

Dated: 30<sup>th</sup> August, 2022

CIRCULAR

To

1. The Chief Secretaries of all the State Governments/ UTs.
2. The Principal Secretaries/ Secretaries of all States/ UTs Public Works Department/ Road Construction Department/ Highways Department (dealing with National Highways and other centrally sponsored schemes).
3. The Chairperson, National Highways Authority of India, G-5 & 6, Sector-10, Dwarka, New Delhi-110 075.
4. The Managing Director, NHIDCL, PTI Building, New Delhi-110001.
5. The Director General (Border Roads), Seema Sadak Bhawan, Ring Road, New Delhi-110 010.
6. All Engineers-in-Chief and Chief Engineers of Public Works Department of States/ UTs/ Road Construction Department/ Highways Departments (dealing with National Highways and other centrally sponsored schemes).
7. All CE-ROs, ROs and ELOs of the Ministry.

**Subject: - Value Engineering Practices for the Design, Construction & Maintenance of National Highways Projects- Reg.**

Madam/Sir,

The Government of India has set an ambitious plan for development of National Highways in the country. Many initiatives have been taken to materialise this ambitious plan such as adopting worldwide best practices in engineering techniques in design, construction and maintenance of highways, bridges and tunnels. Further, the need is felt to adopt value engineering practices in design, construction and maintenance with regards to use of materials and technology as an important and vital step to meet the sustainable development of the NH network throughout the country in a cost-effective manner with improved durability & safety, de-carbonise & grow, reduction in project execution timeline, increase in quality and reduction in maintenance.

2. The value engineering is very crucial for sustainable highway development. It is a systematic method to achieve the targeted function of the highway at the lowest whole-of-life cost without compromising on functionality, quality, performance, safety and aesthetics. Value Engineering practices aim at optimizing the value of the project at various stages viz. project inception, project preparation, project bidding stage, project implementation and maintenance management to achieve at least one or all of the following objectives:

- a. Increasing the speed of construction without compromising the quality
- b. Reducing the cost of construction and maintenance
- c. Improving asset durability

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- d. Improving aesthetics
- e. Enhanced safety
- f. Promoting environmental sustainability
- g. Increasing resilience to climate change and
- h. Lowest life cycle cost

3. Value engineering can be applied at any point in a project, even in construction. However, the earlier it is applied the higher is the return on the time and effort invested and also the acceptance. As per the World Bank report on the Indian Road Construction Industry, it has been established that the savings realized by undertaking value engineering exercises can be in the order of 10-15% of the cost of the originally designed project.

4. EPC/ HAM / BOT mode of project implementation has the potential that the contractors/concessionaire would be able to adopt designs and construction methodologies to suit the requirements of the project to bring down the initial construction cost while not impacting other aspects such as functionality, quality or durability. Although enabling provisions for value engineering is laid out in the governing IRC Manuals for highway projects (IRC SP: 73/84/87/99), however Contractors / Concessionaire, out of an apprehension that the Authority would take adverse views about any alternative technologies, avoid any deviations from the specifications/technologies specified in the Concession/ Contract Agreement. The Concessionaire/ Contractors are also apprehensive about the long-term risks of adopting innovative value engineering proposals, which would be entirely borne by them.

5. To dispel such apprehensions and mind-set among Feasibility & DPR Consultant/Concessionaire/Contractors/IE/AE and add value engineering practices for the design, construction & maintenance of the National Highway, following has been decided:

5.1 Value Engineering shall be assigned as one of the tasks in the Terms of Reference (ToR) for Feasibility Study and Detailed Engineering Projects. In the Inception Report itself, there shall be a Chapter regarding Value Engineering, in which the Consultant shall include the potential & project-specific value engineering aspects identified by the respective domain experts based on site reconnaissance surveys. In the Feasibility Report, the Consultant shall examine the applicability, durability, constructability & appropriateness of the identified value engineering aspects and recommend the cost-effective strategies. During the design stage, the design shall be done for the approved value engineering criteria and considering the same the Schedules and Project Costs shall be prepared. Some examples of value engineering concepts are given in **Appendix-1**. However, in addition to the same other value engineering aspects shall also be explored.

5.2 During the Project appraisal, in PATSC/SFC memo, there shall be a para regarding Value engineering Practices examined and finally adopted.

5.3 Further during implementation, the Concessionaire/ Contractors shall be allowed to propose value-engineered alternative design/ material/ technology. IE/AE shall review the proposed value-engineered design and if it is not reviewed within the stipulated time period specified in the Contract/Concession Agreement or rejected for any frivolous reason, Authority may take appropriate action against the IE/AE.

5.3.1 After acceptance of design, a detailed construction methodology along with requisite details such as proposed machinery/plants/equipment, quality assurance & quality control,