महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम,१९६६

- उक्त अधिनियमाचे कलम ३७(१कक)(ग) अन्वये अधिसूचना
- बृहन्मुंबई विकास नियंत्रण व प्रोत्साहन नियमावली -२०३४ मधील भाग X- Special Provision मध्ये विनियम ५६Λ मानवनिर्मित संकटंचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरेक्षेच्या दृष्टी स्वतंत्र सुरक्षा नियंत्रण नियमावलीचा समावेश अंतर्भूत करणेबाबत.

महाराष्ट्र शासन
नगर विकास विभाग
मंत्रालय, मुंबई :४०० ०३२,
क्रमांक :- टिपीबी-४३२२/१०/प्र.क्र.४५/२०२२/नवि-११
दिनांक :- १० ऑक्टोबर.२०२४

शासन निर्णय : सोबतची सूचना महाराष्ट्र शासनाच्या असाधारण राजपत्रात प्रसिध्द करण्यात यावी.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने.

(निर्मलकुमार चौधरी)
उपसचिव, महाराष्ट्र शासन

प्रत -:

१. मा. राज्यपाल यांचे प्रधान सचिव, राजभवन, मुंबई.
२. मा. मुख्यमंत्री महोदय यांचे अप्पर मुख्य सचिव, मंत्रालय, मुंबई.
३. मा.उप मुख्यमंत्री तथा गृह मंत्री महोदय यांचे सचिव, मंत्रालय, मुंबई.
४. मा.उप मुख्यमंत्री तथा वित्त व नियोजन मंत्री महोदय यांचे सचिव, मंत्रालय, मुंबई
५. मा. विरोधी पक्षनेता, विधानपरिषद / विधानसभा, महाराष्ट्र विधानमंडळ सचिवालय.
६. मा. उपसभापती, महाराष्ट्र विधानपरिषद, महाराष्ट्र विधानमंडळ सचिवालय, मुंबई.
७. मा. उपाध्यक्ष, महाराष्ट्र विधानसभा, महाराष्ट्र विधानमंडळ सचिवालय, मुंबई.
८. मा.प्रधान सचिव (नवि-१), नगर विकास विभाग, मंत्रालय, मुंबई.

प्रति,

१. आयुक्त, बृहन्मुंबई महानगरपालिका, मुंबई.
२. संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे.
३. उपसंचालक, नगर रचना, बृहन्मुंबई, इन्साहटमेंट, महापालिका मार्ग, मुंबई- ४००००१.
४. व्यवस्थापक, शासकीय मध्यवर्ती मुद्रणालय, चर्नीरोड, मुंबई.
   (त्यांना विनंती करण्यात येते की, सोबतची अधिसूचना महाराष्ट्र शासनाचे असाधारण राजपत्रात भाग-१ मध्ये प्रसिध्द करुन त्याच्या प्रत्येकी १० प्रती १)नगर विकास विभाग नवि-११), मंत्रालय, मुंबई २) आयुक्त, बृहन्मुंबई महानगरपालिका, मुंबई ३) संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे व ४) उपसंचालक, नगर रचना, बृहन्मुंबई यांना पाठविण्यात याव्यात.)
५. कक्ष अधिकारी, कार्यासन नवि-२९, यांना विनंती करण्यात येते की, सोबतची अधिसूचना विभागाच्या वेबसाईटवर प्रसिध्द करावी.
६. निवड नस्ती (नवि-११).

Maharashtra Regional & Town Planning Act, 1966.

- Notification under section 37 (1AA) (C) of the said Act.
- Sanction to modification to add New provision 56A for Special Safety Control Regulations for Building vulnerable to Man Made Disasters in Part X Special Provision in Development Control and Promotion Regulations -2034 for Greater Mumbai.

GOVERNMENT OF MAHARASHTRA
Urban Development Department,
Mantralaya, Mumbai 400 032.
Dated: - October, 2024

NOTIFICATION

No. TPB- 4322/10/C.R.45/2022/UD-11

Whereas, the Municipal Corporation of Greater Mumbai is the Planning Authority for the area within its jurisdiction (hereinafter referred to as "the said Corporation") as per the provision of Maharashtra Regional and Town Planning Act, 1966 (hereinafter referred to as "the said Act")

And whereas, in exercise of the powers conferred by sub Section (1) of Section 31 of the said Act, the State Government vide Notification No. TPB-4317/629/CR-118/2017/DP/UD-11, Dt. 08/05/2018 (hereinafter referred to as "the said Notification") has accorded sanction to the Draft Development Plan-2034 of Greater Mumbai along with the Development Control and Promotion Regulations -2034 for Greater Mumbai (hereinafter referred to as "the said Regulations") with modifications shown in SCHEDULE-A appended to the said Notification excluding the substantial modifications as shown in SCHEDULE-B appended to the said Notification. And whereas, Government has issued corrigendum of even number dt. 22nd June, 2018. And whereas, thereafter Government has issued a Corrigendum and Addendum of even number dt. 29th June, 2018 to the said Notification, which is published in Government Gazette dt. 30th June, 2018 as per which the said Regulations have came into force from 1/09/2018;

And whereas, the Government of Maharashtra vide Notification dt. 21/09/2018 has sanctioned EP-1 to EP-168 (Excluding certain EP and provisions which were kept in abeyance) in the said Regulations;

And whereas, the Government of Maharashtra vide Notification dt. 12/11/2018 has issued corrigendum in respect of some typographical errors and mistakes and also to clarify and co-relate certain provisions of said Regulations for its proper interpretation;

And whereas, Government in Urban Development Department vide Government Resolution dated 11/11/2008 had appointed an expert committee to prepare independent safety control Regulation for building safety to deal with man-made disaster. Government in Urban Development Department had publish the safety control Regulation which was prepared by expert committee vide Notice dated 27/02/2009 under section 37(1AA) of the

said Act for inviting objection / suggestion from any person with respect to safety control Regulation; However, final decision regarding sanctioning of safety control Regulation could not be taken;

And whereas, Hon'ble High Court in PIL 80/2019 vide order dated 11/04/2022 has directed Government to draft Special Safety Control Regulations for Building against Man Made Disasters into the said Regulation;

And whereas, considering Hon'ble High Court above mentioned directions Government has formed expert committee (hereinafter referred to as "the said Committee") vide Government Resolution dated 18/08/2022 under the chairmanship of Mr. Praveen Pardeshi, former Municipal Commissioner, Brihanmumbai Municipal Corporation to prepare necessary rules / recommendation in respect of Special Safety Control Regulations for Building Safety against Man Made Disasters;

And whereas, the said committee has submitted its report along with draft Special Safety Control Regulations for Building vulnerable to Man Made Disasters to the Government(hereinafter referred to as "the draft Safety Regulation"); And whereas, Director Town Planning, Maharashtra State, Pune has submitted report regarding the draft Safety Regulation vide letter dated 8/11/2023; And whereas, the meeting was held under the chairmanship of Principal Secretary (UD-1) to discuss the draft Safety Regulation submitted by said Committee and report submitted by Director of Town Planning regarding the draft Safety Regulation and proposed some modification in the draft Safety Regulation;

And Whereas, the Government is of the opinion, it is necessary to accept the report submitted by said committee and include a new provision for Special Safety Control Regulations for Building vulnerable to Man Made Disasters in the said Regulation; And whereas, considering above facts, the Government in Urban Development Department is of opinion that in the public interest, it is expedient to include a new provision for Special Safety Control Regulations for Building vulnerable to Man Made Disasters in the said Regulation; And whereas, in exercise of the powers conferred under Sub-Section (1AA) of Section 37 of the said Act, Government had issued Notice of even no. dated 15th March, 2024 (hereinafter referred to as "the said Notice") for inviting suggestions/objections from the general public with regard to the proposed modification as mentioned in the Schedule appended to the said Notice (hereinafter referred to as "the Proposed Modification") and has appointed the Deputy Director of Town Planning, Gr. Mumbai as the Officer (hereinafter referred to as "the said Officer") to complete the procedure as stipulated under Section 37(1AA) of the said Act and to submit a Report on the objections / suggestions received in respect of the proposed modification to the Government after giving hearing to the concerned persons;

And whereas, the said Notice dated 15th March, 2024 was published in the Maharashtra Government Gazette (Extra-ordinary Part-I, Konkan Division Supplement) dated 15th March, 2024 and the said Officer has submitted his report vide letter dt. 30/08/2024 through the Director of Town Planning, Maharashtra State, after completing the legal procedure stipulated under Section 37(1AA) of the said Act;

And whereas, after considering the Report of the said Officer and after consulting the Director of Town Planning, Maharashtra State, the Government is of the opinion that the proposed modification is required to be sanctioned with certain changes.

Now, therefore, in exercise of the powers conferred upon it under section 37(1AA)(C) of the said Act, the Government hereby:-

A) Sanctions the proposed modification as described more specifically in the Schedule appended herewith.

B) Fixes the date of publication of this Notification in the Official Gazette as the date of coming into force of this modification.

C) Directs the said corporation that in the Schedule of Modifications sanctioning the said DCPR-2034, after the last entry, the Schedule referred to at (A) above shall be added.

This Notification shall also be published on the Government website- www.maharashtra.gov.in (Acts/ Rules)

By order and in the name of the Governor of Maharashtra.

(Nirmalkumar Chaudhari)
Deputy Secretary to Government

SCHEDULE

Accompaniment to the Government in Urban Development Department's Notification. No. TPB- 4322/10/C.R.45/2022/UD-11, dated –10th October, 2024.

(Sanctioned modification to add new provision 56A for Special Safety Control Regulations for Building vulnerable to Man Made Disasters in Part X Special Provision for certain building in Development Control and Promotion Regulations -2034)

56A) Special Regulations for the Safety of Buildings Vulnerable to Man-Made Disasters –

A) Applicability

a. These Special Regulations shall be applicable to buildings vulnerable to terrorist attack/ man-made disasters within the area under the jurisdiction of Municipal Corporations of Greater Mumbai / Special Planning Authorities.

b. Prevailing Development Control and Promotion Regulations of sanctioned Development Plan as amended from time to time shall be applicable mutatis-mutandis except those expressly provided in these Special Regulations.

c. These Special regulations shall be applicable for all buildings fulfilling the criteria of:

1. Having built up area exceeding 10,000 sq.mt. or occupancy over the 1000 persons, used for the following occupancies which are vulnerable to manmade disasters based on the Risk assessment Score as per Annexure-A

   i. Assembly buildings
   ii. Institutional buildings of registered trusts which are used for medical or other Treatments and hospitals
   iii. Educational buildings of schools/colleges
   iv. Buildings which attract or are likely to attract a large number of people / public such as shopping malls, markets, religious buildings, monuments, places of tourist importance, business buildings having headquarters of business houses (such as the World Trade Centre, Stock Exchange) etc.

   The Risk assessment shall be done by Disaster Management Cell in case of Planning Authority and Disaster Management Cell of District in case of Special Planning Authority.

2. For Government buildings, which has been specifically identified as buildings vulnerable to manmade disasters by the Appropriate Authority of the State Government.

   The Appropriate Authority of the State Government shall mean Additional Commissioner of Police, Protection and Security, Mumbai in Greater Mumbai and the Deputy Commissioner of Police, Special Branch in other police, Commissionerate of Maharashtra, and Superintendent of Police in Districts.

   Special Regulations applicable to the buildings mentioned above shall be as per Annexure B .

B) Every high-rise building (as defined in DCPR-2034) shall be provided with Fire Towers having minimum 2 hours fire resistance, consisting of a fireman evacuation lift with a ventilated lobby as an integral part of fire escape staircase, preferably at landing level. Fire Tower may be provided as per sketches shown in the Annexure C.

Note: Other provisions in the sanctioned DCPR with regards to the applicability of a second lift, second staircase for high-rise / Special buildings shall not be applicable after provision of a Fire Tower as given above.

C) High-rise buildings (as defined in DCPR-2034) with height 90 m. and above shall be provided with fire break water tank system with fire pumps at every 65 m. height interval from ground level.
The fire break water tank system may be provided at the service floor, the floor provided with refuge area or any other floor as per specification details shown in the schematic sketch in the Annexure **D**.

D) Details of qualifications, duties, and responsibilities for Licensed Electrical Engineer are as specified in Annexure **E** procedure of appointment, declaration etc. is as specified in Annexure E-1, E-2.1, E-2.2, E-2.3 and registration process and fees for Licensed Electrical Engineer/Consultant cases specified in Annexure-10 of DCPR-2034, as the case may be.

E) Notice of intention to carry out development or redevelopment of a building to be submitted by the owner/developer shall be accompanied by a certificate of supervision in prescribed format by the Licensed Electrical Engineer with respect to planning, designing of electrical installations, and also supervision of electrical installations during the progress of buildings.

F) Owner/developer shall submit a certificate from a licensed Electrical Engineer in prescribed proforma with respect to completion of electrical installations while submission of proposal for occupation certificate.

G) In case of discrepancies observed in the planning, designing and execution, and certification of electrical installations / services by the appointed registered Electrical Professional, the license issued shall be revoked and the Electrical Engineer / Consultant may be debarred from further practice / business for a period as may be decided by the Municipal Corporation/Authority.

H) For planning, designing & execution and certification of the electrical installations / services by Electrical professionals, the various formats / check lists/diagrams, etc. are enclosed in Annexure **F to O**.

I) **Post completion of Building**:
On completion of the buildings for which the criteria of this regulation is applicable shall observe the following perpetual conditions:

i. The fire protection measures provided shall be well maintained by the owner / Society /organization as per the rules and policies prescribed by the concerned fire authority.

ii. The electrical installations in the building including flats, shops, etc. shall be inspected periodically at least once in 5 year and the certificate to that effect shall be obtained from the licensed Electrical Engineer. However, in case of any electrical repair /rectification / renovation work carried out in the building or part thereof, the certificate from Electrical Engineer shall be obtained after the completion of such work.

Notes:

a. The conditions regarding maintaining the electrical and fire installations as mentioned above shall be incorporated in the Occupation / Completion Certificate issued by the Authority.
b. The copy of above certificates shall be displayed at some conspicuous place of the building.
c. Failure to maintain the fire installations and periodical certification may leads to withdrawal of Occupation Certificate by the Authority in addition to fine/ penalty and other actions from the concern authorities.
d. Failure to maintain the electrical installations and periodical certification may leads to disconnection of power supply by power Supply Company till its rectification.

(Nirmalkumar Chaudhari)
Deputy Secretary to Government

महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम,१९६६

- उक्त अधिनियमाचे कलम ३७(१कक)(ग) खालील अधिसूचना.
- बृहन्मुंबई विकास नियंत्रण व प्रोत्साहन नियमावली - २०३४ मधील भाग X- Special Provision मध्ये विनियम ५६Λ मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावलीचा समावेश अंतर्भूत करणेबाबत.

