

Government of India
Ministry of Road Transport & Highways
(S&R (P&B/New Technology) Zone)
Transport Bhawan, 1, Parliament Street, New Delhi-110001

Dated: 20th September, 2024

CIRCULAR

CODE No.1330

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 Chairman, National Highways Authority of India, G-5 & 6, Sector-10, Dwarka, New Delhi-110 075.
4. The Managing Director, NHIDCL, World Trade Centre, New Delhi-110029.
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. The Secretary General, Indian Roads Congress
8. The Director, IAHE, Noida, UP
9. All CE-ROs, ROs and ELOs of the Ministry.

Subject: Use of New/ Alternative Material and Technology in Construction and Maintenance of National Highways Projects and adoption of Value Engineering Practices therein-reg.

Reference: i) Ministry's Letter No. RW/NH-33044/18/2020-S&R (P&B) dated 14.12.2020
ii) Ministry's Letter No. RW/NH-34049/01/2020-S&R(P&B)pt. dated 30.08.2022
iii) Ministry's Letter No. RW/NH-34049/01/2020-S&R(P&B)pt. dated 22.02.2023

Madam/Sir,

Three circulars cited under reference have been issued during the past three years in respect of promoting new and alternative material and technology in the highway sector to reduce construction costs while meeting the objective of sustainable development. These circulars contained different provisions in respect of decrease in costs and the party to the concession/contract (Government Authority or Concessionaire/Contractor) entitled to retain such savings due to adoption of new material / technology.

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2. To bring clarity to the above matter while ensuring the sanctity of the contract(s) already signed as well as to ensure due diligence while assessing optimum solution through value engineering during construction, the present circular is being issued as more clearly specified in para 4.9 & 4.10 of this circular.

3. Value Engineering during DPR

3.1 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 on 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. Consultant shall prepare cost estimate of different items of work involving conventional material/ technology and various value engineering options identified and will recommend the optimum option. During the design stage, the design shall be done for the approved option and considering the same the project cost shall be worked out and Schedules shall be prepared. The exercise shall include all such items/ components of the project where multiple options are available particularly involving new/ alternative material and technology. Some examples of materials/technology/processes leading to value engineering are given in **Annexure-1**. However, other applicable materials/technology can also be considered by Consultant.

3.2 In the Schedule 'B' and 'C' of the bid documents implemented under EPC/HAM/BOT mode, only the design parameters shall be specified. For example; in respect of pavement design only the Pavement Type (Rigid/Flexible/Bonded Concrete Pavement/Perpetual flexible Pavement/CRC/White topping/Short Slab Concrete Pavement) shall be specified along with minimum design traffic (million standard axles) and Design Period. Pavement composition and minimum layer thickness shall not be specified. Minimum and maximum subgrade CBR shall not be mentioned in Schedule 'B' and the same will be in accordance with applicable pavement design standards.

3.3 During the Project appraisal, in PATSC/SFC memo, there shall be a paragraph on the value engineering practices examined/evaluated and finally adopted. The paragraph shall also contain a statement affirming that Schedule 'B' & 'C' of bid documents have been prepared in accordance with this para 3.

3.4 Above procedure shall also be applicable to all ongoing DPR consultancy services where draft feasibility report is yet to be submitted.

4. Value Engineering during Construction

4.1 In projects where Schedule 'B' and 'C' have been prepared in accordance with para 3.2 above, the concessionaire/contractor is free to adopt any value-engineered alternative for any item/component of works subject to satisfying requirements of this para 4.

4.2 The material/technology used in the project shall normally satisfy the requirements of Codes, Standards, Specifications, Guidelines etc. of IRC, MoRTH, AASHTO, ASTM, Euro Code and British Codes with regards to design, pre-construction, construction, quality assurance, quality control and acceptance. In respect of material/technology accredited by IRC on pilot basis or otherwise, the same can be used as per the conditions of accreditation or renewal given by IRC as the case may be subject to the condition that cost of such material / technology shall be within 2% of the project cost.

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4.3 IE/AE shall review/approve the proposed value-engineered design within the stipulated time period specified in the Contract/Concession Agreement in respect of material/technology satisfying the requirements of Codes, Standards, Specifications, Guidelines etc. of IRC, MoRTH, AASHTO, ASTM, Euro Code and British Codes and material/technology accredited by IRC. While approving the design prepared by the Contractor/Concessionaire following Codes, Standards, Specifications, Guidelines etc. of AASHTO, ASTM, Euro Code and British Codes, IE/AE shall ensure that the design parameters conform to the applicable conditions of project site. In respect of other material/technology for which project owner's certificate is available for continued successful performance, design will be approved by Regional Officer of MoRTH or equivalent officer based on recommendation of Authority's Engineer/ Independent Engineer.

4.4 After acceptance of design, a detailed construction methodology along with requisite details such as proposed machinery/plants/equipment (e.g. purpose-built soil stabiliser for soil stabilisation), quality assurance & quality control, traffic diversion, environmental compliance, construction sequence, material design, etc., shall be submitted to IE/AE for review/approval.

