

SECTION 14210 - ELECTRIC TRACTION ELEVATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes electric traction [**passenger**] [**and**] [**freight**] elevators.
 - 1. Seismic switches required by ASME A17.1 are included.
- B. Related Sections include the following:
 - 1. Division 3 Section "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
 - 2. Division 4 Section "Unit Masonry Assemblies" for setting sleeves, inserts, and anchoring devices in masonry.
 - 3. Division 5 Section "Structural Steel" for the following:
 - a. Attachment plates, angle brackets, and other preparation of structural steel for fastening guide-rail brackets.
 - b. Machine beams.
 - c. Divider beams.
 - d. Hoist beams.
 - e. Structural-steel shapes for subsills [**and entrance frames**] that are part of steel frame.
 - 4. Division 5 Section "Metal Fabrications" for the following:
 - a. Attachment plates and angle brackets for supporting guide-rail brackets.
 - b. Machine beams.
 - c. Divider beams.
 - d. Hoist beams.
 - e. Structural-steel shapes for [**subsills**] [**and**] [**entrance frames**].
 - f. Pit ladders.
 - 5. Division 5 Section "Ornamental Metal" for combination units that contain hall push-button stations.
 - 6. Division 9 Section "Painting" for field painting hoistway entrances.
 - 7. Division 9 Section "<Insert Section title>" for finish flooring in elevator cars.
 - 8. Division 13 Section "Fire Alarm" for smoke detectors in elevator lobbies to initiate emergency recall operation [**and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation**] and for connection to elevator controllers.

9. Division 13 Section "<Insert Section title>" for security card access equipment used to restrict elevator use.
 10. Division 16 Section "Premises Telephone Wiring" for telephone service to elevators.
 11. Division 16 Sections for electrical service for elevators to and including **[fused]** disconnect switches at machine room door **[and standby power source, transfer switch, and connection from auxiliary contacts in transfer switch to controller]**.
- C. Allowances: Provide finished elevator cars under the Elevator Car Allowance specified in Division 1 Section "Allowances." Allowance includes furnishing and installing wall[, **floor,**] and ceiling finishes; **[car door finishes;]** light fixtures; handrails; and trim. Allowance also includes cutouts and other provisions for installing elevator signal equipment in cars.

1.3 DEFINITIONS

- A. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 SUBMITTALS

- A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information.
- B. Shop Drawings: Show plans, elevations, sections, and large-scale details indicating service at each landing, machine room layout, coordination with building structure, relationships with other construction, and locations of equipment and signals. Indicate variations from specified requirements, maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
- C. Samples: For exposed finishes of cars, hoistway doors and frames, and signal equipment; **3-inch (75-mm-)** square samples of sheet materials; and **4-inch (100-mm)** lengths of running trim members.
- D. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway, pit, and machine room layout and dimensions, as shown on Drawings, and electrical service, **[including emergency generator,]** as shown and specified, are adequate for elevator system being provided.
- E. Maintenance Manuals: Include operation and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information. Include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel. Submit for Owner's information at Project closeout as specified in Division 1.
- F. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Elevator manufacturer or an experienced installer approved by elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Regulatory Requirements: In addition to local governing regulations, comply with applicable provisions in ASME A17.1, "Safety Code for Elevators and Escalators."
 - 1. Seismic Risk Zone: Project is located in Zone **[0 or 1]** **[2]** **[3 or greater]**.
- C. Accessibility Requirements: In addition to local governing regulations, comply with **[Section 4.10 in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)."]** **[Section 407 in ICC A117.1.]**

1.6 COORDINATION

- A. Coordinate installation of sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
- B. Coordinate locations and dimensions of other work relating to electric traction elevators including pit ladders, sumps, and floor drains in pits; entrance subsills; and electrical service, electrical outlets, lights, and switches in pits and machine rooms.

1.7 WARRANTY

- A. Special Manufacturer's Warranty: Written warranty, signed by manufacturer agreeing to repair, restore, or replace defective elevator work within specified warranty period.
 - 1. Warranty Period: 12 months from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Beginning at Substantial Completion, provide **[three]** **[six]** **[nine]** **[12]** months' full maintenance service by skilled employees of the elevator Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Provide parts and supplies as used in the manufacture and installation of original equipment.
 - 1. Perform maintenance, including emergency callback service, during normal working hours.
 - 2. Include 24-hour-per-day, 7-day-per-week emergency callback service.
 - a. Response Time: Two hours or less.