महाराष्ट्र शासन
नगर विकास विभाग
मंत्रालय, मुंबई : ४०० ०३२,
दिनांक :- १० ऑक्टोबर, २०२४

अधिसूचना

क्र. टिपीबी-४३२२/१०/प्र.क्र.४५/२०२२/नवि-११

ज्याअर्थी, महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम, १९६६ (यापुढे ज्याचा उल्लेख "उक्त अधिनियम" असा करणेत आलेला आहे.) च्या तरतुदींनुसार बृहन्मुंबई महानगरपालिका त्यांचे अधिकार क्षेत्राकरीता (यापुढे ज्याचा उल्लेख "उक्त महानगरपालिका" असा करणेत आलेला आहे.) नियोजन प्राधिकरण आहे;

आणि ज्याअर्थी, उक्त अधिनियमाच्या कलम ३१, पोट-कलम (१) अन्वये प्राप्त अधिकारांचा वापर करुन राज्य शासनाने अधिसूचना क्र .११-नवि/.यो.वि/२०१७/११८.क्र.प्र/६२९/४३१७-टिपीबी. २०१८/०५/८.दि(यापुढे ज्याचा उल्लेख "उक्त अधिसूचना" असा करणेत आलेला आहे) द्वारे बृहन्मुंबई प्रारुप विकास योजना-२०३४ सह विकास नियंत्रण व प्रोत्साहन नियमावली-२०३४ (यापुढे ज्याचा उल्लेख "उक्त नियमावली २०३४" असा करणेत आलेला आहे) ला उक्त अधिसूचनेसोबतचे परिशिष्ट-ब मध्ये दर्शविलेले सारभूत स्वरुपाचे फेरबदल (ई.पी.) वगळून उक्त अधिसूचनेसोबतचे परिशिष्ट-अे मध्ये दर्शविलेल्या सुधारणेसह मंजूरी दिली आहे. आणि ज्याअर्थी शासनाने उक्त अधिसूचनेस समक्रमांकाचे शुध्दीपत्रक दि.२२ जून २०१८ रोजी निर्गमित केले आहे आणि ज्याअर्थी, त्यानंतर उक्त अधिसूचनेस शासनाने समक्रमांकाचे शुध्दीपत्रक व पुरकपत्र दि.२९ जून, २०१८ रोजी पारित केले असून सदर शुध्दीपत्रक व पुरकपत्र महाराष्ट्र शासनाच्या राजपत्रात दि.३० जून, २०१८ रोजी प्रसिध्द करण्यात आले असून त्यानुसार उक्त नियमावली -२०३४, दि.१/०९/२०१८ पासून अंमलात आली आहे.;

आणि ज्याअर्थी, शासनाने दि. २१/०९/२०१८ रोजीच्या अधिसूचनेद्वारे उक्त नियमावली-२०३४ मधील सारभूत स्वरुपाचे बदल ईपी-१ ते ईपी-१६८ ला (ठराविक ईपी व निर्णयार्थ प्रलंबित ठेवलेल्या ठराविक तरतुदी वगळून) मंजूरी प्रदान केली आहे;

आणि ज्याअर्थी, उक्त मंजूरीच्या अधिसूचनेत आणि मंजूर तरतूदीमध्ये टंकलेखनाच्या त्रुटी व चुका तसेच उक्त नियमावली-२०३४ मधील काही तरतूदीच्या अर्थबोधाची स्पष्टता करुन सुसंगती आणणे याकरिता शासनाने दि. १२/११/२०१८ रोजी शुध्दीपत्रक निर्गमित केले आहे;

आणि ज्याअर्थी, मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावली तयार करण्यासाठी शासनाने दि.११/११/२००८ रोजीच्या निर्णयाद्वारे, तज्ञ समितीची नियुक्ती केली होती. शासनाने दि. २७/०२/२००९ रोजी महाराष्ट्र प्रादेशिक व नगर रचना अधिनियम १९६६ चे कलम ३७(१कक) अन्वये इमारतीच्या सुरक्षितेसंबंधीची विषेश नियमावली नागरीकांच्या सूचना/हरकती मागविण्यासाठी सूचना प्रसिद्ध केली होती. तथापि, प्रस्तावित फेरबदलावर अंतिम निर्णय होऊ शकला नाही;

आणि ज्याअर्थी, मा. उच्च न्यायालयाने जनहित याचिका क्र. ८०/२०१९ मध्ये दि.११/०४/२०२२ रोजी आदेश पारित करुन मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावलीचा उक्त नियमावलीमध्ये समावेश करणेबाबत आदेशित केले आहे;

आणि ज्याअर्थी, मा. उच्च न्यायालयाचे वर नमूद आदेश विचारात घेऊन शासनाने श्री. प्रविण परदेशी, माजी आयुक्त, बृहन्मुंबई महानगरपालिका यांच्या अध्यक्षतेखाली दि. १८/०८/२०२२ रोजीच्या शासन निर्णयाद्वारे मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावलीच्या अनुषंगाने आवश्यक नियम /शिफारशी तयार करुन शासनास सादर करण्यासाठी तज्ञ समिती गठीत केली (यापुढे ज्याचा उल्लेख "उक्त समिती" असा करणेत आलेला आहे.);

आणि ज्याअर्थी, उक्त समितीने अहवालासोबत मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावलीचा (यापुढे ज्याचा उल्लेख "उक्त प्रारुप सुरक्षा नियमावली" असा करणेत आलेला आहे.) मसूदा शासनास सादर केला आहे; आणि ज्याअर्थी, उक्त सुरक्षा नियमावलीच्या अनुषंगाने संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे यांनी दि. ८/११/२०२३ रोजीच्या पत्राद्वारे अहवाल सादर केले आहे; आणि ज्याअर्थी, उक्त समितीने सादर केलेली उक्त सुरक्षा नियमावली तसेच संचालक, नगर रचना यांनी उक्त नियमावलीच्या अनुषंगाने सादर केलेल्या अहवालाबाबत चर्चा करणेसाठी प्रधान सचिव (नवि-१) यांच्या अध्यक्षतेखालील बैठक पार पडली असून उक्त नियमावलीमध्ये काही सुधारणा प्रस्तावित करण्यात आल्या;

आणि ज्याअर्थी, उक्त समितीने सादर केलेला अहवाल स्विकृत करुन मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावली चा समावेश उक्त नियमावलीमध्ये करणे आवश्यक आहे असे शासनाचे मत झाले आहे;

आणि ज्याअर्थी, उक्त वस्तुस्थिती विचारात घेता उक्त,नियमावलीमध्ये मानवनिर्मित संकटांचा सामना करण्याच्या दृष्टीने इमारतीच्या सुरक्षेसाठी स्वतंत्र सुरक्षा नियंत्रण नियमावलीचा समावेश करणे सार्वजनिक हिताचे दृष्टीने आवश्यक आहे, अशी शासन नगर विकास विभागाची खात्री झाली आहे; आणि ज्याअर्थी, उक्त अधिनियमाच्या कलम ३७ च्या पोट कलम (१कक) अन्वये प्राप्त अधिकाराचा वापर करुन शासनाने समक्रमांकाची दि. १५ मार्च, २०२४, रोजीची सूचना (यापुढे याचा उल्लेख "उक्त सूचना" असा करणेत आलेला आहे) त्यासोबतचे परिशिष्टामध्ये नमूद प्रस्तावित फेरबदलावर (यापुढे याचा उल्लेख "प्रस्तावित फेरबदल" असा करणेत आलेला आहे) जनतेकडून हरकती / सूचना मागविण्यासाठी प्रसिध्द केली आहे आणि ज्याद्वारे प्रस्तावित फेरबदलाबाबत प्राप्त होणाऱ्या हरकती / सूचनांवर संबंधितांना सुनावणी देण्याकरीता तसेच उक्त

अधिनियमाच्या कलम ३७(१कक) अन्वये विहित केलेली कार्यवाही पूर्ण करुन प्रस्ताव शासनास सादर करणेसाठी उपसंचालक, नगर रचना, बृहन्मुंबई यांची अधिकारी (यापुढे ज्यांचा उल्लेख "उक्त अधिकारी" असा करण्यात आला आहे.) म्हणून नियुक्ती करण्यात आली आहे;

आणि ज्याअर्थी, प्रस्तावित फेरबदलाची उक्त सूचना दि. १५ मार्च, २०२४ ही महाराष्ट्र शासन राजपत्र (असाधारण भाग-१ कोकण विभागीय पुरवणी) मध्ये दि. १५ मार्च, २०२४ रोजी प्रसिध्द करण्यात आली होती आणि उक्त अधिकारी यांनी अधिनियमाचे कलम ३७(१कक) अन्वये वैधानिक कार्यवाही पूर्ण करुन दि.३०/०८/२०२४ रोजीच्या पत्रान्वये त्यांचा अहवाल नगर रचना संचालनालयामार्फत शासनाचे अंतिम मंजूरीसाठी सादर केला आहे;

आणि ज्याअर्थी, उक्त अधिकारी यांनी सादर केलेला अहवाल विचारात घेता व संचालक, नगर रचना, महाराष्ट्र राज्य, पुणे यांचेशी सल्लामसलत केल्यानंतर सदर प्रस्तावित फ़ेरबदल काही सुधारणांस मंजूर करणे आवश्यक असल्याचे शासनाचे मत झाले आहे;

आता त्याअर्थी, उक्त अधिनियमाच्या कलम ३७(१कक)(ग) अन्वये प्राप्त अधिकारात आणि त्या संदर्भातील सर्व शक्तींचा वापर करुन शासन याद्वारे :

अ) उक्त प्रस्तावित फेरबदलाचे प्रस्तावास सोबतचे परिशिष्टामध्ये नमूद केलेप्रमाणे मंजूरी देत आहे.

ब) सदरची अधिसूचना शासकीय राजपत्रामध्ये प्रसिध्द झालेचा दिनांक हा उक्त फेरबदल अंमलात आलेचा दिनांक असेल.

क) उक्त महानगरपालिकेस विकास नियंत्रण व प्रोत्साहन नियमावली-२०३४ च्या मंजूरी सोबतच्या फेरबदलाचे परिशिष्टामध्ये शेवटच्या नोंदीनंतर उपरोक्त 'अ' मध्ये नमूद परिशिष्ट समाविष्ट करणेचे निर्देश देत आहे.

सदर अधिसूचना महाराष्ट्र शासनाच्या www.maharashtra.gov.in (कायदा / नियम) या वेबसाइटवर देखील प्रसिद्ध करण्यात येत आहे.

महाराष्ट्राचे राज्यपाल यांच्या आदेशानुसार व नावाने,

(निर्मलकुमार पं. चौधरी)
उपसचिव, महाराष्ट्र शासन

परिशिष्ट

(शासन नगर विकास विभागाकडील अधिसूचना क्र. टिपीबी टिपीबी ४३२२/१०/प्र.क्र.४५/२०२२/ नवि-११, दिनांक:- १० ऑक्टोबर,२०२४ सोबतचे परिशिष्ट.)

(Proposed modification to add new provision 56A for Special Safety Control Regulations for Building vulnerable to Man Made Disasters in Part X Special Provision for certain building in Development Control and Promotion Regulations -2034)

56A) <u>Special Regulations for the Safety of Buildings Vulnerable to Man-Made Disasters –</u>

A) Applicability

a. These Special Regulations shall be applicable to buildings vulnerable to terrorist attack/ man-made disasters within the area under the jurisdiction of Municipal Corporations of Greater Mumbai / Special Planning Authorities.

b. Prevailing Development Control and Promotion Regulations of sanctioned Development Plan as amended from time to time shall be applicable mutatis-mutandis except those expressly provided in these Special Regulations.

c. These Special regulations shall be applicable for all buildings fulfilling the criteria of:

1. Having built up area exceeding 10,000 sq.mt. or occupancy over the 1000 persons, used for the following occupancies which are vulnerable to manmade disasters based on the Risk assessment Score as per Annexure-A

   i. Assembly buildings
   ii. Institutional buildings of registered trusts which are used for medical or other Treatments and hospitals
   iii. Educational buildings of schools/colleges
   iv. Buildings which attract or are likely to attract a large number of people / public such as shopping malls, markets, religious buildings, monuments, places of tourist importance, business buildings having headquarters of business houses (such as the World Trade Centre, Stock Exchange) etc.

   The Risk assessment shall be done by Disaster Management Cell in case of Planning Authority and Disaster Management Cell of District in case of Special Planning Authority.

2. For Government buildings, which has been specifically identified as buildings vulnerable to manmade disasters by the Appropriate Authority of the State Government.

   The Appropriate Authority of the State Government shall mean Additional Commissioner of Police, Protection and Security, Mumbai in Greater Mumbai and the Deputy Commissioner of Police, Special Branch in other police, Commissionerate of Maharashtra, and Superintendent of Police in Districts.

   Special Regulations applicable to the buildings mentioned above shall be as per Annexure B

B) Every high-rise building (as defined in DCPR-2034) shall be provided with Fire Towers having minimum 2 hours fire resistance, consisting of a fireman evacuation lift with a ventilated lobby as an integral part of fire escape staircase, preferably at landing level. Fire Tower may be provided as per sketches shown in the Annexure C.

Note: Other provisions in the sanctioned DCPR with regards to the applicability of a second lift, second staircase for high-rise / Special buildings shall not be applicable after provision of a Fire Tower as given above.

C) High-rise buildings (as defined in DCPR-2034) with height 90 m. and above shall be provided with fire break water tank system with fire pumps at every 65 m. height interval from ground level.
The fire break water tank system may be provided at the service floor, the floor provided with refuge area or any other floor as per specification details shown in the schematic sketch in the Annexure **D**.

D) Details of qualifications, duties, and responsibilities for Licensed Electrical Engineer are as specified in Annexure **E** procedure of appointment, declaration etc. is as specified in Annexure E-1, E-2.1, E-2.2, E-2.3 and registration process and fees for Licensed Electrical Engineer/Consultant cases specified in Annexure-10 of DCPR-2034, as the case may be.

E) Notice of intention to carry out development or redevelopment of a building to be submitted by the owner/developer shall be accompanied by a certificate of supervision in prescribed format by the Licensed Electrical Engineer with respect to planning, designing of electrical installations, and also supervision of electrical installations during the progress of buildings.

F) Owner/developer shall submit a certificate from a licensed Electrical Engineer in prescribed proforma with respect to completion of electrical installations while submission of proposal for occupation certificate.

G) In case of discrepancies observed in the planning, designing and execution, and certification of electrical installations / services by the appointed registered Electrical Professional, the license issued shall be revoked and the Electrical Engineer / Consultant may be debarred from further practice / business for a period as may be decided by the Municipal Corporation/Authority.

H) For planning, designing & execution and certification of the electrical installations / services by Electrical professionals, the various formats / check lists/diagrams, etc. are enclosed in Annexure **F to O**.

I) **Post completion of Building:**
On completion of the buildings for which the criteria of this regulation is applicable shall observe the following perpetual conditions:

i. The fire protection measures provided shall be well maintained by the owner / Society /organization as per the rules and policies prescribed by the concerned fire authority.

ii. The electrical installations in the building including flats, shops, etc. shall be inspected periodically at least once in 5 year and the certificate to that effect shall be obtained from the licensed Electrical Engineer. However, in case of any electrical repair /rectification / renovation work carried out in the building or part thereof, the certificate from Electrical Engineer shall be obtained after the completion of such work.

Notes:

a. The conditions regarding maintaining the electrical and fire installations as mentioned above shall be incorporated in the Occupation / Completion Certificate issued by the Authority.
b. The copy of above certificates shall be displayed at some conspicuous place of the building.
c. Failure to maintain the fire installations and periodical certification may leads to withdrawal of Occupation Certificate by the Authority in addition to fine/ penalty and other actions from the concern authorities.
d. Failure to maintain the electrical installations and periodical certification may leads to disconnection of power supply by power Supply Company till its rectification.

