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DEPARTMENT OF ENERGY

NOTIFICATION

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No. ई.-2/ऊ.वि.(विविध)-11/17/1291-- In exercise of the powers conferred by section 15 of the Energy Conservation Act, 2001 (52 of 2001), the Government of Jharkhand in consultation with the Bureau of Energy Efficiency do hereby make the following Rules, namely: -

1. Short title and commencement.- (1) These rules may be called Jharkhand ECBC Rules, 2022

(2) They shall come into force on the date of its publication in the Official Gazette.

2. Definitions: (1) In these rules, unless the context otherwise requires, -

(a) “Act” means the Energy Conservation Act, 2001 (52 of 2001);

(b) “Bye-laws” means the building bye-laws framed by Urban Development & Housing Department, Government of Jharkhand or any development authority / Urban Local Bodies (ULB’s) under its control to regulate the building activities in its areas falling in the jurisdiction of:

(i) All Development Authorities / Industrial Area Development Authority / Jharkhand Mineral Area Development Authority;

(ii) All Nagar Panchayats / Nagar Parishad (all class) / Municipal Corporation /

Metropolitan areas;

- (iii) Any other Settlement / Area specified by the Jharkhand Government;

JECBC “Authority” means Urban Local Bodies (ULB) / Mineral Area Development Authority, Industrial Area Development Authority.

Under various development plans notified by the Government of Jharkhand and enforced by such authority in its jurisdiction in which the compliant building shall be located and include any regulation or rule framed by the Jharkhand Government or Urban/Rural Development Agency established by the said Government;

- (c) “best practices” means those measures that allows for optimization of efficiencies in the identified components and systems based on integrated design approach that enhances the building performances or reduces the cost of construction having regard to the safety, stability of the building structure, health and environmental provisions of Central or Jharkhand state laws and includes energy conservation measures approved by the Jharkhand or National Energy Conservation Code Committee or JECBC Quality Review Board;
- (d) “Building complex or complexes” mean a building or group of buildings constructed in a contiguous area for business, commercial, institutional purposes or assembly buildings under the single ownership of individuals or group of individuals or under the name of a co-operative group society or on lease and sold as shops or office space or space for commercial purposes, having a connected load of 100 Kilowatt (kW) or contract demand of 120 Kilo-volt Ampere (kVA) and above.
- (e) “Built up area” means the total covered areas on all floors of an immovable property;
- (f) “Connected load” means the sum of the maximum amount of wattage that is allocated to all applicants or owner of a building or part of a building, who have sought electricity connection for the completed buildings or part thereof;
- (g) “Contract Demand” “contract demand” means the maximum demand in kW or kVA (within a consumer’s sanctioned load) agreed to be supplied by the licensee and indicated in the agreement executed between the licensee and the consumer;
- (h) “Commercial building” means a building or a part of building which is used or intended to be used for transaction of business, dealing with or keeping of accounts and records, or for similar purposes including banks, commercial offices, corporate offices, or offices or storage or services conducting

mercantile activities including shops, stores, market or a place used as such to display and sale of merchandise either in whole sale or retail or facilities incidental to such activities and includes-

- (i) Business: Large Office (> 30,000 sqm), Medium Office (10,000 – 30,000 sqm), Small Office (<10,000 sqm)
- (ii) Health Care: Hospital, Out Patient Health Care
- (iii) Commercial Shopping Complex: Shopping Mall, Stand Alone Retail, Open Gallery Mall, Super Market
- (iv) Hospitality: Large Hotel (Star Hotels), Small Hotel (No Star), Resort
- (v) Educational: College/University, Primary School, Secondary School
- (vi) Assembly: Multiplex, Theatre

Addition to the above list or exemption from the above list could be covered in the Commercial building as per Jharkhand's justified requirements.

- (i) "Construction documents" mean key plan, site plan, building plan, specifications, certificates of supervision covering different components and systems of JECBC compliant building and any other document required by authority having jurisdiction
- (j) Compliance Documents" mean the Forms specified in these rules which ensure or demonstrate compliance with these rules through the JECBC and include EPI Ratio Compliance Report, Building Envelop Compliance Forms, and Mechanical Systems and equipment including Heating, Ventilation and Air-conditioning, Service Water Heating and Pumping Compliance Forms and Mechanical Permit Check-list, Interior and exterior Lighting System Compliance Form and Lighting Electric Power Compliance and Checklist Form annexed at Appendix. and include Certificates from the Certified Energy Auditor for Building
- (k) "Energy Conservation Measures" means the measures incorporated in the building design based on the provisions included in these rules or based on the JECBC chosen by the owner covering any element of a component with any other element of the same or other component of the JECBC and includes any measure incorporated in the said building design based on international and national best practices of the building having regard to the location and needs of the JECBC compliant building
- (l) "ECBC Accredited Building Energy Auditor" means an accredited energy auditor for JECBC compliant building given accreditation in accordance with the provisions of Rule 10 of these rules.
- (m) "Certified Energy Auditor (Building) means a person who fulfils the eligibility

criteria specified in the Energy Conservation (Minimum qualification for Energy Auditors and Energy Managers) Rules, 2006 and has qualified National Examination for Energy Conservation Building Codes Compliance.

- (n) “Energy Performance Index” or “EPI” of a building means the annual energy consumption expressed in terms of electrical units, namely Kilo Watt Hours (kWh) per square meter of the area wherein energy is used and includes the location of the building and shall be expressed by the following formula:
Basement

$E.P.I = \frac{\text{Annual energy Consumption in terms of kWh}}{\text{Total built up area excluding parking}}$

Total built up area excluding parking

E.P.I value shall be calculated based on hours of operation of a building so as to tweak the model for making it to come in the range of the actual EPI of the building.

- (o) E.P.I Ratio of a building means the ratio of the Energy Performance Index of the proposed design of a building in relation Energy Performance Index of the Standard Design of a Building;
- (p) “Energy Conservation Building Codes (ECBC)” means the Energy Conservation Building Codes 2017 or its subsequent updated version approved by the Bureau and displayed by it on the website (www.beeindia.gov.in) Guidelines specified in schedule B of these rules;
- (q) “Form” means the forms appended to these rules
- (r) “Proposed Design” of a building means a computer representation of a design consistent with the design of a building which complies with all the mandatory requirement of JECBC.
- (s) “Standard Design” of a building means a computer representation of a hypothetical design based on the actual design of the proposed building as per Whole Building Performance method.
- (t) “Owner” of a building means a person, group of persons, a company, a trust, institute, Registered Body, Jharkhand or Central Government and its attached or Sub-ordinate Departments, Undertakings and like agencies or organization in whose name the property stands registered in the revenue records for the construction of a building or building complex;

Ø Words and expressions used herein and not defined, but defined in the Act, or in the Energy Conservation Building Codes and National Building Code 2017

shall have the meanings respectively assigned to them in the Act or the said Energy Conservation Building Codes and National Building Code 2017.

3 Application (1) These rules shall apply to the design, construction and completion of any commercial building or establishment having a connected load of 100 kilowatt (kW) or greater or a contract demand of 120 kilovolt ampere (kVA) or greater used or intended to be used for commercial purposes and shall cover-

- (a) building envelopes, except for unconditioned storage spaces or warehouses;
- (b) mechanical systems and equipment, including heating, ventilation, and air-conditioning;
- (c) service hot water heating;
- (d) interior and exterior lighting; and
- (e) electrical power and motor

Provided that these rules shall not apply to-

- (a) buildings that do not use either electricity or fossil fuel; and
- (b) equipment and portions of building systems that use energy primarily for manufacturing processes;
- (c) building that uses 100% renewable energy

Provided further that wherever these rules are in conflict with safety, health, or environmental provisions of Central or Jharkhand state laws or building bye-laws or building regulations such provisions shall prevail over these rules.

(2) Where additions plus the existing building or alteration having a connected load of 100 kilowatt (KW) or greater or a contract demand of 120 kilovolt ampere (kVA) or greater, additions alone shall comply with the provisions referred to in clauses (a) to (e) of sub-rule (1).

(3) The application of energy efficiency and conservation measures based on JECBC and best national and international practices approved under these rules are intended to optimize the use of energy in various components and systems of a building covered under these rules.

(4) The provisions referred to in sub-rule (3) shall be specific to the meeting of requirement of energy efficiency and energy conservation and shall not be equated with the mandatory provisions specified in the municipal bye-laws;

(5) These rules shall be deemed to be part of the building bye-laws enforced by any authority having jurisdiction in the area in which the building covered under these rules is erected after these Rules are notified in the official gazette.

4 Compliance Mechanism (1). -The compliance of energy performance of a building with the requirements of these rules shall be ensured by the owner either by following the Prescriptive Method or by following the Whole Building Performance Method specified in the Energy Conservation Building Code annexed to these rules as per details given below, namely: -

(a) Prescriptive Method:

- (i) The building shall comply with all mandatory measures specified in Sections 4.2, 5.2, 6.2, 7.2 and 8.2 of the Energy Conservation Building Code 2017 displayed on the website (www.beeindia.gov.in);
- (ii) The building shall comply with all the prescriptive requirement specified in the following sections of the aforesaid Code; 4.3. or 4.4; 5.3 and 7.3

PROVIDED that the building owner shall be deemed to have complied with the mandatory as well as prescriptive requirements if the values of the measures deployed by the owner of the proposed building are better than those specified in the code.

- (iii) The Energy Performance Index Ratio or EPI Ratio of the Proposed Building that meet all prescriptive requirements shall be one as the EPI of the Proposed Building shall be the same as the EPI of the Standard Building. Therefore, their ratio, and
The EPI Ratio shall remain one.

$$\frac{EPI_{proposed}}{EPI_{standard}} = 1$$

(b) Whole Building Performance Method

- (i) The building shall comply with all mandatory measures described in Section 4.2, 5.2, 6.2, 7.2 and 8.2 of the Energy Conservation Building Code 2017 displayed on the website (www.beeindia.gov.in);
- (ii) The building shall comply with the requirements specified in section 10: -Appendix B-Whole Building Performance Method of the Energy Conservation Building Code 2017 displayed on the website (www.beeindia.gov.in);
- (iii) The EPI of the Proposed Building under this method, shall be the same or less than the EPI of the Standard Building, the EPI Ratio shall therefore be one or less than one

$$\frac{EPI_{proposed}}{EPI_{standard}} \leq 1$$

- (2) (a) For the purpose of ensuring compliance of JECBC compliant buildings, with these rules the Authorities having jurisdiction shall authorize only a Certified Energy Auditor for Building who shall be competent to carry out inspection of such buildings from the design stage to commissioning stage under these rules; and;
- (b) Every person who has qualified the National Examination for Certification of Building Energy Auditor and has been issued the requisite

certificate and his name is included in the Register of Certified Energy Auditor for Building maintained by the Bureau under regulations framed under clause (r) of sub-section (2) of section 13 of Act shall be competent to perform the functions specified in sub-rule (2) above.