- B. Continuing Maintenance Proposal: Provide a continuing maintenance proposal from Installer to Owner in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.
- C. Continuing Maintenance Proposal: Provide a continuing maintenance proposal from Installer to Owner with terms, conditions, and obligations as set forth in, and in the same form as, "Draft of Elevator Maintenance Agreement" at end of this Section, starting on date initial maintenance service is concluded.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering electric traction elevators that may be incorporated into the Work include, but are not limited to, the following:
- B. Manufacturers: Subject to compliance with requirements, provide electric traction elevators by one of the following:
 - 1. Dover Elevator Systems.
 - 2. Fujitec America, Inc.
 - 3. Montgomery KONE Inc.
 - 4. Otis Elevator Co.
 - 5. Schindler Elevator Corp.
 - 6. Thyssen Elevator Group North America.

2.2 MATERIALS AND COMPONENTS

- A. General: Provide manufacturer's standard elevator systems. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard preengineered elevator systems and as required for a complete system.
- B. Passenger Elevator Machines: **[Provide variable-voltage, variable-frequency ac-type hoisting machines] [At manufacturer's option, provide either variable-voltage, variable-frequency ac-type or variable-voltage dc-type hoisting machines]**. Provide solid-state power converters.
 - 1. Provide **[regenerative] [non-regenerative]** system.
 - 2. Limit total harmonic distortion of regenerated power to 5 percent per IEEE 519.
 - 3. Provide means for absorbing regenerated power when elevator system is operating on standby power.
 - 4. Provide line filters or chokes to prevent electrical peaks or spikes from feeding back into building power system.

- C. Freight Elevator Machines: At manufacturer's option, provide either variable-voltage, variable-frequency ac-type or variable-voltage dc-type hoisting machines. Provide solid-state power converters.
1. Provide [**regenerative**] [**non-regenerative**] system.
 2. Limit total harmonic distortion of regenerated power to 5 percent per IEEE 519.
 3. Provide line filters or chokes to prevent electrical peaks or spikes from feeding back into building power system from solid-state converters.
- D. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work where installation of devices is specified in another Specification Section.
- E. Machine Beams: Provide framing to support elevator hoisting machine and deflector sheaves from the building structure. Comply with Division 5 Section "Metal Fabrications" for materials and fabrication.
- F. Roller Guides: Provide roller guides at top and bottom of car and counterweight frames.
- G. Car Frame and Platform: Welded steel units.
1. For freight elevators, provide special heavy-duty units where indicated for power truck loading, designed to withstand impacts and wheel loadings indicated.
- H. Finish Materials: Provide the following materials and finishes for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment as indicated:
1. Polished Stainless Steel: ASTM A 666, Type 304, with No. 8 mirror polished finish.
 2. Satin Stainless Steel: ASTM A 666, Type 304, with No. [**4, directional**] [**6, nondirectional**] satin finish.
 3. Textured Stainless Steel: ASTM A 666, Type 304; [**titanium nitride colored**] [**oxide colored**]; with [**coined**] [**embossed**] texture rolled into exposed surface.
 - a. Surface is [**satin polished**] [**satin relieved**] [**color coated and satin relieved**] [**color coated and bright relieved**] after rolling.
 - b. Available Product: Subject to compliance with requirements, a product that may be incorporated into the Work includes, but is not limited to, "<Insert product name>" by <Insert manufacturer's name>.
 - c. Product: Subject to compliance with requirements, provide "<Insert product name>" by <Insert manufacturer's name>.
 4. Polished Bronze Plate and Sheet: ASTM B 36/B 36M, alloy UNS No. C28000 (muntz metal), polished finish, lacquered.
 5. Satin Bronze Plate and Sheet: ASTM B 36/B 36M, alloy UNS No. C28000 (muntz metal), directional satin finish, lacquered.
 6. Bronze Extrusions: ASTM B 455, alloy UNS No. C38500 (architectural bronze).
 7. Nickel Silver Extrusions: **ASTM B 151** (**ASTM B 151M**), alloy UNS No. C74500.
 8. Enameled-Steel Sheet: Cold-rolled steel sheet complying with ASTM A 366/A 366M, matte finish, stretcher-leveled standard of flatness; hot-rolled steel sheet complying with ASTM A 569/A 569M may be used for door frames. Provide with factory-applied enamel finish; colors as selected by Architect.