4.5 Trial Section is a must for value engineered design. During trial laying, validation of material characteristic(s) considered in design shall be done and if necessary, modification in design shall be done. Construction shall be started incorporating the modifications, if any.

4.6 Schedule 'H' of EPC Agreement/ Annex-I of Schedule 'G' of HAM agreement shall be modified to indicate appropriate stage(s) of value engineered option(s). Such changes in Schedule 'H' or Annexure - I of Schedule 'G' shall be incorporated with the approval of competent authority through a supplementary agreement.

4.7 For any proprietary product such as Reinforced Soil Wall, Retaining Wall, Expansion Joints, Bridge Bearing, Pre-stressing Systems, Commercial Stabiliser, Geosynthetics Products, UHPFRC elements, etc., Contractor/Concessionaire shall ensure signing of agreement between the Contractor/Concessionaire and Technology Provider before use of such material/ technology/design in NH Project. The agreement shall have the provision of involvement of the Technology Provider during execution. Technology Provider shall deploy the requisite design experts/material technologist/skilled & trained construction supervision personnel to certify material testing & material characterization for design, proof check of the design, approve construction methodology including field trial sections before actual construction, quality control and supervision & certification of the day-to-day construction/execution. The warranty for proprietary product(s) shall be submitted by Technology Provider along with all other document(s) as required by IRC: SP: 112-2017 "Manual for Quality Control in Road and Bridge works". A copy of such agreement shall be furnished to AE/IE and to RO of the Ministry / NHAI/NHIDCL for reference and record.

4.8 The Concessionaire/Contractor shall be entitled to retain all the savings accrued to them on account of value engineering practices adopted by them.

4.9 This circular shall be made applicable for the new projects for which bids shall be received on or after 1st November, 2024. Instructions contained in Ministry's Letter No. RW/NH-34049/01/2020-S&R (P&B) pt. dated 22.02.2023 shall be followed for all projects for which bids were or are received between 22.02.2023 to 31st October, 2024.

4.10 Old ongoing projects for which bids were received before 22.02.2023 and the Schedule 'B' & 'C' of which are in accordance with para 3.2 above, provisions of para 4 of

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this circular shall also be made applicable. Separate instructions shall be issued for other old ongoing projects not covered under para 4.1 of this circular.

5. It is requested that the contents of the circular may be brought into the notice of all concerned for immediate needful compliance.

6. This issues with the approval of Competent Authority.

Yours sincerely,

Bidur Kant Jha
20/09/2024

(Bidur Kant Jha)

Director (New Technology for Highway Development)

For Director General (Road Development) & Special Secretary

Copy to:

1. All CEs in the Ministry of Road Transport & Highways
2. All ROs of the Ministry of Road Transport & Highways
3. The Secretary General, Indian Roads Congress
4. Technical circular file of S&R (P&B) Section
5. NIC-for uploading on Ministry's website under "What's new"

Copy for kind information to:

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2. PS to Hon'ble MOS (RT&H)
3. PSO to Secretary (RT&H)
4. PSO to DG (RD) & SS
5. Sr. PPS/ PPS to AS&FA/Addl. Secretary (Road Safety)/ ADG(SC)/ADG(BKS)/ADG(RS)/ADG(OPS)
6. Sr. PPS/ PPS to JS(Highways)/JS(EAP)/JS(Logistics)

Typical materials/technologies/processes for value engineering practices for National Highway Projects:

A. Materials/Technologies.

- i. Alternative pavement such as bonded concrete pavement (new IRC code under publication), CRCP (IRC: 118), Short Slab Concrete Pavement (IRC: SP: 140), Perpetual Pavement (IRC: 37).
- ii. Whitetopping (IRC: SP: 76).
- iii. Alternative flexible pavement courses such as CTSB (IRC:37), CTB (IRC:37), SMA (IRC:SP:79), GGRB (IRC:SP:107), CGBM (IRC:SP:125), Hiper mix (IRC:SP:139), Warm mix asphalt (IRC:SP:101), Micro surfacing (IRC:SP:81).
- iv. Recycled Asphalt Pavement (IRC: 120).
- v. Stabilization technology (IRC: SP: 89 Part-1 & Part-2).
- vi. GFRP (IRC:137)
- vii. UHPFRC (Ministry's circular dated 22nd Feb, 2022)
- viii. Factory manufactured pre-cast concrete elements.
- ix. Waste plastic (IRC:SP:98)
- x. Construction and demolition waste (IRC:121)
- xi. Steel slag (guidelines under preparation by IRC)
- xii. Geo-synthetics (pavement reinforcement, crack retarding layer, drainage, slope protection, capillary cutoff layer, Basal reinforcement, reinforcement earth structure, erosion prevention) (IRC:56, IRC:SP:59, IRC:SP:48, IRC:113, IRC:SP:106)

B. Processes.

- i. Rational inputs for rate analysis.
- ii. Accountability of excavated soil and reclaimed existing pavement granular courses.

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