TERMS OF REFERENCE FOR THE R&D PROJECT

1. TITLE

Study of the technological advancements in the manufacture of, and market trends in the utilization of precast reinforced concrete street lighting poles.

2. BACKGROUND

The Indian Standard IS 1332 'Specification for precast reinforced concrete street lighting poles (First Revision)' was last revised in 1986.

Precast reinforced concrete poles are suitable for use for street lighting, manufactured by mechanical compacting methods such as vibration, shocking, spinning, etc. Pioneering R&D in precast reinforced concrete street lighting poles aims to optimize durability, sustainability, and design flexibility. Innovations focus on advanced materials, enhanced fabrication techniques, and smart integration for resilient urban infrastructure. The research endeavors to redefine standards, ensuring safer, cost-effective, and aesthetically pleasing public spaces.

The information collected in this study shall be used to revise IS 1332 so that it reflects the current manufacturing technologies, optimum use of raw materials, and the current desirable performance requirements.

3. OBJECTIVE

To study the latest advancement in the field of precast reinforced concrete street lighting poles, in view of the trade, technology, utilization and performance; for effecting changes in the standard as per the latest practices.

4. SCOPE

a) Study and analyze the national/international literature through standards, research papers, and other peer-reviewed documents to identify the performance parameters, grades, and manufacturing practices for further study.
b) Collect and analyze the usage & feedback and installation statistics from relevant government agencies (including power discoms), trade associations, and other databases.
c) To study the Central/State government's relevant rules associated with precast reinforced concrete street lighting poles, their raw materials, production process; and the characteristics of the product (precast reinforced concrete street lighting poles).
d) Carry out surveys and interviews with precast reinforced concrete street lighting poles manufacturers, including assessment of production capacities, technological capabilities, and testing the performance of their respective product and also with user agencies like State Electricity Boards (SEBs), DISCOM, Municipal Corporations, Town area committees, Gram Panchayats etc,.
e) Mapping and evaluation of institutions engaged in research related to precast reinforced concrete street lighting poles and related concrete products, including their infrastructure, equipment, and areas of specialization.

5. METHODOLOGY

In respect of the areas covered in the Scope, the following should be adhered to:

a) Study the literature and analyse w.r.t. the scope
b) Data collection through surveys, interviews, and data mining from authoritative sources; and from those listed in **4** above.
c) Visits to the manufacturing units to observe manufacturing processes and in-process controls
d) Collection of samples – samples to be collected during the visits to industries as per finalized plan
e) Testing of samples – test the samples and submit the analyzed results (Samples shall be tested in BIS recognized laboratories/ laboratories of national repute/ manufacturing premises).
f) Statistical analysis, data interpretation, and market trend.
g) Comparative analysis with global market data to identify competitive advantages and potential areas for growth.

6. SAMPLING PLAN

a) Units of two manufacturers each from large and MSME units (unless the manufacturing database indicates otherwise) shall be visited.
b) Two samples of each shall be tested, preferably from different manufacturers/brands, for all the performance/properties.
c) At least two users of the product need to be visited for their feedback.
d) At least two laboratories must be visited, preferably one in the government sector and one in the private sector (Accredited as per IS/ISO/IEC 17025).

7. DELIVERABLES

The list of expected outputs or deliverables is as follows:

a) Comprehensive report presenting import/export analysis, manufacturing capacity assessment, laboratory availability, and production and consumption data analysis.
b) Study of the performance of poles in the field service for bending, tilting, cracks, breaking, damages percentage in transportation and use.
c) Key findings and strategic recommendations for updation of relevant existing standards.
d) Detailed database or repository of gathered information for future reference or expansion of research.

8. TIME FRAME

The duration of the project shall be **Six Months.**

An initial report indicating the review of the literature, desktop research and sampling & visit plan shall be submitted **within One month** from date of award of the project.

The midterm progress report shall be submitted by the end of **Three months** from date of award of the project. This report may not wait for receipt of final test reports of samples.

Final Project Report (FPR) shall be submitted within **Six months.**

9. SUPPORT FROM BIS

BIS will provide access to the latest available editions of Indian standards and/ or international standards relevant to the project, based on request.

10. NODAL CONTACT POINT

Shri Nishikant Singh, Sc-'D', & Member Secretary, CED 53 may be contacted for more clarification on the R&D project (email- nishikant.singh@bis.gov.in).

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