9. Prime-Painted Steel Sheet: Cold-rolled steel sheet, ASTM A 366/A 366M, or hot-rolled steel sheet, ASTM A 569/A 569M, with factory-applied rust-inhibitive primer.
10. Prime-Painted, Metallic-Coated Steel Sheet: ASTM A 653/A 653M, CS (commercial steel), Type B, with **A60 (ZF180)** zinc-iron-alloy (galvannealed) coating and factory-applied primer.
11. Plastic Laminate: High-pressure type complying with NEMA LD 3, [**Type HGP for postformed applications**] [**and**] [**Type HGS for flat applications**]; color, texture, and pattern as selected by Architect from plastic-laminate manufacturer's full range of products.
12. Rolled Steel Floor Plate: ASTM A 786/A 786M.
13. Aluminum-Alloy Rolled Tread Plate: ASTM B 632/B 632M, Pattern 1, alloy 6061-T6.
14. Rolled Stainless-Steel Floor Plate: ASTM A 793.

2.3 OPERATION SYSTEMS

- A. Passenger Elevators: Provide manufacturer's standard microprocessor operation system for each elevator or group of elevators as required to provide type of operation system indicated.
1. Single Elevator: Provide "selective collective automatic operation" as defined in ASME A17.1.
 2. Multiple-Car Group: Provide "group automatic operation" as defined in ASME A17.1.
 3. Multiple-Car Group: Provide [**reprogrammable**] group automatic system that controls car movements in a zoned operation. System dispatches selected cars in a regulated sequence in response to hall calls. System automatically adjusts to changes in demand for different traffic conditions including heavy incoming, heavy two-way, heavy outgoing, and light off-hours as variations of normal two-way traffic. [**System prioritizes hall calls according to waiting time.**]
 4. Multiple-Car Group--Destination-Based System: Provide reprogrammable group automatic system that requires passengers to identify their destination when placing a hall call and then directs them to an assigned elevator. System dispatches cars in a regulated sequence for optimum system efficiency; dispatch is based on origin and destination of calls. System automatically adjusts to changes in demand for different traffic conditions including heavy incoming, heavy two-way, heavy outgoing, and light off-hours as variations of normal two-way traffic.
 5. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
 6. Products: Subject to compliance with requirements for a non-proprietary control system, provide one of the following:
 - a. ThyssenKrupp; TAC 50.
 - b. Montgomery KONE Inc.; Miprom.
 - c. Otis Elevator Co.; Elevonic.
 - d. Schindler Elevator Corp.; Miconic
 - e. Elevator Controls V900 or Pixel
 - f. Smartrise
 - g. Virginia Controls
- B. Freight Elevators: Provide manufacturer's standard operation system for "[**single automatic operation**] [**car-switch automatic floor-stop operation**]," as defined in ASME A17.1.

- C. Auxiliary Operations: In addition to primary operation system features, provide the following operational features for elevators where indicated:
1. Standby Power Operation: On activation of standby power, cars are returned to a designated floor and parked with doors open. One car is returned at a time, with priority given to loaded cars. If a car cannot be returned after two attempts, each of a preselected length of time, it is removed from the system. When all cars have been returned or removed from the system, one car is automatically placed in service. If car selected for service cannot operate within 60 seconds, the system removes car from service and places another car in service. Cars can be manually put in service on standby power, either for return operation or for regular operation, by switches in control panel located at **[main lobby] [fire command station] <Insert location>**. Manual operation causes automatic operation to cease.
 2. Standby Power Operation: On activation of standby power, cars are returned, one at a time, to a designated floor and parked with doors open. If a car cannot be returned, it is removed from the system. When all cars have been returned or removed from the system, one car can be put in service on standby power by a selector switch in control panel located at **[main lobby] [fire command station] <Insert location>**.
 3. **[Emergency Hospital Service] [Priority Service]**: Service is initiated by a **[keyswitch] [card reader] [remote switch]** at designated floors. One elevator is removed from group operation and directed to the floor where service was initiated. On arriving at the floor, elevator opens its doors and parks **[and a lighted sign directs passengers to exit elevator]**. Car is placed in operation by selecting a floor and pressing door close button or by operating keyswitch to put car in independent service. After responding to floor selected or being removed from independent service, car is returned to group operation. If car is not placed in operation within a preset time after being called, it is returned to group operation.
 4. Independent Service: Keyswitch in car control station removes car from group operation and allows it to respond only to car calls. Key cannot be removed from keyswitch when car is in independent service. When in independent service, doors close only in response to the door close button.
 5. Loaded-Car Bypass: When car load exceeds a predetermined weight, car will respond only to car calls, not to hall calls. Predetermined weight can be adjusted.
 6. Automatic Dispatching of Loaded Car: When car load exceeds a predetermined weight, doors will begin closing.
 7. Nuisance Call Cancel: When car calls exceed a preset number while the car load is less than a predetermined weight, all car calls are canceled. Preset number of calls **[and predetermined weight]** can be adjusted.
 8. Distributed Parking: When cars are not required for response to calls, they are parked with doors closed, distributed in predetermined zones throughout the building. One zone shall include the main floor and the adjacent floors; the remaining floors shall be divided into approximately equal zones.
 9. Load-Weighing Device (Freight Elevators): When car load exceeds 80 percent of rated capacity, a signal light is lit in the car control station; when car load exceeds rated capacity, car will not respond to car or hall calls.
- D. Security Features: In addition to above operational features, provide the following security features, where indicated. Security features shall not affect emergency firefighters' service.
1. Keyswitch Feature: Car and hall push buttons are activated and deactivated by security keyswitches. Key is removable only in deactivated position.

