

## SECTION 142100 - 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 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes gearless traction passenger elevators with machine room-less application.
  - 1. Work required under this section consists of all labor, materials and services required for the complete installation, including operational verification, of all equipment required for elevator(s) as herein specified.
- B. Related Requirements: The following sections contain requirements that relate to this section and are performed by trades other than the elevator manufacturer/installer.
  - 1. Section 015000 "Temporary Facilities and Controls" for temporary use of elevators for construction purposes.
  - 2. Section 033000 "Cast-in-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
  - 3. Section 042000 "Unit Masonry" for setting sleeves, inserts, and anchoring devices in masonry and for grouting elevator entrance frames installed in masonry walls.
  - 4. Section 051200 "Structural Steel Framing" for the following:
    - a. Attachment plates, angle brackets, and other preparation of structural steel for fastening guide-rail brackets.
    - b. Divider beams.
    - c. Hoist beams.
    - d. Structural-steel shapes for subsills.
  - 5. Section 055000 "Metal Fabrications" for the following:
    - a. Attachment plates and angle brackets for supporting guide-rail brackets.
    - b. Divider beams.
    - c. Hoist beams.
    - d. Structural-steel shapes for subsills.
    - e. Pit ladders.
    - f. **<Insert Section Number> <Insert Section Title>** for waterproofing of elevator pit.
  - 6. Section 221429 "Sump Pumps" for sump pumps, sumps, and sump covers in elevator pits.
  - 7. Division 23 – Heating, Ventilating, and Air Conditioning: ventilation and temperature control of elevator equipment areas.

8. Division 26 – Electrical:
  - a. Main disconnects for each elevator.
  - b. Electrical power for elevator installation and testing.
  - c. Disconnecting device to elevator equipment prior to activation of sprinkler system.
  - d. The installation of dedicated GFCI receptacles in the pit and overhead (with machine room-less).
  - e. Lighting in controller area, machine area and pit.
  - f. Wiring for telephone service to controller.
9. Section 263213 “Engine Generators: to generate emergency power for elevator operation.
10. Section 271500 "Communications Horizontal Cabling" for telephone service for elevators and for Internet connection to elevator controllers for remote monitoring of elevator performance.
11. Section 283111 "Digital, Addressable Fire-Alarm System" Fire-Alarm System" for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and controller rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.

### 1.3 DEFINITIONS

- A. Definitions in ASME A17.1/CSA B44 apply to work of this Section.

### 1.4 APPLICABLE CODES

- A. Applicable Codes: Comply with applicable building codes and elevator codes at the project site, including but not limited to the following:
  1. ANSI A117.1, Buildings and Facilities, Providing Accessibility and Usability for Physically Handicapped People.
  2. ADAAG, Americans with Disabilities Act Accessibility Guidelines.
  3. ANSI/NFPA 70, National Electrical Code.
  4. ANSI/NFPA 80, Fire Doors and Windows.
  5. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.
  6. ANSI/UL 10B, Fire Tests of Door Assemblies.
  7. EN 12016 (May 1998): “EMC Product Family Standards for lifts, escalators, and passenger conveyors Part 2 – immunity.”
  8. All other local applicable codes.

### 1.5 SUBMITTALS

- A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include product data for car enclosures, hoistway entrances, and operation, control, and signal systems. Supplier must provide all material, computers, controls and equipment necessary to allow full functionality of Liftnet. Data for all Liftnet components shall be submitted.
- B. Shop Drawings:

1. Include plans, elevations, sections, and large-scale details indicating service at each landing, control room layout, coordination with building structure, relationships with other construction, and locations of equipment.
  2. Include large-scale layout of car-control station and standby power operation control panel.
  3. Indicate maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
- C. Qualification Data: For Installer.
- D. Seismic Qualification Certificates: For elevator equipment, accessories, and components, from manufacturer.
1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- E. Manufacturer Certificates: Signed by elevator manufacturer certifying that hoistway, pit, and control closet layout and dimensions, as shown on Drawings, and electrical service including standby power generator, as shown and specified, are adequate for elevator system being provided.
- F. Sample Warranty: For special warranty.
- G. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.
1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.
- H. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.
- I. Wiring Diagrams: Provide two (2) sets job specific wiring diagrams for each elevator.
- 1.6 QUALITY ASSURANCE
- A. Installer Qualifications: Elevator manufacturer or an authorized representative who is trained and approved by manufacturer.
- 1.7 DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging. Store materials, components, and equipment off of ground, under cover, and in a dry location.

