

AGENDA

| MEETING | NO. OF MEETING | DAY & DATE | TIME | VENUE |
|--|------------------------|--|-----------------|----------------|
| Illumination Engineering and Luminaires Sectional Committee, ETD 49 | 11th | 8th October 2024 Tuesday | 1030 Hrs | Virtual |

CHAIRPERSON: Prof.(Dr.) Saswati Mazumdar

MEMBER SECRETARY: Ms Neha Agarwal

| Sl. No | Organization | Member Name |
|--------|---|------------------------------|
| 1. | Jadavpur University, Kolkata | Prof.(Dr) Saswati Mazumdar |
| 2. | ETD, BIS | Ms Neha Agarwal |
| 3. | Bajaj Electricals Limited, Mumbai | Shri Razi Khan |
| 4. | Binay Opto Electronics Private Limited, Kolkata | Shri Vineet K. Rohatgi |
| 5. | Central Power Research Institute, Bengaluru | Shri N Rajkumar |
| 6. | Consumer Voice, New Delhi | Shri H. S. Wadhwa |
| 7. | Consumer Voice, New Delhi | Shri B.K. Mukhopadhyay |
| 8. | Crompton Greaves, Mumbai | Ms Uma Lanka |
| 9. | Directorate General Factory Advice Service and Labour Institutes, Mumbai | Shri Sourish Datta Choudhury |
| 10. | Directorate General Factory Advice Service and Labour Institutes, Mumbai | Shri Vipul Mishra |
| 11. | Electric Lamp and Component Manufacturers Association of India, New Delhi | Shri Amal Sengupta |
| 12. | Electrical Research and Development Association, Vadodara | Shri Avainsh Trivedi |

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| 13. | Energy Efficiency Services Limited, New Delhi | Shri Anil Kumar Choudhary |
| 14. | Havells India Limited, Noida | Ms. Sudeshna Mukhopadhyay |
| 15. | Havells India Limited, Noida | Shri Pankaj Mittal |
| 16. | Indian Society of Lighting Engineers, New Delhi | Dr. Rajat Subhra Mandal |
| 17. | Intertek India Private Limited, New Delhi | Shri Hari Om |
| 18. | Ledvance India Private Limited, Gurugram | Shri Dharendra Agrahari |
| 19. | Nuclear Power Corporation of India Limited, Mumbai | Shri Saunak Mondal |
| 20. | Signify Innovations India Limited, Gurugram | Shri Nitish Poonia |
| 21. | Surya Roshni Limited, Delhi | Shri Amit Tyagi |
| 22. | UL India Private Limited, Bengaluru | Shri Gurpreet Kaur |
| 23. | UL India Private Limited, Bengaluru | Shri Anand Verma |

Item 0 WELCOME ADDRESS BY THE CHAIRPERSON

Prof. Saswati Mazumdar welcomed all the members present during the meeting through virtual mode. She wished all the members for fruitful discussion on all the agenda items.

Ms Neha Agarwal, Member Secretary welcomed the members present during the meeting.

The meeting started with brief introduction of all the members present during the meeting.

Item 1 CONFIRMATION OF THE MINUTES OF THE LAST MEETING

1.1 In view of no comments received, the committee confirmed the minutes of the 10th meeting of Illumination Engineering and Luminaires Sectional Committee, ETD 49 held on 18th April 2024.