- (c) The inspection provided in sub-rule (2) above shall ensure compliance of-
 - (i) building design submitted by the owner shall be as per JECBC;
 - (ii) construction works undertaken is as per JECBC, sanctioned plan under provisions of the applicable Bye-laws in force as well as in accordance with the provisions of these rules;
 - (iii) Efficiency level of the building envelop, HVAC, lighting and electrical systems shall be as per compliance document submitted by the owner.
- (3) All reports of Inspection shall be in writing, signed and certified by a Certified Energy Auditor for Building.
- (4) The owner of the building shall have: -
 - (a) the right of review against the order passed by the Authority having jurisdiction under these rules before the Jharkhand State Commission given power to adjudicate matters brought before it under section 27 of the Act. The adjudicating officer will hear the views of ECBC Quality Review Board specified in Rule 6, on matters before it and take into consideration its recommendation on issues before it and hold an inquiry and give its decision in the matter accordingly.
 - (b) any person aggrieved, by an order of the said Review Board may prefer an appeal to the Appellate Tribunal for Energy Conservation under section 31 of the Act.

5 Procedure for Erection of JECBC Compliant Building. - (1) Every owner who intends to erect, re-erect or make alterations or addition in any building covered under Rule 3 of these rules shall give notice in **Form I** writing to the concerned authority having jurisdiction and such a notice shall be accompanied by-

- (a) construction documents duly signed by the owner;
- (b) construction documents shall ensure -
 - (i) compliance with the applicable building bye-laws in force covering the site on which the building shall be constructed;
 - (ii) building design incorporates Energy Conservation Measures and best national and international practices having regard to

the climatic conditions of the site and specific needs of the building so as to optimize the EPI Ratio of the building;

- (iii) that all the pertinent data, building features, identified energy conservation measures under various building components

and systems are shown in detail and in the manner specified in the applicable bye-laws;

- (iv) the drawing of plans, color of plans, dimensions of plans, scale of plans shall be as per requirements of the applicable bye-laws in force covering the site on which the building is proposed to be constructed;

- (c) compliance documents covering the construction of components and systems of JECBC compliant buildings, duly certified by Certified Energy Auditor for Building including the following namely -

- (i) EPI ratio report in respect of the proposed building at the design stage;
- (ii) Certificate in **Form II** by Certified Energy Auditor for Building certifying under his seal and signature that the Compliance Documents have been scrutinized/verified by Certified Energy Auditor for Building in respect of identified energy conservation measures, and these measures compliance with the provisions of these rules; and
- (iii) Submit an application with display at the top “APPLICATION FOR JECBC COMPLIANT BUILDING”, duly signed by the owner and obtain Building Permit from the concerned authority having jurisdiction before starting construction work in respect of the proposed JECBC Compliant building.

(2) The authority having jurisdiction may require submission of documents in electronic form in addition to hard copy in respect of buildings covered under these rules.

(3) Procedure for design stage inspection, -The Certified Energy Auditor for Building before recommending approval to the building permit application and furnishing a certificate of compliance in **Form III** with these rules, shall follow the following procedure of inspection, namely; -

- (a) Scrutinize in the construction documents-

- (i) floor area;
- (ii) window area;
- (iii) wall area; and

- (iv) roof area calculations for the building;
- (b) Scrutinize the compliance documents and JECBC checklist -
 - (i) Identify in the JECBC checklist, the Energy Conservation Measures (ECMs) that are applicable to the proposed building;
 - (ii) insulation quantities in walls and roof, and the construction assemblies Solar Heat Gain Co-efficient (SHGC), Visible Light Transmittance (VLT), and Thermal Transmittance (U-factor) for window assemblies;
 - (iii) Heating Ventilation and Air-conditioning (HVAC) component tables for air-handling equipment, refrigeration equipment, condensing equipment, and air-flow summaries;
 - (iv) HVAC equipment efficiencies and control equipment;
 - (v) tables showing lighting equipment schedules;
 - (vi) lighting power density calculations in the Design Documents;
 - (vii) proposed lighting controls;
 - (viii) motor efficiencies and controls;
 - (ix) findings of the document review match with the energy model inputs for the proposed building through the use of simulation tool approved by the Bureau.
- (c) Scrutinize EPI Ratio projected at the design stage;
- (d) Verify and certify the items from (i) to (ix) of (c) and (d);
- (e) Certified Energy Auditor for Building shall fill out the checklist, issue correction list in case the design documents of the proposed building provide inadequate information or do not meet the requirements of these rules and shall-
 - (i) communicate its findings in **Form IV** to the owner of the building under intimation to the Municipal Authority;
 - (ii) give specified time to the owner to implement its findings;
 - (iii) satisfy himself that the communication received from the owner meet his findings;
- (f) record his approval and complete the checklist indicating compliance with these rules and issue the certificate of approval in **Form V** to the owner under intimation to the authority having jurisdiction and SDA as specified in clause (c) (ii) of sub-rule (1) of rule 5;
- (4) **Grant of Permit or Refusal.** (a) The authority having jurisdiction on receipt of notice under sub-rule (1) for issue of permit for construction of JECBC compliant buildings shall sanction building plan only after it has received a certificate in **Form II/Form V** from the Certified Energy Auditor for Building that construction and compliance documents, design, calculation including EPI ratio projected at the design stage, meet the requirements of these rules;

- (b) The authority having jurisdiction while communicating grant of permit to erect or re-erect or add to or make alterations in the building to carry out the construction works shall *inter-alia* add the following conditions in its sanction letter:
- (i) it will be the duty of the owner to ensure that the construction works follow the sanctioned/approved plans and specifications that demonstrate the compliance with these Rules;
 - (ii) the compliance with these rules is achieved during construction-in-progress;
 - (iii) the building shall not be occupied before occupancy certificate is obtained by the owner;
 - (iv) The authority having jurisdiction shall revoke any building permit issued under its bye-laws on receipt of non-compliant report from the Certified Energy Auditor for Building wherever there has been any misrepresentation of material facts in respect of the provisions of these rules made in the application on which the building permit was issued, after giving a reasonable opportunity of being heard to the owner.

(5) Implementation of Energy Conservation Measures- The building owner, based on the JECBC, and having regard to the climatic conditions of the site and needs of the building, shall-

- (a) give notice within the validity of sanction to the Authority having Jurisdiction of his intention to start the construction works at the building site in **form VI**;
- (b) undertake constructions of energy conservation measures incorporated in the construction documents in terms of sub-rule(1)/of rule 5 (b)(ii);
- (c) have the flexibility in constructing the building components and systems covered in the construction documents referred to in Rule 5(1)(a) to most effective use of energy by deploying best practices in such components and systems to optimize the EPI Ratio
- (d) take the approval of the Certified Energy Auditor for Building before undertaking such construction referred to in clause (c) if the components and system proposed which to be constructed are other than those incorporated in the construction and compliance document.

(6) **Verification and Certification of JECBC compliance during construction**-The Certified Energy Auditor for Building shall before giving a certificate of compliance with these rules, follow the following procedure of inspection regarding the on-going construction of the building, namely; -

- (a) Review, verify the specification of name plate values and compare the Compliance Forms with the Checklist filled out during the Design Stage;
- (b) Review and verify the specifications of each individual element of the building systems covered within the scope of JECBC as well as best practices deployed in terms of clause 5(5)(c) as per the sanctioned plan which shall include-
 - (i) review of construction documents for floor area, window area, wall area and roof area calculations;
 - (ii) determination of floor and roof areas using the documents submitted to the municipal authority by the building owner. The Certified Energy Auditor for Building shall do at least random check to measure and determine the window and wall areas;
 - (iii) review of insulation quantities in walls and roof, and the construction assemblies and verify the documents /invoice in support of such insulation quantities used in walls, roof and the construction assemblies etc.
 - (iv) review of product label or manufacturers' cut sheets for Solar Heat Gain Coefficient (SHGC), Visible Light Transmission (VLT), and Overall heat transfer factor (U-factor) verification for window/wall assemblies and verify the bills/invoices/documents in support of the products used in the construction of the building.
- (c) The Certified Energy Auditor for Building shall fill out the checklist at the construction stage, provide comments if the proposed building does not meet the construction requirements of these rules as per sanctioned plan and shall-
 - (i) communicate its finding to the owner;
 - (ii) give specified time to the owner to implement its findings;
 - (iii) satisfy himself that the communication received from the owner meet its findings;
- (d) Record his approval and complete the checklist indicating compliance with these rules and issue a certificate of approval in **Form VII** to the owner under intimation to the authority having jurisdiction.

- (e) Where it is determined at any stage that construction is not proceeding according to the sanctioned plan or is in violation of any of the provisions of these rules, Certified Energy Auditor for Building shall notify the owner, and shall request for additional information with respect to his findings on the short comings identified by him as per **Form VIII**.
- (f) In case the Certified Energy Auditor for Building is satisfied with the additional information provided by the owner, he shall record the certificate of approval in **Form VII** and communicate the same to the owner under intimation to the Authority Having Jurisdiction;
- (g) In case the Certified Energy Auditor for Building is not satisfied with the additional information submitted by the owner he shall report the same to the Authority Having Jurisdiction to ensure that all further construction is stayed until correction has been effectuated and a certificate of approval has been issued by the Certified Energy Auditor for Building.

