

ELEVATOR SAFETY REVIEW BOARD MEETING

Thursday April 9, 2026

9:30 am

5860 W 111th St, Chicago Ridge, IL 60415

AGENDA

1. Call to order.
2. Pledge of Allegiance.
3. Board to review and vote whether to approve minutes from prior Board Meeting. (Final action anticipated)
4. Old Business:
 - A. Elevator progress report – OSFM Elevator Safety Division
5. New Business:
 - A. Status and Presentation by Administrator of withdrawn rules (See Appendix A and Appendix B).
 - B. Discussion of Code Updates/Rules including door lock monitoring.
 - i. Consideration of ASME A17.1 (2025)
 - ii. Presentation by Administrator of Firefighter’s Recall requirements in A17.1 (2022).
 - C. Public comment on Item B.
 - D. Status and presentation by Administrator of Relay Robotics (See Appendix C).
 - E. Public comment on Item D.
 - F. Board to review and act upon Item D. (Final action anticipated)
 - G. Continuing Education Approval Request (See Appendix D).
 - H. Public comment in Item G.
 - I. Board to review and act upon Item G. (Final action anticipated)
6. Public Comment.

7. Adjournment.

Meeting Guidelines

ADA Accommodations: The Elevator Safety Review Board meeting listed on this agenda will be accessible to persons with disabilities. People who need special accommodation should contact the Elevator Safety Board Administrator's office at 312-814-8734, by April 7, 2026, no later than 2:00 p.m.

Public Comment Guidelines: Public comment sessions are provided as opportunities for members of the public to address the Board. Commenters shall sign in to provide notice of their intention to speak. Commenters will be given a reasonable amount of time to speak as determined by the Board Chairperson. Participation and sharing of viewpoints are encouraged; however, public comment sessions are not intended to be conversations with the Board. No commenter shall engage in personal attacks and/or act in an uncivil manner. Such disruptive activity is prohibited, and the commenter may be barred from future opportunities to publicly address Elevator Safety Review Board meetings.

Appendix A: OVERVIEW OF JCAR's OBJECTION NOTICE AND ADDITIONAL CONSIDERATIONS

In 2025, the Elevator Safety Review Board (Board) unanimously voted to approve proposed rulemaking language that would adopt the ASME A17.1 (2022) and consequently retroactively require door lock monitoring (DLM) in elevators in Illinois by 2029. The Office of the State Fire Marshal (OSFM) Elevator Safety Division (ESD) (Administrator), fully supported this stance. For rules to be adopted in Illinois, the proposed rules must go through the rulemaking process that is overseen by the Joint Committee on Administrative Rules (JCAR). After Board approval of the proposed rules, the Administrator proceeded with administrative process of rulemaking, including appearance before JCAR on behalf of the Board.

After new feedback regarding the proposed rules was received in December 2025, JCAR noted concerns about the DLM requirement to the Administrator and requested additional information. The Administrator responded to questions focused on cost and scope of impact regarding implementation of DLM in Illinois. While the Administrator provided information in support of the Board's position on DLM, JCAR remained concerned that the Board had not sufficiently considered the overall cost of implementation across the State and (impeded by time limitations during the winter holidays) would not be able to address those concerns timely. After further discussion with JCAR, the Administrator agreed to withdraw the rules with an expectation that the Board would revisit and resubmit proposed rules on the topic after additional discussion.

As such, JCAR issued an Objection Notice to the rulemaking. The Objection Notice identifies the basis of JCAR's objections, including its conclusion that the Board did not adequately consider "the economic and budgetary effects of the proposed rulemaking upon those regulated by these changes, other State agencies, and State revenue in general" when it approved rule language that included the retroactive DLM requirement. Additionally, JCAR objected as the second notice comments had not been considered by the Board and encouraged changes to Board procedures to address items arising late in the rules process in a more timely manner. The Objection Notice is included.

As the Board begins to consider again the adoption of updated codes and the retroactive DLM requirement, the Administrator will provide, at this and subsequent meetings, additional information for the Board's review and discussion.

