

**SECTION 10 2600  
WALL AND DOOR PROTECTION**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Corner guards.

**1.02 REFERENCE STANDARDS**

- A. ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics; 2010, with Editorial Revision (2015).
- B. ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies; 2023.

**1.03 SUBMITTALS**

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Shop Drawings: Include plans, elevation, sections, and attachment details. Show design and spacing of supports for protective corridor handrails, required to withstand structural loads.
- C. Samples: Submit samples illustrating component design, configurations, joinery, color and finish.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver wall and door protection items in original, undamaged protective packaging. Label items to designate installation locations.

**1.05 WARRANTY**

- A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

**PART 2 PRODUCTS**

**2.01 PERFORMANCE CRITERIA**

- A. Impact Strength: Unless otherwise noted, provide protection products and assemblies that have been successfully tested for compliance with applicable provisions of ASTM D256 and/or ASTM F476.

**2.02 PRODUCT TYPES**

- A. Corner Guards - Flush Mounted:
  - 1. Width of Wings: 1 inches.
  - 2. Corner: Square.
  - 3. Color: As selected from manufacturer's standard colors.
  - 4. Length: One piece, full height

**2.03 FABRICATION**

- A. Fabricate components with tight joints, corners and seams.

**PART 3 EXECUTION**

**3.01 INSTALLATION**

- A. Install corner guard full-height

**3.02 TOLERANCES**

- A. Maximum Variation From Required Height: 1/4 inch.
- B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

**3.03 CLEANING**

- A. Clean wall and door protection items of excess adhesive, dust, dirt, and other contaminants.

**END OF SECTION**

**SECTION 14 2123**  
**ELECTRIC TRACTION PASSENGER ELEVATORS**

**GENERAL**

**1.01 SECTION INCLUDES**

- A. Electric traction passenger elevators.

**1.02 RELATED SECTIONS**

- A. Section 015000 – Temporary Facilities and Controls: Protection of floor openings and personnel barriers; temporary power and lighting.
- B. Section 033000 – Cast-in-Place Concrete: Elevator pits.
- C. Section 036000 – Grouts (Grouting): Grouting door frames and sills.
- D. Section 042000 – Masonry Units (Unit Masonry): Setting sleeves, inserts, and anchoring devices in masonry for guide-rail brackets.
- E. Section 051200 – Metal Stairs Structural Steel (Structural Steel Framing): Support steel, divider beams, and hoist beams.
- F. Section 055000 – Gypsum Metal Fabrications: Pit ladders, supports for entrances in drywall hoistways.
- G. Section 061053 – Miscellaneous Rough Carpentry: Temporary platform assembly.
- H. Section 071600 – Cementitious Waterproofing: Waterproofing of elevator pit.
- I. Section 092900 – Gypsum Board: Hoistway walls.
- J. Section 099000 – Paints and Coatings (Painting and Coating): Field painting of elevator entrances over primer.
- K. Section 283100 – Detection and Alarm (Fire Detection and Alarm): Heat, smoke, and products of combustion sensing devices, fire alarm signal lines to contacts in machine space.
- L. Section 23000 – Heating, Ventilating, and Air Conditioning Equipment (Heating, Ventilating, and Air-Conditioning (HVAC)): Heating, cooling, and ventilation of control and machinery space.
- M. Section 260500 – Wiring Methods (Common Work Results for Electrical): Light outlets, convenience outlets, light switches, and conduits.
- N. Section 262400 – Switchboards, Panelboards, and Control Centers (Switchboards and Panelboards): Disconnect switches.
- O. Section 265000 – Lighting: Light fixtures.
- P. Section 221429 – Sump Pumps: For sump pumps, sumps, and sump covers in elevator pits.
- Q. Section 271500 – Communications Horizontal Cabling: For Telephone service for elevators and for Internet connection to elevator controllers for remote monitoring.
- R. Section 273000 – Telephone and Intercommunication Equipment (Voice Communications): Telephone outlets and elevator telephones.
- S. Section 31000 – Earthwork: Excavation of elevator pit.

