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## Experience in Bridge Management Systems in India

Expérience dans les systèmes de gestion des ponts en Inde

Erfahrungen bei der Brückenunterhaltung in Indien

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## 1. THE SCENARIO OF BRIDGES IN INDIA

The effective utilisation of bridges over their full design life has occupied the attention of bridge planners and engineers throughout the world and more so in a developing country like India where resources are scarce. In India the bridges are owned by Governmental organisations, both for railway and road bridges. About 6400 road bridges were listed in a recent survey only on National Highways and of these about 50% were reported to need some form of repairs or rehabilitation. The other major road network is about 8 times as large as the NH network and is likely to have correspondingly more number of bridges which are in distress. It has also been reported that more than half the bridges have an age of above 40 years and bridge planning so far has been done with the assumption of an average life of about 50 years. Systematic maintenance of bridges has not been followed so far though the Railways have to an extent well organised bridge inspection and maintenance. This background gives an idea of the scope for bridge management in India. However, such problems are by no means peculiar to India. A recent report [1] mentions that in the U.S.A. about 45% of the bridges are in distress and talks of problems of paucity of resources, lack of proper inspection, etc. Hence India is also looking at the rest of the world for solutions adopted successfully elsewhere in the field of Bridge Management Systems (BMS).

## 2. BRIDGE MANAGEMENT PLANNING PROJECTIONS

In the last two or three years, a commendable awareness has grown among the agencies responsible for bridge management. Since all the bridges in India are owned by Governmental agencies the problem of BMS has to be addressed essentially by the State sector. A few papers have been published on the subject [2,3] and the apex body on road development in India, the Indian Roads Congress, has brought out guidelines on Bridge Management [4]. In the earlier days, maintenance and management of bridges were taken up only in an informal manner without any overall planning. This is sought to be remedied by the BMS envisaged in these documents. Basically this BMS covers inventory recording of the bridges and inspections & reporting, leading on to the build-up of a data base, maintenance, repairs & rehabilitation and planning for a replacement. The procedures and organisations for inspection, methodology for creating the data base and guidelines for effecting repairs, rehabilitation and replacement are discussed.

With regard to the above-mentioned broad sectors of activities, the various factors such as traffic, safety, economics, hydrological, engineering and



organisational aspects are sought to be studied and structured integrally to form a Bridge Management System. Since a large number of bridges are involved, special teams and organisations have to be built up and personnel have to be properly trained. In the absence of such teams at present it has been suggested that Consultants be involved with the tasks of inventorying, inspection and preparation of schemes for repair and rehabilitation. This has been already implemented for some major bridges for which consultancy proposals have been invited for such activities.

The BMS specifically excludes planning, design and construction though it should start right from the conceptual stage. BMS can be successful only if adequate funds for maintenance and organisation for the same are earmarked in the planning stage, adequate steps are incorporated in the design stage to ensure longevity of the bridge, measures are built-in to facilitate maintenance and adequate care is taken during the construction stage for Quality Assurance.

### 3. CONCLUSIONS

The present lack of availability of an extensive data base for the large number of bridges, lack of awareness of such organised planning for maintenance and management, lack of adequate resources etc. are the various problems facing the bridge management agencies. Unless the recently evolved schemes of BMS are speedily implemented in a planned manner, the transportation sector in which bridges are vital links will face serious problems.

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