2. Secured Landing Feature: Allows each landing to be secured or cleared. If landing is secured, car buttons for that landing do not register a call unless landing access code is entered within a predetermined time period after landing button is pressed. When a secured landing button is pressed, a "Restricted Floor" lamp lights and remains lit until landing access code has been entered or predetermined time period has elapsed.
 - a. Access codes are programmed at each car operating panel using a security keyswitch. Secured landing feature is activated and deactivated by a security keyswitch at the main landing.
3. Car-to-Lobby Feature: Feature, activated by a keyswitch at main lobby, that causes all cars in a group to return immediately to lobby and open doors for inspection. On deactivation by keyswitch, cars complete calls registered before keyswitch activation and resume normal operation.
4. Card-Reader Operation: For access to restricted landings. Provide required conductors in traveling cable and panel in machine room for interconnecting card readers, other security access system equipment, and elevator controllers. Allow space in car as indicated for card reader.
 - a. When system is activated, car calls to restricted landings do not register until card is accepted by security access system. Security access system determines which landings are restricted and which of those are accessible to cardholder.
 - b. Card readers and other security access system equipment are specified in Division 13 Section "<Insert Section title>."
 - c. Card readers and other security access system equipment are by others.

2.4 SIGNAL EQUIPMENT

- A. General: Provide signal equipment for each elevator or group of elevators with hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements of acrylic or other permanent, nonyellowing translucent plastic.
- B. General: Provide signal equipment designed for destination-based system for each elevator or group of elevators. Fabricate lighted elements of acrylic or other permanent, nonyellowing translucent plastic.
- C. Car Control Stations: Provide manufacturer's standard semirecessed car control stations. Mount in return panel adjacent to car door, if not otherwise indicated.
- D. Car Control Stations: Provide fully recessed car control stations with applied metal faceplates. Mount in return panel adjacent to car door, if not otherwise indicated.
- E. Swing-Return Car Control Stations: Provide car control stations fully recessed in hinged return panel adjacent to car door.
 1. Include **[call buttons for each landing served and other]** buttons, switches, and controls required for specified car operation.
 2. Mark buttons and switches with manufacturer's standard identification for required use or function that complies with ASME A17.1.

3. Mount controls at heights complying with [**the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)."**] [ICC A117.1.]
 4. Provide two car control stations in each passenger elevator; equip only one with required keyswitches, if any.
 5. Where indicated, equip each freight elevator with auxiliary car control station mounted on side of car at height to facilitate operation by forklift truck operator without leaving truck.
- F. Emergency Communication System: Provide system that complies with ASME A17.1 and the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)." On activation, system dials preprogrammed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
- G. Fire Department Communication System: Provide [**flush-mounted cabinet**] [**telephone jack**] in each car and required conductors in traveling cable for fire department communication system specified in Division 16 Sections.
- H. Car Position Indicator: For passenger elevator cars, provide illuminated-signal type, digital-display type, or segmented type, located above car door or above car control station. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
1. Include travel direction arrows if not provided in car control station.
- I. Hall Push-Button Stations: Provide one hall push-button station at each landing for each elevator or group of elevators, but not less than one station for each four elevators in a group. For each group of passenger elevators, locate between two elevators at center of group or at location most convenient for approaching passengers.
- J. Hall Push-Button Stations: Provide hall push-button stations at each landing for each elevator or group of elevators as indicated.
1. Provide units with flat faceplate for mounting with body of unit recessed in wall.
 2. Provide units with direction-indicating buttons; two buttons at intermediate landings; one button at terminal landings.
 3. Provide units with buttons for registering destination that incorporate a visual and audible signaling system to verify floor selection and to direct passenger to assigned car and a button to indicate that passenger has disabilities so control system can allow extra room in assigned car. [**Provide for connecting units to building security access system so a card reader can be used to register call and designate destination.**]
- K. Hall Lanterns: Provide units with illuminated arrows, but provide single arrow at terminal landings.
1. Provide units with flat faceplate for mounting with body of unit recessed in wall and with illuminated elements projecting from faceplate for ease of angular viewing.