**1.03 REFERENCES**

- A. ANSI/ASME A17.1/CAN/CSA B44 – Safety Code for Elevators and Escalators.
- B. ADAAG – Americans with Disabilities Act Accessibility Guidelines.
- C. ANSI/NFPA 70 – National Electrical Code.
- D. ANSI/NFPA 80 – Fire Doors and Windows.
- E. ANSI/UL 10B – Fire Tests of Door Assemblies.
- F. CAN/CSA C22.1 – Canadian Electrical Code.

- G. Model and Local Building CodesH. ISO 9001: 2000 - Quality Management Systems - Requirements.

#### **1.04 DESIGN REQUIREMENTS**

- A. Arrange elevator components in control closet or machinery space so equipment can be removed for repairs or replaced with minimal disturbance to other equipment and components.
- B. Where permitted by code, provide all elevator equipment including controls, drives, transformers, and rescue features within the elevator hoistway.

#### **1.05 SUBMITTALS**

- A. Comply with Section 013300 (01 33 00) – Submittal Procedures.
- B. Product Data: Submit manufacturer/installer's product data, including,
1. Descriptive brochures or detail drawings of car and hall fixtures, cab ceilings, and product features.
  2. Power Information: Horsepower, starting current, running current, machine and control heat release, and electrical requirements.
- C. Shop Drawings: Submit manufacturer/installer's shop drawings, including plans, elevations, sections, and details, indicating location of equipment, loads, dimensions, tolerances, materials, components, fabrication, fasteners, hardware, finish, options, accessories, and other information to render totally functional elevators.
- D. Samples: Submit manufacturer/installer's samples of standard colors and finishes of finish materials.
- E. Operation and Maintenance Manual: Submit manufacturer/installer's operation and maintenance manual; including operation, maintenance, adjustment, and cleaning instructions; trouble shooting guide; renewal parts catalogs; and electrical wiring diagrams.
- F. Warranty: Submit manufacturer/installer's standard warranty.

#### **1.06 QUALITY ASSURANCE**

- A. Manufacturer/Installer's Qualifications: Specialize in manufacturing and installing elevator equipment, with a minimum of 10 years successful experience.
- B. Regulatory Requirements:
1. Elevator design, clearances, construction, workmanship, materials, and installation, unless specified otherwise, shall be in accordance with ANSI/ASME A17.1, handicap accessibility, Americans with Disabilities Act, and other codes having legal jurisdiction.
  2. ANSI/ASME A17.1 shall govern, except where codes having legal jurisdiction include more rigid requirements or conflict with ANSI/ASME A17.1.
  3. Elevator shall follow design and manufacturing procedures certified in accordance with ISO 9001-2000 to meet product and service requirements for quality assurance for new products.
  4. Where product is in variance to the published ANSI/ASME A17.1 model code, provide a 3rd party AECO certification demonstrating equivalent function, safety, and performance.
- C. Pre-installation Meeting:
1. Convene pre-installation meeting before start of installation of elevators.
  2. Require attendance of parties directly affecting work of this section, including Contractor, Architect, and elevator manufacturer/installer.
  3. Review examination, installation, field quality control, adjusting, cleaning, protection, and coordination with other work.

#### **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver materials to site in manufacturer/installer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer/installer.

- B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer/installer's instructions.
- C. Handling: Protect materials during handling and installation to prevent damage.