(7) Notice of completion, Every owner shall submit a notice of completion in **Form IX** of the building to the Authority Having Jurisdiction on the completion of work including the works related to energy conservation measures specified in the sanctioned plan along with the certificate of inspection in **Form X** completed by the Certified Energy Auditor for Building under his seal and signature in support of the completion of the building accompanied by -

- (a) check list of the compliance forms duly completed at the completion stage which shall include the following-
 - (i) review of HVAC component tables for air-handling equipment, refrigeration equipment, condensing equipment, air-flow summaries, tables showing lighting equipment specifications, and tables showing motor specifications;
 - (ii) Inspection of lighting equipment like lamps, ballasts, to confirm fixture wattage. Inspection shall include at least random check across space types in the building to determine lighting power density;
 - (iii) review the required lighting controls such as manual switching off perimeter, day lighting circuits, automated occupancy based control, photo sensor controls, and automated timer based controls;
 - (iv) review of co-efficient of Performance values of installed HVAC equipment and control equipment;
 - (v) review of efficiencies of installed motor and controls;
 - (vi) review of power factor and power distribution losses
 - (vii) review the required check metering and monitoring system

- (b) a list of the energy related building features in the constructed design that is different from the sanctioned/standard design;
- (c) all documents and Invoices in support of the construction undertaken with respect to all energy conservation measures including insulation, fenestration, HVAC, lighting and electrical systems, service water heating systems;
- (d) If the EPI Ratio at the completion stage is less than or equal to one in the sanctioned Plan the building shall be deemed to have complied with these rules;
- (e) If there is deviation in the EPI Ratio of the sanctioned plan i.e. it is more than one he shall record his findings in **Form XI** and communicate the same to the owner and seek compliance of the these rules through incorporation of additional energy conservation measure. If need be Certified Energy Auditor for Building will render technical assistance to ensure the building becomes JECBC compliant;

(8) Issue of occupancy certificate. -The owner shall-

- (a) neither occupy nor allow any other person to occupy any building or a part of the building covered under these rules for any purpose until such building or part thereof has been granted occupancy certificate under the bye-laws of the Authority Having Jurisdiction.
- (b) give notice of completion of the building to the Authority Having Jurisdiction as per sub rule (7) and seek its permission for occupancy of the Building;
- (c) The Authority Having Jurisdiction on receipt of notice by the owner accompanied by a certificate by the Certified Energy Auditor for Building issue the occupancy certificate in **Form XII** incorporating inter-alia the following conditions, namely,-
 - (i) the energy performance of the building shall be monitored and verified by the Jharkhand Energy Conservation Building Code Committee;
 - (ii) The owner and the Certified Energy Auditor for Building shall submit to the SDA an EPI report as per **Form XIII** under intimation to BEE for 2 consecutive years after the building has been fully operational
 - (iii) In case the EPI ratio of the building is more than one, the authority having jurisdiction may issue a provisional occupancy certificate subject to the following conditions that

the owner shall undertake Energy Audit of the building to identify additional Energy Conservation Measures to achieve the EPI Ratio of the Building approved in the sanctioned plan within a period of three year

- (iv) if the owner fails to achieve the EPI Ratio as specified in (iii) above, within a period of three years from the date of occupation of the building the Authority Having Jurisdiction shall place the matter before the Jharkhand Energy Conservation Building Code Committee, who shall give a reasonable opportunity of being heard to the owner and the Certified Energy Auditor for Building and make recommendations in the matter accordingly and the Authority Having Jurisdiction shall comply with such recommendation.

6 Right of Review and Appeal. -(1) The Quality Review Board shall hear review petition filed by the owner of a building within the specified period given by the Authority Having Jurisdiction against the cancellation of building permit or issue of completion or occupancy certificate of building for the following cases, namely, -

- (i) interpretation of the provisions of these rules in relation to any dispute;
- (ii) Non-issue of completion or occupancy certificate due to non-compliance with the EPI Ratio approved in the sanctioned plan; or
- (iii) any other matter covered under these rules for not achieving the EPI Ratio at the completion stage

(2) If the owner of a building is not a Designated Consumer, the quality review board shall, after giving to the representative of Authority Having Jurisdiction concerned, a reasonable opportunity being heard and pass an order in writing for implementation by the Authority Having Jurisdiction under intimation to the SDA/Authority Having Jurisdiction

PROVIDED that where the owner of the building is a designated consumer declared under clause (e) of section 14 of Energy Conservation Act-2001 and has been charged for non-compliance with the any provision specified in the section 26 of the Energy Conservation Act-2001. The quality review board shall make its recommendations on technical matters for consideration by the Jharkhand state Commission under section 27 of the Energy Conservation Act-2001. The Jharkhand state commission shall take into consideration the recommendations of the quality review board before conducting an inquiry under 27 of the Act.

(3) **JECBC Quality Review Board.** -The Jharkhand Energy Conservation Building Guideline Committee constituted shall appoint a JECBC Quality Review Board under sub-rule (8) (a) of Rule 8.

(4) Any person aggrieved, by an order passed by the Quality Review Board or any other authority under the Jharkhand Government may prefer an appeal before the Appellate Tribunal for Energy Conservation under section 31 of the Act within a period of forty-five days from the date on which a copy of the order made by the Quality Review Board or any other authority under the Jharkhand Government to the Appellate Tribunal for Energy Conservation established under section 30 of the Energy Conservation Act, 2001 (52 of 2001).

(5) The appeal filed by the aggrieved party shall be processed as per provisions specified under section 31 of the Act.

The quality review board shall hear review petition file by the honor of JECBC compliant building against the cancellation of building permit or non-issue of completion/occupancy certificate due to non-compliance with the EPI Ratio approved in the sanctioned plan, interpretation of any of the provisions of these rules.

The Jharkhand Energy Conservation Building Code committee shall set up quality review board which shall be headed by a nominee of the urban department of Jharkhand with members drawn from different disciplines, not exceeding three, who are qualified by experience and training to pass judgment on matters pertaining to the construction of the JECBC compliant building.

In case of building owner who have not been declared as designated consumers the recommendation of the quality review board in respect of matter before it shall be submitted to the SDA, which shall insure that they are accepted by Municipal Authority/ULBs.

In case of building owner who is DC, the recommendation of the quality review board in respect of matters before it shall be placed before the adjudicator, a member of the Jharkhand State Regulatory Commission who shall conduct an enquiry under Rule 27 of the Act. In giving decisions in the matter before it, the adjudicator shall take into consideration the recommendations of the quality review board.

7. Procedure for verification and certification of the proposed building-

(1) The Certified Energy Auditor for Building shall verify and certify the EPI Ratio by following the procedure specified below, namely;

- (a) ensure that the building design incorporates the identified energy conservation measure with relevant details so that compliance of the building could be verified;
- (b) verify the standard design model ensuring that it shall comply with the minimum performance requirements of the various energy efficiency and conservation measures specified in the JECBC;
- (c) verify the climate zone in which the proposed building is located and update the model with the concerned weather data input with the help of compliance tools approved by the Bureau;

- (d) verify the category of the building to identify as to whether the proposed building is a 24-hours activity building or a day time activity building;
- (e) determine the EPI Ratio as per provisions of Rule 4;
- (f) if the EPI Ratio of the building design, is less than or equal to one, the building design shall be deemed to comply with these rules
- (g) the Certified Energy Auditor for Building shall proceed to verify the compliance documents submitted by the building owner;
- (h) If the EPI Ratio of building design calculated in clause (f) is more than one the proposed design of the building shall require incorporation of additional energy conservation measures by the owner to bring them in compliance with these rules directing the owner to revise the construction documents;

(2) The E.P.I. of the proposed design shall be compared with that of the standard design through simulation tool as approved by the Bureau to arrive at the following outputs:

- (a) if the E.P.I. Ratio of the building design is greater than one, additional energy conservation measures shall be incorporated in the proposed design.
- (b) the process shall be run repeatedly till E.P.I. Ratio of the proposed design is less than or equal to one.
- (c) the Certified Energy Auditor for Building shall fill the checklist of the various energy conservation measures at each stage namely design, construction and completion to achieve the compliance with these rules;
- (d) the Owner/Certified Energy Auditor for Building shall submit the compliance documents prepared in accordance with clause (c) to the Authority Having Jurisdiction to show that E.P.I. Ratio is less than or equal to one

(3) The tool deployed vide (2) above shall be approved by the Bureau based on the standard method of test for the evaluation of building energy analysis computer program;

8 Establishment, Publication and Promotion of Energy Consumption Standard for Building-

(1) The Bureau shall establish the Energy Consumption Building Standards expressed in terms of per square meter of area, zone wise in relation to Buildings constructed in the Hot and Dry, Warm and Humid, Composite, Temperate and Cold Climate Zones of India and shall amend, revise or cancel the standards so established as may be necessary by a process of consultation through the duly constituted Technical Committee of Expert.

(2) All Energy Consumption Standards for Building, their revisions, amendments and cancellations shall be established by notification in the official gazette under these rules.

(3) All established standards shall be reviewed periodically, at least once in five years, to determine the need for revision or withdrawal of standards and such standards which in the opinion of the Bureau need no revision or amendment shall be reaffirmed.

(4) There shall be -

- (a) Jharkhand Energy Conservation Building Code Committee to promote energy efficient design in the buildings through optimization of energy efficiency in the various components and systems of the building to enhance the building performance and assist the National Energy Conservation Building Code Committee to develop and revise Energy Consumption Standards for Building in terms of EPI in relation to the buildings constructed in the Hot and Dry, Warm and Humid, Composite, Temperate and Cold Climate Zones of India;
- (b) A National Energy Conservation Building Codes Committee to develop and revise Energy Consumption Standards for Building in terms of EPI in relation to buildings constructed in the Hot and Dry, Warm and Humid, Composite, Temperate and Cold Climate Zones of India.

(5) The Jharkhand Energy Conservation Building Code Committees shall be responsible for -

- (a) creating awareness about JECBC compliant Building and procedure for erection of such building, capacity building of building professionals, developers, contractors to promote energy efficient designs of buildings in their States in close co-ordination with Urban/Rural Local Bodies and Municipal Corporations;
- (b) constructions of energy efficient buildings ensuring quality and consistency in their constructions having regard to the climatic conditions and needs of the building projects;
- (c) undertaking performance review of annual work of all Certified Energy Auditor for Building and all accredited Building Energy Auditors for building in the state;
- (d) checking credentials of Certified Energy Auditor for Building and Accredited Energy Auditor for Building;
- (e) for ensuring evaluation of at least one detailed energy audit undertaken by said Accredited Energy Auditor for Building in one evaluation cycle with the object of assessing his depth of knowledge in the field of Building Energy Audit, understanding of the procedure of Building Energy Audit specified in the regulations, quality of recommendations

on implementable energy saving measures including their cost benefit analysis etc.