Appendix B: OBJECTION NOTICE

ILLINOIS REGISTER

1321

26

JOINT COMMITTEE ON ADMINISTRATIVE RULES
ILLINOIS GENERAL ASSEMBLY

STATEMENT OF OBJECTION
TO PROPOSED RULEMAKING

ELEVATOR SAFETY REVIEW BOARD

Heading of the Part: Illinois Elevator Safety Rules

Code Citation: 41 Ill. Adm. Code 1000

Section Numbers: 1000.30
1000.60

Date Originally Published in the *Illinois Register*: 3/28/25
49 Ill. Reg. 3711

At its meeting on 1/9/26, the Joint Committee on Administrative Rules objected to the above-referenced rulemaking because the Board did not consider the economic and budgetary effects of the proposed rulemaking upon those regulated by these changes, other State agencies, and State revenue in general as required by 1 Ill. Adm. Code 220.900(a)(2)(B) and (D). Additionally, JCAR object to this rulemaking because the Board has not been responsive to public comments during the second notice period and encourages the Board to reevaluate its processes and procedures so that it can respond to public comment and JCAR concerns in a timely manner. The Board has indicated its intent to withdraw the rulemaking in response to this objection.

Failure of the agency to respond within 90 days after receipt of the Statement of Objection shall constitute withdrawal of this proposed rulemaking. The agency's response will be placed on the JCAR agenda for further consideration.

Appendix C: OVERVIEW OF REQUEST BY RELAY ROBOTICS TO INTERFACE WITH ELEVATORS IN ILLINOIS

I. Due Diligence Efforts

Previously, Relay Robotics (RR) came before the Elevator Safety Review Board (Board) requesting Board approval to conduct business in the State of Illinois outside the City of Chicago. RR operates robots designed to move materials. RR's robots operate in several hospitals and hotels in the United States.

- Link to the website for RR: <https://relayrobotics.com/>
- Previous presentations of RR can be found in the minutes:
 - [Elevator Safety Review Board Minutes - 03-14-2024](#) (beginning page 48)
 - [Elevator Safety Review Board Minutes - 08-13-2024](#) (beginning page 91)

In August 2024, after the presentation of information from RR and discussion by the Board, the Board requested that the Administrator provide additional information for consideration of conditions that would be appropriate and useful to ensure public safety related to the use of such robots.

The Elevator Safety Division (ESD) staff involved in reviewing RR's request include Robert Capuani¹, Larry Christensen, and John Andersen². As part of the ESD's due diligence, ESD staff requested technical information from RR. Initially, ESD leadership advised that an Accredited Elevator/Escalator Certifying Organization (AECO) certification was required of RR to be considered for Board approval. ESD leadership at the time contemplated RR's interface with elevators as falling under the "New Technology³" section of the Board's administrative rules. A subsequent determination by current ESD staff, however, finds that the request was not new technology and, therefore, the AECO certification is not required⁴ for Board approval.

No currently adopted code section provides explicit guidance on how to proceed, but Section 2.26.13 (Remote Interaction Operation) of A17.1-2022 does provide direction for such robotic interactions. The State of Illinois has not yet adopted the 2022 edition of A17.1.

II. Question(s) For Consideration by the Board

¹ Mr. Capuani retired as Manager of the ESD in summer 2025.

² Mr. Andersen is the current Manager of the ESD (beginning October 2025).

³ Under 41 Il. Admin. Code 1000.75(b), an AECO is required for new technology approval.

⁴ The shift in perspective is indicative of the complex nature of the request, and the paucity of authority to guide the analysis.

1. Whether the Board approves or rejects the request to allow robotic interaction with elevators in the State of Illinois outside Chicago?
2. If the Board would approve the request to allow robotic interaction, what, if any, specific conditions would robots/robotic interaction need to meet to have that approval?

III. Administrator's View

After a review of the responses by RR, a review of the code and rule authorities, consultations internally, consultations externally, and conversations with David Keaney of RR, the ESD **has no objection to Board approval** of the use of these technologies in Illinois. The Administrator recommends a discussion on whether the following, or other, conditions for approval are appropriate:

- Recommended compliance of robots/robotic interaction with the A17.1 (2022) Sections 2.26.13 (Remote Interaction Operation) and Section 8.14 (Cybersecurity).
- Robots/robotic interaction operation additions are alterations of an elevator requiring a permit, which provides notification to the Administrator, or Local Administrator if applicable, that robots will be in use.
 - Permit application should include “Installing Robot Interaction Operation” in the description.

Appendix D: CONTINUING EDUCATION CURRICULUM

**CONTINUING EDUCATION MR026
Harassment and Discrimination in the Workplace
2023 NEC Traction Elevator Code Course
2023 NEC Escalator Code Course
8 Hours**

Course Objectives:

There are three different sections to this course:

Harassment and Discrimination in the Workplace

Completion of this section of the course will give the mechanic an understanding of what constitutes discrimination and harassment.