1.2 Actions Arising Out of Previous Meetings

| Sl. No. | Subject | Decision of the last meeting | Action taken | Decision taken during the meeting |
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| 1. | Revision of IS 7785 Elevated type aerodrome lighting fittings | <p>The committee deliberated the suggestion received from Vardhman Airport regarding addition of other like surge protection, THD % etc which are missing in IEC TS 61827.</p> <p>The members opined that specified values for THD and surge protection may be specified into the standard.</p> <p>It was decided to take inputs from Airport Authority of India for further discussion on the subject.</p> | <p>The mail was sent to Airport Authority of India for seeking inputs.</p> <p>Reply is awaited.</p> | <p>The committee members suggested to visit Airport Authority of India for collecting the inputs.</p> <p>Further Shri Vineet K. Rohatgi kindly agreed to provide the relevant inputs. The copy of IEC standards will be shared with him for his ready reference.</p> |
| 2. | Revision of IS 1944 (Part 1 & 2) 'Code of Practice for Lighting of Public Thoroughfares' | <p>The modified document was circulated amongst panel members vide email dated 15 April 2024 for seeking comments.</p> <p>Further, the committee recommended to divide the draft in two sections consisting separate section for tunnel lighting.</p> <p>It was decided to circulate the draft under wide circulation.</p> | <p>ETD 49_P2 meetings were held twice on 03/07/2024 and 30/08/2024 for reviewing and modifying the revised draft.</p> <p>Minutes of the meeting are placed at Annex 1.</p> | <p>The member secretary briefed the committee regarding the progress made on the revision of IS 1944 since last sectional committee meeting.</p> <p>Further it was informed that annexure remains for discussion which will be discussed in the next panel meeting (to be scheduled shortly). After that, the document will be circulated widely to seek comments.</p> |

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| 3. | Specification for Road Traffic Signals | <p>The committee discussed the comments and decided the following:</p> <p>a) To modify the scope as ‘working voltages d.c. supplies up to 250 V or a.c. supplies up to 1 000 V at 50 Hz’</p> <p>b) Specific lampholders are not required</p> <p>c) Cl 4.14.3- Specify ‘10kV±3% for 50µs±20%’ with note as ‘applicable for a.c. luminaires only’.</p> <p>With the above mentioned changes, the committee decided to send the draft for printing.</p> | The document is under printing stage. | The committee noted the information |
| 4. | Revision of National Lighting Code, SP 72 | The committee noted the information. Member Secretary urged members to review the drafts and submit the comments. | <p>All revised parts of NLC have been circulated as P Draft for seeking comments. Comments received are placed at Annexure 2.</p> <p>Please refer Item 3 also.</p> | <p>The matter was discussed in detail and it was decided to assign chapters to a group of experts who can review the chapter along with the comments received, if any, during P-draft stage and re-submit the modified document.</p> <p>The members were requested to nominate themselves based on their expertise to review the chapters .</p> <p>The contact details of the experts of the groups and the subjects/parts/sections assigned to the nominated experts for review are provided in Annex 1.</p> |

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| 5. | Revision of IS 10322 series | <p>Shri Nitish Poonia, Signify suggested to also include reference of IS 694 for PVC cables.</p> <p>Further, it was decided to circulate IEC 60598-1 along with National Annexure with changes as submitted by ELCOMA as P-draft amongst committee members.</p> | <p>ETD/49/25743 (revision of IS 10322 (Part 1): 2014) was circulated as P-Draft vide letter dated 28th May 2024 with last date of comments as 27 June 2024.</p> <p>Comments received from DCMSME and VOICE in agreement of the draft.</p> <p>The committee may consider.</p> | <p>In view of no receipt of comments, the committee approved the draft for wide circulation for 1 month period of time.</p> <p>Further committee approved the revision of others part of IS 10322 series in line with the latest IEC standard.</p> <p>The draft will be circulated to seek comments.</p> |
| 6. | Revision of IS 3646 (Part 1): 1992 Code of practice for Interior illumination Part 1 General Requirements and Recommendations for Working Interiors | <p>The committee approved the draft for wide circulation.</p> | <p>ETD 49 (22373) WC (revision of IS 3646-1) was wide circulated vide BISDG letter dated 03/07/2024 with last date of comments as 02 August 2024.</p> <p>Comments received from Intertek in agreement of the draft.</p> <p>Comments received from Shri Nitish Poonia (Editorial- Table 54. It shall be '1000' in place of '100'.)</p> <p>The committee may consider.</p> | <p>Committee finalized the draft for ETD/49 (22373) for printing .</p> |
| 7. | New Work Item Proposals (NWIPs) | <p>1. Indian Standards on 'Search Light'- by Shri Narender Reddy Beesu</p> <p>The committee deliberated on the new subject received on search light.</p> | <p>1. Mail was sent to all members in this regard. Comments received from Shri P K Mukherjee are placed at Annexure 3.</p> | <p>1.The matter was discussed in detail and the committee members opined that the request of search light as mentioned in the draft document</p> |