#### **1.08 PROJECT CONDITIONS**

- A. Temporary Electrical Power:
  - 1. Owner will arrange for temporary 220 VAC, single-phase, 60 Hz., GFCI-protected electricity to be available for installation of elevator components.
  - 2. Comply with Section 015100 – Temporary Utilities.
- B. Installation of the Elevator:
  - 1. General Contractor will provide permanent three-phase power prior to installation start.
  - 2. General Contractor will provide clear, rollable access to a 20' x 10' secure and dry storage area prior to delivery.
  - 3. General Contractor will provide a clean, dry, and complete hoistway along with temporary installation platform and all required OSHA-compliant barricades prior to delivery.
- C. Temporary Use of Elevator:
  - 1. Owner will negotiate with manufacturer/installer for temporary use of elevator, if required.
  - 2. Temporary use of elevator shall be in accordance with terms and conditions of manufacturer/installer's temporary acceptance form.

#### **1.09 SCHEDULING**

- A. Coordinate elevator work with work of other trades, for proper time and sequence to avoid construction delays.

#### **1.10 WARRANTY**

- A. Manufacturer/installer shall guarantee materials and workmanship of equipment installed under these specifications and make good, defects not due to ordinary wear or to improper use, which may develop within 1 year after completion of installation or acceptance thereof by beneficial use, whichever is earlier.

#### **1.11 MAINTENANCE SERVICE**

- A. Elevator maintenance service shall be performed by elevator manufacturer/installer.
- B. Elevators shall receive regular maintenance on each unit for period of 12 months after completion of work specified herein or acceptance thereof by beneficial use, whichever is earlier.
- C. Trained employees shall make periodic examinations and perform work including necessary adjusting, greasing, oiling, and replacing parts to keep elevators in operation, except parts that require replacement because of accidents, vandalism, misuse, or negligence by parties other than manufacturer/installer.
- D. Manufacturer/installer shall perform all Work, except emergency minor adjustment call-back service, during regular working hours. Manufacturer/installer shall provide emergency minor adjustment call-back service, during regular working hours.
- E. Should Owner request that examinations, cleaning, lubrication, adjustments, repairs, replacements, or emergency minor adjustment call-back service, unless specified herein, be performed on other than manufacturer/installer's regular working hours of regular working days, manufacturer/installer shall absorb straight-time labor charges and Owner will compensate manufacturer/installer for overtime premium, travel time, and expense at normal billing rates.
- F. Elevator Control System:
  - 1. Include built-in remote diagnostic module to relay constant status of elevators and control system to a 24-hour, 7-days-a-week central-monitoring facility.
  - 2. Remote Monitoring Device: Transmit information on current status of elevators, including malfunctions, system errors, and shutdown.

## **1.12 PRODUCTS**

### **1.13 BASIS OF DESIGN**

- A. ThyssenKrupp; Synergy, see basis of design.
- B. Equal products by other manufacturers may be submitted.

### **1.14 ELEVATOR SYSTEM AND COMPONENTS**

- A. Elevator Equipment Summary:
  - 1. Application: Machine Room Less (MRL)
  - 2. Counterweight Location: Side
  - 3. Service: General Purpose Passenger
  - 4. Quantity: 2 Units
  - 5. Capacity: 3500 lbs
  - 6. Speed: MIN. 150 fpm
  - 7. Front Openings: 4
  - 8. Rear Openings: 0
  - 9. Operation: Microprocessor Group Automatic Operation
  - 10. Guide Rails: Equivalent to 12 lb. per foot
  - 11. Entrance Type and Width: Two Speed Side Opening 3' 6" Wide X 7' 0" High doors
  - 12. Entrance Height: 7'-0"
  - 13. Power Supply: 208 Volts 3 Phase 60 Hz
  - 14. Meets local codes for gurney and wheelchair access
- B. Performance:
  - 1. Car Speed: -10% to +5% of contract speed under any loading condition or direction of travel.
  - 2. Car Capacity: Safely lower, stop and hold up to 125% of rated load per code.
- C. Ride Quality:
  - 1. Vertical Vibration (maximum): 25 mg
  - 2. Horizontal Vibration (maximum): 15 mg
  - 3. Vertical Jerk (maximum): 2 ft/sec<sup>3</sup>
  - 4. Acceleration (maximum): 1.6 ft/sec<sup>2</sup>
  - 5. In Car Noise: 53-60 dB(A)
  - 6. Stopping Accuracy: ±5mm
  - 7. Starts per hour (maximum): 180
- D. Elevator Operation:
  - 1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. When all calls have been answered, the car shall park at the last landing served.
  - 2. Group Automatic Operation with Demand-Based Dispatching: Provide reprogrammable group automatic system that assigns cars to hall calls based on a dispatching algorithm designed to minimize passenger waiting time.
- E. Operating Features - Standard:
  - 1. Door Light Curtain Protection
  - 2. Static AC Drive
  - 3. Phase Monitor Relay
  - 4. Cab Overload with Indicator
  - 5. Load-weighing
  - 6. Central Alarm
  - 7. Remote Monitoring
  - 8. Firefighter's Operation
  - 9. Automatic Evacuation