2. Place lanterns either above or beside each hoistway entrance, unless otherwise indicated. Mount at a minimum of **72 inches (1829 mm)** above finished floor.
 3. Place lanterns in both jambs of entrance frame for each elevator. Mount at a minimum of **72 inches (1829 mm)** above finished floor.
 - a. At manufacturer's option, for single elevators or for only two cars in a group, lanterns may be located in car doorjambs instead of entrance jambs.
 4. With each lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
 - a. At manufacturer's option, audible signals may be placed on each car.
- L. Hall Position Indicators: Provide illuminated-signal type or digital-display type, located above each hoistway entrance at ground floor. Provide units with flat faceplate for mounting with body of unit recessed in wall.
1. Integrate ground-floor hall lanterns with hall position indicators.
- M. Corridor Call Station Pictograph Signs: Provide signs matching hall push-button stations with text and graphics according to ASME A17.1, Appendix H.

2.5 DOOR REOPENING DEVICES

- A. Infrared Array: Provide door reopening devices with a uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more of the light beams shall cause doors to stop and reopen.
- B. Door Edge Device: Provide retractable edge shoes on elevator entrance doors that cause doors to stop and reopen on contacting an obstruction. Include photoelectric device with timed cutout that projects dual-light beams across car entrance at **5- and 29-inch (127- and 737-mm)** heights; the beams, when interrupted, cause doors to stop and reopen.
1. Provide keyswitch in car operating panel for photoelectric device.
 2. Nudging Feature: After car doors are prevented from closing for a predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

2.6 PASSENGER ELEVATOR CAR ENCLOSURES

- A. General: Provide manufacturer's standard [**enameled-steel car enclosures with removable wall panels**] [**steel-framed car enclosures with nonremovable wall panels**], suspended ceiling, trim, accessories, access doors, doors, power door operators, sills (thresholds), lighting, and ventilation.
1. Floor finish is specified in another Section.
 2. Metal Wall Panels: Flush hollow-metal construction, fabricated from metal indicated.
 3. Plastic-Laminate Wall Panels: Plastic laminate adhesively applied to **1/2-inch (13-mm)** fire-retardant-treated particleboard with [**plastic-laminate panel backing complying**

with NEMA LD 3, Type BKV and] manufacturer's standard protective edge trim. Panels have a flame-spread rating of **[25] [75]** or less, when tested according to ASTM E 84.

4. Fabricate car with recesses and cutouts for signal equipment.
5. Fabricate car door frame integrally with front wall of car.
6. Enameled-Steel Doors: Flush, hollow-metal construction.
7. Stainless-Steel Doors: Flush, hollow-metal construction, fabricated from stainless steel.
8. Textured Stainless-Steel Doors: Flush, hollow-metal, prime-painted-steel doors, faced with textured stainless-steel sheets. Laminate textured stainless steel to exposed faces and edges using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
9. Bronze Doors: Flush, hollow-metal, prime-painted-steel doors, faced with bronze sheets. Laminate bronze to exposed faces and edges using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
10. Plastic-Laminate Doors: Flush, hollow-metal, prime-painted-steel doors, faced with plastic laminate; with manufacturer's standard protective edge trim.
11. Sills: Extruded metal, with grooved surface, **1/4 inch (6.4 mm)** thick. Provide polished finish on **[bronze] [and] [nickel silver]**.
12. Luminous Ceiling: Fluorescent light fixtures and ceiling panels of translucent acrylic or other permanent rigid plastic complying with flammability requirements.
13. Polished Metal Ceiling: Flush panels, of metal indicated, with low-voltage downlights in the center of each panel.
14. Handrails: Manufacturer's standard handrails, of metal indicated.

2.7 FREIGHT ELEVATOR CAR ENCLOSURES

- A. General: Provide car enclosures of freight loading classes, sizes, door types, and opening sizes indicated. Include ventilation, lighting, finishes, access doors, thresholds, trim, and accessories. Fabricate car with recesses and cutouts for signal equipment.
 1. Provide power door operators with linkages for hoistway door operation.
- B. Materials and Fabrication: Provide manufacturer's standard flush panel welded construction made from **[prime-painted steel sheet with a minimum thickness of 0.0677 inch (1.7 mm)] [prime-painted, metallic-coated steel sheet with a nominal thickness of 0.079 inch (2.0 mm)] [stainless-steel sheet with a nominal thickness of 0.0781 inch (2.0 mm)]** reinforced at **16-inch (406-mm)** maximum spacing.
 1. Provide perforated panels for ceiling and walls **72 inches (1829 mm)** or more above car floor, unless required to be solid by ASME A17.1.