2023 NEC Traction Elevator Code Course

Completion of this section of the course will provide the mechanic with electrical code requirements for traction elevators.

2023 NEC Escalator Code Course

Completion of this section of the course will provide the mechanic with electrical code requirements for escalators.

**Online Continuing Education Course
For State Licensing Renewal**

NEIEP CONTINUING EDUCATION SERIES

PROGRAM: National Elevator Industry Educational Program Continuing Education

DIVISION: Licensing Renewal

COURSE HOURS: 8

CATALOG DESCRIPTION:

This course is designed to provide the Licensed Elevator Constructor with industry specific continuing education in an effort to satisfy the requirements established in, and in accordance with, the appropriate Administrative Code having jurisdiction. There are three sections to this course:

**Harassment and Discrimination in the Workplace
2023 NEC Traction Elevator Code Course
2023 NEC Escalator Code Course**

Course Description

Harassment and Discrimination in the Workplace 2 Hours

- Introduction
- Defining Sexual Harassment
- Sexual Harassment Facts and Statistics
- Review 1: Definition of Sexual Harassment
- Sexual Harassment and the Law
 - Federal Laws
 - California Laws (for CA Course)
 - New York Laws (for NY Course)
 - Fair Workplace and Improving Company Culture
- Review 2: Sexual Harassment and the Law
- Recognizing Sexual Harassment Behaviors
 - Sex Stereotyping
 - Abusive Conduct
 - Sexual Misconduct
 - Quid Pro Quo
 - Sexual Assault
 - Hostile Work Environment
- Review 3: Recognizing Sexual Harassment Behaviors
- Your Employer's Responsibilities
 - Your Employer's Responsibilities
 - Employment Rights for Workers
 - Factors that Increase the likelihood for Sexual Harassment
- Review 4: Your Employer's Responsibilities
- Responding to Sexual Harassment
 - The Supervisor's Responsibility
 - Documentation and Reporting for Employees
 - Retaliation
 - Investigation Process
 - Additional Protection and Remedies
 - Other Types of Workplace Harassment
- Case Studies
 - Example 1: not Taking No for an Answer
 - Example 2: The Boss with a Bad Attitude
 - Example 3: No Job for a Woman
 - Example 4: Too Close for Comfort
 - Example 5: A Distasteful Trade
 - Summary
 - Exam

National Electric Code Course For Traction Elevators
NEC 2023 Article 110 Part II 110.26 Spaces
Part II. 1000 Volts, Nominal, or Less
110.26 Spaces About Electrical Equipment.
(A) Working Space.

4 Hours

- (1) Depth of Working Space.
- (2) Width of Working Space.
- (3) Height of Working Space.
- (4) Limited Access.
- (5) Separation from High-Voltage Equipment.
- (6) Grade, Floor, or Working Platform.
- (B) Clear Spaces.**
- (C) Entrance to and Egress from Working Space.**
 - (1) Minimum Required.
 - (2) Large Equipment.
 - (3) Personnel Doors.
- (D) Illumination.**
- (E) Dedicated Equipment Space.**
 - (1) Indoor.
 - (2) Outdoor.
- (F) Locked Electrical Equipment Rooms or Enclosures.**

NEC 2023 Article 110 Part II 110.26 Equip Marking
110.21 Marking.

- (A) Equipment Markings.**
 - (1) General.
 - (2) Reconditioned Equipment.
- (B) Field-Applied Hazard Markings.**

NEC 2023 Article 430.7 Motor Marking
430.7 Marking on Motors and Multimotor Equipment.

- (A) Usual Motor Applications.**
- (B) Locked-Rotor Indicating Code Letters.**
 - (1) Multispeed Motors.
 - (2) Single-Speed Motors.
 - (3) Dual-Voltage Motors.
 - (4) 50/60 Hz Motors.
 - (5) Part-Winding Motors.
- (C) Torque Motors.**
- (D) Multimotor and Combination-Load Equipment.**
 - (1) Factory-Wired.
 - (2) Not Factory-Wired.

NEC 2023 Article 620.51 Disconnecting Means
Part VI. Disconnecting Means and Control
620.51 Disconnecting Means.

- (A) Type.**
- 110.25 Lockable Disconnecting Means.**
- (B) Operation.**
- (C) Location.**
 - (1) On Elevators Without Generator Field Control.
- 620.91 Emergency and Standby Power Systems.**

(C) Disconnecting Means.

- (2) On Elevators with Generator Field Control.

(D) Identification and Signs.

