

Dated: 24<sup>th</sup> June, 2025

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 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: - Mandatory Use of Precast Concrete Components in National Highways Projects - Reg.**

Ref: i) File No.RW/NH-34049/01/2020-S&R (B) dated 08.04.2022

Madam/Sir,

Ministry has issued 'National Highway Precast Concrete Policy' cited under reference. Need was felt to accelerate the use of precast concrete components to harness the benefits of precast technology in construction of National Highways, Expressways & Other Centrally Sponsored Road Projects. Use of Precast concrete elements in built-up area/urban municipal limits has several benefits such as reduced pollution, minimise user time delay, etc. In view of the same, following policy decisions have been taken:

2. Schedule 'B' or Schedule 'C' of the Contract Agreement for projects costing more than Rs. 300 crore (civil cost) shall have the provision of mandatory use of precast concrete components (may be either factory-made or precast at project site, in contractor's own casting yard). The schedules should also specify the drawings, specifications and the relevant standards as applicable for each element.
3. The contractor may be allowed to use the factory made precast elements subject to proper quality certification by the factory as per legal norms of the industry or be allowed to cast in the yard at site in accordance with the agreement. Authority Engineer/Independent Engineer of the Project shall approve the factory after duly inspection.
4. The use of precast concrete elements should initially be taken up for non-critical components of highway projects with total civil cost of over Rs 300 crore on mandatory basis. The main structures such as bridges and pavement should be only in accordance

with the specifications of the contract agreement. The identified items/finished products which shall be mandatorily precast concrete (PCC/RCC/PSC as applicable) are as under:

- i. Box Culverts of specified sizes
- ii. Storm Water Drain cum footpath
- iii. Chute drain with dissipation chamber
- iv. Boundary wall/Toe Wall/fence
- v. RCC Crash Barrier/RS Wall Friction Slab-cum-Crash Barrier
- vi. Kerbs/Channels
- vii. Pedestrian Railing/Median Railing

The proposal for sanction should accompany the sheet showing the extent of usage of precast elements mentioned above estimated in terms of amount, quantity in specified units and percentage of total quantity and amount proposed in the project.

5. Design, fabrication/casting and launching/installation of pre-cast concrete components will be done as per relevant IRC/BIS standards/guidelines/codes such as IRC: 112/IRC: 122/IS: 456/IS: 15916 furthermore taking into consideration expected handling/lifting stresses, etc. Any international guidelines such as AASHTO, FHWA (Accelerated Bridge Construction Guidelines), Japan codes, American Precast concrete Association (PCA), World Roads Congress, Euro/British/ French/Swiss/German, etc., may be followed in case of any gaps in IRC/BIS standards/ guidelines/codes till such time IRC/BIS guidelines are developed.

6. Design & Drawings of the proposed pre-cast concrete components shall be checked & approved by the AE/IE's of the Project. Any clarification sought by Engineer shall be obtained by the Contractor from the manufacturer and submit to Engineer for his satisfaction. AE/IE shall also conduct review of quality control documents in respect of factory manufactured materials/finished products, etc. as per IRC:SP:112. The precast concrete components shall be produced in accordance with the approved drawings.

7. Standardization of design/drawings/construction methodology of precast concrete components (whether procured from precast factory/contractor's own casting yard) is the key for its wider adoption and to take advantage of volumes and repetitive use of molds. Therefore, It is beneficial to keep the sizes of different precast concrete components as uniform as possible. All executing Agencies should maintain the as-design and as-built drawings and construction methodology for all such elements as repository in Data Lake of NHAI for record and reference. The details (including quantity and names of manufacturers) of the ex-situ pre-cast elements used and a quality review on standardised parameters shall be uploaded on the Datalake of NHAI for reference.

8. DPR should be prepared considering factory manufactured concrete for the identified components and accordingly rate analysis and cost should be estimated. In case of any gaps in rate of items, CPWD/Delhi Schedule of Rates may be followed.

9. Quality Assurance & Quality Control and Testing should be done as specified in NHAI Policy Circular dated 20<sup>th</sup> February 2025 and IS: 15916 including at the manufacturers facilities in case of ex-situ pre-cast elements.

10. Minimum facilities, Certifications protocol and Quality Control & Quality Assurance for Off-Site Manufacturing of Precast Concrete Components are given in Annexure-1, which shall be scrupulously followed to ensure quality of products. Certification shall not be required for pre-casting being done at Project site.

11. This circular shall be made applicable for the new projects for which bids as received 90days after the issue of this circular.

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

13. This issues with the approval of the Competent Authority.

Yours sincerely,

*Bidur Kant Jha*  
*24/06/2025*

(Bidur Kant Jha)

Director

(New Technology for Highway development)

For DG (RD) & SS

Copy to:

1. All CEs in the Ministry of Road Transport & Highways
2. All ROs of the Ministry of Road Transport & Highways
3. All CE(NH) of PWD/R&B dealing with National Highways
4. Technical circular file of S&R (P&B) Section
5. NIC-for uploading on Ministry's website under "What's new" & "Comprehensive Compendium Circulars with CODE 1970.12.