2.8 PASSENGER HOISTWAY ENTRANCES

- A. General: Provide manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Provide frame size and profile to coordinate with hoistway wall construction.
 1. Where gypsum board wall construction is indicated, provide self-supporting frames with reinforced head sections.

B. Materials and Fabrication: Provide manufacturer's standards but not less than the following:

1. Enameled-Steel Frames: Formed steel sheet.
2. Stainless-Steel Frames: Formed stainless-steel sheet.
3. Bronze Frames: Prime-painted, formed-steel frames faced with formed-bronze sheet. Laminate bronze to steel frames using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
4. Enameled-Steel Doors [**and Transoms**]: Flush, hollow-metal construction.
5. Stainless-Steel Doors [**and Transoms**]: Flush, hollow-metal construction, fabricated from stainless steel.
6. Textured Stainless-Steel Doors [**and Transoms**]: Flush, prime-painted-steel, hollow-metal construction, faced with textured stainless-steel sheets. Laminate textured stainless steel to exposed faces and edges using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
7. Bronze Doors [**and Transoms**]: Flush, prime-painted-steel, hollow-metal construction, faced with bronze sheets. Laminate bronze to exposed faces and edges using adhesive that fully bonds metal to metal without telegraphing or oil-canning.
8. Plastic-Laminate Doors [**and Transoms**]: Flush, prime-painted-steel, hollow-metal construction, faced with plastic laminate; with manufacturer's standard protective edge trim.
9. Sills: Extruded metal, with grooved surface, **1/4 inch (6.4 mm)** thick. Provide polished finish on [**bronze**] [**and**] [**nickel silver**].
10. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

2.9 FREIGHT HOISTWAY ENTRANCES

A. General: Structural-steel frames and sills for hoistway entrances are specified in Division 5 Section "Metal Fabrications." Unless otherwise indicated, provide hoistway entrance doors of type indicated below, with truckable sill bars and resilient safety meeting-rail gaskets.

1. Equip for power operation by coordinated linkage with power-operated car door.
2. Where gypsum board wall construction is indicated, provide fire-resistance-rated, hollow-metal, door-and-frame hoistway entrances. Provide self-supporting frames with reinforced head sections.

B. Materials and Fabrication: Provide selections indicated; provide manufacturer's standards but not less than the following:

1. Metal Door Panels: Constructed of metal sheets, flush on room side, welded and reinforced in steel framing with vertical reinforcing spaced not more than **24 inches (610 mm)** o.c. Fabricate panel faces from [**prime-painted steel sheets with a minimum thickness of 0.0966 inch (2.5 mm)**] [**stainless-steel sheet with a nominal thickness of 0.1094 inch (2.8 mm)**].

