Terms of Reference for R& D Project

Project Title:	Study of Windscreen Wiping and Washing Systems and their Components
Sectional Committee	(Automotive Electrical Equipment and Instruments Sectional Committee -TED 11)
Duration	3 Months

1. Background:

1.1 The functionality of a vehicle's windscreen wiping and washing system is crucial for ensuring a clear view of the road, especially in challenging weather conditions. Currently, there are numerous Indian Standards pertaining to these systems and their components. These standards have been developed with guidance from various standards such as ISO, SAE, JIS, and AIS. However, it is observed that the component standards (various parts of IS 7827) have not been referred in the system standards (IS 14141, IS 15802, IS 15804, IS 16325). Therefore, review of these standards is also important from compatibility perspective.

1.2 List of Indian Standards on windscreen wiping and washing system and their components, are as follows:

S. No.	IS No	Title
1	IS 7827 (Part 1) : 1975	Specification for electrical windscreen wipers Part 1 Wiper system
2	IS 7827 (Part 2) : 1975	Specification for electrical windscreen wipers Part 2 Wiper motors
3	IS 7827 (Part 3/Sec 1) : 1993	Automotive vehicles electricalwind screen wipers Part 3 Wiper arms and blades Section 1 Wiperarms - Specification
4	IS 7827 (Part 3/Sec 2) : 1985	Specification for electrical windscreen wiper Part 3 Wiper arms and blades Section 2 Wiper blades
5	IS 14141:1994	Automotive vehicles – Electrical windshield washing system – Performance requirement
6	IS 15802:2008	Automotive vehicles –Windscreen wiping system for 4 wheelers other than M1 category of vehicles –Requirements
7	IS 15804:2008	Automotive vehicles –Windscreen wiping and washing system for M1 category ofvehicles –Requirements
8	IS 16325: 2019	Automotive Vehicles – Windscreen wiping system for 3- wheeler vehicles – Specification

2. Objectives:

The primary objective of this project is to collect and analyze data from both primary and secondary sources regarding the safety and performance requirements for updation of the aforesaid Indian Standards.

3. Scope:

3.1 An extensive literature review and comparative analysis of Windscreen Wiping and Washing Systems and their components, which include study of Indian Standards, International

standards, research papers, SOP/guidelines issued by concerned Ministry and any other study published on the subject.

3.2 Identification of manufacturing base (large, medium and small scale) and testing agencies, exporters and importers, for each component and systems (refer **1.2)**

3.3 Reviewing the technical requirements of different countries (from where imports and where exports are made), and making comparative analysis, for each component and each system.

3.4 Undertaking visits to the manufacturing facilities and NABL accredited testing labs, Minimum-two large, 2 MSME and 2 NABL accredited laboratory to be visited for collection of details.

3.5 Collection of data from these industries and testing laboratories for test methods, requirements and standards that they are following.

3.6 Collection of data from other Industries and testing laboratories through questionnaire. The questionnaire to be finalized in consultation with BIS.

3.7 Carrying out comparative analysis after collection of data done as per **3.5** and **3.6**

3.8 Collection of data from industries about steps taken by them to promote sustainability in their manufacturing processes, raw materials, methods, storage, packaging and waste disposal.

3.9 Collection of feedback from users regarding issues being faced, and other related points.

3.10 Identification of gap areas on subject for standard formulation.

3.11 Preparation of detailed analytical report based on above points.

4. Research Methodology:

4.1 Carry out thorough literature review as specified in **3.1**.

4.2 After the collection of data for manufacturing and testing units, sampling plan shall be submitted by proposer to BIS for approval for visiting each component and systems (refer **1.2**) manufacturing and testing units.

4.3 Collect information from stakeholders (exporter and importer) through discussion and structured questionnaire for technical requirements. Further prepare a comparative analysis as per **3.3.**

4.4 Visits to manufacturers facilities to witness the manufacturing processes and to collect the data in detail, for each component and systems (refer **1.2**). These data should be collected by observing processes and focused group discussions on the following (tentative):

i.	Whether following the Indian Standards: yes/No If No: Then what standard/regulation/document is being followed: If partially following: Which provision of standards not being followed and specific reason thereof, if any:	ix.	Testing facilities available
ii.	Sizes	x.	How product is different than that of the requirement given in standards
iii.	Raw materials	xi.	Measures may be taken to make the standards compatible for cross reference of various standards
iv.	Types	xii.	Measures taken by Industry towards Sustainable development of product(please refer 3.7)
v.	Test methods	xiii.	Technological advancement for each component and system, that should be

			addressed through standards:
vi.	Test requirements	xiv	Designed for proper working in what Temperature range :
vii.	Manufacturing processes	xv	Tests to check the function in Temperature range:
viii.	In process quality checks	xvi	Other relevant points

4.5 Visits to testing laboratories, especially NABL accredited, and collect data for testing facilities available, test methods, test requirements and standards being followed, if any.

4.6 Collect data through questionnaire from Manufacturing units and testing laboratories as per **4.4** and **4.5** respectively.

4.7 Collect data and feedback from different users through circulation of questionnaire regarding issues being faced by them, for aforesaid components and systems and their suggestions for improvement.

4.8 Analyse the findings and data.

5. Deliverables:

An analytical report in soft and hard copy, covering all aspects mentioned in the scope, shall be submitted. Details of visits to manufacturers and testing agencies, discussions with focused group as per **4.4**, questionnaire with exporters and importers, feedbacks from users, research findings, data collected, comparative analysis, literature review and test results shall be appended to the report.

An analysis report of the data collected with respect to compatibility of component standards with system standards.

6. Sampling Plan:

Based on identification of manufacturing and testing base, a sampling plan shall be submitted by researcher for approval from BIS, for visits to different stakeholders.

7. Support:

BIS will provide the related Standards on request.

8. Timelines and Method of Progress Review:

A stage wise indicative timeline plan is provided below:

a) Project timeline – 3 months from the date of award of project.
b) Identification of stakeholders and initial literature review report- By end of 30 days.
c) Visit to manufacturers and laboratories and testing of collected samples – By end of 60 days.
d) Final report covering all the aspects of the ToR – By end of 90 day.