(निर्मलकुमार चौधरी)
उप सचिव, महाराष्ट्र शासन

ANNEXURE – ~~A~~ A

Checklist for calculation of Risk Assessment of buildings vulnerable to man-made disasters

1. Threat Assessment (TA)

Parameter	Rating Out of	Assigned Score	Remarks
Inputs from various Government, Quasi or Semi Government or even private sources.	60		0—if no specific input 60—if specific input is received
Historical data and evidence of such threats to a structure or a structure type can provide the basis for identifying the threat type.	40		0—no previous inputs or incidences or threats 20—in past inputs 40—previous incidence and specific inputs
Total (TA)	**100**		

2. Consequence Assessment (CA)

Parameter	Rating Out of	Assigned Score	Remarks
Human Impact (public health and safety): Effects on human life and physical well-being (e.g., fatalities, injuries).	30		0—no approvable impacts 30—very high number of casualties and injuries
Economic Impact: Direct and indirect effects on the economy with respect to the building and its functions (e.g., cost to rebuild assets, cost to respond to and recover from the attack, downstream costs resulting from the disruption of operations or services, long-term costs due to environmental damage).	25		0—no effect on the economy; very low asset recreation cost. 25—very high impact on economy; very high asset reconstruction cost.
Public Confidence (psychological): Effect on public morale and trust in the government and critical infrastructure. This encompasses those changes in perceptions emerging after a significant incident that affected the public's sense of safety and well-being.	25		0—no effect on public confidence or non-critical infrastructure. 25—very high impact on public confidence or critical infrastructure.
Government Functionality (Governance): Effect on the local government's ability to maintain order, deliver minimum essential public services, ensure public health and safety, and carry out security-related	20		0—no effect on government function. 10—impact on local-area governance. 20—very high effect on government functioning at the national level.
Total (TA)	**100**		

3. Vulnerability Assessment (VA)

3.1 Site (VA-1)

Parameter		Rating Out of	Assigned Score	Remarks
i. Distance to unsecured vehicle	Setting of the building, giving it adequate protection against any unsecured vehicle. 5 ft being the minimum and 75 ft being ideal.	3		0—unsecured vehicle beyond 75 feet. 3—unsecured vehicle can come within 5 feet of the building.
ii. Perimeter boundary	What kind of perimeter protection in place for any vehicle/ person trying to enter the plot—type of wall, other barriers etc	4		0—very secured boundaries, not possible for vehicle entry or intrusion. 4—not secured boundaries capable of stopping vehicles and infrared.
iii. Unobstructed view (5 ft to [illegible] ft)	Visibility for counter- surveillance activity. 5 ft being minimum and 30 ft being best.	2		0—more than 30 ft 2—less than 5 ft
iv. Unsecured underground access	Unsecured underground access through any tunnel/ drain/ culvert of some other infrastructure. Eg.—getting into a building through the sewage drain passing below it	3		0—no underground access 3—underground unscreened access near the site
v. Storage of hazardous material (none to high)	Whether the structure has stores of any kind of material that is explosive thereby causing secondary fliers / can emit toxic releases	3		0—no hazardous/ explosive material. 3—hazardous and explosive material at site likely.
Total (VA-1)		**15**		

3.2 Architecture (VA-2)

Parameter		Rating Out of	Assigned Score	Remarks
i. **Building Height - 20 ft to 200 ft**	The greater the height of the building, the greater the risk of a collapse due to its own weight and higher the challenges of a timely evacuation. Low risk – Upto 30m Moderate risk – Upto 70m High risk– More than 70m	2		0–20 feet height or less 2–200 feet height or more
ii. Height/ Least Lateral Dimension	Slender buildings are more prone to progressive and catastrophic collapses. Low risk– <5 Medium risk– 5-10 High risk– >10	2		H/B Ratio < 5=0. 5< H/B Ratio <9=1 H/B Ratio>9=2
iii. **Building configuration (shape etc.)**	Influence of a shock wave gets enhanced due to sharp corners and concave shape. Low risk–circular and convex Moderate risk– rectangular boxes High risk–re-entrant corners and concave shapes	2		0.0–circular and convex corners 1.0–rectangular boxes 2.0–concave/rectangular/ sharp corners
iv. Overhang	The larger the overhang, the greater the risk of sudden collapse. Low risk–0-2 High risk–2 and above	1		0–overhang 0.75m or below. 1–overhang of 2m or above.
v. **Lobby/Retail location/ Parking with respect to main building**	Whether the structure allows visitors to be alienated from the main structure. Independent being safest Integrated being most dangerous.	3		0–independent lobby where secured screening happens 3–secured screening in the building
vi. Vehicular penetration of exterior envelope	Defines the angles at which vehicles can be driven into the complex and rammed into the structure at high speeds. 90 degrees (right-angle turn) is the best protection. 180 degree (straight drive) is the most dangerous.	3		0–no possibility of vehicle driver 3–very easy to drive into the envelope at high speed and breach the envelope.
vii. **Evacuation Risk**	**Exit Adequacy**	2		0–quick evacuation arrangement at exits. 2–difficult to evacuate due to narrow/insufficient exit
Total (VA-2)		15		

3.3 Building Envelope (VA-3)

Parameter		Rating Out of	Assigned Score	Remarks
i. Percentage of Window/ structural wall/ glazing area to total façade area	Low risk—20% Moderate risk—20-80% High risk—more than 80%	4		0—20% (safe) 2—20-80% (moderate risk) 4—more than 80% (high risk)
ii. Window support type	How well-secured are the windows/ structural wall/ glass façade to the main structure	1		0—securced 1—unsecured
type	Is the glass/ window blast resistant Safest—laminated glass Moderately safe—security film - safe tempered Risky—heat strengthening Most risky—annealed	2		0—glass is blast resistant 2—ordinary glass
iv. Wall type	Safest—RCC Moderate—curtain wall Risky—pre-cast panels Most risky—unreinforced masonry structure	8		0—RCC (safest) 3—curtain wall (moderate) 5—pre-cast panels (risky) 8—unreinforced masonry structure (most risky)
Total (VA-3)		**15**		

Note: Robust unreinforced structure for low rise will be equivalent to RCC

3.3 Building Envelope (VA-3)

Parameter		Rating Out of	Assigned Score	Remarks
Structural System	i. Defines the Load-Carrying Structure A. Redundancy and Robustness B. Degree of redundancy in main-frame thereby allowing redistri-bution of load. C. Column vulnerability due to large spacing (10m, higher height -9m and above) D. Public Accessibility to the column	8 4 5 8		0—20% (safe) 2—20-80% (moderate risk) 4—more than 80% (high risk)
Total (VA-4)		**25**		

3.5 Security Systems (VA-5)

Parameter	Rating Out of	Assigned Score	Remarks
i. Intrusion Detection	2		0—robust detection 2—no system
ii. Video Surveillance and Assessment	4		0—system with AI detection and robustness. 2—system available 4—no system
iii. Security Guards	6		0—robust multi-level security with trained professionals
iv. Security Lighting	2		0—adequate lighting 2—no lights
v. Vehicle Access Control and Screening	6		0—boom barriers and bollard belly view camera. 6—no screening of vehicle
vi. Pedestrian Access and Screening	6		0—X-ray metal detector ... dogs 3—manual screen with metal detector 6—person can just walk in unscreened with no detectors.
vii. Package Screening	2		0—specific package X-ray screening provided 2—no package screening until an unscreened package is in the lobby.
viii. Public address (PA) system	2		0—adequate system provided 1—system inadequate 2—no system ade...
Total (VA-5)	**30**		

Parameter	Rating (out of 100)	Assigned Score
Site (VA-1)	15	
Architecture (VA-2)	15	
Building Envelope (VA-3)	15	
Structural Components and Systems (VA-4)	25	
Security Systems (VA-5)	30	
Total (VA)	**100**	

Based on the criterion mentioned above, risk assessment is calculated with the following formula.

Risk = Threat Assessment (TA) x Consequence Assessment (CA) x Vulnerability Assessment (VA)

Risk assessment will be scored out of 10,00,000z

Up to 1,25,000	Low Risk
From 1,25,000 to 4,50,000	Moderate Risk
From 4,50,000 and above	High Risk

ANNEXURE 4.2

Mitigation measures to be provided for the safety of buildings vulnerable to man-made disasters as per Risk Assessment.

Risk Assessment as per checklist		Low Risk		Moderate Risk		High Risk	
A. General requirements		New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
	Open Spaces for "The Buildings Vulnerable to Terrorist Attack" shall be provided with a safe perimeter or blast standoff distance delineated with positive barriers and systems that prevent any attackers from approaching within that zone.	NA	NA	A	NM	A	NM
2	**Marginal Distances required are as follows:** As per the building line prescribed for National Highway/State Highway/ Major Road from the boundary of the road or as per provisions in that respect in DCPR 2034 and UDCPR 2020 as may be modified from time to time.	NA	NA	A	NM	A	NM
3	Compound wall shall be of 2.0m in height or as specified in these regulations (the height may be reduced to 0.75m if line of sight gets affected in which case the balance height shall be made up of vertical strong steel rods).	A	NM	A	A	A	A
4	At the corner plot, the boundary wall for a length of 10m on the front and side of the intersection shall be constructed of masonry/ concrete up to a height of 0.75m and the balance height shall be made of iron mesh or a railing of suitable size and thickness. However, this provision shall not be applicable to the boundary walls of jails.	A	NM	A	NM	A	NM
5	The approach to the building shall be provided with sufficient restraints to prevent any direct movement of vehicles towards the structures. There shall not be ordinarily more than two entry points, one for persons and another for materials. The outer perimeter of the porch and the entrance area of the structure shall be protected with an RCC kerb of height not less than 600mm and thickness not less than 450mm.	NA	NA	A	NM	A	A
6	An additional standoff shall be provided to reduce the effect of an explosion at a closer distance of not less than that approved by the competent authority of the Police Department.	NA	NA	A	NM	A	A
7	Parking shall not be provided in the minimum marginal open spaces.	NA	NA	NM	NM	A	NM
	A Security Outpost with the following requirements shall be provided near the entry control of the building having size not less than 45 sq.m. a. Fire-resistant material with two hours fire rating shall be used for construction. b. Latest electronic system for surveillance purpose shall be provided.	NA	NA	A	NM	A	A

Risk Assessment as per checklist	Low Risk		Moderate Risk		High Risk	
A. General requirements	New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
A Control room with following requirements shall be provided for use by the owner/ occupier for controlling and monitoring various Security and Surveillance operations having size not more than 45 sq.m.	NM	NM	A	A	A	A
a. The Control room shall be centrally located but shall be away from the main entrance of the building.	NM	NM	A	A	A	A
b. Control rooms shall be provided with escape routes at suitable locations.	NM	NM	A	A	A	
c. Control rooms shall be designed as blast-resistant strong rooms and shall be self-sustaining with full independent provisions for water, electricity, and communications. These rooms shall be provided with essential survival kits for at least a 72-hour period.	NM	NM	A	A	A	A
d. The walls of the control room shall have adequate blast resistance.	NM	NM	A	NM	A	NM
e. The door shall be provided with steel guard bars or grills. The main entry room or the control area shall be provided with steel armored gates having a minimum thickness of 12mm.	NM	NM	A	A		
f. The control room should also house the centralized control system of the building. Any window for ventilation shall be suitably protected with bulletproof glass and shatterproof membranes.	NM	NWWM	A	A	A	A
g. The control room shall be suitably ventilated, and care taken to ensure foolproof safety of this ventilation arrangement.	NM	NM	A	A	A	A
h. The control room should not be located near other highly-inflammable areas.	NM	NM	A	A	A	A
i. Adequate water discharging capacity and provisions shall be made to prevent flooding in case of damage to overhead water tanks, water supply lines etc.	NM	NM	A	NM	A	A
j. A proper access control from the terrace to the building shall be provided in the form of a locked door with proximity control to be activated and deactivated from the control room.	NM	NM	A	A	A	A

Note:

1) 'A' mentioned in the above chart means 'Applicable'.
2) 'NA' mentioned in the above chart means 'Not Applicable'
3) 'NM' mentioned in the above chart means 'Not Mandatory / At the option of owner'
4) NM in High risk and Moderate risk may include feasible alternative mitigation measure.

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Risk Assessment as per checklist		Low Risk		Moderate Risk		High Risk	
	B. Requirements for Electrical and Electronic Systems	New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
	Electronic Surveillance Systems shall be installed at various locations both inside and outside the building as may be required and with previous approval of the Appropriate Authority of Police Department having regard to the degree of perceived risk. A suitable control room shall be provided within the premises for monitoring, as mentioned above.	A	A	A	A	A	A
2	CCTV coverage of all important locations and vital installations shall be done including the main gate, reception, utility areas, and common open areas on floors, lifts, lobbies, and the compound. Perimeter lighting outside the building shall be adequate with focus at critical areas and movable search lights at corners.	A	A	A	A	A	A
3	All electronic systems, electrical systems, security systems and minimum services to the control room shall be provided with a three-tier system arrangement consisting of: (i) main supply (ii) standby generating system, (iii) Inverter or UPS system, to have continuous and uninterrupted power supply and shall comply with the provisions of IS codes, Indian Electricity Rules, 1956 and the National Building Code.	A	A	A	A	A	A
4	All provisions of the National Building Code in respect of electrification shall be applicable. In addition, the following requirements shall also apply regarding the illumination levels etc. in different areas in respect of security	A	A	A	A	A	A
5	Maximum to average ratio of luminance should not be more than 3:1.	A	A	A	A	A	A
6	Luminance level for vertical illumination at 1.5m above ground should be equal to horizontal luminance level at that point to enable clear detection.	A	A	A	A	A	A
	The design should be such that uniform lux level is maintained considering the utility of the area which is dependent on the following points and is to be decided by its previous history and the environment.	A	A	A	A	A	A
	• Crime status of area • Nature of site (business, malls, restaurant) • Degree of obstruction (landscape designs, building configuration) • Ambient brightness of surrounding area. • Impacts on the surrounding area (stray light from security lighting, trespass).						

Risk Assessment as per checklist B. Requirements for Electrical and Electronic Systems		Low Risk		Moderate Risk		High Risk	
		New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
7	In controlled sites, public spaces, important places, the illumination levels for different areas may be maintained as per Table No. 4 in Section 1 of part 8 (building services) of the National Building Code.	A	A	A	A	A	A
8	**Light Controls: These should be of timer clock; photo control, dimmers, and motion detectors. Lighting control should be energized lighting when the ambient natural light level is less than 1.6 times the minimum horizontal security luminance value or 15 lux whichever is higher.**	A	A	A	A	A	A
9	For façade lighting, the illumination level on building faces should be kept as required with an arrangement to increase or reduce this whenever essential depending on the situation and vital nature of the building. There should be rotating searchlights/ floodlights for very important buildings.	A	A	A	A	A	A
10	**For vital buildings, on the compound wall or on the fence, electrical fencing of lower voltage (below 30 volts) can be proposed with a sensor arrangement.**	NA	NA	A	NM	A	A
11	In addition to the main supply to the licensee through a transformer and/ or a standby generating system to fulfill minimum basic requirements in case of failure of the main supply, an inverter or UPS system for the centralized security system and for access control shall be provided. The generating system and transformer should preferably be provided outside the building with necessary security and the electrical cables should be underground/ metallic covered.	A	NM	A	NM	A	A
12	**The usual provisions for maintenance of the Power Supply System and luminaires shall be properly scheduled for periodical servicing, tests, inspections, repairs, security audits for electrical installations, etc.**	A	A	A	A	A	A

Note:

1) 'A' mentioned in the above chart means 'Applicable'.
2) 'NA' mentioned in the above chart means 'Not Applicable'
3) 'NM' mentioned in the above chart means 'Not Mandatory / At the option of owner'
4) NM in High risk and Moderate risk may include feasible alternative mitigation measure.

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Risk Assessment as per checklist		Low Risk		Moderate Risk		High Risk	
C. Requirements for quick evacuation during emergencies		New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
1	Adequate provisions within the building for quick and safe evacuation shall be made in accordance with standards of the National Building Code, if provision in this respect is not available in prevailing DCPR. This includes the number and width of exit doors, passages to be used as escape routes, staircases, longitudinal and cross-aisle and passages in the offices with built up furniture.	NM	NM	A	NM	A	NM
	All external cladding shall be provided with shatterproof membranes for the glass walls and openable shutters at intervals for access for the rescue teams and to release air pressure due to any blast.	A	NM	A	NM	A	A
3	Maps of exit routes shall be displayed at various spots within the building.	A	A	A	A	A	A
	Emergency light operation on UPS or inverters lasting for 48 hours shall be provided.	A	A	A	A	A	A
5	A trained safety squad shall be provided for monitoring quick and safe evacuation in case of emergency. Every building shall have a building-specific safety manual to be approved by the Fire Officer and Police Department containing the duties and responsibilities of various squad members/ floor marshals, etc.	NM	NM	A	A	A	A
6	In respect of quick and safe evacuation during emergencies, outside the building and within the compound of the premises, additional exits/ exit routes are to be provided on the rear side, which can be normally kept closed and used only during emergencies.	NM	NM	A	NM	A	NM

Note:

1) 'A' mentioned in the above chart means 'Applicable'.

2) 'NA' mentioned in the above chart means 'Not Applicable'

3) 'NM' mentioned in the above chart means 'Not Mandatory / At the option of owner'

4) NM in High risk and Moderate risk may include feasible alternative mitigation measure.

Risk Assessment as per checklist D. Blast-resistant design of buildings	Low Risk		Moderate Risk		High Risk	
	New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
The buildings shall be designed for blast resistance in accordance with the guidelines given in IS 4991-1968 and the following requirements shall be considered in their planning and design:	NM	NM	A	NM	A	NM
a. Provision of optimal combination of mass and stiffness in the building, structure, enough structural redundancy in the buildings, member strength proportioned as per capacity design concept, consideration of reversal of loading, strong connections, etc.	A	NM	A	NM	A	A
b. The wall facing a direct vehicular approach shall be of RCC, 45cm thick and suitably reinforced.	A	A	A	A	A	A
c. The minimum thickness of stilt members on the ground floor and floors below shall be of fire resistance of 3 hours as specified in I.S.456.	A	A	A	A	A	A
d. The various architectural controls shall be so provided that the building is away from hub activities. Roads should not lead straight into the building in question. The number of roads to the building must be minimum. Provision for effective entry control for persons, vehicles and materials, provision of spikes to puncture tyres, thereby preventing inbound vehicles from using outbound lanes, provision of passive and active barriers, etc. shall be made.	NA	NA	A	NM	A	NM
e. Orientation of the building should be such that walls with glazing are perpendicular to the street side façade. Re-entrant corners must be avoided on the building exterior.	NA	NA	A	NM	A	NM

1

Note:

1) 'A' mentioned in the above chart means 'Applicable'.
2) 'NA' mentioned in the above chart means 'Not Applicable'
3) 'NM' mentioned in the above chart means 'Not Mandatory / At the option of owner'
4) NM in High risk and Moderate risk may include feasible alternative mitigation measure.

