CHAPTER VI: QUALITY AND INTERNAL CONTROL MECHANISM

Audit Objective: To ascertain the adequacy and enforcement of quality/ internal control mechanisms to ensure that the roads and bridges were constructed as per the planned specifications and users' satisfaction

6. Quality Control

DGBR Technical Instructions and specifications issued from time to time, standard specifications of Indian Road Congress (IRC), National Building Codes, Indian Standard Codes, Technical Instructions of E-in-C's Branch, *etc*. form the framework of quality control mechanism for BRO works.

Provision for stringent monitoring mechanism exists at various levels in BRO for achievement of the Quality Control (QC) in respect of ICBRs as prescribed below:

i) Officer-in-Charge (OIC) Sector is stationed near work site for day to day checks and monitoring;

ii) OIC-RCCs visit sectors on weekly/fortnightly basis to ensure the quality and progress of works;

iii) Commander Task Force visits the work sites on quarterly/half yearly basis to verify the quality and progress of works;

iv) CE(P) visits sector on periodic basis to verify the progress and quality of works;

v) Quality Control Cell (QCC) is required to ensure the quality control of works being executed in the projects;

However, in spite of the provisions for such elaborate monitoring mechanism, we noticed numerous instances where scope, design and specifications of the roads and bridges were found unsuitable and flawed as discussed in Chapter-III.

6.1 Users dissatisfaction on construction of ICBRs

Out of the 61 roads, seven roads of class-9 had been completed by 2006. The need for improvement in the specifications of roads to be constructed along India-

China border was discussed in the meeting of a Sub-committee headed by Director General Military Operations (DGMO) in February 2007. In order to facilitate the movement of heavy/modern equipment/weapons on roads the committee recommended for improvement in the specifications of the road as under:

(a)	Suitable turning radius	: 30 Meters
(b)	Minimum turning radius	: 21 Meters
(c)	Ruling gradient	: 1 in 20
(d)	Bridge classification	: Class 30 (minimum)

On confirmation of the BRO that these parameters were above the specifications of Class-9 roads based on which CCS approval was obtained earlier and would entail excess expenditure, the recommendation for higher specification was approved by High Level Empowered Committee headed by the Union Home Secretary (June 2007) on account of operational requirements. However, in 20 roads out of the selected 24, the works planned as well as executed were of Class-9 specifications and the remaining four roads were of higher specifications *i.e.* National Highway Double Lane (NHDL)[7]. In reply to an audit query with regard to T-M-T Road, DGBR stated (July 2016) that the constructed road of Class-9 specifications would need to be upgraded to Class-9 (E)[8] for movement of Smerch/ Pinaka vehicles.

Examination of the users feedback in respect of the works executed by the BRO relating to the selected ICBRs, revealed as follows:

- Out of the 24 roads upon which expenditure of ₹ 2713.76 crore has been incurred, 17[9]were facing problems of improper gradient, undulating surface, unsatisfactory riding comfort, improper turning radius, minimum passing places, non-availability of road furniture/drainage and improper specifications.
- The ICBRs were projected for movement of the new generation heavy/modern equipment/weapons on these roads in 2007. Out of the 24 selected roads only six roads of length 197.22 km had been completed by March 2016 at a cost of ₹164.05 crore, out of which five were not fit for smooth running of the vehicles/ equipment as desired by the users. On two roads *viz.* Bona-Gelling and M-T-Y, the vehicles of only 2.5 tonne capacity could move. The users had pointed out in March 2015 that Bona-

[7] NHDL specifications are laid by Indian Road Congress (IRC), an apex body of highway engineers.
[8] Class 9(E) Specifications are higher than Class 9 as fixed by BRO.
[9]17 roads are DS-DBO, Horang-Chushul, K-P-C-Z, Sasoma-Saserla, Naga-Nilapani, Joshimath-Malari, Ghastoli-Rattakona, L-D-Y, BJG-NGG, BJG-LGG, Jang-Ramasapper, B-C-T, N-TCC, H-S-H, M-T-Y, T-M-T & Bona-Gelling.

Gelling was constructed 1.5 Km short of the Gelling village and BRO had been asked to provide a factual report on this aspect to MHA.