- (f) undertake detailed assessment of the work done by an Accredited Energy Auditor for Building in a year and prepare a report on each Accredited Energy Auditor registered within the State. The report shall list the name of projects evaluated by the JECBC Accredited Building Energy Auditor covering the projects in violation of the compliance of these rules and level of compliance and level of violation;
- (g) preparing a summary of violations which shall be provided by SDA to BEE; and they shall review such violations for the purpose of evaluating his professional skills.
- (h) preparing a yearly report which shall be sent by the SDA to BEE indicating *inter alia* the progress made in compliance with JECBC rules in the Jharkhand and the steps taken by the SDA to improve the rate of compliance of ECBC in the Jharkhand State;
- (i) creation of data base through compilation of data of EPI achieved by each building constructed after the coming into force of these rules;
- (j) assist the Bureau in developing the Energy Consumption Standards in terms of EPI in respect of various categories of buildings based on statistical data of building constructed under the different climatic zones covered under these rules;

(6) The Jharkhand Energy Conservation Building Code Committee shall function under the Chairperson of an officer nominated by the Jharkhand Government and shall *inter alia* have the following members, namely: -

- (i) A nominee of the Urban Development & Housing Department, Govt. of Jharkhand;
- (ii) A nominee of a Chief Town Planner, UD&HD, Government of Jharkhand;
- (iii) A nominee of the Jharkhand Electricity Regulatory Commission;
- (iv) A nominee of the DISCOM;
- (v) A nominee of the Building Construction Department, Govt. of Jharkhand;
- (vi) Jharkhand nominee to the Council of Architecture, New Delhi;
- (vii) President of the Association of the JECBC Accredited Building Energy Auditors (if any);
- (viii) A nominee of the Jharkhand State Pollution Control Board;
- (ix) A head of the team of Permit Approval Committees of Authority Having Jurisdiction in the Jharkhand and the senior-most amongst them shall act the Member-Secretary of the State Energy Conservation Building Code

(7) The SDA shall provide the secretariat to the Jharkhand Energy Conservation Building Codes Committee.

(8) The Jharkhand Energy Conservation Building Code Committee through SDA shall: constitute a Quality Review Board headed by a nominee of the Urban Department & Housing Department, Govt. of Jharkhand, with other members not exceeding two who are qualified by experience and training to pass judgment upon matters pertaining to construction of JECBC compliant building in the State;

- (a) Nominate a representative of the team of Certified Energy Auditor for Building in the State to act as the Secretary to the Quality Review Board.
- (b) Adopt the rules of procedures in the 1st committee meeting of the Review Board for discharge of its functions including providing assistance to the State Commission in the conduct of enquiry in the matters before the commission.
- (c) On receipt of a review petition, the SDA shall arrange a meeting of the Quality Review Board and seek recommendations of the Quality Review Board for implementation by the Authority Having Jurisdiction in case of building owner who is not a designated consumer and for Designated Consumer, the SDA shall seek the technical recommendations for adjudication of the matter pending before it, as the case may be.
- (d) The Quality Review Board as well as the Jharkhand state Commission shall ensure implementation of its decisions through the SDA and Authority Having Jurisdiction.
- (e) The Jharkhand state Commission shall be competent to seek the opinion of the experts of the Quality Review Board on its own on any matter pertaining to JECBC compliant building pending before it.

(9) **National Energy Conservation Building Code Committee** The National Energy Conservation Building Code Committee shall function under the Chairmanship of Director-General of the Bureau, the head of ECBC division of the Bureau will be the Member Secretary and shall have the following members, namely: -

- (a) one representative each nominated by the SDA preferably accredited energy auditor for building who has undertaken energy audits of JECBC compliant buildings;
- (b) a representative from BIS
- (c) a representative from Consumer Affairs
- (d) a representative from MoUD
- (e) a representative of CPWD
- (f) a representative from Construction Industry
- (g) a representative from Council of Architecture (COA)
- (h) a representative from the Green Building Rating Systems
- (i) any other member which may be nominated by the Central Government.

(10) The aforesaid committee shall -

- (a) evaluate the recommendations of the Jharkhand Energy Conservation Code Committee as a result of deliberations held by the Committee with the concerned interests and finalize its recommendations in connection with the formulation of national energy consumption

standards for various categories of buildings.

- (b) where the subject has been so evaluated in clause (a) above and the need of having a uniform standard is established the Bureau shall appoint a Technical Committee of experts to have interaction with various interests for the purpose and prepare a draft standard, widely circulate the same amongst the various interests including SDAs for a period of not less than 45 days for critical review and suggestions and finalize the draft standards

(11) The draft standards shall be placed before the Policy Advisory Committee of the Bureau for consideration and recommendations

(12) The recommendations of the Policy Advisory Committee shall be placed before the Governing Council for direction and approval.

(13) The Bureau after having received the approval of the Governing Council shall send its recommendations to the Central Government for consideration and approval.

(14) The Central Government shall notify the energy consumption Standards required to be notified for the various categories of building in different climatic zones of the country under the Act for compliance.

9. Competence of Certified Energy Auditor for Building

(1) Every feature of a JECBC compliant building from design stage to its commissioning stage including its post occupancy use shall be scrutinized, verified and certified by a Certified Energy Auditor for Building registered with the Bureau for the Authority Having Jurisdiction under whose jurisdiction the proposed building is erected

(2) Qualification of Certified Energy Auditor for Building- A person shall be qualified to become a Certified Energy Auditor for Building, if he/she -

- (i) has passed the National Examination for Certified Energy Auditor for Building under the Bureau of Energy Efficiency (Certification procedure for Energy Auditor and Energy Manager, 2010) as amended from time to time; and
- (ii) has been issued a certificate by the Bureau to that effect.

(3) No candidate shall be eligible for appearing in the said National Examination unless he is --

- (a) an architect registered with the Council of Architecture as per Architects Act, 1972 with three years of experience in the field of building design, its construction, structural engineering, and other related building activities after registration with the Council; or
- (b) a civil or structural engineer having corporate membership of the

- Institution of Engineer; or
- (c) engineer having other degree in Engineering from a University incorporated by an Act of the Central or Jharkhand State Legislature in India; or other educational institutions established by an Act of Parliament or Jharkhand State Legislature in India or declared to be deemed as Universities under section 3 of the University Grants Commission Act, 1956 or any degree recognized by All India Council for Technical Education as equivalent; or
 - (d) a graduate degree in Engineering from such foreign University or College or Institution recognized by the Central Government under such conditions as may be laid down for the purpose, from time to time with three years' experience in building design, construction, structural engineering, and other related building activities or involving use of energy in operation, maintenance and planning etc.;
 - (e) a post-graduate degree in engineering, or architecture, Business management, or Energy and Environment with two years' experience in building design, construction, structural engineering, and other related building activities or involving use of energy in operation, maintenance and planning etc. after the award of post-graduate degree; or
 - (f) a candidate having diploma in engineering or architecture with six years' experience in building design, construction, structural engineering, and other related building activities or involving use of energy in operation, maintenance and planning etc.; or
 - (g) a certified Energy Manager or certified Energy Auditor under clause (r) of sub-section (2) of section 13 of the Act;

10. Qualification of Accredited Energy Auditor for Building –

(1) A person shall be qualified to become an Accredited Energy Auditor for Building if: -

- (a) he/she is an accredited energy auditor and his/her name is included in the list of Accredited Energy Auditors maintained by the Bureau under the Bureau of Energy Efficiency (Qualification for Accredited Energy Auditors and maintenance of their list) Regulations; 2010 and to
 - (i) has passed the National Examination for Certified Energy Auditor for Building under the aegis of the Bureau; and
 - (ii) has been issued a certificate by the Bureau to that effect.
- (b) he/she is an Certified Energy Auditor for Building and
 - (i) has an experience of five years in energy audit in the industrial or building sector out of which at least two years should be in the JECBC compliant building sector;
 - (ii) has been recommended by the Accreditation Advisory Committee JECBC compliant buildings;
 - (iii) has been granted a Certification of Accreditation by the Bureau

11. Competence of Accredited Energy Auditor for Building. –

(1) Any person who has been given accreditation as ECBC Accredited Building Energy Auditor under clause (p) of sub-section (2) of section 13 of the Act shall be eligible to -

- (a) undertake energy audit in the JECBC compliant Building under the Act
- (b) scrutinize and verify the activities undertaken by the owner from Design stage to the commissioning stage including its occupation of ECBC compliant building
- (c) Evaluation of the performance of JECBC compliant Building and assist the SDA in the development of norms and standard in respect of various categories of building in the different climatic zones in terms of Energy Performance Index;

12. Responsibilities and duties of the owner. -The owner of JECBC compliant building shall have full obligation and responsibility of carrying out the work on the commissioning of the said building in accordance with the requirements of these rules. Every owner shall-

- (a) Select the Architect and JECBC certified Building Auditor registered with the Bureau and the Authority Having Jurisdiction in whose jurisdiction the JECBC compliant building is proposed to be erected to help him to develop the building design, installation of material and equipment to meet with the requirements of these rules;
- (b) with the help of selected team of Architect and JECBE certified Building Energy Auditor-
 - (i) finalize the compliance approach relevant for his building project based on the complexity of the building, budget and time constraints;
 - (ii) finalize the Energy Conservation Measures (ECMs) as per JECBC having regard to the location of the proposed building;
 - (iii) seek to integrate the ECMs in the building and system design so as to achieve the optimized solution;
 - (iv) ensure that drawings, specifications and compliance forms are prepared and ECMs are reflected in the building design documents and submitted to the Authority Having Jurisdiction in compliance with the requirements of their rules accompanied by a certificate specifying inter-alia the E.P.I. ratio of the Building, by the JECBE certified Building Energy Auditor that the documents meet the requirement of these rules;

- (v) give notice within the validity of sanction to the Authority Having Jurisdiction of his intention to start the construction work at the building site in the **Form V**
 - (vi) commence the work within the period specified by the Authority having Jurisdiction from the date of such notice or seek extension of time for starting the construction work, wherever necessary
 - (vii) ensure that the design ECMs are reflected in the construction of the building and installation of its systems.
- (c) permit the Certified Energy Auditor for Building to enter the building or premises at any reasonable time for the purpose of inspection to ensure compliance of building works with municipal bye laws for which the building permit has been granted;
- (d) give written notice to the Authority Having Jurisdiction intimating the completion of the construction work accompanied by a certificate from the Certified Energy Auditor for Building to the effect that-
 - (i) the construction of the building has been done in accordance with the sanction of the building permit for erection of the building; in compliance with the design and specifications of the building;
 - (ii) all the energy conservation measures have been installed and inspected by him and they meet the requirements of these rules;
 - (iii) the building design meet with the provisions of these rules;
- (e) Give written notice to the Authority Having Jurisdiction as well as to the SDA in case of termination of the services of Certified Energy Auditor for Building and appointment of other such professional;
- (f) obtain an occupancy permit from the Authority Having Jurisdiction prior to any occupancy of the building or part thereof after completion of the building;
- (g) Wherever practical difficulties in carrying out the provisions of these rules are encountered, he shall report the matter to the Certified Energy Auditor for Building, and shall modify such provisions only upon seeking approval of the JECBC certified Building Energy Auditor and shall observe the spirit and intent of these rules;
- (h) Wherever any building after the receipt of the occupancy certificate is used contrary to the provisions of these rules the owner shall discontinue the use within reasonable time after receipt of the notice. In no case the owner shall disregard the provisions of these rules.