Copy for kind information to:

1. PS to Hon'ble Minister (RT&H)
2. PS to Hon'ble MOS (RT&H)
3. Sr. PPS to Secretary (RT&H)
4. Sr. PPS to DG (RD) & SS
5. Sr. PPS/ PPS to Addl. Secretary (Road Safety)/ Addl. Secretary (RT&H & LA)
6. Sr. PPS/ PPS to AS&FA
7. Sr. PPS/ PPS to all ADG (KB)/ ADG(SC)/ ADG(RS)
8. Sr. PPS/ PPS to JS (RT&MVL)/ JS (EIC) / JS (Logistics)/ JS (NHIDCL)

## Annexure-1

### Minimum Facilities, Certification and QA&QC for Off-Site Manufacturing of Precast Concrete Components

#### DEFINITIONS:

#### **BIS 15916:2020 as per Clause 11.1.2 Manufacture**

The Manufacture of the Components can be done in a factory for the Commercial production established at the focal point based on the market potential or in a site Pre-casting yard set up at or near the site of work.

#### **BIS 15916:2020 As per Clause 11.1.2.1 Factory prefabrication**

Factory prefabrication is resorted to in a factory for the commercial production for the manufacture of standardized components on a long term basis. It is a capital intensive production where work is done throughout the year preferably under a closed shed to avoid effects of seasonal variations. High level of mechanization can always be introduced in this system where the work can be organized in a factory-like manner with the help of a constant team of workmen.

#### **BIS 15916:2020 As Per Clause 11.1.2.2 Site prefabrication**

In this scheme, prefabricated components are produced at site or as near the site of work as possible.

This system is normally adopted for a specific job order of large scale that will continue over a long period. This option provides definite economy with respect to cost of transportation thereby improving productivity. Even though temporary, the factory established should be comparable to high capacity permanent factory with equivalent state-of-the-art degree of mechanization and quality control. Under this category there are two types, that is, semi-mechanized and fully-mechanized.

a) Semi-mechanized – The work is normally carried out in open space with locally available labour force or skilled labour force depending on project complexity. The equipment/machinery used may be minor in nature and moulds are of mobile or stationary in nature.

b) Fully-mechanized – The work is carried out under a shed with skilled labour. The equipment used is similar to those of factory production. This type of precast yard will be set up for the production of precast components of high quality with a high rate of production.

- i. The Precast Manufacturing Facility shall have the following facilities:
  - Fully automatic RMC plant duly certified by BIS/QCI/ RCMA(Ready Mixed Concrete Manufacturers Association)
  - MS Moulds duly designed & inspected for Product Tolerances prescribed as per methodology approved in BIS 15916
  - Arrangement for steam curing,
  - Mechanical handling of Concrete and Pre-cast components,
  - Bar bending machines,
  - Stacking yard for Raw material, Stores Finished Goods, with OH Cranes of adequate facilities
  - Water Treatment Plant & RO plant for water purification

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- Recycling of Water Aggregates
- ii. Precast factory shall have well-equipped laboratory at factory itself for internal quality control. Laboratory shall have ISO: 17025 “General requirements for the competence of testing and calibration laboratories” certification granted by NABL or other approved certification bodies (CBs) However, such certification shall not be insisted upon for Project site laboratory. Each equipment shall have valid calibration certificate. The laboratory shall be manned by a Quality Manager with min 10 yrs of experience, Inspectors of Concrete, REbars, Formwork & Safety with min 3 years’ experience.
- iii. The factory shall carry out Quality Control Tests on the Materials, Processes and Works to the frequency stipulated in Project’s Specification with digitalisation of QC Process.
- iv. Precast Concrete Factory shall employ a third-party PMC for QA&QC for the supervision of daily activities/testing conducted at the factory. All the tests shall be witnessed by the personnel of the PMC & recorded using digitalisation of QC Process.
- v. PMC/AE/IE will do surprise check & audit the plant & its process as and when required by Authority.
- vi. Precast factory shall have following valid certifications granted by BIS/QCI/other approved CBs:
  - ISO 9001:2015 Quality Management System
  - ISO 14001:2015 Environmental Management System
  - ISO 45001:2018 Occupational Health & Safety Management System
- vii. Precast Concrete Factory shall have also valid products certification along with license for ISI label marking on the precast concrete components by BIS. This is applicable only for the products for which BIS does the certification.
- viii. On each of the precast concrete components bar code/QR code should also be engraved for traceability of lot, other QA&QC tests, etc.
- ix. Manufacturers Test Certificate for each lot of the products shall be provided by Precast Concrete factory, which shall be submitted by the Contractor along with bills.
- x. Plant also must have a Skill training facility for Interns in the Plant based on capacity of plant.
- xi. Contractor/Concessionaire to satisfy himself about the quality of products as per relevant IRC specifications/BIS standards & comments on quality of products shall be hoisted on Data Lake of MoRT&H/NHA for wider information to avoid recurrent/frequent tests of products by individual contractors on each occasion/order. Product quality certification shall be by the user himself.

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