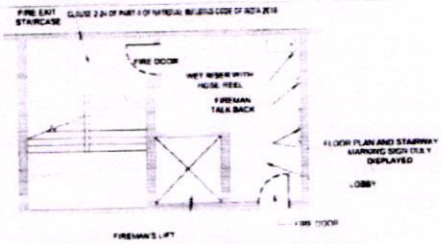
Risk Assessment as per checklist	Low Risk		Moderate Risk		High Risk	
E. Other Provisions	New Building	Existing Building	New Building	Existing Building	New Building	Existing Building
A	a. All existing buildings considered vulnerable (with Protection level High) to terrorist attacks shall also make provisions for compliance with these regulations except those which are not applicable or feasible or possible to be complied with, in the opinion of the Planning authority. This includes retrofitting as may be required to comply with these provisions. b. In case of buildings considered vulnerable with Moderate Protection level, the project proponent will finalize the appropriate norms to be complied with in consultation with the Planning authority. c. Low Risk buildings—Guidelines of FEMA 426, 452, 455 will be recommended to the owner to follow.					
B	Owner/Occupier of the Medium and High-Risk building premises, shall have his own security management administration with trained personnel for execution, procedures for fire and evacuation drills, security audits and a manual containing various requirements and procedures for security control with properly-defined duties in line of control and directions, which shall be already-approved by the Police Department.					
C	Proper monitoring and periodic security audits of systems in Medium and High-risk buildings shall be done, and these reports shall be submitted to the Specified Authority of the Police Department. The owners/occupiers of such specified buildings shall assist the Police and State authorities in arranging and carrying out third-party security audits at specified intervals as directed, preferably every 5 years. The Protection level shall be reassessed every 5 years, and building/s are to be dealt with accordingly.					
D	Pending standardization of Reference Manuals and procedures for Maharashtra, the provisions in FEMA-426, 452, and 455 may be used as a guide and security arrangements made accordingly.					
E	For Special class of institutional viz; Bridges, Dams, and buildings viz; critical Industry, Refinery, BARC, Water Treatment Plant, Energy providers, RBI, BSE, NSE, Data centers, Operational infrastructure and control rooms of all essential services including but not limited to airways, railway, metro and port transportation, data and telecom providers etc. detailed security guidelines should be declared by the respective authority.					
F	The information regarding Risk Assessment mentioned in Annexure 4.1 being very sensitive information, the authorities should keep this information out of the public domain and only the emergency response department will have access to such details.					

Note:

1) 'A' mentioned in the above chart means 'Applicable'.
2) 'NA' mentioned in the above chart means 'Not Applicable'
3) 'NM' mentioned in the above chart means 'Not Mandatory / At the option of owner'
4) NM in High risk and Moderate risk may include feasible alternative mitigation measure.

ANNEXURE – ~~2.4~~ C Fire Tower (Typical Sketches)

TYPE 1



(LAYOUT TO BE PLANNED AS PER PROJECT BASIS MEETING ALL THE REQUIRED DETAILS)

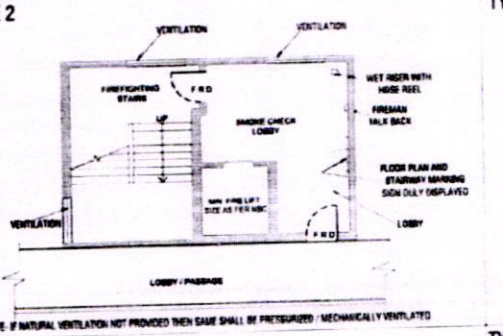
NOTES

1)WHERE SUCH LOBBIES AND STAIRCASE IN THE FIREFIGHTING SHAFT ARE NATURALLY VENTILATED / CROSS VENTILATED THE SHAFT MAY NOT BE ENCLOSED AND FIRE DOORS NEED NOT TO BE PROVIDED

2)FOR ALL ENCLOSED FIREFIGHTING SHAFT , THE SHAFT'S LOBBY SHOULD HAVE FLOOR PLAN DULY DISPLAYED FOR THE INFORMATION OF FIRE FIGHTERS

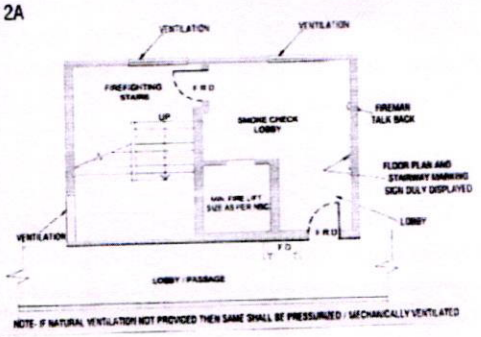
FIG. 2 TYPICAL FIRE FIGHTING SHAFT

TYPE 2



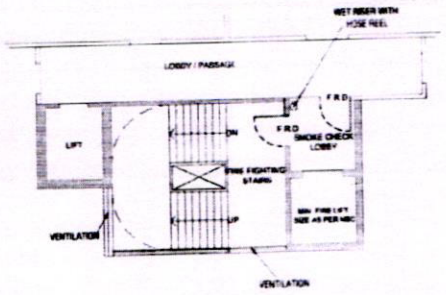
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 2A



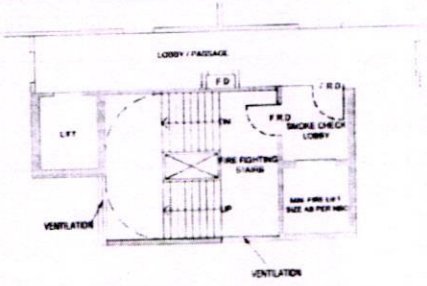
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 3



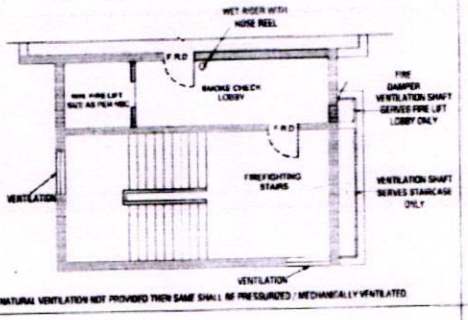
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 3A



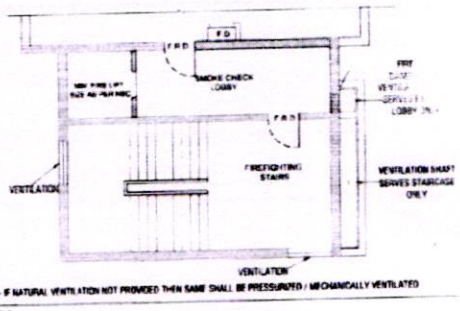
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 4



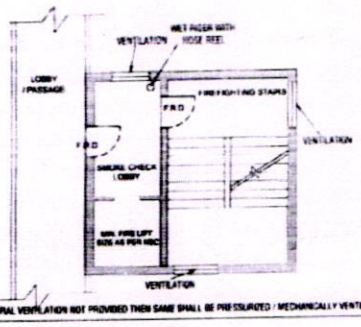
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 4A



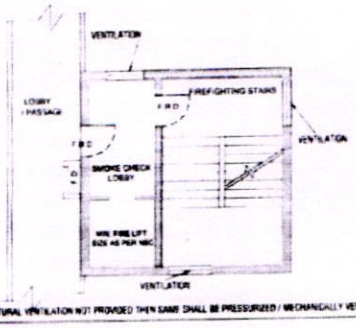
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 5



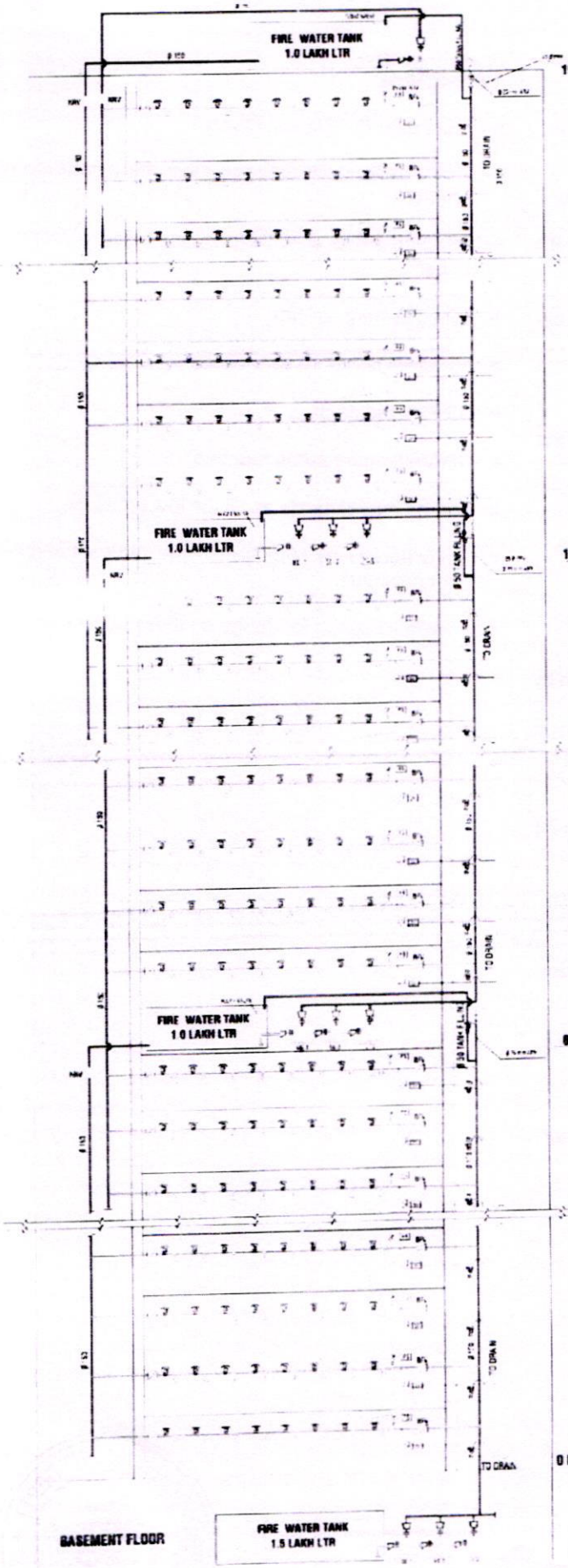
NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

TYPE 5A



NOTE- IF NATURAL VENTILATION NOT PROVIDED THEN SAME SHALL BE PRESSURIZED / MECHANICALLY VENTILATED

ANNEXURE-D Fire Break Water Tank System



EQUIPMENT DATA :-

PUMP DESIGNATION	P-1 COM. STAND BY PUMP	P-2 COM. MAIN PUMP	P-3 COM. JOCKEY PUMP
CAPACITY	150 m3/Hr	150 m3/Hr	10.8 m3/Hr
DUTY HEAD	10 BAR	10 BAR	10 BAR
SHUT OFF HEAD	12 BAR	12 BAR	12 BAR
QTY.	1Nos.	1Nos.	1Nos.
MODE OF OPERATION	AUTO START & MANUAL START/STOP	AUTO START & MANUAL START/STOP	AUTO START /STOP

DS	DIESEL STAND BY
SE	STAND BY ELECTRICAL PUMP
ME	MAIN ELECTRICAL PUMP
JP	JOCKEY ELECTRICAL
B	BOOSTER PUMP

DESIGN BASIS		
01	STANDARD FOLLOWED	NFPA 13
02	DENSITY OVER WATER AREA	4.1 LPM/M²
03	AREA	140 M²
04	SPRINKLER DEMAND (574 LPM X 40)	574 LPM
05	HOSE DEMAND (650 LPM X 3NOS.)	1950 LPM
06	TOTAL DEMAND (574 + 1950)	2404 LPM

PROPOSED HIGH RISE BUILDING
90M & ABOVE SCHEMATIC

ANNEXURE - ~~2.3~~ D - Fire Break Water Tank System for High-Rise Buildings of Height 90m and above

Current Issues for Fire Hydrant Systems:

1. Use of Pressure Release Valves (PRVs) to limit line pressure up to 12 Bar.
2. Cost effectiveness of PRVs and their maintenance.
3. Effectiveness of Multistage Pump sets and their reli ability.
4. Maintenance of such complex Pumping systems by Residential/Comme rcial Owners.
5. High pressure pumping and valves availability.

A schematic for a high-rise building 90m and above up to 200mt, the intent of the schematic meets the following:

Design Parameters:

1. Common Pumping for Hydrant and Sprinkler
2. Diesel Engine Standby Pump only at ground level
3. Standby pumps on floors are all electrical and fed by Diesel Generator
4. Sprinkler density considered is 4.1 LPM over 140 sq. mt.
5. Hydrant flow of 3 hydrants operating at 3.5 Bar (630 LPM x 3)
6. Total Pumping considered is 2500 LPM at 10 Bar– Duty Point–Standard Single outlet pump
7. Storage tanks at levels such that line pressure does not go beyond 12 Bar
8. Gravity feed is also considered for sprinklers
9. Redundant riser also considered for sprinklers
10. Filling of above tanks through FF Pumps at ground level.

Advantages:

- Redundant Pumps and Risers
- Gravity feed at all times in case the pumps do not function.
- No pump sets over 10 Bar pressure, and shutoff below 12 bar.
- Zoned system at 55m
- All valves below 16 bar PN 16
- NO PRV required
- NO Multi-outlet pump required
- Low on maintenance as all are low pressure.
- Utility floor every 65m, breaks the vertical fire (check floor concept)
- Additional space for refuge on these utility floors

ANNEXURE ~~3.2~~ E – Qualifications, duties, and responsibilities of the Electrical Professional (Electrical Engineer/Consultant)

i. Qualification

An Electrical Engineer having a bachelor's degree in electrical engineering with two years working experience in a similar field and knowledge of related standards, codes, and regulations. Or

An Electrical Engineer having a diploma degree with five years working experience in a similar field and knowledge of related standards, codes, and regulations.

ii. Duties

The Electrical Engineer shall check electrical requirements in architectural plans. He shall prepare electrical designs and provide material specifications. He shall scrutinize and validate plans, designs, drawings, and material specifications if taken from external sources. He shall supervise and certify work, produce information as required in prescribed checklists, process all regulatory compliances related to verification/inspection and testing along with applicable NOCs/Permissions from respective authorities.

iii. Responsibilities

To check compliance with the latest Indian Standards, National Electrical Code (NEC), related sections from the National Building Code (NBC), and Statutory Provisions applicable under Rules framed by government, Regulations framed by the Central Electricity Authority, pertaining to related sections from the Electricity Act 2003. He shall be responsible for the quality of work and related documents (electrical plans, single line diagrams, design sheets, specifications). He shall give stagewise **declarations for design, construction and verification and testing** in the prescribed formats given under **Annexure E-4** which will be a mark of his responsibility and further accountability

E-1

ANNEXURE ~~3.3~~ – Appointment of Electrical Professional (Electrical Engineer/ Consultant) and Contractor

Standard Procedures for Executing Electrical Work in Buildings						
Check List No.1						
Planning – Preliminaries						
Ref.	CEA Reg. 5A, 29:2010					
Name of Project / Work						
Site Address						
Name of Owner / Builder						
Contact details						
Sl No.	**Appointments – Electrical Professional (Electrical Engineer/ Consultant) / Electrical Contractor**					**Remarks**
1	**Appointment of MEP Consultant**		Yes	No	N.A.	
1.1	If yes, Name					
	Date of appointment					
2	**Name of Electrical Consultant/CESE**		Yes	No	N.A.	
2.1	Contact Details					
2.2	Registration No. if CESE					
3	**Appointment of Electrical Contractor 1***		Yes	No		
3.1	If yes, Name					
3.2	Contact Details					
3.3	Date of appointment					
3.4	License No.			Validity		
3.5	Agreement & Under-taking	See format of declaration and model conditions of agreement	Yes	No		
3.6	Name of Supervisor(s) -1					
3.6.1	Permit No.					
3.7	Name of Supervisor(s) -2					
3.7.1	Permit No.					
	* for subsequent change(s) in Electrical Contractor, repeat 4 below					
4A	**Re-appointment of Electrical Contractor 2***		Yes	No		
4.1	If yes, Name					
4.2	Contact Details					
4.3	Date of appointment					
4.4	License No.		Validity			
4.5	Agreement & Under-taking	See declaration under Annexure B and model conditions of agreement under Annexure M	Yes	No		
4.6	Name of Supervisor(s) -1					
4.6.1	Permit No.					
4.7	Name of Supervisor(s) -2					
4.7.1	Permit No.					
4B	**Re-appointment of Electrical Contractor 3***		Yes	No		
	Repeat 4.1 through 4.7.1, when applicable					

Signatures of the stakeholders as applicable with date		MEP Consultant	Electrical Professional / Engineer / Consultant
	Electrical Contractor (outgoing)	Electrical Contractor (new)	Owner / Builder

E-2.1

ANNEXURE ~~3.4A~~- Forms of Declarations from Electrical Professional (Electrical Engineer/ Consultant)

[Corresponding to Annex E IEC 60364-6:2016]

Form 1 – Declaration for Design of Electrical Installation

Details of Building

Owner/Builder: _____

Contact details [Phone No(s)., email]: _____

Name of the Building / Project: _____

Address: _____

_____

_____

Wing: _____

No. of Floors: _____ **Height:** _____

Details of flats/tenements/blocks: _____

Type (Residential / Commercial / Other (specify) _____

1. Declaration for Design

I/We being person(s) responsible for design of the electrical installation, particulars and location as described above, having exercised reasonable skill and care when carrying out the design hereby DECLARE that the design work for which I/we have been responsible, is to the best of my/our knowledge and belief in accordance with the latest Standards and Codes published by the BIS and in compliance with the CEA (measures relating to Safety and Electric Supply) Regulations, 2010; with the latest amendments.