10. When the main line power is lost for longer than 5 seconds the emergency battery power supply provides power automatically to the elevator controller. If the car is at a floor when the power fails, it remains at that floor, opens its doors, and shuts down. If the car is between floors, it is raised or lowered to the first available landing, opens its doors, and shuts down.

11. Independent Service

F. Operating Features - Optional:

### **1.15 EQUIPMENT: CONTROL COMPONENTS AND CONTROL SPACE**

- A. Controller: Provide microprocessor-based control system to perform all of the functions of safe elevator operation, as well as perform car and group operational control.
  1. All high voltage (110v or above) contact points inside the inspection and test panel shall be protected from accidental contact in a situation where the access panels are open.
  2. The controller shall be distributed throughout the elevator system located in the overhead, cab and inspection and test panel. The inverter will be mounted in the overhead adjacent to the hoist machine and an inspection and test panel will be located in the door jamb at the top floor or one floor below the top floor. No elevator equipment mechanical rooms or closets are required.
  3. Provide multi-bus control architecture to reduce cabling, material and waste.
- B. Drive: Provide a Variable Voltage Variable Frequency AC Closed Loop drive system. Provide stable start without high peak current, quickly reaching a low energy consumption level.
- C. Inspection and Test Panel: Integrated control equipment, main inspection and test panel in door frame at top level served or at one floor below the top level served.

### **1.16 EQUIPMENT: HOISTWAY COMPONENTS**

- A. Machine:
  1. Gearless asynchronous AC motor with integral drive sheave, service and emergency brakes.
  2. Design machine to enable direct power transfer, thereby avoiding loss of power.
  3. Design machine to be compact, lightweight and durable to optimize material usage and save space.
  4. Mount to structural support channels on top of guide rail system as applicable in hoistway overhead.
- B. Governor:
  1. Tension type over-speed governor with remote manual reset.
  2. Mount to structural support channels as applicable in hoistway overhead.
- C. Buffers, Car and Counterweight: Compression spring type buffers to meet code.
- D. Hoistway Operating Devices:
  1. Emergency Stop switch in the pit.
  2. Terminal stopping switches.
  3. Emergency stop switch on the machine.
- E. Positioning System: System consisting of proximity sensors and door zone vanes.
- F. Guide Rails and Attachments: Provide Tee-section steel rails with brackets and fasteners. Side counterweight arrangements shall have a dual purpose bracket that combines both counterweight guide rails, and one of the car guide rails to building fastening.
- G. Suspension System: Non circular Elastomeric coated suspension media with high tensile grade steel cords.
- H. Governor rope: Steel wire rope with 6 mm diameter.

### **1.17 EQUIPMENT: HOISTWAY ENTRANCES**

- A. Hoistway Doors and Frames:

1. UL rated with required fire rating.
  2. Doors: Rigid flush panel construction with reinforcement ribs.
  3. Frames: Securely fasten at corners to form unit frame. Frames shall be bolted.
- B. Entrance Markings and Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors. Plate Mounting: Refer to manufacturer drawings.
- C. Smoke control curtains as required by building code.