- (i) Where the owner proposes to alter the installation of any system or material or instrument on account of improving the energy efficiency of the building contrary to the system, material or instrument as indicated in the sanction plan he shall use or install such system or material or instrument after obtaining the necessary approval of the Certified Energy Auditor for Building provided it does not violate the intent of the provisions of these rules.

Provided further that such change shall not compromise with the building requirements namely, structural stability, safety, health or environmental provisions of Central and Jharkhand State laws applicable to the building covered under these rules.

- (j) The owner exercises his right of appeal against any order passed under these rules to get redressal of his grievance or wrong done to him under any of these rules.

13 Roles, Responsibility and Duties of the Certified Energy Auditor for Building

(1) Certified Energy Auditor for Building, whose services are hired by the owner shall verify and certify the following, namely-

- (a) design of the building keeping in view the design criteria, energy goals of the project, integrated energy design approach, energy systems performance verification plan, and the modeling approach;
- (b) Energy conservation measures (ECMs) based on the design approach for the project under consideration.
- (c) construction documents, compliance forms and checklists specified to ensure that the building complies with these rules.
- (d) EPI Ratio of the proposed building design.
- (e) report on such unusual technical issues that may arise due to issue of building permit or construction of building or during occupancy stage subject to approval of the competent authority under the building bye-laws.
- (f) provide inputs to the Jharkhand and National Energy Conservation Building Code Committees to facilitate the implementation of JECBC rules and to promote norms and standards for various categories of buildings under various climatic zones of the country;

(2) furnish a certificate under his seal and signature to the effect that drawings, specifications, Construction Documents, Compliance Forms prepared covering Building envelope, Heating, Ventilation, and Air-Conditioning, Service hot water system, Lighting and Electrical Power systems, where ever applicable, and all other JECBC related documentation prepared for submission to the Authority Having Jurisdiction, ensure compliance with the provision of these rules.

- (3) Certified Energy Auditor for Building shall exercise the powers of

inspection of the building works from the design stage to commissioning of buildings including their uses under these rules:

(4) it shall be ensured that no such professional or employee working under him/her is engaged in any work in connection with the erection or re-erection of the concerned building covered under these rules to ensure that there is no conflict of interest with his/her official duties with the interests of the Authority Having Jurisdiction.

14. Responsibility and Duty of State Designated Agency (SDA), -

(1) The State Designated Agency shall co-ordinate with various stakeholders and regulate and enforce the various provisions of these rules in the Jharkhand State and it shall ensure that; -

- (a) every building having a connected load of 100 kW or greater or contract demand of 120 kVA or greater used or intended to be used for commercial purpose, is erected in compliance with these rules;
- (b) framework for evaluating the performance of the Certified & Accredited Energy Auditor for Buildings to improve the quality, consistency and rate of compliance of these rules is in place;
- (c) a data bank is created in the Jharkhand State to measure the compliance rates of the buildings covered under these rules and accurately account for the energy savings resulting from the compliance of these rules;
- (d) databank on energy use per square meter of area of the building under different zones namely, hot and dry, warm and humid, temperate, composite and cold, separately for each category, is created in the State;
- (e) necessary steps are taken to make EPI as a measure to comply with these rules in the various categories of buildings and send its recommendations to the Bureau for the formulation of energy consumption norms and standard in respect of various categories of buildings constructed zone wise in its State;
- (f) it identifies the JECBC compliant building projects in consultation with the Bureau for detailed energy audit and a minimum of one project certified by JECBC Certified Building energy auditor is included in the programme for detailed energy audit under its supervision in one evaluation cycle.
- (g) the performance of JECBC accredited building auditor/ECBC Certified Building Professional in the states are monitored with a view to making the cadre of Certified Building Energy Auditor and Accredited Building Energy Auditor as effective instruments of promotion of energy efficiency in the building sector.
- (h) it also conducts site visits, if considered necessary, to gauge the

accuracy of reporting by the ECBC accredited building energy auditor and Certified Energy Auditor for Building in their state;

- (i) it prepares a report on performance of each accredited energy auditor for building listing out the projects audited by it, projects in violation of its compliance with these rules and the level of violation.
- (j) it shall provide summary of violations for each year to the Bureau.
- (k) it coordinates with the Authority Having Jurisdictions to amend their building bye-laws incorporating the provisions of these rules for the purpose of erection of buildings in compliance with these rules.
- (l) it shall provide the necessary support to the Authority Having Jurisdiction to conform to the provisions of these rules with regard to matters concerning material, design, construction, method for improving the energy performance of JECBC compliant buildings and effectiveness in compliance of these rules.
- (m) shall ensure that use of any material or method or design or construction not specifically specified by these rules shall not be prevented by the Authority Having Jurisdiction if such alternative material, method of design or construction is found to be satisfactory and assist the owner in optimizing the EPI Ratio in the use of energy on its occupancy.

(2) Every SDA shall inter-act with its Jharkhand State Government to ensure that-

- (i) these Rules are made part of buildings Bye-laws of the Jharkhand State Municipal Authorities or Development Agencies or other Urban/Rural local bodies concerned with building related activities in its State;
- (ii) reasonable level of fees is provided in the building bye-laws of such authorities for providing services for enforcement of these rules in its State;
- (iii) reasonable level of penalties are provided under its building bye-laws in case of violations or noncompliance with the provisions of these rules for failure to meet the obligations imposed on the owner or any person other than designated consumers for enforcement of these rules.

15 Responsibility and Duty of the Bureau, -(1) The Bureau shall create a data bank in respect of buildings covered under these rules through receipt of inputs from the SDAs, reports of Certified Energy Auditor for Building/Designated building official. The data base shall cover-

- (a) Conduct National Examination for certification of Certified Energy Auditor for Building and accreditation of Accredited Building Energy Auditor and maintain a list of such certified JECBC Building Energy Auditor and Accredited Building Energy Auditor.
- (b) Compilation of climatic zones-wise and category-wise data relating to EPI in respect of JECBC compliant building;
- (c) Develop Energy Performance Standards in terms of EPI in respect of JECBC compliant buildings climatic zone- wise and category-wise and review them periodically.

(2) The Bureau shall issue from time to time the guidelines to SDA on any of the issues covered in these rules including the imposition of penalty on any person in case he fails to comply with the provisions of these rules from time to time.

16. Penalties and Fee, -The Authority Having Jurisdiction in consultation with SDA shall be competent to -

- JREDA in consultation with Quality Review Board shall be competent to propose penalty in case of violations of the provisions of these rules for non-compliance of the requirements or obligations imposed on the owner or any person other than designated consumers declared under the Act.
- JREDA in case of violations shall give notice in writing to the owner/developer/ consumer for non-compliance and 3 months period shall be given to respond.
- JREDA in case of violations may levy penalty in the form of increased utility tariff at the rate of 10 paisa per unit through distribution licensee with the approval of JSERC.
- The money collected from penalty shall be deposited to JREDA in the State Energy Conservation Fund.
- If a building is used by multiple consumers:
 - I. The whole building will be monitored as one entity. The building will be in violation only if the whole buildings' EPI fails to meet the proposed EPI at the time of grant of occupancy certificate.
 - II. The building owners can mutually agree and develop a scheme for EPI bifurcation approved by JREDA. In case of EPI violation only the consumer exceeding the allocated EPI will be penalized.

17. Power to Modify Forms, -The Authority Having Jurisdiction shall in consultation with the Jharkhand State Designated Agency be competent to modify suitably or add in their existing forms provided in their bye-laws, the forms specified in these rules.

18. Power to Relax, - Where the State Government's Energy Department is of the opinion that it is necessary or expedient to relax, by order, for reasons to be recorded in writing, any of the provisions of these rules with respect of any class or category of persons on recommendation of JECBC Committee or JREDA.

19. Responsibility and duty of the distribution licensee – The distribution licensee responsible for granting connection to JECBC eligible building shall ensure that:

(a) a unique building identification (UBID) is provided to applicable buildings under these rules at the time of grant of new connection to any portion of the said building and ensure that all connections of that building have the same ID for monitoring the building performance as per the methodology, format decided by JREDA.

(b) Necessary changes are made in the software, rules, regulations and tariff to accommodate the implementation of these rules.

(c) Take necessary actions as suggested by JREDA in regard to these rules. Suggest the procedures and formats in regard to the rules.

(d) Share the consumption data of the consumers of the building regularly as prescribed by JREDA.

By Order of the Governor,

Avinash Kumar,
Principal Secretary
Department of Energy, GoJ
Ranchi, Dated-07-07-2022

Memo No.- 1291

Form I
[(see rule 5(1))]
**Application for seeking Building Permit in respect of erection/ re-
erection/making alteration of JECBC Compliant Building**

To

The Commissioner or (name of the competent authority)

Authority Having Jurisdiction,

Name of the city

Name of the State

Date: / /

Subject: Application for erection of JECBC compliant Building in premises of Plot no.

 Block No. Scheme Street Name of the town/city

Sir,

I/we the undersigned hereby give you notice of my intention to erect /re-
erect/alter ECBC Compliant Building under the JECBC Rules, 2022 in the premises of
p l o t N o . B l o c k N o . S c h e m e a n d r e q u e s t f o r
issue of building permit for the construction of the JECBC compliant building. The
following documents are enclosed

- (i) Construction Documents and Compliance Forms together with check-
lists incorporating the installation of Energy Conservations Measures
specified in the aforesaid rules.
- (ii) The Construction Documents and Compliance Forms together with
check-lists have been verified by Shri----- Regd.
number Certified Energy Auditor for Building. A
certificate in the **Form II** duly signed by him under his seal in this regard
is enclosed.

Yours faithfully,

(Name of the owner)

Address

Tel. No./Mobile no.

Form II**[See Rule 5(1)(c)(ii)]****[Certificate from Certified Energy Auditor for Building to be enclosed with the application for Building Permit for JECBC compliant building]****Certificate**

I am Certified Energy Auditor for Building having registration No / under the Energy Conservation Act 2001 (52 of 2001) and am/are authorized to scrutinize and verify the design of JECBC Compliant Building. I certify that .