I/We hereby declare that:

1 I have a valid electrical contractor's license. [Tick if yes and provide details]

2 License No. _____

3 I am a Chartered Electrical Safety Engineer (CESE). [Tick if yes and provide details]
My Registration No. is _____
I am a registered electrical engineer/professional as per DCPR [Tick if yes and provide details]
My qualifications are _____
My experience in the field is _____ (months/years)
My Registration No. is _____

Signature of the LEC
(if applicable)

Signature of the Designer/
Electrical Professional
(Electrical Engineer/ Consultant)

(Name & Stamp)
Date

(Name & Stamp)
Date

E 2.2

ANNEXURE ~~3.4B~~ FORM 2- Declaration for Construction of Electrical Installation

Details of Building

Promoter / Developer / Owner: _____

Contact details [Phone No(s)., email]: _____

Name of the Building / Project: _____

Address: _____

_____

_____

Wing: _____

No. of Floors: _____ **Height:** _____

Details of flats/tenements/blocks:

Type (Residential / Commercial / Other (specify) _____

2. Declaration

I/We being person(s) responsible for construction of the electrical installation at the location described above, having exercised reasonable skill and care when carrying out the installation work; hereby DECLARE that the said work* for which I/we have been responsible, is to the best of my/our knowledge and belief, constructed in accordance with the latest Standards and Codes published by the BIS and in compliance with the CEA (measures relating to Safety and Electric Supply) Regulations, 2010; with the latest amendments.

Signature of the Supervisor

(Name)
Date

Signature of the LEC

(Name)
Date

Signature of Electrical Professional *(Electrical Engineer/ Consultant)*

(Name)
Date

** If there is a change of contractor before completion of the project, the stage of work shall be recorded and mentioned with handing over and taking over documents to be signed jointly and attached with this document.*

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E 2.3

ANNEXURE ~~3.4C~~ FORM 3- Declaration for Inspection and Testing of Electrical Installation

Details of Building

Promoter / Developer / Owner: _____

Contact details [Phone No(s)., email]: _____

Name of the Building / Project: _____

Address: _____

_____

_____

_____

Wing: _____

No. of Floors: _____ **Height:** _____

Details of flats/tenements/blocks:

Type (Residential / Commercial / Other (specify) _____

3. Declaration for Inspection and Testing

I/We being person(s) responsible for Inspection and Testing of the electrical installation at the location described above, having exercised reasonable skill and care when carrying out the inspection and testing; hereby DECLARE that the said work for which I/we have been responsible, is to the best of my/our knowledge and belief, inspected and tested in accordance with the latest Standards and Codes published by the BIS and in compliance with the CEA (measures relating to Safety and Electric Supply) Regulations, 2010; with the latest amendments.

Signature of the Supervisor	Signature of the LEC	Testing agency / Chartered Electrical Safety Engineer
(Name) Date	(Name) Date	(Name) Date

Signature of Electrical Professional *(Electrical Engineer/ Consultant)*

(Name)
Date

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ANNEXURE ~~3.5~~ F – Building clearances from Electric Line (OH/UG) & Earth Work

Standard Procedures for Executing Electrical Work in Buildings						
Check List No.2						
Planning – Design Part 1 – Architectural and Construction related Preliminaries						
Ref.	Reg. 12, 58, 60, 63, 64, 65, NEC-1/7/4.2, IS 732-4.1.4, 4.1.3.1.2, 4.1.3.12					
Name of Project / Work						
Address						
Name of Owner / Developer						
Contact details						
	Land / Site Survey					**Remarks**
1	Does the electrical overhead line exist on site?	Yes	No			
1.1	If yes, mention voltage level		kV			
1.2	Did you check with power utility or concerned if UG line exists within plot	Yes	No			
1.3	If UG line exists, mention voltage level		kV			
1.4	If UG or OH line exists, did you check compliance with CEA Reg. 63:2010.	Yes	No	NA		
	Construction activities					
2	From the location of existing electrical overhead or underground line, will there be:					
2.1	Blasting within 300m	Yes	No			
2.2	Cutting of soil within 10m	Yes	No			
2.3	Brick kiln, or any polluting unit within 500 m	Yes	No			
2.4	Storage / temporary shed below electrical lines	Yes	No			
2.5	If yes, did you check compliance with CEA Reg. 64 & 65:2010	Yes	No	NA		
Signatures of stake-holders & Notes		Electrical Professional Engineer/ Consultant		Electrical Contractor		

ANNEXURE ~~3.6~~ G – Requirements related to Civil Construction

Standard Procedures for Executing Electrical Work					
Check List No.4					
Planning – Design Part 2 – Civil Construction for Electrical Work					
Ref.	Standards, Codes (NEC, NBC), CEA Regulations				
Name of Project / Work					
Site Address					
Name of Owner / Developer					
Contact details					
Sl No.	**Civil Construction activities Plans, Material, Specifications**				**Remarks**
1	Adequate ventilation arrangement done for electrical equipment	Yes	No	NA	
1.1	Fire Rating of rooms as per standard provided?	Yes	No	NA	
1.2	Fire Rating of doors, partitions at a minimum of 2 hours?	Yes	No	NA	
1.3	Fire Rating of electrical shaft, segregation at a minimum of 2 hours?	Yes	No		
1.4	Fire Rating of baffle wall between transformers at a minimum of 4 hours?	Yes	No	NA	
1.5	Doors opening outside?	Yes	No	NA	
1.6	Sizes/Cross section of ducts, cable chambers satisfactory?	Yes	No	NA	
1.7	Access to Earthing stations maintained?	Yes	No		
1.8	In case of structural earthing activity coordinated with electrical	Yes	No	NA	
1.9	In case of heavy electrical equipment with static/dynamic load, structural stability confirmation received?	Yes	No	NA	
1.10	Provision of entries kept in RCC work to avoid core cutting	Yes	No	NA	
1.11	Required vertical clearances below beam soffit/ceiling slab satisfactory?	Yes	No	NA	
1.12	Adequate clearances maintained between electrical & other UG services in Plans?	Yes	No	NA	
1.13	Construction of room for DSS – Plan satisfactory?	Yes	No	NA	
Signatures of the stak holder	Electrical Professional / Engineer/ Consultant	Electrical Contractor		Civil Contractor	

ANNEXURE H – Assessment of Electrical Load requirement

Standard Procedures for Executing Electrical Work in Buildings							
Check List No. 3							
Planning – Design Part 3							
Ref.	Reg. 12, NEC Part2 Section 1						
Name of Project / Work							
Site Address							
	er / Developer						
Contact details							
Sl No.	**Electrical Load, Supply (Primary Assessment)**						
1	Assessment of Electrical Load						
1.1	Assessment done?		Yes	No			
1.2	If yes, anticipated capacity	Power from Utility Provider		kVA / kW			
		Electrical Supply	HT	LT			
1.4		Power from Standby Supply		kVA / kW			
1.5		Genset		kVA	NA		
1.6		UPS		kVA	NA		
2	**Assessment of space allocation required for electrical equipment, system in Architectural Planning**						
	BMS/DSS required?		Yes	No			
2.1.1	If yes,	Required space, room, location suitable?	Yes	No	NA		
2.2	Genset required?		Yes	No	NA		
2.2.1	If yes,	Required space, location suitable?	Yes	No	NA		
2.3	Distribution cables		Yes	No	NA		
2.3.1	Does the drawing show,	Marking of routes in plot?	Yes	No	NA		
2.3.2		Separate cable shaft in building?	Yes	No	NA		
2.4	Rooms						
2.4.1	As per drawing,	Meter room(s) suitable?	Yes	No			
2.4.2		Elect Panel/control rooms, etc., suitable?	Yes	No	NA		
		UPS, batteries' location, room suitable?	Yes	No	NA		
2.5	Lightning Protection System	Risk analysis done as per IS/IEC 62305-2	Yes	No	NA		
2.5.1	If yes, as per the drawing,	Location of air-terminations, down conductor satisfactory?	Yes	No	NA		
2.6	Earthing stations – system drawings	Locations and access for maintenance satisfactory?	Yes	No			
2.7	Construction and Post completion facility	Routes, corridors, access for transportation, maintenance; satisfactory?	Yes	No			
Signatures of		Electrical professional / Engineer / Consultant		Electrical Contractor			
& dates	Chartered Electrical Safety Engineer						

ANNEXURE 3I – Layouts and drawings – Equipment and Internal Electrical Installation

Standard Procedures for Executing Electrical Work					
Check List No. 5					
Planning –Design Part 4 – Electrical Drawings & Layouts					
Ref.	Standards, Codes (NEC, NBC), CEA Regulations				
Name of Project / Work					
Site Address					
Name of Owner / Developer					
Contact details					
Sl No.	**Layouts Drawings for Equipment / Apparatus**				**Remarks**
1	Drawing of Transformer substation prepared?	Yes	No	NA	
1.1	If yes approval received from Electrical Inspector	Yes	No	NA	
2	Drawing of standby supply arrangement from Genset prepared?	Yes	No	NA	
2.1	If yes approval received from Electrical Inspector	Yes	No	NA	
3	Drawing of standby supply arrangement with UPS & Battery prepared?	Yes	No	NA	
3.1	Does it comply with codes	Yes	No		
4	Drawing of Meter room prepared?	Yes	No		
4.1	Does it comply with codes	Yes	No	NA	
5	Any other? specify	Yes	No	NA	
5.1	Does it comply with respective standard/code/Regulation				Remarks
	Internal Layouts drawings of Individual Tenement (Flat/Block)				
6	Internal layout drawing prepared?	Yes	No	NA	
6.1	Does it comply with the requirements in respect of minimum No. of points	Yes	No	NA	
6.2	Does it comply with the requirements in respect of location of switch boards & DBs	Yes	No	NA	
	External Electrical Layouts, Drawings				Remarks
7	External layout prepared for streetlights?	Yes	No	NA	
7.1	Does it comply with the requirements of Lux level	Yes	No	NA	
8	Layout of Pump rooms prepared? Does it comply with the requirements of Lux level	Yes	No	NA	
8.1	Does it comply with the requirements of respective authority	Yes	No	NA	
9	**Internal Layouts drawings for Hospital Buildings**				Remarks
9.1	Have the areas been classified as A0, A1, and A2 is per IS 17512	Yes	No	NA	
Signatures of the stakeholders and Dates		Electrical professional / Engineer / Consultant		Electrical Co	
	Civil Contractor				

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ANNEXURE ~~3.9~~ J – Single Line Diagrams

Standard Procedures for Executing Electrical Work					
Check List No. 6					
Planning – Design Part 5 - Electrical Drawings – Distribution, Single Line Diagram					
Ref.	Standards, Codes (NEC, NBC), CEA Regulations				
Name of Project / Work					
Site Address					
Name of Owner / Developer					
Contact details					
Sl No.	**SLDs for Common Services**				**Remarks**
1	SLD prepared for supply from tapping point to individual service connection?	Yes	No		
1.1	Critical services bifurcation done?	Yes	No	NA	
1.2	Precise selection of HFFR/FS cable made?	Yes	No		
1.3	Does the cross section and conductor type conform to IS 732?	Yes	No		
1.4	Provision of Fire Switch made?	Yes	No	NA	
1.5	If a high-rise building, approval from the Electrical Inspector taken?	Yes	No	NA	
2	System-wise SLD prepared for common services in accordance with above?	Yes	No	NA	
	SLDs for Individual Services				**Remarks**
3	Individual consumer-wise SLD prepared for each tenement?	Yes	No		
4	Do the SLDs show complete details of load, cable size, DBs and protections at every stage of distribution?	Yes	No		
5	Is the type of conductor and minimum cross section of cables as prescribed and precise w.r.t load, current carrying capacity considering situation and derating factors as recommended under IS 732?	Yes	No		
6	Are the protections precise to prevent installation from				
6.1	Overload / Short circuit / Earth fault	Yes	No		
6.2	Leakage current	Yes	No		
6.3	Over voltages / Surges	Yes	No	NA	
6.4	Arc fault	Yes	No	NA	
7	Any other – APFC, Harmonic Filter panels	Yes	No	NA	
8	Do the above SLDs conform to the various provisions under standards codes & regulations?	Yes	No.		

Signatures of the stakeholders	Electrical Professional / Engineer / Consultant	Electrical Contractor	Civil Contractor

ANNEXURE ~~3.10~~ K – Coordination in Activities

Standard Procedures for Executing Electrical Work					
Check List No. 8					
Construction – Electrical Installation 1					
Ref.	Standards, Codes				
Name of Project / Work					
Site Address					
Name of Owner / Developer					
Contact details					
Sl No.	**Coordination between construction activities**				
1	Has the bar chart been prepared?	Yes	No		
2	Does the bar chart include all activities of civil, electrical, and other building services?	Yes	No	NA	
3	Is there mutual agreement between the civil engineer and Technical Person related to other building services in respect of activities and the barchart?	Yes	No		
4	Has the responsibility been assigned to the project management personnel/engineer for monitoring the progress of work as per bar chart?	Yes	No		
5	Are the corridors, routes, spaces, clearances, access for construction, maintenance, transport of material / equipment assigned for respective services being observed and monitored?	Yes	No	NA	
6	In case of any damage to the work of other services, are there arrangements to resolve the issues?	Yes	No	NA	
Signatures of the stakeholders with dates		PMC		Civil Contractor	
	Electrical Professional/ Engineer/ Consultant	Electrical Contractor			

ANNEXURE ~~3.11~~ L – Points to be observed in Construction Work

Standard Procedures for Executing Electrical Work					
Check List No. 9					
Construction – Electrical Installation 2					
Ref.	Standards, Codes (NEC, NBC), CEA Regulations				
Name of Project / Work					
Site Address					
Name of Owner / Developer					
Contact details					

Sl No.	Electrical Installation – General				Remarks
1	Has the proper agreement been executed with the electrical contractor making him aware of his duties and responsibilities?	Yes	No		
2	Have the various conditions mentioned in the checklist under the planning section, been verified, conformed to, and being monitored?	Yes	No		
3	Requirements related to NOCs concerning construction completed?	Yes	No	N.A.	
4	The method of construction being adopted is complying with the standards and codes as enlisted under the test report (verification & testing) format? (Ref. Annexure E-11)	Yes	No		
5	Is proper record of hidden work and certification before concealing being maintained?	Yes	No		
6	Is the work being supervised by an authorised person continuously?	Yes	No		

Signatures of the stakeholders with dates	Electrical Professional / Engineer/ Consultant	Electrical Supervisor	Electrical Contractor

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M-1

ANNEXURE ~~3.12A~~ – Model format for Test Report of Electrical Works in Buildings

[Refer Annexure E-14 for 'Instructions to the Consultants, Contractors, Stakeholders' for providing information in Test Report]

PART-A: Particulars of Electrical Contractor and Installation*

[to be given by Promoter / Developer and LEC per service cable/meter room]

1. Electrical Contractor details

Name of the firm: _____

Contractor's name: _____

Contact details: [Phone No., email] _____

License No.: _____ Validity: _____

Supervisor's name: 1. _____ Permit No. _____

2. _____ Permit No. _____

Test Report No. HR/ _____

Date of verification and tests _____

2. Details of Multi-Storeyed Building

Promoter / Developer / Owner: _____

Contact details [Phone No(s)., email]: _____

Name of the Building / Project: _____

Address: _____

_____

_____

Wing: _____

No. of Floors: _____ Height: _____

Details of flats:

Residential _____

Other (specify) _____

3. Date of appointment of contractor: _____

Stamp & Sign
(Owner/Developer/Promoter)

Stamp & Sign
(Electrical Contractor)

* *In case of change of contractor before completion of project, a separate form is necessary.*

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M-2

ANNEXURE ~~3.12B~~ – Model format for Test Report of Electrical Works in Buildings

PART-B: Verification (Inspection and Testing)

[To be given by Licensed Electrical Contractor and Electrical Professional (Electrical Engineer/ Consultant)]

B-1 Architectural Planning and Civil Construction – Electrical Requirements

1. State if sufficient clearances maintained from overhead/underground lines and the construction is in compliance with **Reg. 58, 60, 61, 63:** [Yes/No/NA]
2. State if there is adequate provision of rooms, spaces and clearances as required for electrical equipment to operate, be maintained safely within the building and if it complies with the requirements as per CEA Regulations, 2010. **Reg. 12(1), 37** [Yes/No]
3. State if there is provision of an independent meter / ...tric service room of adequate size for installation of meters and equipment with proper ventilation **NBC, NEC** [Yes/No]
4. State if the door openings of electrical equipment rooms are outside and are of fire resistance not less than 2 h. **Reg. 12(1), NBC** [Yes/No]
5. State if the meter room is free from water seepages/ leakages/water logging? **Reg. 12(4)** [Yes/No]
6. In respect of meter room are there any signs which show proneness to accidents? **Reg. 12(1), 35(7)** [Yes/No]
7. State if there is provision of a separate and independent vertical shaft/duct for distribution network of power cables/bus trunking and conveniently located adjacent to meter room. **Reg. 12(1), 36(5)** [Yes/No]
8. State if arrangements have been made to segregate the electrical cable duct from the other services' shafts/ducts and sealed at every floor with the material having minimum 2 h fire rating, to prevent spread of fire. **Reg. 36(5)** [Yes/No]
9. State if the provisions for DTC within the building are in compliance with **Reg. 12(4), 44.** [Yes/No/NA]
10. State in case of the oil/liquid filled transformer within the premises/building complex is filled with liquid having fire point above 300°C. **NEC**

B-2 Electric Supply – Details and Supplier's installation Requirements

1. State the total number of meter connections and total load in kW/kVA on service cable [Aggregate of Connected / Sanctioned load of consumer(s) on this cable]. _____
2. State if the load sanctioned is less than the standard load consideration norms set by the supply company per m² **Reg. 12(1).** [Yes/No]
3. Service Cable details **Reg. 12(1)** [type, size, construction] _____
4. State if the service cable is suitable **Reg. 12(1)** [Yes/No]
5. Has the supplier provided information in respect of fault level at the supply point? **Reg. 12(1), Schedule V of CEA Reg. 2010** [Yes/No]
6. State if the meter room is independent and of adequate size to maintain stipulated clearances, ventilation. **Reg. 12(1)** [Yes/No]
7. State if the meter room is properly located, safe from external influences, and adequate care is taken to protect the supplier's equipment. **Reg. 13(1), (3), NEC** [Yes/No]
8. State if the supplier's distribution network has provision of multiple neutral earthings. **Reg. 41(iii)** [Yes/No]
9. State if the supplier has earthed the neutral of service cable at the consumer's premises (TNC-S / TNS system). **Reg. 41(iii)** [Yes/No]
10. State if the supplier has provided an earth terminal for consumer's use? **Reg. 16(1)** [Yes/No]
11. State if there is provision of separate/independent earth terminal from the consumer's side, to provide return path to leakage / fault current. (TT system) **Reg. 16(1)** [Yes/No] State the value of resistance _____ ohm(s).
12. Has testing been done for external Earth Fault Loop Impedance Ze at origin of supply? [Yes/No] If yes, state the value measured. _____ ohm Reg. 41(xv)(b)
13. State if provision to isolate complete supply of building (Fire Switch) is done. **Reg.36(3)** [Yes/No]
14. State if critical load requiring electrical supply during emergency is separated at the origin of supply distribution and provision of fire switch is made in accordance with **IEC 30364-5-56:2018 Annex D** [Yes/No]

B-3 Electric Supply — Standby supply arrangement and installation requirements

1 Give the list of emergency and critical services with respective load and supply restoration time No-Break (0 s), short break (< 0.5 s), medium break (< 15 s)

Sr. No.	Service	Load in kW No Break (0 s)	Load in kW Short Break (< 0.5s)	Load in kW Medium Break (< 15s)	Load in kW Long Break (>15 s)
1					
2					
Total Load					

Note – Increase no. of rows if required.

2 Give details of the source of standby/back-up supply arrangements corresponding supply restoration time, e.g., Genset 125 kVA with AMF (< 15 s)

3 State if the power rating of genset(s) conforms to standards? **IS/ISO 8528-1,** [Yes/No]

4 State if the change-over time of genset(s) conforms to standards? **IS/ISO 8528-12,** [Yes/No]

5 State if the location of the genset is safe to continue operation during emergency, (e.g., fire in the building shall not affect the working of genset). **NEC** [Yes/No]

6 Give status of permission required under **Reg. 32** (received / in process)

B-4 Earthing arrangements

1 Do the construction of earth electrode(s) and connectivity up to Main Earthing Terminal (MET) comply with standards? **IS 3043** [Yes/No]

2 Is there provision of a test terminal and is it accessible for testing earth resistance of individual earth electrodes? **Reg. 41, 48** [Yes/No]

3 Are the test results of measurement of resistance of earth electrode (RE) satisfactory? **IS 3043** [Yes/No/ Not practicable]

4 Does the earthing system generally comply with requirements as mentioned, the standards, and as stipulated in the CEA Regulations? **CEA Reg. 41,48:2010, IS 3043** [Yes/No]. If 'No', give details. _____

5 In case of hospitals, do the earthing arrangements comply with the requirements as per IS 17512? [Yes/ No/NA]

B-5. Electrical Installation — Applicable for installations belonging to individual and common utility services

1. General/common points

1.1	**Wiring type:**	Indoor [surface / concealed / mixed / hybrid] Outdoor [surface / underground / mixed / hybrid]
1.2	**Material used:**	Do all materials used carry the ISI mark? Reg. 12(3) [Yes/No] Where Indian Standards do not exist, do materials conform to International Standards [Yes/No]. Give details _____

1.3	**Wiring/Cables:**	State separately for general services and critical services requiring supply integrity: **Indoor use:** Make [mention] _____ Insulation. **Reg. 35(6), NEC** [FR/FRLSH/HFFR/FS] Conductor cross section as per IS 732 Annex S / T? **Reg. 36(4)** [Yes/No] Minimum 1.5 mm2 copper [Yes/No] Up to 16 mm2 Copper **NBC, NEC** [Yes/No] Above 16 mm2 [Copper/Aluminium] Current-carrying capacity of conductor more than the rating of MCB? **Reg. 12(1)** [Yes/No] Identification by colour code as per NEC: **Reg 36(4)** [Yes/No] All cables are erected as per standards and protected from mechanical damages and no live parts are exposed Reg. 35(7) [Yes/No] **For outdoor use:** [Armoured / non armoured] [NA} Is construction of the UG cable as per **IS 1255** [Yes/No/NA] In case of non armoured whether protected with mechanically strong casing / conduit / pipe (RCC/HDPE/DWC) **Reg. 37(i)** [Yes/No/NA] **Specific for critical services:** Have Fire Survival cables (FS) been used for following services having appropriate Fire Survival Category? **Reg. 12(1), 36(4), IS 17505 Annex A** [Yes/No]
1.4	**Conduit/casing:**	Make [mention] Size – adequate space factor maintained? **Reg.12(1), NEC** [Yes/No]
1.5	**Distribution:**	**A. For installation belonging to individual and common services** **1. Single Line Diagram** Typical SLDs attached? **Reg. 12(1)** [Yes/No] **2. Division of Circuits** Are circuits divided adequately as per room/area, type of load light/power general/back-up? **NEC** [Yes/No] Do the load / points on the branch circuit exceed max. limit? **Reg. 36(4), 12(1), NEC** [Yes/No] **3. Cables** State if the sizes of cables and their design maximum current-carrying capacities depending on the situation and derating factors are suitable to supply the load? **Reg. 12(1), NEC, IS 732** [Yes/No], **4. Over-Current Protection Device (OCPD)** State if the cables in each circuit are protected with MCBs having appropriate O/L and breaking capacity and instantaneous tripping characteristics as per load pattern (type B, C, D)? [Yes/No] Do such ratings of MCBs coordinate with the maximum current carrying capacity of the cable as per design suitable in particular situations? **Reg. 12(1), 35(1)(4)(5)** [Yes/No] State if in case of fault/short-circuit, the MCBs used have precise rating as per the loop impedance to trip in stipulated time. **Reg. 35(1)** [Yes/No] State if the sequence of tripping devices is coordinated. **Reg. 12(1)** [Yes/No]

		5. Protection from leakage currents/electric shocks State if RCDs (or RCBOs) are of appropriate types and have been provided with the appropriate rating **Reg. 42** [Yes/No] **6. Protection from surges** State if provision of Surge Protection Devices is made at appropriate distribution locations **IS 732** (Yes/No) **7. Protection from Arc Flash** State whether provision of Arc Flash Detection Device is made **NEC** (Yes/ No) **8. Distribution Boxes / Consumer's unit** State if distribution boxes are located in easily-accessible positions? **Reg. 35(4), (5)** [Yes/No] State if DBs, each circuit in DB and switchboards are marked with unique identifications as per the SLD and if ferruling is done at both ends of cable termination. **Reg. 12(1), 24** [Yes/No] **9. Terminations** State if all cable terminations have been checked and found adequate without loose contact and any possibility of overheating **Reg. 12(1)** [Yes/ No] **B. Specific requirements in respect of common services in buildings** 1. Reverify § B-1 (12) & (13). Does the provision stand to the satisfaction as per **Reg. 12(1), 36(4), IEC 60364-5-56?** [Yes/No] 2. Is the arrangement of fire switch in the incoming supply distribution made as per the **Annex D of IEC 60364-5-56** [Yes/No] 3. Has the provision of a ring circuit with an alternate route been made to maintain supply integrity during an emergency? **Reg. 12(1), 36(4)** [Yes/ No]
1.6	**Inverter/UPS:**	Is there provision of a separate circuit with phase along with separate neutral wire for the load provided with standby supply arrangement through inverter / UPS? **Reg. 12(1), Code** [Yes/No] Has it been confirmed that there will be no back feeding of inverter/UPS supply to the main supply? **Reg. 12(1)** [Yes/No]
1.7	**Point wiring:**	Considering room / area / utility; are the points provided adequate in number and location to suit the functionality and ergonomics as recommended in code? **Reg. 12(1), 36(4), NEC** [Yes/ No] Are the locations of switch boards made as per Code? **Reg. 12(1) NEC** [Yes/No] Are the provisions of switches made on phase wire only? **Reg. 12(1) NEC** [Yes/No] Are the plug sockets 3-pin only? Are the plug sockets below 1m shuttered type? **Reg.12(1), Code** [Yes/No]

1.8	**Earthing**	1. Does the size and type of Protective Earth (PE) conductor conform with **Table 12 IS 3043: Reg. 36(4)** [Yes/No] 2. State whether equipotential bonding has been done with an appropriate size of conductor? **IS 3043** [Yes/No] 3. Are connections of PE conductor, equipotential bonding conductor, supplementary bonding conductors with earth terminal/metal body of electrical appliances, apparatus/mutual interconnection between PE and bonding conductors proper and mechanically strong? **Reg. 41, IS 3043, IS 732** [Yes/No] Does the continuity test carried out show satisfactory results? **Reg. 41, IS 732** [Yes/No] 4. Where measurement of RE is not practicable, are the values of earth fault loop impedance Zs, satisfactory to operate protective devices within precise time (short time/instantaneous tripping)? **Reg. 41, IS 3043** [Yes/No]

2. Electrical Installation details and testing (List—meter/individual service connection-wise)

2.1 Attach separately in the following format.

Attach separately for each service connection in the following format.

Sr. No.	[1]Flat / Common service	[2]Area ft2/m2	Supply 1-ph / 3-ph	Sanctioned load kW	Mains	[4]OCPD (main)	RCD / RCBO	Remarks
		[6] IR test value	**[7]Continuity Test**	**[8] Earth fault loop impedance Zs**	**[9]Prospective fault current / short circuit current**	**[10]Polarity test**	**[11]Neutral looping**	**[12]Typical SLD Ref.**

Note – Refer instructions for respective superscript

2.2 Handing over preparations made as per the format [Yes/No]

We hereby certify that the work is completed, verified, tested as per the standards, codes, CEA regulations and declare this to be safe for use.

Sign

Electrical Professional/ Electrical Engineer/ Consultant

Date

Sign

Supervisor Permit No.

Date

Sign

Electrical Contractor License No.

Date

URBAN DEVELOPMENT DEPTT. ★ MANTRALAYA MUMBAI-32 ★ सत्यमेव जयते

N-1

ANNEXURE ~~3.13A~~ – Checklist for Handing-Over Documents to Individual Buyer

[Floor: ---------- Tenement / Flat No. ----------]

Sr. No:	Document	✓ or X
1	Electrical Service connection papers relating to individual energy meter, sanctioned/connected load, Security Deposit paid	
2	**Copy of Test Report of the electrical installation given by the Electrical Contractor in respect of individual meters.**	
3	Single Line Diagram of completed Electrical Installation	
4	**Instructions / Troubleshooting chart in respect of the use, limit of maximum load, operation, safety of Electrical Installation precautions to be taken while making changes in existing installation.**	
5	Users' responsibilities – Equipment to be connected to fixed wiring compliant with Standards in respect of safety, THD, EMI, no overloading, no interfering with the installation without LEC, obligations in respect of periodic inspection to be carried out as per CEA Reg. 30:2010 etc.	
6	**Emergency contacts in respect of any possible problem with Electrical Installation.**	

Handed over		Taken over
Promoter **Stamp**	LEC **Stamp**	**Owner** [Name] Date

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ANNEXURE ~~3.13B~~ N-2 – Checklist for Handing-Over Documents to the owner's Society / Association

Sr. No	Document	✓ or X
1	Load sanctioned letter of Electric Supply Company	
2	Copies of the payments made to the Supply Company, towards proving supply	
	Agreement with Supply Company.	
4	Electrical Service Connection papers in respect of common energy meter, sanctioned/ connected load, Security Deposit paid.	
5	Single line diagram from the tapping point of service cable to the point of supply (incoming terminal of consumers switch/MCB installed near energy meter).	
6	Copy of Test Report of the electrical installation given by the Electrical Contractor in respect of common meters.	
	i. Copies of the approvals/permissions/licenses received from the authorities in respect of; Generating set/s (CEA Reg. 32:2010) High-rise building (CEA Reg. 36:2010) HT installation (CEA Reg. 43:2010); if installation is owned by consumer/s Lift/s (Rule 5, Mah. Lift Rules)	
8	Warranties/Guarantees and initial AMCs of Lift/s, genset, UPS and batteries and also in respect of installation handed over to the Supply Company etc. as per applicable.	
9	Instructions in respect of maintenance and operation of water pump, Lift, EV charging equipment and handling emergency. Telephone numbers of emergency services.	
10	ii. List of liabilities, responsibilities to be undertaken: • Maintaining electrical installation (related to common facilities like lights, water pump, fire fighting, common facility of EV charging equipment), in good condition so as to cause no danger. • Renewing AMCs in respect of genset, lifts after defect liability period. Due dates shall be given. • Safeguarding electrical installation belonging to the Supply Company in the premises, e.g., equipment in the Meter Room. • Communicating with the Electrical Inspector within 24 hours in respect of any electrical accident. • Any electrical related work to be done only through a license/permit holder person. • Obligations in respect of periodic inspection as per the CEA Reg. 30:2010	

Handed over		Taken over
Promoter Stamp	LEC Stamp	Secretary/ Office bearer of Society /Association Stamp & Date

ANNEXURE 3.14 – Instructions to the Electrical Professional/Engineer/ Consultants, Contractors, Stakeholders for providing information in the Test Report for high-rise buildings.

