	6	2
2.	Panagarh-Palsit	6	-	1	5
	Palsit-Panagarh	6	-	1	5
3.	Anakapalli-Tuni	5		4	1
	Tuni-Anakapalli	3	2	-	1
4.	Jaipur-Kishangarh	9	-	6	3
	Kishangarh-Jaipur	9	-	1	8
5.	Satara-Kagal	6	5	1	-
	Kagal-Satara	11	1	10	-
6.	Delhi-Gurgaon	5	5	-	-
	Gurgaon-Delhi	5	3	2	-

From the above table, it could be observed that the deflection values were more than the acceptable limit in 28 out of 82 sections tested, indicating the necessity of overlay requirement.

In Jaipur-Kishangarh and Delhi-Gurgaon concession agreements, the Authority stipulated that wherever the characteristic deflection exceeded 0.8 mm, a bituminous overlay shall be provided appropriately designed according to IRC: 81-1997 or its latest versions or amendments. The concession agreements for the remaining four projects simply indicated that the structural condition of the road shall be assessed every year by working out characteristic deflection as per the IRC: 81-1997 without specifying remedial measures.

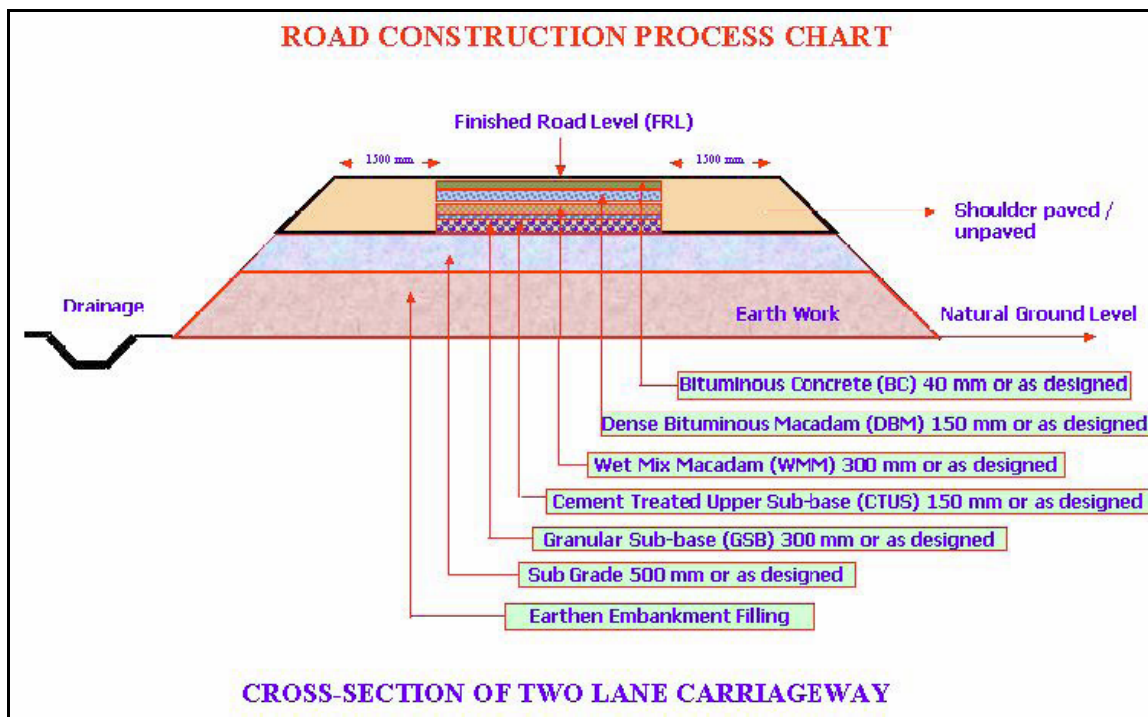
The Authority stated that in respect of Tuni-Anakapalli project, the Concessionaire carried out survey in the presence of IC in 2006-07 and the deflections recorded were well within the specified limit of 0.8 mm. In respect of Panagarh-Palsit highway, the Authority stated that CRRRI conducted BBD tests at a few selected localised places where there were significant

pavement distress caused by overloading and as such these do not reflect overall condition of the pavement.