- (a) I have scrutinized the construction documents duly signed by the owner/design professional showing all the pertinent data and features of the building, equipment and systems in sufficient details covering Building Envelop, HVAC, Service hot water, Lighting and Electrical power in accordance with Municipal Bye-laws and with the ECBC rules, in respect of building proposed to be constructed on plot on-----
--- block no ----- Scheme in the city of----- in Jharkhand;
- (b) I have scrutinized the compliance forms together with the check- lists to ensure compliance with the bye-laws and JECBC Rules---2022.
- (c) The construction documents have been duly inspected by the undersigned
- (d) The Energy Performance Index Ratio of the building design as per construction documents at the design stage is equal to or less than one and is therefore in compliance with the JECBC Rules.
- (e) It is certified that all the required scrutiny and verification of the documents submitted have been carried out diligently and truthfully and all reasonable professional skill, care and diligence have been taken in scrutinizing and verifying the drawings of the buildings and compliance forms together with checklists covering the various components of the JECBC rules.
- (f) The contents of all the documents submitted along with the application are a true representation of the facts and nothing has been concealed.
There is no objection for issue of Building Permit in respect of the aforesaid proposed building in so far as requirements of JECBC Rules are concerned.

Signature

**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**

Registration No /SEAL.

Date

Form III
[See Rule 5(3)(a)]

[Undertaking by owner for construction of JECBC compliant building]

I am the owner of the aforesaid Plot No. _____ Block No. _____ and the building on completion of construction shall have a connected load/contract demand of 100kW/120 kVA or greater and is proposed to be constructed as JECBC compliant building and shall be used or intended to be used for commercial purposes.

The proposed building accordingly attracts the provisions of Jharkhand Energy Conservation Building Codes Rules 2022.

I/we undertake that the aforesaid building shall be constructed in accordance with the bye-laws of the Municipal Authority and the provisions of JECBC Rules, 2022. In case any deviation is noticed during the construction of the Building, I/we shall indemnify the loss to the Authority having jurisdiction.

I/ we further undertake that the information supplied in the enclosed drawings and application is accurate to the best of my knowledge. And if any of the information supplied is found to be incorrect and such information result in loss to the Central or the Jharkhand State Government or any other authority under them. I/ we undertake to indemnify such loss.

Signature

(Name of the owner)

Address _____

Mobile no/ Tel no ----

Form IV
[See rule 5(3) (e)(i)]

[Certificate of Inspection by Certified Energy Auditor for Building on review of Building Permit Application in respect of JECBC compliant building-Communication of omissions and non-compliance to owner]

To

Shri _____,
Address _____

Subject: Application for erection of JECBC compliant Building in premises of
Plot no. _____

Block No. _____ Scheme _____ Street _____ Name of the
town/city- Discovery of omission /non-compliance with the ECBC
rules on design stage inspection

Sir,

I, ...(Name), being an authorised Certified Energy Auditor for Building vide order No. _____ hereby state. I have reviewed and verified the undertaking given by you and have inspected the construction documents, compliance forms, check-lists, submitted along with Building Permit Application in respect of the various elements specified sub-rule (3) of rule 5 of the various components of the proposed JECBC Compliant Building in respect of the subject building and inform that the following omission/non-compliance have been discovered on inspection –

- (i)
- (ii)
- (iii)
- (iv)

It is requested that the following energy conservation measure be carried out in order to bring them into compliance with the JECBC rules. You are accordingly requested to take corrective action within a period of one month from the date of issue of this letter. Further action on your application for issue of Building Permit shall be taken after satisfactory compliance of the aforesaid omission/non-compliance.

Signature
**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**
Registration number/Mobile number
Seal

Form V
[See rule 5(3)(f) & 5(4)]

[Certificate of Inspection by Certified Energy Auditor for Building on review of Building Permit Application enclosing construction documents and compliance forms in respect of JECBC compliant building]

I, ... (Name), being an authorised Certified Building Energy Manager vide order No. hereby state that I have reviewed and verified the undertaking given by the owner, and have inspected the construction documents, compliance forms, check-lists, submitted along with Building Permit Application in respect of the various elements of the proposed JECBC Compliant Building in the premises of plot No. Block No. Scheme _____ Town/City _____ state of _____ and certify that the

- (i) the omission/non-compliance pointed out by the undersigned in the certificate of Inspection dated..... have been complied satisfactorily;
- (ii) the EPI Ratio calculation match with the data given in the aforesaid documents and is in compliance with the JECBC Rules.

I further certify that –

- (a) all reasonable professional skill, care, and diligence have been taken in verifying the compliance forms in respect of the various elements of the components covered in JECBC Rules and contents thereof are a true representation of the facts and meet the requirements of JECBC rules.
- (b) there is no objection for issue of Building Permit in respect of the aforesaid proposed building in so far as requirements of JECBC rules are concerned

The check-list duly completed and signed by the undersigned is enclosed.

Signature
**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**
Registration number/ Mobile number
Seal

Form VI
[Rule 5(5)(a)]
Notice for commencement of construction work

To

Date: / /

The Commissioner or (name of the competent authority)
Authority Having Jurisdiction,
Name of the city
Name of the State

Subject: Erection of JECBC compliant Building on premises of Plot no. _____
Block No. _____ Scheme _____ Street _____ Name of the town/city-
Notice for commencement of building works

Sir,

I/We hereby give notice for commencement of building works including
implementation of Energy Conservation Measures for erection of JECBC Compliant
building in the aforesaid site i.e. Plot No. _____ Scheme _____ Street
_____ in pursuance of the sanction granted by the Authority Having Jurisdiction/vide
file No. /letter No

Yours faithfully

Signature of the owner

(Name of the owner)
Address of the owner

CC:

Chief Executive, Jharkhand State Designated Agency,....

Form VII**[See rule 5(6) (d&f)]**

[Certificate of Inspection by Certified Energy Auditor for Building on review of construction works enclosing construction documents and compliance forms in respect of JECBC compliant building- Issue of certificate of compliance]

To
The Owner,
Address

I, ... (Name), being an authorised/**Certified Energy Auditor for Building** vide order No hereby state that I have reviewed the undertaking given by the owner, **energy conservation measures installed during the construction works** and have reviewed the construction documents, compliance forms, check-lists, submitted along with progress in construction works in respect of the various elements of the components referred to in sub-rule (6) of Rule 5 of the proposed JECBC Compliant Building in the premises of plot No. Block No. Scheme Town / City state of and certify that the EPI Ratio calculation match with the data given in the aforesaid documents;

I further certify that all reasonable professional skill, care, and diligence have been taken in verifying the construction document and compliance forms in respect of the various elements of the components covered in JECBC Rules and contents thereof are a true representation of the facts and meet the requirements of JECBC rules, 2022.

The check-list duly completed and signed by the undersigned is enclosed.

Signature

**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**

Registration No./Mobile number

Seal

Copy to: Commissioner, Authority Having Jurisdiction/Name of the City/Town
Chief Executive, Jharkhand State Designated Agency, /Name of State/Address

Form VIII**[See rule 5(6)(e)]**

[Certificate of Inspection by Certified Energy Auditor for Building on review of construction works enclosing construction documents and compliance forms in respect of JECBC compliant building- Issue of certificate of non-compliance]

To**Shri****owner****Address****Date: / / .**

Sub: Erection of JECBC compliant Building on premises of Plot
no. Block No.
Scheme Street Name of the
town/city Communication of findings by the JECBC
Certified Building Energy Manager

Sir,

I,.....(Name), being an authorised/ECBC Certified Building Energy Manager vide order No. hereby state that I have reviewed the undertaking given by the owner, and energy conservation measures under construction and have reviewed the construction documents, compliance forms, checklists, submitted along with progress in construction works in respect of the various elements of the components of the proposed JECBC Compliant Building in the premises of plot No. Block No. Scheme Town/City state of and have to state that the construction has not proceeded in accordance with the sanctioned plan and has/is deviating from the following provisions of JECBC rules, namely: -

- (i)
- (ii)
- (iii)

2 None of the above deviations are covered in the best practices approved by the Jharkhand Energy Conservation Building Code Committee.

or

The following deviations are covered in the best practices by the Jharkhand Energy Conservation Building Code Committee.

3 The building owner is requested to rectify the above deviations or take the approval of the Municipal Authority/JECBC Quality Review Board.

4 The building owner after obtaining the approval provided in para 3 above or rectifying the deviations notified in para 1 above may inform the undersigned of the action taken in the matter within one month from the date of approval obtained or rectification completed along with the updated check- list to enable me to inspect the works in connection with the issue of certificate of approval provided in Rule 5(6)(d) of the JECBC Rules.

Yours faithfully

Signature

**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**

Registration number/Mobile number

Seal

**Copy to: Commissioner, Authority Having Jurisdiction/Name of the
City/Town/State**

Form IX
[see rule 5(7)]
Notice of completion

To

The commissioner
Authority Having Jurisdiction
Name of the Town/State

Subject: Erection of JECBC Compliant Building on plot No. _____ in Block
No. _____ Town _____ Notice for completion of works

Sir,

I / we hereby give notice that the erection of the building on plot
No. _____ Block No. _____ including execution and
implementation of the energy conservation measures have been completed in
accordance with the plans sanctioned vide your office communication No
dated _____ The following documents are enclosed:-

- ① A certificate of inspection on completion of the aforesaid building from
Shri _____ Certified Energy Auditor for Building vide Municipal
Authority Order No _____ dated _____

The building is fit for use for which it has been erected/re-erected/constructed.

It is requested that permission to occupy or use the aforesaid building may be
granted.

Yours faithfully,

Signature.....
Name of the owner
Plot no.
Block no.
Address.

Form X
[See rule 5(7)]

[Certificate of Inspection by Certified Energy Auditor for Building on review of completion of construction works enclosing construction documents and compliance forms in respect of JECBC compliant building-Issue of certificate of compliance]

To

Name.....

Owner the Building,

Address

Subject: Completion of Construction Works in respect of JECBC Compliant

Building-

Certificate

I, ...(Name), being an authorised/Designated Building official vide order No. hereby state that I have verified the undertaking given by the owner, and have inspected the construction documents, compliance forms, check-lists, submitted on completion of building of the proposed JECBC Compliant Building in the premises of plot No. _____ Block No. _____ Scheme _____ Town/City _____ State of _____ and certify that the

- (i) The works covered under the JECBC rules have/ been completed to the best of my satisfaction. The workmanship and other material have been used as per the general and detailed specifications provided in the said rules details of which are given below:

Name of the component

dated

- 1.
- 2.
- 3.
- 4.
- 5.