2.10 PASSENGER ELEVATORS

A. Elevator Nos.: **<Insert elevator numbers as shown on Drawings.>**

1. Type: [**Gearless**] [**Gearless**] traction.
2. Rated Load: [**2000 lb (908 kg)**] [**2100 lb (953 kg)**] [**2500 lb (1135 kg)**] [**3000 lb (1362 kg)**] [**3500 lb (1589 kg)**] [**4000 lb (1816 kg)**] [**4500 lb (2043 kg)**] [**5000 lb (2270 kg)**].
3. Rated Speed: [**200 fpm (1.0 m/s)**] [**350 fpm (1.8 m/s)**] [**400 fpm (2.0 m/s)**] [**450 fpm (2.3 m/s)**] [**500 fpm (2.5 m/s)**] [**700 fpm (3.6 m/s)**] [**800 fpm (4.1 m/s)**] [**1000 fpm (5.1 m/s)**] [**1200 fpm (6.1 m/s)**] [**1400 fpm (7.1 m/s)**].
4. Operation System: [**Selective collective automatic operation**] [**Group automatic operation, two-car group**] [**Group automatic operation**] [**Group automatic operation with automatic variation of zoned control**] [**Group automatic operation, destination-based system**].
5. Auxiliary Operations:
 - a. Standby power operation.
 - b. [**Emergency hospital service**] [**Priority service**] at [**all**] floors <Insert floor designations>.
 - c. Independent service.
 - d. Loaded-car bypass.
 - e. Automatic dispatching of loaded car.
 - f. Nuisance call cancel.
 - g. Distributed parking.
 - h. Earthquake Emergency Operation: Comply with requirements in ASME A17.1.
6. Security Features: [**Keyswitch feature**] [**Secured landing feature**] [**Car-to-lobby feature**] [**Card-reader operation**].
7. Car Enclosures: As follows:
 - a. Inside Width: [**64 inches (1626 mm)**] [**68 inches (1727 mm)**] [**80 inches (2032 mm)**] [**92 inches (2337 mm)**].
 - b. Inside Depth: [**51 inches (1295 mm)**] [**57 inches (1448 mm)**] [**65 inches (1651 mm)**] [**87-1/2 inches (2222 mm)**] [**90 inches (2286 mm)**] [**93 inches (2362 mm)**] [**93-1/2 inches (2375 mm)**] [**96 inches (2438 mm)**] [**101 inches (2565 mm)**] [**102 inches (2591 mm)**].
 - c. Inside Height: [**88 inches (2235 mm)**] [**94 inches (2388 mm)**] [**108 inches (2743 mm)**].
 - d. Front Walls: [**Enameled steel**] [**Polished stainless steel**] [**Satin stainless steel**] [**Polished bronze**] [**Satin bronze**] with integral car door frames.
 - e. Car Fixtures: [**Polished stainless steel**] [**Satin stainless steel**] [**Polished bronze**] [**Satin bronze**].
 - f. Side and Rear Wall Panels: [**Enameled steel**] [**Plastic laminate**] [**Satin stainless steel**] [**Textured stainless steel**].
 - g. Reveals: [**Enameled steel**] [**Polished stainless steel**] [**Satin stainless steel**] [**Polished bronze**] [**Satin bronze**].
 - h. Door Faces (Interior): [**Enameled steel**] [**Polished stainless steel**] [**Satin stainless steel**] [**Textured stainless steel**] [**Polished bronze**] [**Satin bronze**] [**Plastic laminate**].
 - i. Door Sills: [**Aluminum**] [**Bronze**] [**Nickel silver**].
 - j. Ceiling: [**Luminous ceiling**] [**Polished stainless steel**] [**Polished bronze**].
 - k. Handrails: [**Polished stainless steel**] [**Satin stainless steel**] [**Polished bronze**] [**Satin bronze**], at side and rear walls.
 - l. Floor prepared to receive carpet (specified in Division 9 Section "Carpet").

- m. Floor prepared to receive resilient tile (specified in Division 9 Section "Resilient Tile Flooring").
 - n. Floor prepared to receive sheet vinyl (specified in Division 9 Section "Sheet Vinyl Floor Coverings").
 - o. Floor recessed and prepared to receive dimension stone tile (specified in Division 9 Section "Dimension Stone Tile"). Provide **[cementitious backer units] [applied over] [5/8-inch (16-mm) underlayment grade, exterior plywood]**, screwed to car platform.
8. Hoistway Entrances: As follows:
- a. Width: **[36 inches (914 mm)] [42 inches (1067 mm)] [48 inches (1219 mm)] [54 inches (1372 mm)]**.
 - b. Height: **[84 inches (2134 mm)] [96 inches (2438 mm)]**.
 - c. Type: **[Single-speed side sliding] [Two-speed side sliding] [Single-speed center opening] [Two-speed center opening]**.
 - d. Frames **[at First Floor] [at Basement Floors] [at Other Floors]**: **[Enameled steel] [Polished stainless steel] [Satin stainless steel] [Polished bronze] [Satin bronze]**.
 - e. Doors **[and Transoms] [at First Floor] [at Basement Floors] [at Other Floors]**: **[Enameled steel] [Polished stainless steel] [Satin stainless steel] [Textured stainless steel] [Polished bronze] [Satin bronze] [Plastic laminate]**.
 - f. Sills **[at First Floor] [at Basement Floors] [at Other Floors]**: **[Aluminum] [Bronze] [Nickel silver]**.
9. Hall Fixtures **[at First Floor] [at Basement Floors] [at Other Floors]**: **[Polished stainless steel] [Satin stainless steel] [Polished bronze] [Satin bronze] [Recessed type with no exposed-metal surfaces]**.
10. Additional Requirements: As follows:
- a. Provide inspection certificate in each car, mounted under acrylic cover with **[polished stainless-steel] [satin stainless-steel] [polished bronze] [satin bronze]** frame.
 - b. Provide protective blanket hooks in all four cars and two complete sets of full-height blankets.