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| | | <p>Member secretary also informed regarding existing Indian Standard on Flash light i.e. IS 2083: 1991. It was decided to circulate the draft document as received from the proposer along with the copy of IS 2083 amongst members for further review.</p> <p>2. Luminaires for Swimming Pools and Similar Applications IEC 60598-2-18:2022 ‘Luminaires - Part 2-18: Particular requirements - Luminaires for swimming pools and similar applications’</p> <p>The committee agreed to take up the subject for formulation of Indian Standard. It was decided to circulate the concerned IEC as P-draft amongst committee members for seeking feedback.</p> | <p>2. ETD 49 Doc. (25619) was circulated as P Draft amongst committee members vide letter dated 14 May 2024 with last date of comments as 13 June 2024.</p> <p>No comments received.</p> | <p>received from the proposal are covered in IS 2083 and 10322 (Part 5/ Sec 5).</p> <p>Therefore it was decided to omit the proposal.</p> <p>2. In receipt of no comments, it was decided to wide circulate the document for seeking feedback for one month period of time.</p> |
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Item 2 REVIEW OF COMPOSITION OF SECTIONAL COMMITTEE, ETD 49

- 2.1 The committee reviewed the composition of the Sectional Committee ETD 49 and decided to include organization working in the field of Smart Luminaires. Such as TATA Company Limited & Reliance Industries.

Shri Pankaj Mittal kindly agreed to provide details of concern person

In view of absence in last two consecutive meetings of ETD 49, it was decided to remove the following organizations:

1. MLS India Private Limited, New Delhi
2. Ledvance India Private Limited, Gurugram

Item 3 APPROVAL OF DRAFT INDIAN STANDARDS FOR FINALIZATION/WC

| SI. No. | Doc No | TITLE | |
|---------|---|--|------------------------------------|
| 1 | ETD 49 (25378) Revision of: SP 72:2010 | National Lighting Code of India Part 3 Electric Light Sources and their Accessories Section 1 Solid State Lighting LED Technology Section 2 LED Driver and Controls First Revision of SP 72 Part 3 | Please refer Item1.2(4) |
| 2 | ETD 49 (25578) Revision of: SP 72:2010 | National Lighting Code of India Part 5 Interior Illumination Section 1 to Section 9 First Revision of SP 72 Part 5Section 1 to Section 9 | Please refer Item1.2(4) |
| 3 | ETD 49 (25619) | Luminaires for swimming pools and similar applications | Please refer Item1.2(7) (2) |
| 4 | ETD 49 (25743) Revision of: IS 10322:2014 | Luminaires Part 1 General Requirements and Tests Third Revision | Please refer Item1.2(5) |
| 5 | ETD 49 (25787) Revision of: SP 72:2010 | National Lighting Code of India Part 7 Energy-Effective Lighting Systems Section 1 and Section 2 First Revision of SP 72 Part 7 Section 1 and Section 2 | Please refer Item1.2(4) |
| 6 | ETD 49 (25814) Revision of: SP 72:2010 | National Lighting Code of India Part 10 Installation Aspects for Lighting Section 1 Mechanical Section 2 Electrical Section 3 Coordination with Related Disciplines Section 4 Installation Guidelines for LED System Section 5 Lighting Maintenance First Revision of SP 72 Part 10Section 1- Section 5 | Please refer Item1.2(4) |
| 7 | ETD 49 (26127) Revision of: SP 72:2010 | National Lighting Code of India PART 17 SCIENCE OF ULTRA VIOLET AND ULTRA VIOLET GERMICIDAL IRRADIATION APPLICATIONS FOR HOSPITALS First Revision of SP 72 Part 17 | Please refer Item1.2(4) |