- (ii) The EPI ratio of the proposed building match/with the data given in the aforesaid compliance documents specified in para 1 above

- (iii) A list of the energy conservation measures deployed in the construction of aforesaid building enclosed. Necessary approvals required have been taken by the owner.

.

- (vi) The building in my view is JECBC compliant building and is intended to be used for.....
- (v) The building in so far as JECBC rules are concerned is fit for occupation for which it has been erected. i.e. office use/multi-purpose use/24 hrs use/day use /Hospital/Hotel.
- (vi) I further certify that all reasonable professional skill, care, and diligence have been taken in verifying the construction document and compliance forms in respect of the various elements of the components covered in JECBC Rules and contents thereof are a true representation of the facts and meet the requirements of JECBC rules.
- (vii) The check-list duly completed, signed sealed by the undersigned is enclosed

Signature

**Name of the Certified Energy Auditor (Building)/ ECBC Accredited
Building Energy Auditor**

Registration Number/Mobile Number

Seal

A copy of the certificate is sent herewith to:

- (i) Commissioner, Authority Having Jurisdiction, Town /city/ State
- (ii): Chief Executive, (By Name), Jharkhand State Designated
Agency /Address/Jharkhand

Form XI
[See rule 5(3)(f)(i)]

[Certificate of Inspection by Certified Energy Auditor for Building on review of completion of construction works enclosing construction documents and compliance forms in respect of JECBC compliant building-Communication of omissions and non-compliance to owner]

To

Shri _____,
 Address _____

Subject: Application for erection of JECBC compliant Building in premises of Plot no. _____

Block No. _____ Scheme _____ Street _____ Name of the town/city- Discovery of omission /non-compliance with the JECBC rules on design stage inspection

Sir,

I, ...(Name), being an authorised Certified Energy Auditor for Building vide order No. _____ hereby state I have reviewed and verified the undertaking given by you and have inspected the construction documents, compliance forms, check-lists, submitted on completion of the proposed JECBC Compliant Building in respect of the subject building and inform that the following omission/non-compliance have been discovered on inspection –

- (i)
- (ii)
- (iii)
- (iv)

You are accordingly requested to take corrective action within a period of three month from the date of issue of this letter. Further action on your application for issue of Completion Certificate shall be taken after satisfactory compliance of the aforesaid omission/non-compliance.

Signature
**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
 Energy Auditor**
 Registration number/Mobile number
 Seal

Form XII
[See Rule 5(8)(c)]
Occupancy Certificate

**(to be incorporated by Authority Having Jurisdiction in their
occupancy certificate)**

To

Name of the owner....

Address

Subject: Issue of Occupancy Certificate

Sir,

With reference to your notice of completion of construction dated_____on plot no_____block no_____situated at. I hereby certify that the building as per description annexed on plot No._____Block No._____Scheme_____whose plans were sanctioned vide No_____dated_____has been inspected with reference to requirements of JECBC rules, 2022.

1.The building is declared fit for occupation as follows:

- Climate Zone
- 24-Hour use Buildings / Day Time use Buildings
- Hospitals/Hotels/Call Centre/Other Building Types

Annexure

	Description of the building	
	Usage	connected load
Ground Floor		
1. 1st floor		
2.2nd floor		
3.3r floor		
4.4th Floor		
5. etc.		

2 The EPI ratio of the building on the completion stage is as per the sanction plan. It has been decided by the Authority Having Jurisdiction in consultation with the Jharkhand State Designated Agency that the Building is declared fit for occupation as specified above subject to the condition that the owner shall undertake energy audit of the building and identify the additional energy conservation measures to achieve the compliance with the EPI of the Building approved in the sanctioned plan,

3. The energy performance of the Building shall be monitored and verified by the Jharkhand Energy Conservation Building Code Committee for the next two years.

Enclosures: copy of certified completion plan.

Yours faithfully,

(Signature of building official)
Authority Having Jurisdiction

Copy to
The Chief Executive, SDA

Note:

The EPI ratio of the building shall be calculated with reference to the definition of building given in clause (c), section 2 of the Act that is if the connected load of 100kW or above or contract demand of 120 kVA or above is linked with any existing structure or erection or part of structure or erection.

Form XIII**[See rule 5(8)(c)(ii)]****[EPI Report Submission by Certified Energy Auditor for Building to State Designated Agency (SDA) after the building has been fully operational]****To****The Chief Executive,
State Designated Agency,
Government of (State)****Sub:** EPI Report for Plot no. _____ Block No. _____ Scheme
_____ Street _____ Name of the town/city- Communication by the Certified
Energy Auditor for Building**Sir,**

I, ... (Name), being an authorised/**Certified Energy Auditor for Building** vide order No. _____ hereby state that I have reviewed the undertaking given by the owner, energy consumption for year of the proposed JECBC Compliant Building of building type in the premises of _____ plot _____ No. _____ Block No. _____ Scheme _____ Town/City _____ State of _____ and certify that the Energy Performance Index (EPI) ratio is..... which is less than or equal to one. The EPI report is enclosed.

I further certify that all reasonable professional skill, care, and diligence have been taken to verify the energy consumption of the aforesaid building.

Copies of the electricity bills have been enclosed for your reference.

Yours faithfully

Signature

**Name of the Certified Energy Auditor (Building)/ ECBC Accredited Building
Energy Auditor**

Registration number/Mobile number

Seal

Enclosure: EPI Ratio Report (Form XIV or XIVa)

Copy to: Energy Economist, Buildings Programme, Bureau of Energy Efficiency, 4th
Floor, Sewa Bhavan, R K Puram, New Delhi - 110 066

Form XIV (see Rule 4(a)(iii))
Prescriptive Method
Envelop Summary Checklist

Envelop Summary						
Project Info	Project Address			Date		
	Applicant Name					
	Applicant Address			For Building Department Use		
	Applicant Phone					
Project Description	New Building					
	Addition					
	Alteration					
	Change of Use					
Compliance option	Whole Building					
	Envelope Trade off					
	Prescriptive					
Vertical Fenestration Area Calculations Note: Vertical fenestration area can not exceed 40% of the gross wall area for prescriptive option	Total Vertical Fenestration Area rough opening)	Divide d by	Gross exterior wall area	Times 100 equals	%vertical fenestrati on	
		÷		×100		
Skylight Area Calculation Note: Skylight area cannot exceed 5% of the gross roof area for prescriptive compliance	Total Skylight Area rough opening)	Divide d by	Gross exterior wall area	Times 100 equals	%vertical fenestrati on	
Check here if using this option and if project meets all requirements for the Concrete/Masonry Option						
Hospital, hotel, call center (24 hour			Other building type (daytime			
OPAQUE ASSEMBLY			OPAQUE ASSEMBLY			
Roof Minimum Insulation R-value			Roof Minimum Insulation R-value			
Wall Minimum Insulation R-value			Wall Minimum Insulation R-value			
FENESTRATION			FENESTRATION			
Vertical			Vertical			
Maximum U-factor			Maximum U-factor			
Maximum SHGC (or SC			Maximum SHGC (or SC			
Overhang (yes or no)			Overhang (yes or no)			
If yes, enter Projection Factor			If yes, enter Projection Factor			
Side fins (yes or no)			Side fins (yes or no)			
If yes, enter Projection Factor			If yes, enter Projection Factor			

Skylight		Skylight	
Maximum U-factor		Maximum U-factor	
Maximum SHGC (or SC)		Maximum SHGC (or SC)	

Envelop Permit Checklist						
Project Address				Date		
Applicability		Component		Information required		Location on Plans
						Building Departments Notes
Mandatory Provisions						
Yes	NO	Na	Fenestration rating			
			U-factor			
			SHGC			
			Air Leakage	Specify leakage rates		
			Opaque U-factors	Specify whether per default in Appendix C or ASHRAE		
			Bldg. env. sealing	Indicate sealing, caulking, gasketing, and weather stripping		
PRESCRIPTIVE COMPLIANCE OPTION						
			Roofs	Indicate R-values on roof sections		
			Cool roof	Indicate minimum reflectance and emittance on plans		
			Roof	Indicate R-values on wall sections (1) Indicate U-factors on fenestration schedule. Indicate if values are rated or default. If values are default, then specify frame type, glazing layers, gap-width, low-e (2) Indicate SHGC or SC on fenestration schedule. Indicate if values are rated or default (3) Indicate if overhangs or side fins are used for compliance purposes. If so, provide projection factor calculation.		
			Vertical fenestration	(1) Indicate U-factors on fenestration schedule. Indicate if		

				values are rated or default. If values are default, then specify frame type, glazing layers, gap-width, low-e 2) Indicate SHGC or SC on fenestration schedule. Indicate if		
BUILDING ENVELOPE TRADE-OFF OPTION						

SignaturesOwner/s:Certified Energy Auditor (Building)/ECBC Accredited Building Energy Auditor:

**Prescriptive Method
Mechanical equipment Summary Form**

Mechanical Summary		
Project Info	Project Address	Date
	Applicant Name	
	Applicant Address	For Building Department Use
Applicant Phone		
	New Building	

Project Description	Addition							
	Alteration							
	Change of Use							
Compliance option	Simple system							
	Complex system							
	System analysis							
Equipment Schedules	The following information is required to be incorporated with the mechanical equipment schedules on the plans. For projects without plans, fill in the required information below							
Cooling Equipment Schedule								
Equip ID	Brand Name	Model No	Capacity kW	Total L/s	OSA CFM or Econo	SEER or EER	IPLV	Location
Heating Equipment Schedule								
Equip ID	Brand Name	Model No	Capacity kW	Total L/s	OSA CFM or Econo	SEER or EER	IPLV	Location
Fan Equipment Schedule								
Equip ID	Brand Name	Model No	Capacity kW	Total L/s	OSA CFM or Econo	SEER or EER	IPLV	Location