The Central Electricity Authority, an apex body monitoring safety in respect of electrical supply and installations, has given the Forms I, II, III of Inspection for electrical installation in the CEA (measures relating to Safety and Electric Supply) regulations 2010. These correspond to installations having voltage up to 250V (1-ph installations), 415V (3-ph installations) and HT installations above 1kV (e.g., 11kV, 22kV, 33kV and further EHV) respectively. The forms as mentioned above are generic in nature. The National Electrical code classifies High-rise buildings under a special category (Ref. NEC 2022 Part 3 Sec. 22). In accordance with this, special parameters apply to such buildings. So, considering the high risk imposed due to the height of the building, emergency operations like evacuation and special requirements in respect of electrical installations, importance of supply integrity during emergencies like fire for the operation of critical services, there has been a need for a specific format of test report pertaining to electrical works. The instructions given below will help to provide information.

1. Declarations to streamline responsibilities of the stakeholder(s) – **Part-I**
2. Appointment of Licensed Electrical Contractor – **Part-II**
3. Checklist to verify conformation with standards, codes, and regulations – **Part-III**

PART-I: Forms of Declarations in respect of electrical work in High-rise buildings

1. Design – It is considered to be a foundation of electrical installation work and concerned persons; the designer, who may be a MEP consultant or an independent electrical consultant or an electrical contractor; his declaration in respect of design will decide his accountability for related aspects of design. The design comprising drawings, layouts, parts of electrical installation with design capacity of various material components, their specifications shall include method of construction also.

Note – Where design is prepared by the person other than the electrical contractor such as MEP consultant/electrical consultant, the contractor shall check conformation with standards, codes, regulations, etc., applicable in that regard and shall sign as a token of such consent.

Since there is no regulatory framework for giving accreditation to the electrical consultant, qualification and experience shall be given by such a person.

Note 1 - It shall be noted that the various points under the checklist are enlisted for verification at the time of completion. From these points, the following points require consideration from the design stage.

Part-I Forms of Declaration
Form-1 Declaration for Design

Part-II Particulars of Electrical Contractor
Electrical Contractor Details

Part-III Verification
A Architectural Planning and Civil Construction – Electrical Requirements
§ 1, 2, 3, 7, 10

B-1 Electric Supply – Details and Supplier's installation requirements
§ 2, 5, 6, 11, 13, 14

B-2 Electric Supply – Standby supply arrangement and installation Requirements
§ 1, 2, 3, 4, 5

B-3 Earthing Arrangements
§ 1, 4

C Electrical Installation – Applicable for installations belonging to individual and common utility services
1. General/common points
§ 1.1, 1.2, 1.3, 1.4, 1.5 A (1 to 8), 1.5 B (1 to 3), 1.6, 1.7, 1.8 (1, 2)

2. Construction – Required skill set and expertise are a very important part of workmanship. Continuous supervision and surveillance are necessary for the construction to be monitored from start to end. To get quality work output, IS 732 recommends verification during erection. Hence the declaration in respect of construction is necessary to decide responsibility for related aspects of construction work of electrical installation. It is recommended that the concealed portion of work which remains hidden at the time of completion and not available for visual inspection, shall be certified before being concealed.

Note –1. The name of the contractor appearing shall match with the person/ag ency giving this declaration.

2. Where there is a change of contractor before completion of the project, the outgoing contractor shall prepare a report of the stage of work completed and give a declaration for that portion of work. The new contractor shall agree and countersign such a report as a mark of acceptance. In case of any non-agreement in respect of such a report, the new contractor shall report it to the appointing authority and take responsibility to clear defects, if any, from the previously executed work.

Note 2

It shall be noted that the various points in the checklist are enlisted for verification at the time of completion. From these points, the points requiring observance from the design stage are given in Note 1. During construction it is necessary that work is being executed as per the design. In addition to these points, the following points also need monitoring during the construction stage.

Part-I Forms of Declaration

Form-2 Declaration for **Construction** of Electrical Installation,

Part-II Particulars of Electrical Contractor

Electrical Contractor Details to be provided when there is a change of contractor in between the progress of work

Part-III Verification

A Architectural Planning and Civil Construction – Electrical Requirements

B-1 Electric Supply – Details and Supplier's Installation Requirements

§ 6

B-2 Earthing Arrangements

§ 2

C Electrical Installation – Applicable for installations belonging to individual and common utility services

1. General / common points

§ 1.8 (3)

2. Inspection and Testing – To decide whether an installation conforms to statutory provisions, standards, codes and is safe for use, verification which includes inspection [illegible] the pre-final step before the installation [illegible] allowed for beneficial use (refer IS 732 § 6 Verification). Signed report of concerned persons carrying out the task is considered as an authentic document and hence streamlines related responsibilities. The person carrying out tests shall be equipped with all required testing instruments of appropriate class and calibration certificates.

Note – Preference shall be given to third party testing

PART-II: Particulars of Electrical Contractors and Installations

1 It is recommended that the appointment of the electrical contractor shall be made at the planning stage to check the aspects of electrical installation in architectural plans

2 The contractor shall have a valid license during 555 the period of installation and till completion and testing. In case of change of contractor during the project, [illegible]priate record of status / completed/ in progress [illegible]on of installation work shall be properly maintained with handing over and taking over notes. These shall be produced on demand.

3 It shall be noted that the test report is to be submitted separately for each service cable providing supply to the individual meter rooms. If within a meter room there are two service cables serving two groups of meters, then there shall be two separate test reports.

4 Give details of the wing of the building (if applicable).

5 Give details of floors distinctively, e.g., parking/ basement(s), upper floors

6 State height of building as per definition Cl. 2.6 Part 4 of NBC/UD DCPR

7 Give details of number of flats categorically, with typical area and respective numbers e.g., 450 sq.ft (1BHK) 20 Nos., 700 sq.ft. (2BHK) 24 Nos, etc. (area may be mentioned in m2 instead of sq.ft.)

8 This form shall be jointly signed by the promoter / developer and the electrical contractor as the information in the form pertains to both of them.

9 For any subsequent change in contractor, a separate form as given in Part-II, duly filled with all details shall be kept on record and submitted as and when required by an authority.

PART-III: Verification (Inspection and Testing)

A. Architectural Planning and Civil Construction – Electrical Requirements

This phase of the project on which the design and construction of electrical work relies, needs attention right from the planning stage. The developer/project manager shall appoint an electrical contractor in this regard at the beginning level. Persons involved in the design and construction of electrical installation shall check if adequate provisions are considered in architectural plans and civil work. § 1 to 9 as enlisted are most common but these provisions shall not be considered to be limited to them. §10 requires the transformer to be filled with K class insulating liquid for cooling of the transformer. Other points not covered in the list may be g iven in addition. If any contravention was likely to have occurred or ultimately existed even after necessary communication to the concerned, it shall be maintained as record and produced to decide responsibility.

Note – Option from Yes/No/NA, shall be ticked. Where necessary, justification may be given.

B-1 Electric Supply – Details and Supplier's installation requirements

Regulations mandate some obligations from electricity supply providers, persons carrying out electrical installation and the user. Compliance of the same shall be given in this section.

Note – In case of a user, the following points shall be noted. Electrical supply and installation is an important building service forming a part of the deliverables. It is also one of the points of compliance for issuing an occupancy certificate. When the user takes possession, the building is complete with electrical services. Hence, the responsibility of the work completed and the obligatory compliances, prior to taking over possession rests with the supplier of electricity, developer and an electrical contractor appointed by him.

Pointwise guidelines, information, examples to furnish details

1 Example: 1-ph meter connections 14 Nos. 4 kW each; 3-ph meter connections 7 nos. 10 kW each. Total load 126 kW

Note – Information is to be provided per service cable (inclusive parallel run with two cables feeding one group of meters). If two or more service cables provide supply in one meter room for two or more groups of meters independently, test reports shall be separate.

2 Example: 3.5x95 XLPE Aluminium cable in trench

3 Check in accordance with the sanctioned load

4 It is helpful in deciding breaking capacities and tripping time of breakers.

5 There shall be adequate length, width, and height to accommodate meters without overcrowding. Meter board at a minimum of 0.7m from the ground clearance in front and maximum height 1.8 meters. All switchgears in easily- accessible positions. Suitably cross ventilated.

6 Meter room shall be safe under all climatic conditions without any seepage, leakage accumulation of water, have restricted entry, and shall serve no other purpose than metering and housing allied electric supply equipment, cabling, etc. The area in the vicinity of the meter room, its use and nearby situation shall not endanger safety and entry approaches (e.g., use as a storeroom, nearby storage of inflammable material, hindrance of parked vehicles). Route of outgoing mains from the point of supply to vertical cable shaft if not closely adjacent, shall be safe from all external influences, with method of construction standards.

7 Multiple neutral earthings are helpful in maintaining the value of Z_e within limits, satisfactory operation of protective devices, and mitigate chances of floating neutral. The contractor is supposed to give only the status.

8 Earthing of neutral point of service cable in consumers premises is to ensure Z_e within limits, satisfactory operation of protective devices, mitigate chances of floating neutral. The contractor is supposed to give only the status.

9 Regulations stipulate provision of earthed termin which is to conform to the TNC-S obligation applies to the supplier supposed to give only the status.

10 Provide status about consumers' earth terminal, e.g., Yes. Resistance (R_E) 2 ohms

11 Example: Yes, Z_e = 0.8 ohms

12 Example: Yes, 200A 25kA MCCB for Building Supply (excluding critical supply)

13 For clarity refer **Attachment A.** Check the concept of a fire switch. Confirm separation of critical load requiring supply integrity during emergency before placing the fire switch. Example: Yes, 125A 25kA MCCB for Emergency/Critical Services Supp

B-2 **Electric Supply – Details of standby supply arrangement and installation requirements**

Provision of standby supply arrangement with suitable arrangement like gensets (or UPS for No break) is necessary for the operation of emergency services.

1 List of emergency services shall be given under column 2. It may comprise escape routes, lighting and signages, fire pumps, PA system, pressurization system, smoke venting, Fire-man's lift, security systems (door locking/opening), etc. Load shall be divided depending on allowable changeover/ supply restoration time.

2 Aggregate load under each category shall be considered to decide capacity(ies) of gen-set(s). Accordingly, the capacity of gen-set(s) provided shall be mentioned.

3 IS/ISO 8528-1 shall be followed to decide the capacity of the genset.

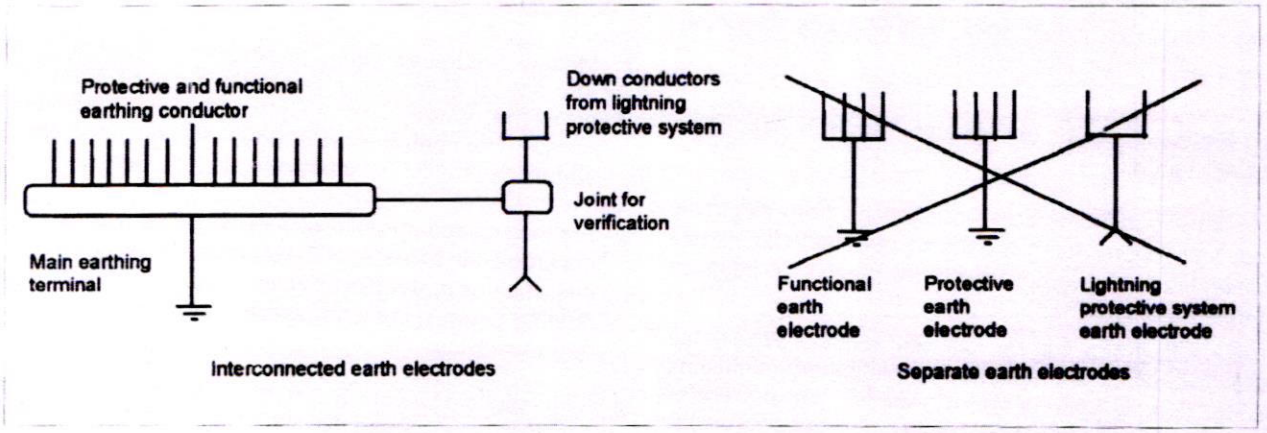
4 IS/ISO 8528-12 shall be followed to decide changeover time for the restoration of supply.

5 It is necessary to choose the location of the genset to be sufficiently away from other installations and to be secured to maintain trouble-free operation during an emergency.

6 As per applicability, the status of permission from the Electrical Inspector shall be mentioned. If permission is accorded, reference number shall be mentioned.

B-3 Earthing arrangements

For earthing systems, the guidelines given in respective clauses of IS 3043 shall be followed. Guidelines for the provision of the Main Earthing Terminal is as the Typical Diagram given below:



C-1 **Electrical Installation-**

Installations belonging to individuals and serving common utility services.

This section is applicable for electrical installations in individual premises as well as in common/public areas and within the possession of office bearers of society and associations of owners. While giving test reports, points not applicable in respect of individual or common installations may be marked as 'NA'. For example, UG ... work may not be applicable in respect of individual ...ers.

C-1.1 Wiring type: Wiring installations that are partly open and partly concealed (in walls/partitions/above false ceiling/below the floor or the ground), for the same service shall be considered as hybrid. Wiring of different categories for different circuits shall be considered as mixed.

C-1.2 Material used: In case of non-ISI material (standard not published by the BIS), but in conformation with international standards, the list shall be provided for such material with a corresponding international standard. In absence of both, separate lists shall be attached.

C-1.3 Wiring /Cables:

Indoor use:

For high-rise buildings, cables recommended for general use as per NEC are FRLSH or HFFR. Up to 16 mm2 size, copper conductors have been recommended in NBC and NEC.

For determination of cross-section, Annex S or T of IS 732 needs to be observed.

The cross-sectional area of conductors shall be determined for both normal operating conditions and for fault conditions according to:

a. their admissible maximum temperature;

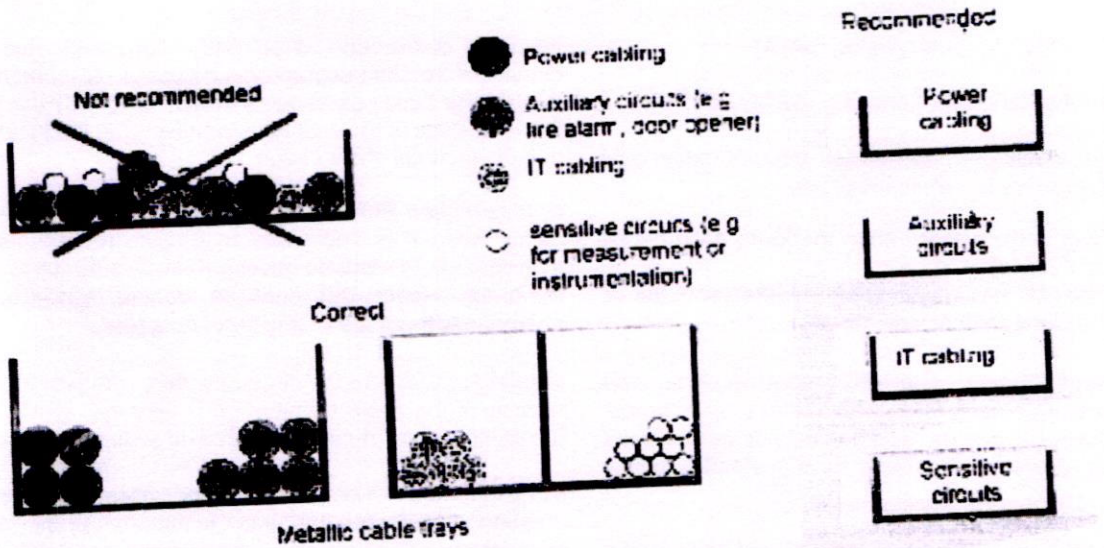
b. the admissible voltage drop;

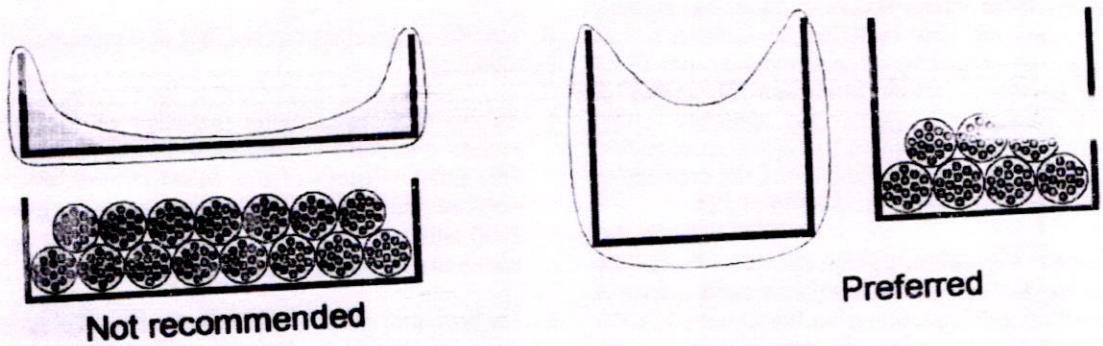
c. the electromechanical stresses likely to occur due to earth fault and short-circuit currents;

d. other mechanical stresses to which the conductors can be subjected;

e. the maximum impedance with respect to the functioning of the protection against fault currents; and

f. the method of installation—for guidance following the diagram shall be observed.