- The riding comfort of Harong-Chushul road constructed by March 2012 at a cost of ₹ 26.18 crore was termed unsatisfactory by the users in their feedback due to uneven formation surface and non- existence of parapet walls and side drains as of March 2016.
- One of the six completed road viz. G-R has been shown completed by March 2016 without carrying out the surfacing work and having granular sub-base of 10 cm thickness up to 2.89 km only. Uneven surface conditions, steep gradient and narrow turning are posing security/ safety hazard as well as heavy wear and tear of the vehicles.
- Road S-W-A has been shown completed (March 2012) by the BRO, however 73 *per cent* permanent works and 10 *per cent* surfacing works were yet to be executed as of March 2016 as per information provided by the users. This shows gaps in monitoring and supervision mechanism.
- Users reconnaissance for SCANIA vehicle movement trial on N-TCC road carried out in October/November 2014 revealed that the route was still not suitable for the movement of Bofors Gun due to lower turning radius.
- 20 km stretch on road BJG-LGG, where formation work was completed by March 2015, was not suitable for movement of Ashok Leyland Stallion (ALS) due to steep gradient and would need corrective action.
- The works executed on road Sasoma-Saserla at the cost of ₹56.95 crore (March 2016) faced steep gradient at places from Sasoma to 15 km and beyond 45 km up to Saserla with very small turning radius on numerous hair pin bends, inadequate passing places. The riding comfort was also shown poor beyond 35 km. Further, side drains had not been constructed.
- Though connectivity up to km 208.00 on road DS-DBO was reported to be achieved as of March 2016 by incurring expenditure of ₹277.19 crore, the users in March 2016 depicted a very alarming picture of the quality of the entire road works executed making it unfit for military use. According to the users, there exists natural surface on the road beyond 96 km despite the fact that surfacing works were sanctioned and partly executed up to 125 km. There are minimal passing places till 75 km and beyond that point there was no passing place. Users reflected requirement of formation cutting, formation filling along the entire stretch of road due to faulty gradient, improvement along the turning places at places km 175 and resurfacing up to 75 km. Moreover, no side drain on the complete road, road furniture up to km 23 and poor riding comfort beyond 75 km were reported by the users. Thus the purpose of execution of works costing ₹277.19 crore had by and large been defeated.

- The riding comfort of road Koyal-Photile-Chushmule-Zurasa on which an expenditure of ₹161.46 crore had been incurred (March 2016) was termed unsatisfactory by the users in their feedback due to uneven formation surface and absence of parapet walls and side drains as of March 2016.
- Users attributed the abandoning of 26 km stretch of BJG-NGG road to faulty planning of BRO and asked (July 2015) to stop the work from NGG side till the fresh alignment is endorsed by the MO Directorate.

DGBR in its reply dated 15 July 2016 did not offer any comments on the above audit points. However, in response to audit query relating to the road DS-DBO, DGBR stated that the users remained associated all along the execution of works, monitoring the progress of work on day to day basis never commented or raised any observations and commenting later on about the defects of roads is not acceptable and not to be encouraged. Audit does not agree with the view as the users are not technically conversant in respect of construction of roads, however when they find problems during usage, they pin point the difficulties faced by them which need to be rectified.

6.2 Internal Control

BRDB Inspection Cell under the command and control of Secretary, BRDB comprises of one Technical Examiner and three Regional Teams headed by the Deputy Technical Examiner. Inspection Cell carries out the inspection of all works executed by the BRO involving inspection of roads, bridges and miscellaneous works under the DGBR as well as the works being executed by other public agencies but funded through the BRDB.

In pursuance to the instructions of the Central Vigilance Commission (CVC), BRDB, in March 2009, introduced Chief Technical Examiner (CTE) type inspection headed by a Chief Engineer who is entrusted with checking on quality assurance and all vigilance matters relating to the works executed on ground. For CTE type inspections, works are selected *inter alia* on the basis of quarterly progress report and complaints received from various sources.

6.2.1 Non-finalisation of Court of Inquiries (COIs)

We found that the CTE had pointed out (between June 2010 and August 2014) several financial and technical irregularities of serious nature in construction of roads *viz*. huge manipulation of estimates by assessing rates applicable in hills for cutting of roads in a plain road, steep gradient, acute radius of curve, insufficient width, inflated height of cutting and inadequate RSTC. Since financial and technical irregularities of serious nature were found, the enquiries should have been finalized timely. However COIs convened in such incidents were not finalized by the DGBR even after a lapse of 2-8 years from the date of their

convening against the prescribed time limit of 45 days for completion of COI proceedings and thereafter decision on the same within 67 days by the DGBR. Some significant cases of this nature are discussed below:

- A Board of Officers (BOO) cum COI was convened in July 2014 which found (December 2014) that the road geometrics *i.e.* radius of curves, road width and gradient were not achieved in almost all sectors of the T-M-T road but did not recommend any action against the erring officers, due to which the recommendations were not approved by the DGBR. DGBR returned the BOO in February 2015 to the CE as it did not meet the requirements stipulated in the convening order issued by DGBR. The revised BOO was awaiting completion as the CE assigned the work for revised submission of this BOO to the Commander 761 TF in June 2015.

- The three COIs convened between February 2008 and September 2010 were still in progress in respect of Joshimath-Malari and Ghastoli-Rattakona road and not finalised due to various reasons even after a lapse of six to eight years as on December 2016.

- The outcome of COI convened in April 2013 to investigate the reasons of execution of faulty construction of the road DS-DBO was awaited as of March 2016. However, two rectification jobs worth ₹ 43.80 crore were sanctioned and expenditure of ₹ 26.64 crore incurred without considering outcome of COI.

- A COI was convened in October 2014 with respect to N-TCC road to investigate the reasons for irregularity committed during construction. The recommendations duly endorsed by CE (P) Arunank in respect of COI convened in October 2014 were submitted to the DGBR for finalisation and were yet to be finalised as of October 2016.