| Sl. No. | Doc No | TITLE | |
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| 8 | ETD 49 (26128) Revision of: SP 72:2010 | National Lighting Code of India Part 6 Outdoor Lighting Section 1 to Section 12 First Revision of SP 72 Part 6 Section 1 to Section 12 | Please refer Item1.2(4) |
| 9 | ETD 49 (26166) Revision of: SP 72:2010 | National Lighting Code of India Part 11 Human Centric Lighting First Revision of SP 72 Part 11 | Please refer Item1.2(4) |
| 10 | ETD 49 (26189) Revision of: SP 72:2010 | National Lighting Code of India Part 15 Horticulture Lighting First Revision of SP 72 Part 15 | Please refer Item1.2(4) |
| 11 | ETD 49 (26211) Revision of: SP 72:2010 | National Lighting Code of India Part 14 Adverse Effects of Lighting First Revision of SP 72 Part 14 | Please refer Item1.2(4) |
| 12 | ETD 49 (26319) Revision of: SP 72:2010 | National Lighting Code of India Part 8 Daylighting for Buildings First Revision of SP 72 Part 8 | Please refer Item1.2(4) |
| 13 | ETD 49 (26435) Revision of: SP 72:2010 | National Lighting Code of India Part 9 Emergency Lighting First Revision of SP 72 Part 9 | Please refer Item1.2(4) |
| 14 | ETD 49 (26462) Revision of: SP 72:2010 | National Lighting Code of India Part 12 Indoor Connected IoT Based Lighting First Revision of SP 72 Part 12 | Please refer Item1.2(4) |
| 15 | ETD 49 (26468) Revision of: SP 72:2010 | National Lighting Code of India Part 13 Outdoor Digital Connected IOT Based Road Lighting First Revision of SP 72 Part 13 | Please refer Item1.2(4) |
| 16 | ETD 49 (26629) Revision of: SP 72:2010 | National Lighting Code of India Part 4 Luminaires First Revision of SP 72 Part 4 | Please refer Item1.2(4) |

Draft Standards Completed WC Stage

| Si. No. | Doc No | Title | |
|---------|----------------|---|--------------------------------|
| 1 | ETD 49 (22373) | Code Of Practice For Interior Illumination Part 1 General Requirements And Recommendations For Working Interiors First Revision | Please refer Item1.2(6) |

| Si. No. | Doc No | Title | |
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| 2 | ETD 49 (23883) | Electrical Installations For Lighting And Beaconing Of Aerodromes Characteristics Of Inset And Elevated Luminaires Used On Aerodromes And Heliports | Please refer Item1.2(1) |
| 3 | ETD 49 (25066) Revision Of: SP 72:2010 | National Lighting Code Of India Part 1 Lighting Vocabulary | Please refer Item1.2(4) |
| 4 | ETD 49 (25108) Revision Of: SP 72:2010 | National Lighting Code Of India Part 2 Physics Of Light First Revision Of SP 72 Part 2 | Please refer Item1.2(4) |

Item 4 PRESENT POSITION OF WORK

4.1 The committee noted the programme of work of ETD.

4.2 Review of Standards - Taking up Revision of pre-2000 standards

The committee noted the status of Pre-2000 standards.