- (1) Available Fault Current Field Marking.

(E) Surge Protection.

620.52 Power from More Than One Source.

- (A) Single-Car and Multicar Installations.
(B) Warning Sign for Multiple Disconnecting Means.

110.21 Marking.

- (B) Field-Applied Hazard Markings.

Interconnection Multicar Controllers.

620.53 Car Light, Receptacle(s), and Ventilation Disconnecting Means.

430.109 Type.(C) Stationary Motors of 2 Horsepower or Less.

620.54 Heating and Air-Conditioning Disconnecting Means.

620.55 Utilization Equipment Disconnecting Means.

NEC 2023 Article 620.61 Overcurrent Protection

Part VII. Overcurrent Protection

Overcurrent protection shall be provided in accordance with 620.61(A) through (D).

(A) Operating Devices and Control and Signaling Circuits.

724.43 Class 1 Circuit Overcurrent Protection.

724.45 Class 1 Circuit Overcurrent

Device Location.

- (A) Point of Supply.
(B) Feeder Taps.
(C) Branch-Circuit Taps.
(D) Primary Side of Transformer.
(E) Input Side of Electronic Power Source.

(B) Overload Protection for Motors.

(1) Duty Rating on Elevator, Dumbwaiter, and Motor-Generator Sets Driving Motors.

(C) Motor Feeder Short-Circuit and Ground-Fault Protection.

(D) Motor Branch-Circuit Short-Circuit and Ground-Fault Protection.

620.62 Selective Coordination.

620.65 Signage.

110.21 Marking.

Field-Applied Hazard Markings.

NEC 2023 Article 620.82 Grounding and Bonding

Part IX. Grounding and Bonding

620.82 Electric Elevators.

Part V.

250.90 General.

250.92 Services.

- (A) Bonding of Equipment for Services.
(B) Method of Bonding at the Service.

250.94 Bonding for Communications Systems.

- (A) The Intersystem Bonding Termination Device.
- (B) Other Means.
- 250.96 Bonding Other Enclosures.**
 - (A) General.
 - (B) Isolated Grounding Circuits.
- 250.97 Bonding for Over 250 Volts to Ground.**
- 250.98 Bonding Loosely Jointed Metal Raceways.**
- 250.100 Bonding in Hazardous (Classified) Locations.**
- 250.102 Grounded Conductor, Bonding Conductors, and Jumpers.**
 - (A) Material.
 - (B) Attachment.
 - (C) Size — Supply-Side Bonding Jumper.
 - (1) Size for Supply Conductors in a Single Raceway or Cable.
 - (2) Size for Parallel Conductor Installations in Two or More Raceways or Cables.
 - (D) Size — Equipment Bonding Jumper on Load Side of an Overcurrent Device.
 - (E) Installation.
 - (1) Inside a Raceway or an Enclosure.
 - (2) Outside a Raceway or an Enclosure.
 - (3) Protection.
- Structural Metal.**

Exposed structural metal that is interconnected to form a metal building frame, is not intentionally grounded or bonded, and is likely to become energized.
- Common Grounding Electrode Conductor.**
- 250.106 Lightning Protection Systems.**

The lightning protection system ground terminals shall be bonded to the building or structure grounding electrode system.
- Part VII. Methods of Equipment Grounding Conductor Connections**
- 250.130 Equipment Grounding Conductor Connections.**
 - (A) For Grounded Systems.
 - (B) For Ungrounded Systems.
 - (C) Replacement of Nongrounding Receptacle or Snap Switch and Branch Circuit Extensions.
- 250.132 Short Sections of Raceway or Cable Armor.**
- 250.134 Equipment Fastened in Place or Connected by Permanent Wiring Methods (Fixed).**
- 250.136 Equipment Secured to a Metal Rack or Structure.**
- 250.138 Cord-and-Plug-Connected Equipment.**
 - (A) By Means of an Equipment Grounding Conductor.
 - (B) By Means of a Separate Flexible Wire or Strap.
- 250.142 Use of Grounded Circuit Conductor for Grounding Equipment.**
 - (A) Supply-Side Equipment.
 - (B) Load-Side Equipment.
- 250.144 Multiple Circuit Connections.**
- 250.146 Connecting Receptacle Grounding Terminal to an Equipment Grounding Conductor.**

- (A) Surface-Mounted Box.
- (B) Contact Devices or Yokes.
- (C) Floor Boxes.
- (D) Isolated Ground Receptacles.