#### **1.18 EQUIPMENT: CAR COMPONENTS**

- A. Car Frame and Safety: Provide car frame with adequate bracing to support the platform and car enclosure. The safety shall be integral to the car frame and shall be flexible guide clamp type.
- B. Platform: Provide platform of steel construction with plywood subfloor and aluminum threshold.
- C. Car Guides: Provide sliding guide shoes mounted to top and bottom of both car and counterweight frame. Arrange each guide shoe assembly to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.
- D. Provide central guiding system to reduce mechanical friction and energy consumption.
- E. Steel Cab:
1. Fire rating: Provide Class B fire rating for cab, or Class A fire rating where required by local Code.
  2. Design cab to comply with LEED Indoor Environmental Quality requirements through use of Low-Emitting Materials on walls, ceiling and subflooring.
  3. Car wall finish: As selected by Architect from all standard finishes.
  4. Base and frieze: Aluminum.
  5. Car front finish: Brushed stainless steel.
  6. Car door finish: Brushed stainless steel.
  7. Ceiling: Canopy ceiling, finished in #4 Stainless Steel With Down Lit Led Lighting. Provide lighting consisting of four compact fluorescent energy saving lights located in two semi-oval lateral cutouts located on the center-sides of the cab ceiling, Lexan lens cover.
  8. Handrail: 1 3/8" Round And Curved Painted Aluminum. Locate on Rear Wall.
  9. Flooring: By others. Not to exceed 3/8" finished depth.
  10. Ventilation: Provide one-speed fan in canopy.
  11. Emergency Car Lighting: Provide an emergency power unit employing a 12 volt sealed rechargeable battery and static circuits to illuminate the elevator car and provide current to the alarm bell in the event of building power failure.
  12. Emergency Siren: Provide siren mounted on top of the car that is activated when the Alarm button in the car operating panel is engaged.
  13. Emergency Exit Switch: Provide an electrical contact to open the safety circuit when the emergency car top exit is opened. When the exit door is opened, the top exit switch shall signal the control and the car will be unable to move.
  14. Emergency Exit Lock: Provide an emergency exit lock where required by local code.
  15. Emergency Exit Guard: Provide emergency exit guard on top of car when required for hoistway wall to platform clearance exceeds 12" or for multiple cars in hoistway.

#### **1.19 DOOR OPERATOR AND REOPENING DEVICES**

- A. Door Operator: Provide a closed loop VVVF high performance door operator with frequency-controlled drive for fast and reliable operation to open and close the car and hoistway doors simultaneously.
- B. In case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Provide emergency devices and keys for opening doors from the landing as required by local code.
- C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of

a car button. Provide door open button in the car operating panel. Momentary pressing of this button shall reopen the doors and reset the time interval.

- D. Provide door hangers and tracks for each car and hoistway door. Contour tracks to match the hanger sheaves. Design hangers for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed for life bearings.
- E. Electronic Door Safety Device: Equip car doors with concealed transmitter and receiver infrared beam devices to detect presence of object in process of passing through hoistway entrance and car doorway (light curtain device).
  - 1. Use multi-beam scanning without moving parts to detect obstructions in door opening.
  - 2. Detector Device: Prevent doors from closing, or if they have already started closing, cause doors to reopen and remain open while object is within detection zone.
  - 3. Horizontal Beams: Minimum of 33 infra red beams to fill doorway from ground level to a height of 6 feet.