The reply is not tenable as CRRI found that the deflection value in Tuni-Anakapalli highway was more than 0.8 mm in two sections out of eight test-checked. In respect of Panagarh-Palsit highway selected sections covered all the three types of pavement surface conditions viz. 'Good', 'Fair' and 'Poor' and tests on all these sections did not indicate significant pavement distress and therefore, the results reflected the overall pavement condition and majority of results (10 out of 12) exceeded the acceptable limit of deflection.

3.9 Assessment of quality of road construction

A finished road consists of earth embankment, sub-grade, granular sub-base (GSB), cement treated upper sub-base, wet mix macadam (WMM), dense bituminous macadam (DBM) and bituminous concrete in that order from the bottom as given in the following chart.



To assess the quality of different materials used during construction of various pavement layers vis-à-vis their conformity with the specifications stipulated in the concession agreement including the thickness of various pavement layers, test pits were dug on the road stretches.

3.9.1 Granular layer thickness

The actual and specified thicknesses of WMM and GSB granular layers (combined) observed during test pits excavations are given in **Table 8**.

Table 8: Results of road construction quality – Granular layer thickness compliance

Sl.No.	Name of the project	No. of test pits dug	Specified thickness (combined) (mm)	Compliance with specifications		
				No. of pits that complied with specifications	No. of pits not complying with specifications	Range of variation (mm)
1	Tambaram-Tindivanam	5	550	3	2	19-63
2	Panagarh-Palsit	5	600	3	2	10-55
3	Tuni-Anakapalli	4	600	2	2	40
4	Jaipur-Kishangarh	6	480-500	3	3	11-30
5	Satara-Kagal	5	450-525	-	5	11-55
6	Delhi-Gurgaon	6	480	3	3	9-27

As shown in **Table 8**, the combined thickness of WMM and GSB was not complied with in all test pit locations in respect of one project (Satara-Kagal) and that the non-compliance was significant in the other projects. As regards degree of compaction of granular layers, based on the CRRI test results, Audit observed that the same was inadequate in five road projects* with an adverse impact on the long-term performance of these roads.

The Authority stated that the range of variation in total thickness varied from 9 mm to 63 mm and that the maximum was about 10 *per cent*. It further stated that the variation in total thickness by five to ten *per cent* was not likely to affect the performance of the road.

The reply is not tenable as all the five pits excavated in Satara-Kagal project showed deviation in pavement layer thickness from the concession agreement specifications whereas in the remaining five projects, the thickness was complied with in some pits and deficiencies were noticed in some other pits. This indicated weakness in quality control supervision on the part of the Concessionaire and the IC.

3.9.2 Gradations and material properties of granular layers.

CRRI observed that the gradations and properties of WMM materials were in conformity with the Ministry's specifications in all the projects. However, in five projects (except Delhi-Gurgaon project) the combined flakiness and elongation indices of aggregates in WMM were higher than the limit of 30 *per cent* specified by Ministry. Higher values of combined flakiness and elongation indices may result in breaking up of flaky and elongated particles due to the impact of traffic loads and the actual gradation of the WMM mix might

* Except Delhi-Gurgaon project which was completed in January 2008.

change resulting in reduction of the service life of the road structure and consequently reduced performance.

Further findings of CRRI indicated that GSB materials used for construction of Satara-Kagal project did not meet the technical specifications of Ministry.

The Authority replied that the manner in which CRRI carried out the gradation tests was not acceptable and that the effect of compaction during construction and in service loading of the road was likely to bring about changes in grading.

The reply is not tenable as CRRI carried out gradation tests as per Bureau of Indian Standards prescribed methods of test and that no considerable change in gradation of granular layer during the service life of a road was likely to occur. Further, if it was accepted that materials break down due to traffic loading, then there should have been finer gradations in all or at least majority of pits which was not the case.

3.9.3 Gradations and material properties of bituminous layers

Bituminous layer is structurally more sound and gives strength to the project road. The thickness of bituminous layers (Bituminous Concrete and Dense Bituminous Macadam) met the specifications in five road projects. In the case of Tambaram-Tindivanam project, the CRRI tests indicated reduction in thickness between 8 and 20 mm compared to the specification of 190 mm. The gradation of aggregates in BC layer in Tambaram-Tindivanam project was coarser than the specified limits.