250.148 Continuity of Equipment Grounding Conductors and Attachment in Boxes.

- (A) Connections and Splices.
- (B) Equipment Grounding Conductor Continuity.
- (C) Metal Boxes.
- (D) Nonmetallic Boxes.

NEC 2023 Article 620.91 Emergency & Standby Power

Part X. Emergency and Standby Power Systems

620.91 Emergency and Standby Power Systems.

- (A) Regenerative Power.
- (B) Other Building Loads.
- (C) Disconnecting Means.

NEC 2023 Article 620.21 Machine Room Wiring

620.21 Machine Room Wiring Methods

Within Machine Rooms, Control Rooms, and Machinery Spaces and Control Spaces.

NEC 2023 Article 620.23 Machine Rm Branch Circuits

620.23 Branch Circuits for Machine Room, Control Room/Machinery Space and Control Space Interior Lighting and Receptacle(s).

- (A) Separate Branch Circuits.
- (B) Lighting Switch.
- (C) Duplex Receptacle.

NEC 2023 Article 620.25 Additional Branch Circuits

620.25 Branch Circuits for Other Utilization Equipment.

- (A) Additional Branch Circuits.
- (B) Overcurrent Devices.

NEC 2023 Article 430.6 Ampacity & Motor Rating

430.6 Conductor Ampacity and Motor Rating Determination.

(A) General Motor Applications.

For general motor applications, current ratings shall be determined based on 430.6(A)(1) and (A)(2).

430.22 Single Motor.

- (B) Multispeed Motor.

430.52 Rating or Setting for Individual Motor Circuit.

- (A) General.
- (B) All Motors.
- (C) Rating or Setting.

(B) Torque Motors.

(C) Alternating-Current Adjustable Voltage Motors.

NEC 2023 Article 450 Transformers

Part I. General

450.1 Scope.

450.2 Interconnection of Transformers.

450.3 Overcurrent Protection.

- (A) Transformers Over 1000 Volts, Nominal.
- (B) Transformers 1000 Volts, Nominal, or Less.

430.72 (C) Control Circuit Transformer.

- (1) Class 1 Power-Limited, Class 2, or Class 3 Circuits.
- (2) Transformers.
- (3) Less Than 50 Volt-Amperes.
- (4) Primary Less Than 2 Amperes.
- (5) Other Means.

(C) Voltage (Potential) Transformers.

450.4 Autotransformers 1000 Volts, Nominal, or Less.

- (A) Overcurrent Protection.
- (B) Transformer Field-Connected as an Autotransformer.

450.5 Grounding Autotransformers.

(A) Three-Phase, 4-Wire System.

- (1) Connections.
- (2) Overcurrent Protection.
- (3) Transformer Fault Sensing.
- (4) Rating.

(B) Ground Reference for Fault Protection Devices.

- (1) Rating.
- (2) Overcurrent protection shall comply with 450.5(B)(2)(a) and (B)(2)(b).

(C) Ground Reference for Damping Transitory Overvoltages.

450.6 Secondary Ties.

(A) Tie Circuits.

- (1) Loads at Transformer Supply Points Only.
- (2) Loads Connected Between Transformer Supply Points.
- (3) Tie Circuit Protection.
- (4) Interconnection of Phase Conductors Between Transformer Supply Points.

(a) Interconnected.

(b) Not Interconnected.

(5) Tie Circuit Control.

(B) Overcurrent Protection for Secondary Connections.

(C) Grounding.

450.7 Parallel Operation.

450.8 Guarding.

- (A) Mechanical Protection.
- (B) Case or Enclosure.
- (C) Exposed Energized Parts.
- (D) Voltage Warning.

450.9 Ventilation.

450.10 Grounding and Bonding.

(A) Dry-Type Transformer Enclosures.

(B) Other Metal Parts.

450.11 Marking.

(A) General.

(B) Source Marking.

450.12 Terminal Wiring Space.

450.13 Accessibility.

(A) Open Installations.

(B) Hollow Space Installations.

450.14 Disconnecting Means.

NEC 2023 Article 450 Transformers Installation

Part II. Installation

450.21 Dry-Type Transformers Installed Indoors.

(A) Not Over 112½ kVA.

(B) Over 112½ kVA.

(C) Over 35,000 Volts.

450.22 Dry-Type Transformers Installed Outdoors.

450.23 Less-Flammable Liquid-Insulated Transformers.

(A) Indoor Installations.

(B) Outdoor Installations.