#### **1.20 EQUIPMENT: SIGNAL DEVICES AND FIXTURES**

- A. Car Operating Panel: Provide a car operating panel with all push buttons, key switches and message indicators for elevator operation.
  - 1. Full height car operating panel shall be surface mounted on front return.
  - 2. Comply with handicap requirements.
  - 3. Push Buttons: Mechanical, illuminating using long-lasting LEDs for each floor served.
  - 4. Emergency Buttons: Provide in accordance with code. Emergency alarm button, door open and door close buttons.
- B. Features of the Car Operating Panel Shall Include:
  - 1. Audible chime to signal that the car is either stopping at or passing a floor served by the elevator.
  - 2. Raised markings and Braille provided to the left-hand side of each push button.
  - 3. Car Lantern: Provide LED illuminated car lantern with direction arrows to comply with local code when hall lanterns are not provided.
  - 4. Door open and close push buttons.
  - 5. Firefighter's hat and Phase 2 Key-switch
  - 6. Inspection key-switch.
  - 7. Key-switch for optional Independent Service Operation
  - 8. Illuminated alarm button with raised marking.
  - 9. Elevator Data Plate marked with elevator capacity and car number.
  - 10. Help Button: Activation of help button will initiate two-way communication between car and a location inside the building, switching over to alternate location if call is unanswered, where personnel are available to take the appropriate action. Visual indicators are provided for call initiation and call acknowledgement.
- C. Hall Fixtures: Provide hall fixtures with necessary push buttons and key switches for elevator operation.
  - 1. Push buttons: Metallic tactile push buttons, up button and down button at intermediate floors, single button at each terminal floor.
  - 2. Height: Comply with handicap requirements.
  - 3. Illumination: Illuminating using long-lasting low power LEDs.
- D. Hall Lanterns and Position Indicators.
  - 1. LED illuminated direction arrows with audible and visible call acknowledgement.
- E. Hoistway access switches: Provide key-switch at top and/or bottom floor in entrance jamb as required by local code.
- F. Firefighter's Phase 1 Service: Key switch in brushed stainless steel cover plate.



- G. Fixture Cover Plates: For push buttons, hall lanterns and position indicators, resistant white back-printed glass, no screws required for mounting. Provide stainless steel cover plates for Firefighter's Phase I switch and hoistway access switches, with tamper resistant screws in same finish.
- H. Mounting: Mount hall fixtures in entrance frames.

#### **1.21 EXECUTION**

#### **1.22 EXAMINATION**

- A. Examine hoistways, hoistway openings, and pits before starting elevator installation.
- B. Verify hoistway, pit, overhead, and openings are of correct size, within tolerances, and are ready for work of this section.
- C. Verify walls are plumb where openings occur and ready for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.
- D. Verify hoistway is clear and plumb, with variations not to exceed -0 to +1 inch at any point. Verify projections greater than 4" must be beveled not less than 75 degrees from horizontal. No negative tolerance is permitted for minimum hoistway dimensions.
- E. Verify minimum 2-hour fire-resistance rating of hatch walls.
- F. Notify Architect in writing of dimensional discrepancies or other conditions detrimental to proper installation or performance of elevators.
- G. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to manufacturer/installer.

#### **1.23 INSTALLATION**

- A. Install elevators in accordance with manufacturer/installer's instructions and ANSI/ASME A17.1.
- B. Set entrances in vertical alignment with car openings, and aligned with plumb hoistway lines.

#### **1.24 FIELD QUALITY CONTROL**

- A. Perform tests of elevator as required by ANSI/ASME A17.1 and governing codes.

#### **1.25 ADJUSTING**

- A. Adjust elevators for proper operation in accordance with manufacturer/installer's instructions.
- B. Adjust elevators for smooth acceleration and deceleration of car so not to cause passenger discomfort.
- C. Adjust doors to prevent opening of doors at landing on corridor side, unless car is at rest at that landing, or is in leveling zone and stopping at that landing.
- D. Adjust automatic floor leveling feature at each floor to within 1/4 inch of landing.
- E. Repair minor damages to finish in accordance with manufacturer/installer's instructions and as approved by Architect.
- F. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

#### **1.26 CLEANING**

- A. Clean elevators promptly after installation in accordance with manufacturer/installer's instructions.
- B. Do not use harsh cleaning materials or methods that could damage finish.

#### **1.27 PROTECTION**

- A. Protect installed elevators from damage during construction in accordance with the negotiated temporary use agreement between Owner and manufacturer's installer.

**END OF SECTION**