The Authority stated that it was not possible to match the exact thickness in all cases because the profile of the existing roads was at times irregular which would increase or decrease the thickness with respect to the specified thickness. It further stated that if sample was taken at the centre of the roads, the thickness would be more. The variation was also not alarming being 4 to 10 *per cent* and the overall performance of the road was not likely to be affected.

The reply is not tenable as bituminous cores were extracted at random locations including the centre of the road and in this project, out of 15 cores, deficiency was noticed in eight, higher thickness in three and four had the exact specified thickness which showed that adequate quality control was not exercised during construction.

3.10 Non-execution of repair and maintenance work

As per the concession agreement, the Concessionaire is required to operate and maintain the project highway so as to comply with the specifications and standards and other requirements set forth in the concession agreement. In Satara-Kagal project, the Concessionaire had neither appointed any operation and maintenance contractor (OMC) nor carried out any maintenance work during the period from November 2005* to April 2007 (the Concessionaire appointed the OMC in May 2007 only) and did not forward the quarterly progress reports as required in the concession agreement. Further, the IC observed that the quantities of damaged road facilities had increased day-by-day due to accidents on highway stretch and stressed the urgency of engaging the OMC through their monthly reports. Although the concession agreement provided for appointing separate OMC by the Authority

* A portion of the project road (86 km) was completed in October 2005.

in the event of the Concessionaire's failure to appoint such OMC at their risk and cost and also levy penalty for such failure, the Authority did not recover penalty of Rs.50.60 lakh for the period up to April 2007.

The Authority stated that due to its persistent efforts, the Concessionaire had appointed the O&M contractor with effect from 15 May 2007.

The Authority's reply confirms that the O&M contractor was not appointed till April 2007 and it did not invoke the remedial/penalty clause in the meantime.

3.11 Functioning of Independent Consultant

3.11.1 As per the concession agreement entered into for all the BOT-Toll and BOT-Annuity projects, the Authority was to appoint ICs to supervise the project in consultation with the Concessionaire. The professional fee paid to IC was to be shared equally between the Authority and the Concessionaire. As per the general conditions of contract, the IC was to act as faithful advisor to the client i.e. the Authority and at all the times, support and safeguard their legitimate interests in any dealings with sub-consultants or third parties. To effectively supervise the work, the IC was to evolve a suitable project management control system (PMCS).

Audit noted that there were inconsistencies in the Terms of References (TOR) of the eight contracts entered into with the ICs of BOT-Toll and Annuity projects test-checked, as they did not stipulate the uniform contractual obligations as detailed below.

Table 9: Terms of reference

Sl.No.	Terms of Reference	Name of projects in which not included
1	Review of reasonableness of the total construction cost estimate.	All the BOT projects except Delhi-Gurgoan
2	Identify the construction delays and recommend remedial measures.	Tuni-Anakapalli, Panagarh-Palsit, Palsit-Dankuni and Satara-Kagal
3	Determine the extension of project completion schedule and resultant concession period.	Tuni-Anakapalli, Panagarh-Palsit, Palsit-Dankuni and Satara-Kagal
4	Assist the Authority in arriving at any cost variation due to change of scope orders and its impact on the concession agreement.	Panagarh-Palsit, Palsit-Dankuni, Satara-Kagal and Tuni-Anakapalli
5	Review the manpower and equipment deployed by the Concessionaire.	Jaipur-Kishangarh, Tada-Nellore, Delhi-Gurgoan and Tambaram-Tindivanam
6	Review compliance by the Concessionaire of its obligation under concession and other agreements.	Tuni-Anakapalli, Panagarh-Palsit, Palsit-Dankuni and Satara-Kagal

Audit also noted that as per the TOR, the ICs were to supervise the construction works on sample basis, but the basis of such sample selection was not indicated in the contract agreements leaving scope for ambiguity. Audit noted that there were instances of IC not

carrying out the items of works as per the terms of reference (TOR). Details of such cases are given in the succeeding paragraphs.

3.11.2 Professional and third party liability insurance

As per clause 3.5 (c) of special conditions of contract for Delhi-Gurgaon project, the IC was to indemnify the Authority for a maximum value of their fee in the form of professional liability insurance (PLI). During execution of project, the IC was given supervision of change of scope of work as additional works at an agreed fee of 4.75 *per cent* of the change in scope order which worked out to Rs.6.96 crore. Audit observed (December 2006) that the Authority had so far not insisted on any additional PLI from the IC for entrustment of these additional works. Audit further observed that in the absence of an enabling provision in the agreement with the IC for furnishing PLI for additional change of scope, the IC was discharging duties without any liability to indemnify the Authority for the risk of the former's under/deficient professional performance.