450.24 Nonflammable Fluid-Insulated Transformers.

450.25 Askarel-Insulated Transformers Installed Indoors.

450.26 Oil-Insulated Transformers Installed Indoors.

450.27 Oil-Insulated Transformers Installed Outdoors.

450.28 Modification of Transformers.

NEC 2023 Article 620.21 Car Wiring Methods

Flexible metal conduit, liquidtight flexible metal conduit, or liquidtight flexible nonmetallic conduit of metric designator 12 (trade size 3/8), or larger, not exceeding 1.8 m (6 ft) in length, shall be permitted on cars where so located as to be free from oil and if securely fastened in place.

Article 400 Flexible Cords and Flexible Cables Part I.

General

400.1 Scope. This article covers general requirements, applications, and construction specifications for flexible cords and flexible cables.

400.2 Other Articles.

400.3 Suitability.

400.4 Types.

NEC 2023 Article 620.22 Car Light Receptacles Vent

620.22 Branch Circuits for Car Lighting, Receptacle(s), Ventilation, Heating, and Air-Conditioning.

(A) Car Light Receptacles, Auxiliary Lighting, and Ventilation.

(B) Air-Conditioning and Heating Source.

NEC 2023 Article 620.24 Pit Lighting & Receptacles

620.24 Branch Circuit for Hoistway Pit Lighting and Receptacles.

(A) Separate Branch Circuits.

(B) Lighting Switch.

(C) Duplex Receptacle.

620.6 Ground-Fault Circuit-Interrupter Protection for Personnel.

(A) Pits, Hoistways, and on Cars.

(B) Machine Rooms, Control Spaces, Machinery Spaces and Control Rooms.

(C) Sump Pumps.

NEC 2023 Article 620.21 Pit Wiring Methods

Wiring methods shall be permitted in the pit in lengths not to exceed 1.8 m (6 ft).

Article 400 Flexible Cords and Flexible Cables Part I. General

400.1 Scope.

400.2 Other Articles.

400.3 Suitability.

400.4 Types

NEC 2023 Article 620.21 Hoistway Wiring Methods

620.21 Hoistway Wiring Methods.

Wiring methods shall be permitted in the hoistway in lengths not to exceed 1.8 m (6 ft).

1. Flexible metal conduit.

2. Liquid tight flexible metal conduit.

3. Liquid tight flexible nonmetallic conduit.

4. Flexible cords and cables, or conductors grouped together and taped or corded, shall be permitted to be installed without a raceway.

NEC 2023 Article 620.32 Metal & Nonmetallic Wireways

Part IV. Installation of Conductors

620.32 Metal Wireways and Nonmetallic Wireways.

620.33 Number of Conductors in Raceways.

620.34 Supports

620.35 Auxiliary Gutters.

366.10(C) Extended Distance of Auxiliary Gutters.

366.22 Number of Conductors.

(A) Sheet Metal Auxiliary Gutters.

(B) Nonmetallic Auxiliary Gutters.

620.36 Different Systems in One Raceway or Traveling Cable.

620.37 Wiring in Hoistways, Machine Rooms, Control Rooms, Machinery Spaces, and Control Spaces.

(A) Uses Permitted.

(B) Lightning Protection.

250.106 Lightning Protection Systems.

(C) Feeders.

NEC 2023 Article 620.41 Traveling Cables

Part V. Traveling Cables

620.41 Suspension of Traveling Cables.

Traveling cables shall be suspended at the car and hoistways' ends, or counterweight end where applicable, so as to reduce the strain on the individual copper conductors to a minimum.

620.42 Hazardous (Classified) Locations.

620.43 Location of and Protection for Cables.

620.44 Installation of Traveling Cables.

Exam

National Electric Code Course For Escalators

2 Hours

NEC 2023 Article 110 Part II 110.26 Equipment Marking

110.21 Marking.

(A) Equipment Markings.

- (1) General.
- (2) Reconditioned Equipment.

(B) Field-Applied Hazard Markings.

NEC 2023 Article 430.7 Motor Marking

430.7 Marking on Motors and Multimotor Equipment.

(A) Usual Motor Applications.

(B) Locked-Rotor Indicating Code Letters.

- (1) Multispeed Motors.
- (2) Single-Speed Motors.
- (3) Dual-Voltage Motors.
- (4) 50/60 Hz Motors.
- (5) Part-Winding Motors.

(C) Torque Motors.

(D) Multimotor and Combination-Load Equipment.

- (1) Factory-Wired.
- (2) Not Factory-Wired.