Item 5 REVIEW/REAFFIRMATION OF PUBLISHED INDIAN STANDARDS

As per BIS procedure, Indian Standards are to be reviewed which are 5 years old and are to be reaffirmed. As on date, following standards are due for reaffirmation:

| S.NO | ETD | Action | Decision Taken |
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| 1. | IS 10322 (Part 5/Sec 5): 2013 Luminaires: Part 5 particular requirements: Sec 5 floodlights (First Revision) | Proposed to be reaffirmed as base IEC is not revised | The committee took a decision to reaffirm and revise the standard. |
| 2. | IS 10322 (Part 5/Sec 6): 2013 Luminaires: Part 5 particular requirements: Sec 6 handlamps | Proposed to be reaffirmed as base IEC is not revised | The committee took a decision to reaffirm and revise the standard. |
| 3. | IS 10322 (Part 5/Sec 8): 2013 | Proposed to be reaffirmed as base IEC is not revised | The committee took a decision to reaffirm and revise the standard. |

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| | Luminaires: Part 5 particular requirements: Sec 8 emergency lighting | | |
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Item 6 NEW SUBJECTS AND FUTURE PROGRAMME OF WORK

6.1 The committee noted the information.

Item 7 INTERNATIONAL ELECTROTECHNICAL COMMISSION

7.1 program of Work

7.1.1 The committee noted the information.

7.1.2 Designation of Indian Experts at IEC Projects:

The committee acknowledged the information and approved the nomination of Shri Hari OM from Intertek Pvt Ltd as the designated expert to review and provide comments on IEC documents related to the development of the IEC 60598 series, received from IEC SC 34D.

Other members were also invited to express their interest or submit nominations for reviewing and providing detailed feedback on drafts/documents received from IEC SC 34D.

Item 8 DATE AND PLACE FOR THE NEXT MEETING

8.1 The committee noted the annual calendar of ETD 49 meetings. It was decided to have another meeting in 3rd Quarter (December 2024).

Item 9 ANY OTHER BUSINESS

In view of no other business, the meeting ended with vote of thanks to chair and members present during the meeting.

ANNEX 1

| Sl. No | Part/ Section | Subject | Nominated Experts for Review | Contact Details | |
|---------------|---|---------------------|--|--|---------------------------------|
| 1. | Part 1 | Lighting Vocabulary | 1) Shri Amit Tyagi <i>(Surya Roshni Limited, Delhi)</i> 2) Shri Razi Khan <i>(Bajaj Electricals Limited, Mumbai)</i> | amit.tyagi@surya.in 9582115285 Razi.khan@bajajelectricals.com 8791593376 | |
| 2. | Part 2 Physics of Light | Section 1 | 1) Shri Amit Tyagi <i>(Surya Roshni Limited, Delhi)</i> 2) Shri Razi Khan <i>(Bajaj Electricals Limited, Mumbai)</i> | amit.tyagi@surya.in 9582115285 Razi.khan@bajajelectricals.com 8791593376 | |
| | | Section 2 | | | Vision |
| | | Section 3 | | | Colour |
| 3. | Part 3 Electric Light Sources & Their Accessories | Section 1 | 1) Shri Avainsh Trivedi <i>(Electrical Research and Development Association, Vadodara)</i> 2) Shri Hari Om <i>(Intertek India Private Limited, New Delhi)</i> | avainsh.trivedi@erda.org hari.om@intertek.com 9958656663 | |
| | | Section 2 | | | Driver And Controls |
| 4. | Part 4 Luminaires | Section 1 | 1) Shri Razi Khan <i>(Bajaj Electricals Limited, Mumbai)</i> 2) Shri Hari Om <i>(Intertek India Private Limited, New Delhi)</i> 3) Shri Pankaj Mittal <i>(Havells India Limited, Noida)</i> 4) Shri N Rajkumar | Razi.khan@bajajelectricals.com 8791593376 hari.om@intertek.com 9958656663 pankaj.mittal@havells.com 9910440336 rajkumar@cpri.in 9886497677 | |
| | | Section 2 | | | Lightings Measurement Standards |