## 1.8 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; electrical service; and electrical outlets, lights, and switches in hoistways, pits, and control rooms.

## 1.9 WARRANTY

- A. **Manufacturer's Special Warranty:** Manufacturer agrees to repair, restore, or replace elevator work that fails in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.
  - 2. **Warranty Period:** One year from date of turnover of last elevator in a group. Interim maintenance for all elevators turned over prior to last elevator shall be provided at no additional cost to the Owner.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. **Basis-of-Design Product:** Subject to compliance with requirements, provide Otis Elevator Co. Gen2 Gearless Traction Elevators or comparable product by one of the following:
  - 1. KONE Inc.
  - 2. Schindler Elevator Corp.
- B. **Source Limitations:** Obtain elevators from single manufacturer.

### 2.2 PERFORMANCE REQUIREMENTS

- A. **Regulatory Requirements:** Comply with ASME A17.1/CSA B44.
- B. **Accessibility Requirements:** Comply with Section 407 in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.
  - 1. Coordinate with Cleveland Clinic "Elevator Accessibility Guidelines," found on the Cleveland Clinic Buildings and Properties "Design Guidelines" webpage.

- C. Seismic Performance: Elevator system shall withstand the effects of earthquake motions determined according to [ASCE/SEI 7] <Insert requirement> and shall comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified [**and the system will be fully operational after the seismic event**]."
  2. Affected peak velocity acceleration (Av) for Project's location is [**less than 0.10 (seismic risk Zones 0 and 1)**] [**greater than or equal to 0.10, but less than 0.20 (seismic risk Zone 2)**] [**greater than or equal to 0.20 (seismic risk Zones 3 and 4)**].
  3. Provide earthquake equipment required by ASME A17.1/CSA B44.
  4. Provide seismic switch required by ASCE/SEI 7.
  5. Design earthquake spectral response acceleration short period (Sds) for Project is <Insert value>.
  6. Project Seismic Design Category: [A] [B] [C] [D] [E] [F].
  7. Elevator Component Importance Factor: [**1.5**] [**1.0**].

### 2.3 ELEVATORS

- A. Elevator System, General: Manufacturer's standard elevator systems. Unless otherwise indicated, manufacturer's standard components shall be used, as included in standard elevator systems and as required for complete system.
- B. Elevator Description:
1. Group Number: <Insert a different number for each group of elevators that share a **group operation system**>.
  2. Elevator Number(s): <Insert elevator number(s) as shown on Drawings>.
  3. Emergency Elevator Number(s): <Insert elevator number(s) as shown on Drawings>.
  4. Machine Location: Hostway; no machine room is provided.
  5. Rated Load: [**3500 lb (1589 kg)**] [**4000 lb (1816 kg)**] [**5000 lb (2270 kg)**].
  6. Rated Speed: [**150 fpm (0.75 m/s)**] [**200 fpm (1.0 m/s)**] [**350 fpm (1.8 m/s)**] [**400 fpm (2.0 m/s)**].
  7. Operation System: Group automatic operation with demand-based dispatching.
  8. Auxiliary Operations:
    - a. Standby power operation.
    - b. Earthquake Emergency Operation: Comply with requirements in ASME A17.1/CSA B44.
    - c. Automatic dispatching of loaded car.
    - d. Nuisance call cancel.
    - e. [**Emergency hospital**] [**Priority**] service at [**all**] <Insert floor designations> floors.
    - f. Independent service for one car in group.
    - g. Loaded-car bypass.
    - h. Distributed parking.
  9. Security Features: Card-reader operation.
  10. Dual Car-Control Stations: Provide two car-control stations in each elevator with center opening doors; equip only one with required key switches if any.