NEC 2023 Article 650.51 Disconnecting Means

620.51 Disconnecting Means.

(A) Type.

110.25 Lockable Disconnecting Means.

(3) On Escalators and Moving Walks.

Identification and Signs.

(1) Available Fault Current Field Marking.

110.21 Marking.

(B) Field-Applied Hazard Markings.

1. The marking shall be of sufficient durability to withstand the environment involved and warn of the hazards using effective words, colors, symbols, or any combination thereof.
2. The marking shall be permanently affixed to the equipment or wiring method and shall

not be handwritten.

NEC 2023 Article 620.61 Overcurrent Protection

620.61 Overcurrent Protection.

Overcurrent protection shall be provided in accordance with 620.61(A) through (D).

(A) Operating Devices and Control and Signaling Circuits.

724.43 Class 1 Circuit Overcurrent Protection.

724.45 Class 1 Circuit Overcurrent

Device Location.

- (A) Point of Supply.
- (B) Feeder Taps.
- (C) Branch-Circuit Taps.
- (D) Primary Side of Transformer.
- (E) Input Side of Electronic Power Source.

(B) Overload Protection for Motors.

Motor and branch-circuit overload protection shall conform to Article 430, Part III, (Motor and Branch-Circuit Overload Protection) and 620.61(B)(1) through (B)(4) (Overcurrent Protection for Motors).

(2) Duty Rating on Escalator Motors.

Duty on escalator and moving walk driving machine motors shall be rated as continuous. Such motors shall be protected against overload in accordance with 430.32 (Continuous-Duty Motors).

(3) Overload Protection.

(C) Motor Feeder Short-Circuit and Ground-Fault Protection.

(D) Motor Branch-Circuit Short-Circuit and Ground-Fault Protection.

620.62 Selective Coordination.

620.65 Signage.

NEC 2023 Article 620.82 Grounding and Bonding

Part V.

250.90 General.

Bonding shall be provided if necessary to ensure electrical continuity and the capacity to conduct safely any fault current likely to be imposed.

(A) Bonding of Equipment for Services.

(B) Method of Bonding at the Service.

- (A) The Intersystem Bonding Termination Device.
- (B) Other Means.

250.96 Bonding Other Enclosures.

- (A) General.
- (B) Isolated Grounding Circuits.

250.97 Bonding for Over 250 Volts to Ground.

250.98 Bonding Loosely Jointed Metal Raceways.

250.100 Bonding in Hazardous (Classified) Locations.

250.102 Grounded Conductor, Bonding Conductors, and Jumpers.

- (A) Material.
- (B) Attachment.

- (C) Size — Supply-Side Bonding Jumper.
 - (1) Size for Supply Conductors in a Single Raceway or Cable.
 - (2) Size for Parallel Conductor Installations in Two or More Raceways or Cables.
- (D) Size — Equipment Bonding Jumper on Load Side of an Overcurrent Device.
- (E) Installation.
 - (1) Inside a Raceway or an Enclosure.
 - (2) Outside a Raceway or an Enclosure.
 - (3) Protection.

Structural Metal.

Exposed structural metal that is interconnected to form a metal building frame, is not intentionally grounded or bonded, and is likely to become energized shall be bonded. If exposed structural metal that is interconnected to form the building frame exists in the area served by the separately derived system, it shall be bonded to the grounded conductor of each separately derived system.

Common Grounding Electrode Conductor.

250.106 Lightning Protection Systems.

The lightning protection system ground terminals shall be bonded to the building or structure grounding electrode system.

Part VII. Methods of Equipment Grounding Conductor Connections

250.130 Equipment Grounding Conductor Connections.

- (A) For Grounded Systems.
- (B) For Ungrounded Systems.
- (C) Replacement of Nongrounding Receptacle or Snap Switch and Branch Circuit Extensions.

250.132 Short Sections of Raceway or Cable Armor.

250.134 Equipment Fastened in Place or Connected by Permanent Wiring Methods (Fixed).

250.136 Equipment Secured to a Metal Rack or Structure.

250.138 Cord-and-Plug-Connected Equipment.

- (A) By Means of an Equipment Grounding Conductor.
 - (B) By Means of a Separate Flexible Wire or Strap.
- 250.142 Use of Grounded Circuit Conductor for Grounding Equipment.**
- (A) Supply-Side Equipment.
 - (B) Load-Side Equipment.