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| 6. | Part 6 Outdoor Lighting | Section 1 | Security Lighting | <p>1) Ms Uma Lanka (Crompton Greaves, Mumbai)</p> <p>2) Shri Vineet K. Rohatgi (Binay Opto Electronics Private Limited, Kolkata)</p> <p>3) Dr. Rajat Subhra Mandal (Indian Society of Lighting Engineers, New Delhi)</p> | <p>uma.lanka@crompton.co.in 9920064030</p> <p>info@binayled.com 9830040062</p> <p>drrajatmandal2013@gmail.com 9971492403</p> |
| | | Section 2 | Decorative Lighting Monument & Heritage | <p>1) Ms. Sudeshna Mukhopadhyay (Havells India Limited, Noida)</p> | <p>sudeshna.mukhopadhyay@havells.com 9560806161</p> |
| | | Section 3 | Landscape Lighting - Park & Garden | <p>1) Ms. Sudeshna Mukhopadhyay (Havells India Limited, Noida)</p> | <p>sudeshna.mukhopadhyay@havells.com 9560806161</p> |
| | | Section 4 | Lighting For Utility Areas | ETD 49_P2 (Panel for Revision of IS 1944) | ---- |
| | | Section 5 | Sports Lighting | <p>1) Ms. Sudeshna Mukhopadhyay (Havells India Limited, Noida)</p> <p>2) Shri Shreekant Dattatray Phanse (Signify Innovations India Limited, Gurugram)</p> | <p>sudeshna.mukhopadhyay@havells.com 9560806161</p> <p>shreekant.phanse@signify.com 2262443000</p> |
| | | Section 6 | Lighting For Mass Rapid Transit Transport System (MRTS) | <p>1) Ms. Sudeshna Mukhopadhyay (Havells India Limited, Noida)</p> | <p>sudeshna.mukhopadhyay@havells.com 9560806161</p> |

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| | | Section 7 | Lighting Of Hazardous Areas | <p>1) Ms Uma Lanka (<i>Crompton Greaves, Mumbai</i>)</p> <p>2) Shri Vineet K. Rohatgi (<i>Binay Opto Electronics Private Limited, Kolkata</i>)</p> <p>3) Dr. Rajat Subhra Mandal (<i>Indian Society of Lighting Engineers, New Delhi</i>)</p> | <p>uma.lanka@crompton.co.in 9920064030</p> <p>info@binayled.com 9830040062</p> <p>dr Rajatmandal2013@gmail.com 9971492403</p> |
| | | Section 8 | Road Lighting | ETD 49_P2 (Panel for Revision of IS 1944) | ---- |
| | | Section 9 | Aviation Obstruction Lighting | <p>1) Ms Uma Lanka (<i>Crompton Greaves, Mumbai</i>)</p> <p>2) Shri Vineet K. Rohatgi (<i>Binay Opto Electronics Private Limited, Kolkata</i>)</p> <p>3) Dr. Rajat Subhra Mandal (<i>Indian Society of Lighting Engineers, New Delhi</i>)</p> | <p>uma.lanka@crompton.co.in 9920064030</p> <p>info@binayled.com 9830040062</p> <p>dr Rajatmandal2013@gmail.com 9971492403</p> |
| | | Section 10 | High Mast Lighting | 1) Shri Shreekant Dattatray Phanse (<i>Signify Innovations India Limited, Gurugram</i>) | shreekant.phanse@signify.com 2262443000 |
| | | Section 11 | Tunnel Lighting | ETD 49_P2 (Panel for Revision of IS 1944) | ----- |
| | | Section 12 | Signage Lighting | 1) Ms Uma Lanka (<i>Crompton Greaves, Mumbai</i>) | uma.lanka@crompton.co.in 9920064030 |