Note – The items listed above concern primarily the safety of electrical installations. Cross-sectional areas greater than those required for safety, may be desirable for economic operation.

For cross-section above 16 mm2, specify the conductor type (copper or aluminium) and the size.

Note – The recommendations above concern primarily the safety of the electrical installations in conjunction with inherent properties of the metal in relation with thermal management. One up size of conductor cross-section is recommended to ensure longer life of cables and accommodate/take care of future additions to certain extents.

For outdoor use:

Armoured cables shall be used for street, garden, or similar lighting. The minimum depth of the cable below ground level shall be 750mm for LT, 900mm for 11kV and 1050mm for 22/33 kV, it needs cushioning below and above with rammed soil/sand and shall be mechanically protected with bricks/ blocks or half round / full round pipe of suitable strength.

For critical services requiring supply integrity:

Systems required to be operative under emergency situations (like evacuation during fire) shall be considered as critical services and cables used shall be in accordance. Also check Annex A of IS 17505 (See **Attachment B**).

C-1.4 Conduit/casing: For proper dissipation of heat (considering maximum temperature rise allowed) the space factor or fill factor (corresponding to internal cross section of conduit/trunking) shall not exceed 53%, 31%, 40% for single, two, more than two cables respectively as per NEC 2022.

C-1.5 Distribution:

A. For installations belonging to individual and common services

1. Single Line Diagram - Typical SLDs depending on distribution pattern and load corresponding to flat area/ rooms/load, shall be prepared. They shall provide following details:

i. electrical distribution of installation from meter to final branch circuit feeding supply to switch-board;

ii. distinct marking of circuits with standby supply arrangement through inverter / UPS;

iii. sizes of mains, sub-mains, circuits, protective earth conductor;

iv. details of DBs (types, ways);

v. details of incoming and outgoing MCBs (poles, rating A, kA, type);

vi. details of RCD(s) (poles, rating mA, A);

vii. details of other protections (e.g., SPD(s), AFDD);

viii. load on individual final branch circuits, sub-mains, mains, at every DB, main switches;

ix. SLD shall show identification marks to each circuit, DB, and switch board.

NOTE — If the SLD having prior approval differs with the 'as built' SLD, reasons shall be mentioned.

2. **Division of Circuits** - The NEC recommends an independent circuit for each room with a door to have proper control in case the door is locked. Also, separate circuits for lighting, power and circuits having standby power sources.

The limits set by the NEC on maximum load and number of points need to be observed.

3. **Cables** - Cable cross-sections shall be suitably selected to carry the load continuously without rise in temperature and satisfying requirements as per C-1.3. There shall be intercorrelation between the ratings of MCBs and design current-carrying capacity under particular situations. If current is 12A, the corresponding MCB will be 16A. So, the cable shall have the capacity to carry a minimum of 16A current instead of 12A.

4. **Over-Current Protection Device (OCPD)** - It shall be noted that for the same cross section cable capacity gets reduced by 50% depending on the situation at the place of installation and other derating factors. So, the MCB shall be selected in accordance with a rating not less than the design current which may vary for the same cross section of cable. The MCB shall also have a suitable breaking capacity of more than the anticipated short-circuit current. The selection of MCB type shall be in accordance with the load pattern. Where there is high inrush current, type B MCB will not be suitable. There shall be tripping coordination at different levels. The MCB of the corresponding final branch circuit shall trip first and the main MCB shall trip at the end.

5. **Protection from leakage currents/electric shocks** - As per CEA Reg, 42:2010, there shall be provision of RCD, the maximum earth leakage threshold for tripping of which shall not exceed 30mA for domestic connections and 100mA for all other installations.

NOTE – It is also recommended to provide RCD of 300mA at source to mitigate chances of initiation of fire due to heat generated by continued leakage current.

To avoid complete blackout, RCDs on local DBs/per phase isolation in TPNDBs is recommended, which helps to locate fault and avoids complete blackout.

6. **Protection from Surges** - Provision of Surge Protection Device (SPD) prevents risks of transient over voltages and surge currents from lightning, switching surges or over voltages. Proper test class (I/II/II) shall be selected at precise points in the electrical distribution.

7. **Protection from Electrical Arc Flashes** - Arc Flash Detection Device (AFDD) detects initiation of arc within electrical distribution at an early stage and trips the circuit before such occurrence. Its use is recommended in high-rise buildings above a certain height by the NEC. Such a device is of great help in preventing fire initiation due to electrical short circuit.

8. **Distribution Boxes/Consumer's unit** During an emergency when it is necessary to disconnect the supply immediately, immediate access to such a device is very important. Hence DBs shall be located in accessible positions without aid of any stool or ladder.

Marking of DBs and the circuits within, with provision of ferrules in the cable termination is very important from the point of view of maintenance and avoiding accidents.

9. **Terminations** - Loose terminations always lead to the creation of hot spots and result in initiation of fire. So, it is most important to have proper initial and periodical checks for proper tightening, and to check that there are no loose strands around.

B. Specific requirement in respect of common services in buildings

1 As per CEA Regulations provision of a switch to isolate complete supply of buildings is necessary. This point in most of the cases comes before the point of supply for the individual meter. Its provision shall either be made by the supplier or the building owner in coordination with the supplier.

2 For provision of such a switch the circuit diagram as given in **Attachment A** shall be followed.

3 Critical services depending on electrical supply have been identified in IS 17505 Annex A given under **Attachment B** (it shall be followed as per applicability but not be considered as being limited to).

C-1.6 Inverter/UPS: The load to be connected on the inverter supply – there shall be an independent circuit with phase and separate neutral conductor. The neutral from this circuit shall not be looped with any other circuit. Under the checklist, NA option shall be chosen if there is no inverter supply with battery backup.

C-1.7 Point wiring: The NEC provides guidelines in respect of minimum number of points depending on use of area / utility of room and the locations of switchboards for operation. Inconvenient locations and shortfall in number of points leads the user to make changes in existing installation after taking-over possession. Such subsequent work often becomes the reason for the installation becoming unsafe. Hence to mitigate possibilities, it is necessary to follow the guidelines given in the NEC. Choose an option from Yes/No or NA as observed in inspection.

C-1.8 Earthing:

1 Refer Attachment C to check the recommended sizes of the protective earth (PE) conductor.

2 Equipotential bonding is necessary to maintain exposed conductive parts and extraneous

conductive parts at the same potential. It helps to strengthen earth fault, leakage protection through automatic disconnection of supply, envisaged to prevent a touch voltage from persisting for such a duration that would be harmful to human beings.

3 Continuity of protective earth conductor between different points and to the MET is the most important requirement for the operation of protection. Its resistance shall not exceed 0.2 ohms.

4 Value of ZS (Ze + R1 + R2) needs to be sufficiently low to operate protective devices within the stipulated time.

C-2 Electrical Installation details and test results (List – meter-wise):

The details to be provided in this section shall be separate in respect of each service connection. The number of service connections will depend on the number of common meters, plus the number of flats within the building. It will be necessary for the testing person to follow the recommendations from Annex SS of IS 732:2019 and maintain a detailed DB-wise test results sheet ready (See **Attachment D**). The DB mentioned in the test result shall correspond to and be traceable in the SLD. These test results shall form the basis of the summarized information to be provided in the form given under 2.1

C-2.1

1 Mention Flat No. and floor, e.g., 404 first digit showing Floor No. as 4 and next digits showing flat no. 04 or alternatively 04, 4th floor. Also mention wing if applicable. In case of a common meter, mention the list of services for which supply is provided, e.g., domestic water pumps, lifts, common lighting, fire-fighting, etc.

2 Mention area either in sq. ft or sq. m

3 Mention the material (copper/aluminium) and cross-sectional area (mm^2) of the line, neutral and protective earth conductor for mains (cable between point of supply in meter room and main DB); e.g., 4x6Cu+6ECu, i.e., 4 conductors for 3 phases and 1 neutral (R Y B N) of size $6mm^2$ cross section copper and 1 conduct of size 6 mm2 copper for protective earth.

4 OCPD – Over Current Protective Device m... current rating, breaking capacity and poles, e.g., ... FP MCB or 16A, 10kA DP MCB

5 RCD (ELCB / RCCB) – Residual Current Device, RCBO– Residual Current Operated Circuit Breaker ... over-current protection: for RCD mention nominal current rating in A, leakage current rating in mA and poles; e.g., 32A FP – 30mA. For RCBO, mention breaking capacity in addition. Test operation of RCD and mention Ok/Not Ok

6 IR Test– Insulation Resistance Test shall be taken with 500V DC Tester at origin/point of supply between L-N, L-E, N-L for 1-ph supply, for 3-ph supply consider L1, L2, L3 in place of L and between L1-L2, L2-L3, L1-L3

7 Continuity Test– shall be conducted to measure resistance, R1 – resistance of line conductor and R2 – protective earth conductor (PE/CPC); between point of origin of supply to the point of utility outlet. Combined R1+R2 values may also be given.

8 Earth Fault Loop Impedance (Z_s) which is the combined value of Ze+(R1+R2) shall be tested with an appropriate instrument at every DB. This test shall be carried out and the highest value shall be mentioned.

9 Prospective Fault Current (I_{pf}) / Short Circuit Current (I_{sc}) – From results, the highest value shown by the respective test instrument shall be mentioned.

10 Polarity Test – whether all switches (1-way / 2-way) are installed in online conductors only. In case of plug socket outlets, check if the line conductor is connected to the right side of the socket only. Mention Tested OK/not OK.

11 Neutral Looping – check if there is an independent neutral for individual circuits and the looping of neutral is restricted within the points of the respective circuit only. Mention Tested OK / not OK.

C-2.3 Handing-Over checklist to each individual consumer shall be as per the **Annexure E-12** These checklists shall be ready with details.

Attachment - A to Instructions under Annexure ~~3.13~~

Annex D (informative)
[IEC 60364-5-56:2018]

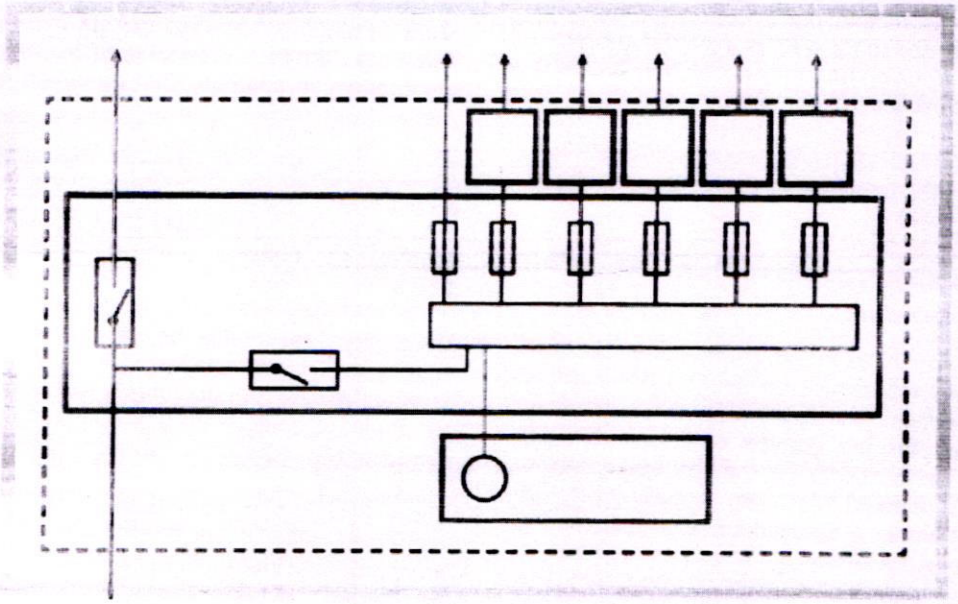


Figure D.1 – Fire switch installation

Attachment - B to Instructions under Annexure 3.13

Annex A
[Ref. IS 17505:2020]

APPLICATION OF FS CABLE

Sl. No. (1)	System Description (2)	Cable Fire Rating Required (°C) (3)	Time for which System Should Withstand (Minutes) (4)
i)	Fire pumps	FS (950/FWS)	180
ii)	Pressurization	FS (950/FWS)	180
iii)	Smoke venting including its ancillary systems, such as dampers and actuators	950	60
iv)	Fire-fighting shaft (staircase, lift, lift lobby)	FS (950/FWS)	180
v)	Fireman's lifts (including all lifts)	FS (950/FWS)	180
vi)	Exit signage lighting	950	120
vii)	Emergency lighting	950	120
viii)	Fire alarm system		
	a) Conventional (zone-based system)	650	60
	b) Intelligent addressable system	650	60
ix)	Public address (PA) system (related to emergency voice evacuation and annunciation)	650	60
x)	Magnetic door hold open devices	650	60
xi)	Lighting in fire command centre and security room	FS (950/FWS)	180

Attachment - C to Instructions under Annexure 2.13

Table 12 Cross-section of Protective Conductor

Cross sectional area of Phase Conductor of the Installation S mm	Minimum Cross Sectional Area of the Corresponding Protective Conductor S_p mm
(1)	(2)
S < 16	S
16 < S < 35	16
S > 35*	See 17.2.2.1

* For these sizes alternatively formula S/2 may be used as per IS 732 Table 14

Cl. 17.2.2.1 of IS 3043

The cross-sectional area shall be calculated such that the current density value determined by the following formula is not exceeded (applicable only for disconnection times not exceeding 5s).

$$\frac{I}{S} = k \frac{1}{\sqrt{t}}$$

Where,

S = cross-sectional area, in square millimeters.

I = value (ac, rms) of fault current for a fault of negligible impedance, which can flow through the protective device, in Amperes;

t = operating time of the disconnecting device, in seconds; and

NOTE — Account should be taken of the current-limiting effect of circuit impedances and the limiting capability (joule integral) of the protective device.

k = factor dependent on the material of the protective conductor, the insulation and other parts, and the initial and final temperatures. Values of k for protective conductors in various use or service for t = 1s and 3s respectively are given in the following table which applies for insulated conductors or bare conductors touching other insulated conductors (for other conditions see Table 11 from IS 3043:2018.

Material of conductor	Copper			Aluminium			Steel		
Insulation	PVC	Butyl Rubber	XLPE/ EPR	PVC	Butyl Rubber	XLPE/ EPR	PVC	Butyl Rubber	XLPE/ EPR
1 s current rating in A/ mm^2 (k_1)	136	160	170	90	106	112	49	58	62
3 s current rating in A/ mm^2 (k_3)	79	92	98	52	61	65	28	33	36

Attachment - D to Instructions under Annexure ~~3.13~~

ANNEX SS
(Clause 6)
(Normative)

REPORT OF VERIFICATION

Table 65 Model Form for Circuit Details and Test Results Schedule

INFORMATION REGARDING DISTRIBUTION BOARD (1)																								
Description:					Ref.:					Manufacturer														
Rated voltage, U_n V			Nominal current, I_n: A			Frequency: Hz				Protection IP degree:							Short-circuit withstand capability of distribution board, I_{cc} kA							
MAIN SUPPLY TO DISTRIBUTION BOARD (6)																								
Protective device:				Type:		Rating, I_n: A				Short circuit capacity rating kA			RCD: mA		I_{cp}: kA (2)	Z_s:			CSA supply condition Section: L= mm²; PE= mm²				
CIRCUIT DETAILS										TEST RESULTS														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Circuit No.	Description room served	Number of points	Function	Connected load	Cable: Cond.		Circuit protection			Circuit characteristics			Insulation resistance				RCD				Touch voltage	Polarity test	PE continuity	Remarks/ additional requirements
					Type	Section L/PE	I_n (A)		Type	Z	I_a (A)		MΩ				I_n	I_d	T_d					
			(5)	kW (9)		Min²	Fuse	Circuit breaker		Ω	L-N	L-PE	N-PE	L1-PE	L2-PE	L3-PE	A	mA	(3) (4)	(7)	(8)	(3)		

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