250.144 Multiple Circuit Connections.

250.146 Connecting Receptacle Grounding Terminal to an Equipment Grounding Conductor.

- (A) Surface-Mounted Box.
 - (B) Contact Devices or Yokes.
 - (C) Floor Boxes.
 - (D) Isolated Ground Receptacles.
- 250.148 Continuity of Equipment Grounding Conductors and Attachment in Boxes.**
- (A) Connections and Splices.
 - (B) Equipment Grounding Conductor Continuity.
 - (C) Metal Boxes.
 - (D) Nonmetallic Boxes.

NEC 2023 Article 620.21 Machine Room Wiring

Within Machine Rooms, Control Rooms, and Machinery Spaces and Control Spaces. Escalators.

- (1) Wiring Methods.
- (2) Class 2 Circuit Cables.
- (3) Flexible Cords.

NEC 2023 Article 620.23 Machine Room Branch Circuit's

620.23 Branch Circuits for Machine Room, Control Room/Machinery Space, Control Space, or Truss Interior Lighting and Receptacle(s).

- (A) Separate Branch Circuits.
- (B) Lighting Switch.
- (C) Duplex Receptacle.

NEC 2023 Article 620.24 Escalator Receptacles

620.24 Branch Circuit for Escalator Receptacles.

620.6 Ground-Fault Circuit-Interrupter Protection for Personnel. Truss Interiors.

NEC 2023 Article 620.25 Additional Branch Circuit's

620.25 Branch Circuits for Other Utilization Equipment.

- (A) Additional Branch Circuits.
- (B) Overcurrent Devices.

NEC 2023 Article 430.6 Ampacity and Motor Rating

430.6 Conductor Ampacity and Motor Rating Determination.

(A) General Motor Applications.

For general motor applications, current ratings shall be determined based on 430.6(A)(1) and (A)(2).

430.22 Single Motor.

(B) Multispeed Motor.

430.52 Rating or Setting for Individual Motor Circuit.

- (A) General.
- (B) All Motors.
- (C) Rating or Setting.
- (B) Torque Motors.
- (C) Alternating-Current Adjustable Voltage Motors.
- (D) Valve Actuator Motor Assemblies.

NEC 2023 Article 450 Transformer General

450.1 Scope.

450.2 Interconnection of Transformers.

450.3 Overcurrent Protection.

- (A) Transformers Over 1000 Volts, Nominal.
- (B) Transformers 1000 Volts, Nominal, or Less.

430.72 (C) Control Circuit Transformer.

- (1) Class 1 Power-Limited, Class 2, or Class 3 Circuits.
- (2) Transformer protection shall be permitted to be provided in accordance with 450.3(Overcurrent Protection).
- (3) Less Than 50 Volt-Amperes.
- (4) Primary Less Than 2 Amperes.
- (5) Other Means.
- 450.4 Autotransformers 1000 Volts, Nominal, or Less.**
 - (A) Overcurrent Protection.
 - (B) Transformer Field-Connected as an Autotransformer.
- 450.5 Grounding Autotransformers.**
 - (A) **Three-Phase, 4-Wire System.**
 - (1) Connections.
 - (2) Overcurrent Protection.
 - (3) Transformer Fault Sensing.
 - (4) Rating.
 - (B) **Ground Reference for Fault Protection Devices.**
 - (1) Rating.
 - (2) Overcurrent Protection.
 - (C) **Ground Reference for Damping Transitory Overvoltages.**
- 450.6 Secondary Ties.**
 - (A) **Tie Circuits.**
 - (1) Loads at Transformer Supply Points Only.
 - (2) Loads Connected Between Transformer Supply Points.
 - (3) Tie Circuit Protection.
 - (4) Interconnection of Phase Conductors Between Transformer Supply Points.
 - (a) Interconnected.
 - (b) Not Interconnected
 - (5) Tie Circuit Control.
 - (B) Overcurrent Protection for Secondary Connections.
 - (C) Grounding.
- 450.7 Parallel Operation.**
- 450.8 Guarding.**
 - (A) Mechanical Protection.
 - (B) Case or Enclosure.
 - (C) Exposed Energized Parts.
 - (D) Voltage Warning.
- 450.9 Ventilation.**
- 450.10 Grounding and Bonding.**
 - (A) Dry-Type Transformer Enclosures.
 - (B) Other Metal Parts.
- 450.11 Marking.**
 - (A) General.
 - (B) Source Marking.
- 450.12 Terminal Wiring Space.**
- 450.13 Accessibility.**

(A) Open Installations.

(B) Hollow Space Installations.

450.14 Disconnecting Means.

Exam

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