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| | | | | <p>2) Shri Vineet K. Rohatgi (<i>Binay Opto Electronics Private Limited, Kolkata</i>)</p> <p>3) Dr. Rajat Subhra Mandal (<i>Indian Society of Lighting Engineers, New Delhi</i>)</p> | <p>info@binayled.com 9830040062</p> <p>dr Rajatmandal2013@gmail.com 9971492403</p> |
| 7. | Part 7 Energy-Effective Lighting Systems | Section 1 | Energy Efficiency in Lighting | 1) Ms Uma Lanka (<i>Crompton Greaves, Mumbai</i>) | uma.lanka@crompton.co.in 9920064030 |
| | | Section 2 | Sustainability | 2) Shri Vineet K. Rohatgi (<i>Binay Opto Electronics Private Limited, Kolkata</i>) | info@binayled.com 9830040062 |
| 8. | Part 8 | | Day Lighting for Buildings | 1) Shri Amit Tyagi (<i>Surya Roshni Limited, Delhi</i>) | amit.tyagi@surya.in 9582115285 |
| 9. | Part 9 | | Emergency Lighting | 1) Shri Amit Tyagi (<i>Surya Roshni Limited, Delhi</i>) | amit.tyagi@surya.in 9582115285 |
| 10 | Part 10 Installation and Commissioning | Section 1 | Lighting Installation | 1) Shri Vipul Mishra (<i>Directorate General Factory Advice Service and Labour Institutes, Mumbai</i>) | vipul.mishra@dglasli.nic.in |
| | | Section 2 | Lighting Maintenance | 2) Shri Anil Choudhary (<i>Energy Efficiency Services Limited, New Delhi</i>) | achoudhary@eesl.co.in |
| 11 | Part 11 | | Human Centric Lighting | 1) Shri Vineet K. Rohatgi (<i>Binay Opto Electronics Private Limited, Kolkata</i>) | info@binayled.com 9830040062 |

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| | | | <p>2) Ms. Sudeshna Mukhopadhyay (Havells India Limited, Noida)</p> <p>3) Shri Nitish Poonia (Signify Innovations India Limited, Gurugram)</p> | <p>sudeshna.mukhopadhyay@havells.com 9560806161</p> <p>nitish.poonia@signify.com 8800266011</p> |
| 12 | Part 12 | Indoor Digital Connected and IOT Based Lighting | 1) Ms Uma Lanka (Crompton Greaves, Mumbai) | uma.lanka@crompton.co.in 9920064030 |
| 13 | Part 13 | Outdoor Digital Connected and IOT Based Road Lighting | <p>2) Shri Razi Khan (Bajaj Electricals Limited, Mumbai)</p> <p>3) Shri Nitish Poonia (Signify Innovations India Limited, Gurugram)</p> | <p>Razi.khan@bajajelectricals.com 8791593376</p> <p>nitish.poonia@signify.com 8800266011</p> |
| 14 | Part 14 | Adverse Effects of Lighting | 1) Shri Vineet K. Rohatgi (Binay Opto Electronics Private Limited, Kolkata) | info@binayled.com 9830040062 |
| 15 | Part 15 | Horticulture Lighting | <p>2) Shri Anil Choudhary (Energy Efficiency Services Limited, New Delhi)</p> <p>3) Ms Uma Lanka (Crompton Greaves, Mumbai)</p> | <p>achoudhary@eesl.co.in</p> <p>uma.lanka@crompton.co.in 9920064030</p> |
| 16 | Part 16 | Science of Ultra Violet & Ultra violet Germicidal | 1) Shri Vineet K. Rohatgi | info@binayled.com |

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| | | <p>Irradiation Applications for Hospitals</p> | <p>(<i>Binay Opto Electronics Private Limited, Kolkata</i>)</p> <p>2) Shri Nitish Poonia (<i>Signify Innovations India Limited, Gurugram</i>)</p> <p>3) Representative from <i>CSIR - National Physical Laboratory, New Delhi</i></p> | <p><u>9830040062</u></p> <p><u>nitish.poonia@signify.com</u> 8800266011</p> |
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