**Prescriptive Method
Mechanical Permit Checklist Form**

Mechanical Permit Checklist						
Project Address				Date		
Applicability			Component	Information required	Location on Plans	Building Departments Notes
Mandatory Provisions						
Yes	NO	Na	Equipment efficiency	Provide equipment schedule with type, capacity, efficiency		
			Controls			
			Timeclocks	Indicate thermostat with night setback, 3 different day types and 2-hour manual override		
			Temp. & deadband	Indicate temperature control with 3-degree C deadband minimum		
			Clg. tower, fluid cooler	Indicate two-speed motor, pony motor, or variable speed drive to control the fans		
			Piping & ductwork	Indicate sealing, caulking, gasketing, and weather stripping		
			Piping insulation	Indicate R-value of insulation		
			Ductwork insulation	Indicate R-value of insulation		
			Ductwork sealing	Specify sealing types and locations		
			System balancing	Specify system balancing		
PRESCRIPTIVE COMPLIANCE OPTION						
				Indicate whether project is complying with JECBC Prescriptive Option OR with ASHRAE Standard 90.1-2004		
			Economizer			
			Air economizer	Indicate 100% capability on schedule		
			Integrated operation	Indicate capability for partial cooling		
			Field testing	Specify tests		
			Variable flow hydronic			

			Pump flow rates	Indicate variable flow capacity on schedules		
			Isolation valves	Indicate two-way automatic isolation valves		
			Variable speed drive	Indicate variable speed drive		

SignaturesOwner/s:
Certified Energy Auditor for Building /ECBC Accredited Building Energy Auditor:

Prescriptive Method
Lighting Summary Form

Lighting Summary				
Project Info	Project Address		Date	
	Applicant Name			
	Applicant Address		For Building Department Use	
Applicant Phone				
Project Description	New Building			
	Addition			
	Alteration			
	Change of Use			
Compliance option	Whole Building			
	Prescriptive			
Maximum Allowed Lighting Wattage				
floor/room no	Occupancy description	Allowed Watt/m2	Area in m2	Allowed *area
** Document all exception		Total allowed Watt		1.1
Proposed Lighting Wattage (Interior)				
Location floor/room no	Fixture Description	Number of Fixtures	Watts/fixture	Watts Proposed
Total Proposed Watts may not exceed Total Allowed Watts for Interior		Total Proposed Watts		1.3
		1.2		
Maximum Allowed Lighting Wattage				
Location	Description	Allowed Watts/m2	Area in m2	Allowed watts
		Total Allowed Watts		
Proposed Lighting Wattage (Exterior)				
Location	Fixture Description	Number of fixtures	Watts /fixture	Watts proposed

SignaturesOwner/s:Certified Energy Auditor for Building / ECBC Accredited Building Energy Auditor:

**Prescriptive Method
Lighting Summary Checklist Form**

Lighting Permit Checklist						
Project Address				Date		
Applicability	Component	Information required	Location on Plans	Building Departments Notes		
MANDATORY PROVISIONS						
Yes	NO	Na	Controls			
			Automatic shut off	Indicate automatic shutoff locations or occupancy sensors		
			Space Control	Provide schedule with type, indicate locations		
			Daylight Zones	Provide schedule with type and features, indicate locations		
			Ext. Lighting Control	Indicate photosensor or astronomical time switch		
			Additional Controls	Provide schedule with type, indicate locations		
			Tandem wiring	Show wiring on schedule		
			Exit signs	Indicate 5 watts maximum		
			Ext. bldg. groundsltg	Indicate minimum efficacy of 60 lumens/Watt		
PRESCRIPTIVE INTERIOR LIGHTING POWER COMPLIANCE OPTION						
				Indicate whether project is complying with the Building Area Method (7.3.1) or the Space Function Method (7.3.2)		
			Building Area Method	Provide lighting schedule with wattage of lamp and ballast and number of fixtures. Document all exceptions		
			Space function method	Provide lighting schedule with wattage of lamp and ballast and number of fixtures. Document all exceptions		
			Luminaire Wattage	Indicate on plans		

	Proposed Design	Standard Design	Percentage Improvement/Change (%)
--	-----------------	-----------------	-----------------------------------

Total Energy Used (kWh)			
Energy Performance Index (EPI) kWh/m²/yr			
EPI Ratio			

SignaturesOwner/s:Certified Energy Auditor for Building / ECBC Accredited Building Energy Auditor:

Form XIVa (see Rule IV(b)(iii))
Whole building performance method compliance report

Whole building Performance Method Compliance report			
Project Name		Date	
Project Address		Telephone	
Designer of record			
Contact Person			
City:			
Weather Data:			
Climatic Zone:			
Total Conditioned Area(sqft)	Total Unconditioned Area(sqft)	Total Floor Area (sqft)	
Advisory Message			
	Proposed Design	Standard Design	Difference
Number of hours of heating loads unmet(system /plant)			
Number of hours of cooling loads (system/plant)			
Number of warnings			
Number of errors			
Number of defaults			
Additional building Information			
Number of floors			
Simulation program			
Comparison of Input Parameters in proposed design and standard design			
Building element	Proposed Design Input	Standard design Input	
Envelop			
Above Grade Wall construction(s)			
Below grade construction			
Roof construction			
Exterior Floor construction			
Slab-on-grade construction			
Window to gross wall ratio			
Fenestration types(s)			
Fenestration Assembly U-factor			
Fenestration Assembly SHGC			
Fenestration Visual light transmittance			
Fixed Shading devices			
Automated movable shading devices			
Electrical system & process loads			
Ambient light power density and lighting design description			

Process lighting		
Lighting occupant sensor controls		
Day lighting controls		
Receptacle equipment		
Elevators or escalators		
Re-refrigeration equipment		
Other process loads		
Mechanical and plumbing systems		
HVAC systems	Variable air volume	Constant air volume
Design supply air temperature differential		
Fan Control		
Fan Power		
Economizer Control		
Demand control ventilation		
Unitary Equipment cooling efficiency		
Unitary Equipment heating efficiency		
Chiller type, capacity and efficiency		
Cooling tower		
Boiler efficiency		
Chilled water loop and Pump parameters		
Condenser water loop and Pump parameters		
Hot water loop and pump parameters		
Domestic Hot Water pump parameters		

[illegible]

Total process energy	Elec										
----------------------	------	--	--	--	--	--	--	--	--	--	--

Energy Summary by End Use						
	Proposed design			Standard Design		
	Energy Type	Energy (KWh)	Peak (kW)	Energy (KWh)	Peak (kW)	Energy(%)
Interior Light (Ambient)	Electricity					
Interior Lighting (Process)	Electricity					
Exterior Lighting	Electricity					
Space Heating (Fuel 1)	Natural gas					
Space Heating (Fuel 2)	Electricity					
Space cooling	Electricity					
Pumps	Electricity					
Heat Rejection	Electricity					
Fans-Interior	Electricity					
Fans-Parking Garage	Electricity					
Service Water Heating (fuel 1)	Natural gas					
Service Water Heating (fuel 2)	Electricity					
Receptacle equipment	Electricity					
Referigeration (food, etc.)	Electricity					
Cooking (commercial,Fuel 1)	Natural gas)					
Cooking (commercial, fuel 2)	Electricity					
Elevators and escalators	Electricity					
Other process	Electricity					
Total building consumption						

	Proposed design	Standard Design	Percentage Improvement
Type	Energy Use (kWh)	Energy Use (kWh)	Energy (%)
Non-renewable (regulated & unregulated)			
Electricity			
Natural Gas			

Steam or hot water			
Chilled water			
Other			
Total Non-renewable Regulated & un regulated)			
Energy Performance Index (EPI) kWh/m²/yr			
EPI Ratio			

**To be modified by the Jharkhand state department during amendment to JECBC *JECBC implementing agencies may adapt the compliance form to suit their requirement*

Schedule(A)**SUBJECTS FOR NATIONAL EXAMINATION**

1	Energy Conservation Act, 2001 (52 of 2001)
2	Energy Conservation Building Code(ECBC)
3	ECBC User Guide
4	Handbook of Fundamentals, ASHRAE
5	ECBC Standard Training Package for Professionals prepared by USAID's Energy Conservation and Commercialization Project (ECO-III) and BEE
6	Tip sheets and selection guides prepared by USAID's Energy Conservation and Commercialization Project (ECO-III) and BEE
7	National Building Code (2005) Part 5 and 8, as reference standard for lighting levels, HVAC, Comfort levels, Natural ventilation Pump and Motors efficiencies, Transformer Efficiencies and any other building materials and system performance criteria
8	ASHRAE 90.1 (chapters 5, 6,7 and 9)
9	ECONirman tool and its user manual

Examination Structure

JECBC Design and Compliance Verification exam will consist of two separate paper as per details given below, namely:-:

1. **PRINCIPLES OF ENERGY EFFICIENCY**

Principles of energy efficiency, will consist of 50 multiple choice questions in a 2 hours paper to test basic knowledge of principles of heat transfer, passive design strategies, air leakage, heating and cooling tradeoffs etc.

Table 1.(annexed)

2. **JECBC COMPLIANCE PROCEDURE**

Table 1**ECBC Design and Compliance Verification exam structure**

1.4	Paper	No. of Questions	Marks	Time
1.	Paper I Principles of building energy efficiency	50	100	2 Hours
a	Numerical/ calculations questions	25	50	
b	Knowledge based questions	25	50	
2.	Paper II ECBC compliance Procedure	-	100	2 Hours
	Total	-	200	4 Hours

Syllabus Weightage for Paper I

	Category	Weightage
A)	Building Physics	30 %
	Building heat transfer principles	5%
	External Factors (Climate)	2%
	Internal Load Factors	2%
	Thermal Comfort Parameters	2%
	Air Leakage	2%
	Building Orientation	2%
	Cooling and heating tradeoffs	5%
	Passive strategies for EE building design	10%
B)	Energy Code	50 %
1	ECBC compliance requirements (mandatory and prescriptive)	
a)	Envelope	10%
	Determining fenestration efficiencies (U-Factor , SHGC , VLT, effective aperture)	
	Determining envelope efficiency (calculations - U values for opaque construction)	
	Envelope material specifications	
	Air Leakage	
	Envelope trade off option	
b)	HVAC	10%
	Natural ventilation	
	Determining equipment efficiencies	
	Piping and ductwork requirements	
	System balancing	
	VFH system and Economizers requirements	
c)	Lighting	10%

	Lighting controls	
	Internal and external lighting power allowance - calculations, minimum-maximum thresholds	
d)	Electrical Power	5%
	Motor efficiency, power factor correction	
	Metering and monitoring	
	Allowable power transformer losses	
	Power distribution system losses	
e)	Service Hot Water and Pumping	5%
	Equipment efficiencies	
	Solar water heating systems	
2	ECBC compliance mechanisms	5%
C)	Energy Terminology & Others	20%
	Terminology/ Definitions, Abbreviations, Acronyms given in the User Guide	5%
	Energy Units	5%
	Calculating net and gross areas	5%
	Building drawings and dimensions	1%
	Indian climate zones	3%
	Energy Conservation Act 2001	1%