The Authority stated that the observation is noted for future compliance.

3.11.3 Unjustified recommendation for bonus payment

In Tambaram-Tindivanam project, during the course of construction, the change of scope order was issued deleting the flyover near Melmaruvathur temple and instead a four lane road was added. Similarly, three other change of scope orders were issued. The impact of each of the item in respect of time and their effect on commercial operation date were, however, not worked out by the IC. While issuing the completion certificate, the IC had deleted construction of one rail over bridge and one traffic intersection trumpet from the scope of work. The IC had also recommended bonus payment as the project was completed 28 days ahead of schedule without indicating the effect of omissions/deletions of certain items of work and change in scope. Hence, the recommendation for payment of bonus of Rs.8.83 crore was not justified.

The Authority stated that instead of the deleted works, (Rs.21.00 crore) the Concessionaire has done some additional works (Rs.21.90 crore) and hence it had no impact on the commercial operation date (COD). It further stated that time required for completion of positive and negative change of scope of work need not be seen separately because all the work was supposed to be completed within construction period.

The reply is not acceptable. The time required for deleted items of work and additional items of work have to be separately computed and cannot be set off based on their cost.

3.11.4 Non appointment of team leader

As per terms of agreement with the IC on Tuni-Anakapalli project, the IC was required to appoint a team leader in the first week of March 2002. As the IC did not appoint the team leader, the Authority issued show-cause notice for termination of his contract. The Authority, however, decided (16 March 2002) not to terminate the contract but continued with a deputy team leader acting as team leader up to September 2002 on an undertaking by the IC to appoint the originally approved team leader by that time. The IC could not mobilise the

original team leader as promised and the deputy team leader continued to function as acting team leader till the completion of the project i.e. January 2005.

Audit observed that out of the 100 marks allotted for the IC team's qualifications and experience, 20 marks were given to the team leader and hence he played an important role in total technical score of a firm at the time of evaluation of technical bid. Therefore the non appointment of the team leader violated an important condition for selection of IC and the Authority could not penalise the IC in any way as there was no such provision in the agreement.

The Authority stated that the deputy team leader had enough experience and therefore it was agreed that he would act as team leader in the interest of the work.

But the fact remained that such action defeated the purpose of inclusion of a team leader in IC's team for which no deterrent action was taken by the Authority.

3.11.5 Absence of Management Information System (MIS)

Under the terms of reference on Delhi-Gurgaon and Tada-Nellore BOT projects, IC was required to develop a MIS to be used by the Authority, the Concessionaire, lenders and other stake holders in the project. Audit found that it was not developed and made operational either during the design, construction or operational stage. The Authority also did not insist on development of MIS.

The Authority admitted that there was no MIS developed by IC of Tada-Nellore project and further stated that in respect of Delhi-Gurgaon, the MIS was developed by the Authority themselves.

3.12 Unintended benefit to the Concessionaire

Audit found that the Authority extended benefits to Concessionaires that were not as per the terms of agreements or practices in the following cases.

3.12.1 Delay in taking decision

In Delhi-Gurgaon project, the IC issued (April 2003 to May 2004) change of scope notices for execution of 10 additional items of work. Though the Authority issued change of scope notices during the period April 2003 to May 2004, it did not finalise the rates for these additional items of work. The Concessionaire intimated the cost of these additional items as Rs.257.50 crore in April 2005 and the IC initially evaluated the cost as Rs.223.26 crore in May 2005. Consequently, the Concessionaire did not commence execution of these items till June 2005. The Authority advised the Concessionaire (July 2005) to proceed with the execution of these items of work with the assurance that it would make payment at 85 *per cent* of the rates recommended by the IC. When the Concessionaire commenced the work on these additional items, he stated that because of the delay in finalisation of rates for additional items, the project would be substantially completed by September 2007 only i.e. 26 months after the scheduled COD. The Authority directed the IC to rework the cost based on the latest available approved drawings finalised and the IC revised the same to Rs.146.62 crore which was approved by the Authority in June 2006.