2.11 FREIGHT ELEVATORS

A. Elevator Nos.: <Insert elevator numbers as shown on Drawings.>

- 1. Type: **[Geared] [Gearless]** traction.
- 2. Rated Load: **[2000 lb (908 kg)] [2500 lb (1135 kg)] [3000 lb (1362 kg)] [4000 lb (1816 kg)] [5000 lb (2270 kg)] [6000 lb (2720 kg)] [8000 lb (3632 kg)] [10000 lb (4540 kg)]**.
- 3. Freight Loading Class: Class **[A] [B] [C1] [C2] [C3]**.
- 4. Rated Speed: **[75 fpm (0.38 m/s)] [100 fpm (0.51 m/s)] [150 fpm (0.76 m/s)] [200 fpm (1.0 m/s)] [350 fpm (1.8 m/s)]**.
- 5. Auxiliary Operations: **[Keyswitch feature] [Card-reader operation] [Load-weighing device] [Earthquake emergency operation]**.
- 6. Signal Equipment: Satin stainless-steel, single-button hall stations with **[position] ["In Use"]** indicator.

7. Car Enclosures: As follows:
- a. Platform Width: **[64 inches (1626 mm)] [76 inches (1930 mm)] [88 inches (2235 mm)] [100 inches (2540 mm)]**.
 - b. Platform Depth: **[84 inches (2134 mm)] [96 inches (2438 mm)] [120 inches (3048 mm)] [144 inches (3658 mm)] [168 inches (4267 mm)]**.
 - c. Ceiling Height: **96 inches (2438 mm)**.
 - d. Walls and Ceiling: **[Enameled] [Satin stainless]** steel.
 - e. Floor: **[Rolled steel floor plate] [Aluminum-alloy rolled tread plate] [Rolled stainless-steel floor plate]**.
 - f. Door Type: **[Vertical biparting] [Single-speed vertical lift] [Two-speed vertical lift]**.
 - g. Car Gate Operation: **[Manual] [Power operated]**.
 - h. Car Gate Material: **[Painted] [Satin stainless]** steel.
 - i. Car Sill: Steel angle.
 - j. Lighting: **[Two] [Three] 48-inch (1219-mm)** suspended 2-tube fluorescent light fixtures with white reflectors.
8. Hoistway Entrances: As follows:
- a. Width: **[60 inches (1524 mm)] [72 inches (1829 mm)] [96 inches (2438 mm)]**.
 - b. Height: **[84 inches (2134 mm)] [96 inches (2438 mm)]**.
 - c. Door Type: **[Vertical biparting] [Single-speed vertical lift] [Two-speed vertical lift]**.
 - d. Door Operation: **[Manual] [Power operated]**.
 - e. Door Material: **[Painted] [Satin stainless]** steel.
 - f. Sills specified in Division 5 Section "[**Structural Steel**] [**Metal Fabrications**]."
9. Additional Requirements: As follows:
- a. Door reopening device.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. Examine hoistways, hoistway openings, pits, and machine rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed. Proceed with installation only after unsatisfactory conditions have been corrected.

1. For the record, prepare a written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance.

3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.

- B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to minimize transmission of vibrations to structure and thereby minimize structure-borne noise from elevator system.
- D. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.
- E. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- F. Leveling Tolerance: **1/8 inch (3 mm)**, up or down, regardless of load and direction of travel.
- G. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: On completion of elevator installation and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by ASME A17.1 and governing regulations and agencies.
- B. Operating Test: Load elevators to rated capacity and operate continuously for 30 minutes over full travel distance, stopping at each level and proceeding immediately to the next. Record temperature rise of elevator machines during 30-minute test period. Record failure of elevators to perform as required.
 - 1. Perform operating test specified above on one elevator of each type, capacity, speed, and travel distance.
- C. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

3.4 DEMONSTRATION

- A. Instruct Owner's personnel in proper use, operation, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of operational failure and other building emergencies. Train Owner's personnel in procedures to follow in identifying sources of operational failures or malfunctions. Confer with Owner on requirements for a complete elevator maintenance program.
- B. Make a final check of each elevator operation with Owner's personnel present and before date of Substantial Completion. Determine that operation systems and devices are functioning properly.

3.5 PROTECTION

- A. Temporary Use: Do not use elevators for construction purposes unless cars are provided with temporary enclosures, either within finished cars or in place of finished cars, to protect finishes from damage.
 - 1. Provide full maintenance service by skilled, competent employees of elevator Installer for elevators used for construction purposes. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper elevator operation at rated speed and capacity. Use same parts and supplies as used in the manufacture and installation of original equipment.
 - 2. Provide protective coverings, barriers, devices, signs, and other procedures to protect elevators. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

END OF SECTION 14210