Audit observed that the inordinate delay (April 2003 to June 2005) on the part of the Authority in finalising the rates for additional items led to postponement of COD to September 2007 from the originally planned July 2005. This delay would also extend the concession period by 26 months and was likely to result in an unintended benefit in the form of differential toll income of Rs.62.11 crore* to the Concessionaire during the extended period.

The Authority stated that though COD has been issued, concession period has not been extended by the Authority for whatever reason including delay caused by change of scope work and that the revenue loss anticipated by audit may not be correct.

The reply is not tenable as the clause 17.1 of the concession agreement clearly stipulates that in case the change of scope work adversely affected COD, the matter shall be referred to the IC and his decision in this regard would be final and binding on both the parties. The Concessionaire had already taken up the issue of delay due to delay in finalisation of rates for COS items.

3.12.2 Use of wayside amenities

As per agreement provisions of Tada-Nellore project, the Concessionaire was required to maintain the carriage highways, rest areas and other project facilities including wayside amenities. While the concession agreement allowed Concessionaire to levy and collect fees from the users of highway, it was silent about the use of other highway facilities by the Concessionaire. Along the highway, two rest areas with restaurant facilities, dhabas were constructed as per the agreement. The Concessionaire was allowed to run the restaurants without payment of any rent to the Authority.

The Authority stated that the wayside amenities were constructed by the Concessionaire and not at its cost. The Authority's reply is not tenable as the cost of constructing such facilities was being recovered by the Concessionaire through the grant given by the Authority and the toll. Hence the Concessionaire should have been allowed to operate such facilities on payment of reasonable rent.

3.13 Excess claim of Rs.3.92 crore by the Concessionaire under COS items

In Palsit-Dankuni project, the Authority issued 22 COS orders. Of these, 16 orders involved embankment work for which the Concessionaire used granular sand instead of the earth material on the plea that earth material was not available within the reasonable proximity of project site. The Concessionaire also pleaded that the cost of importing earth from the approved borrow pits beyond the reasonable distance from the project site would be higher than the cost of granular sand and claimed a rate of Rs.332.95 per cubic metre being the rate for usage of granular sand as per West Bengal Public Works Department (PWD) schedule of rate for 1.86 lakh cubic metre of granular sand used for the above items. The Authority admitted the claim.

Audit observed that the DPR for this project mentioned that sufficient earth material required for embankment work was available within the project site. The IC also recommended use

* *Net present value of future toll revenue discounted at 15 per cent*

of earth for embankment works included under the COS orders. As per the agreed provisions, the Concessionaire was required to make his own arrangement for construction material. Hence, allowing use of granular sand instead of earth was not justified. This also resulted in unintended benefit of Rs.3.92 crore* to the Concessionaire.

The Authority stated that the IC had certified that the requisite earth was not available within the proximity of highway and hence use of granular sand was allowed. The reply is not tenable as the concession agreement stipulated that the Concessionaire was responsible for making own arrangement for all the materials required for project construction. Therefore, extra payment due to non-availability of material within the proximity of highway was not justified.

Recommendation No. 3

The Authority should strengthen the supervision mechanism by improving the quality assurance systems and methodologies.

Recommendation No. 4

The Authority should review the need to specify two levels of quality parameter viz. 'desirable' and 'acceptable'. Only the acceptable level of quality specifications in respect of structural and functional parameters viz. roughness and deflection should be specified in the concession agreement to ensure road safety, quality of construction, and riding comfort; and acceptance of deviation should be fully justified and approved at the appropriate level in the Authority.

Recommendation No.5

The Authority should on completion of every road project and at periodical intervals thereafter, conduct tests through reputed agencies other than the Independent Consultant to ensure that all the quality specifications have been complied with and continue to be within the level mentioned in the agreement. In case of deviations, immediate remedial measures should be undertaken through the Concessionaire.

Recommendation No.6

The Authority should establish procedures to ensure that bonus for early completion of project is approved only after the Independent Consultant fully reflect and justify the impact of addition/deletion of items of work on the scheduled completion date.

*Computed at the rate of Rs.210.52 per Cu. Metre being the difference between the West Bengal PWD schedule of rates for granular sand (Rs.332.95 per Cu. Metre) and earth (Rs.122.43 per Cu. Metre).