11. Car Enclosures:
- a. Inside Width: [68 inches (1727 mm)] [80 inches (2032 mm)] [92 inches (2337 mm)] <Insert dimension> from side wall to side wall.
  - b. Inside Depth: [51 inches (1295 mm)] [53 inches (1346 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)] <Insert dimension> from back wall to front wall (return panels).
  - c. Inside Height: [88 inches (2235 mm)] [92 inches (2337 mm)] [94 inches (2388 mm)] [100 inches (2540 mm)] [104 inches (2642 mm)] [108 inches (2743 mm)] [112 inches (2845 mm)] <Insert dimension> to underside of ceiling.
  - d. Front Walls (Return Panels): Refer to Materials Schedule.
  - e. Side and Rear Wall Panels: Refer to Materials Schedule.
  - f. Door Faces (Interior): Refer to Materials Schedule.
  - g. Ceiling: Polished stainless steel, No. 8 finish
  - h. Handrails: 1/2 by 2 inches (13 by 50 mm) rectangular] <Insert dimension> [mirror-polished stainless steel, No. 8 finish] satin stainless steel, No. 4 finish, at sides and rear of car.
  - i. Floor prepared to receive Refer to Materials Schedule.
12. Hoistway Entrances:
- a. Width: [42 inches (1067 mm)] [48 inches (1219 mm)] [54 inches (1372 mm)].
  - b. Height: 84 inches (2134 mm).
  - c. Type: Single-speed center opening.
  - d. Doors: Refer to Materials Schedule.
  - e. Sills at First Floor: Nickel silver, polished.
  - f. Sills at Other Floors: Aluminum, mill finish.
13. Hall Fixtures: Satin stainless steel, No. 4 finish.
14. Hall Fixtures at Other Floors: Satin stainless steel, No. 4 finish.
15. Additional Requirements:
- a. Provide inspection certificate in each car, mounted under acrylic cover with frame made from satin stainless steel, No. 4 finish.
  - b. Provide hooks for protective pads in all cars and one complete set(s) of full-height protective pads.

## 2.4 TRACTION SYSTEMS

- A. Elevator Machines: Variable-voltage, variable-frequency, ac-type hoisting machines and solid-state power converters.
1. Provide 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.

- B. Fluid for Hydraulic Buffers: If using hydraulic buffers, use only fire-resistant fluid.
- C. Inserts: Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.
- D. Machine Beams: Provide framing to support elevator hoisting machine and deflector sheaves from the building structure. Comply with Section 055000 "Metal Fabrications" for materials and fabrication.
- E. Car Frame and Platform: Bolted- or welded-steel units.
- F. Guides: Spring loaded roller guides. Provide guides at top and bottom of car and counterweight frames.

## 2.5 OPERATION SYSTEMS

- A. General: 2.5.A: Provide manufacturer's standard microprocessor operations systems as required to provide type of operation as indicated. It is the intent of the Owner to be provided with OEM, non-proprietary control systems. All components (microprocessor boards, etc.) shall be readily available for purchase by the owner or owner's agents, including all elevator maintenance companies.
- B. Group Automatic Operation with Demand-Based Dispatching: Provide reprogrammable group automatic system that assigns cars to hall calls based on a dispatching program designed to minimize passenger waiting time. System automatically adjusts to demand changes for different traffic conditions including heavy incoming, heavy two-way, heavy outgoing, and light off-hours as variations of normal two-way traffic.
  - 1. Products: Subject to compliance with requirements, provide one of the following:
    - a. OEM – no third party controllers
    - b. KONE Inc.; KCM 831.
    - c. Otis Elevator Co.; Gen2.
    - d. Schindler Elevator Corp.; Miconic TX.
- C. Auxiliary Operations: In addition to primary operation system features, provide the following operational features for elevators where indicated:
  - 1. Single-Car Standby Power Operation: On activation of standby power, car is returned to a designated floor and parked with doors open. Car 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. Manual operation causes automatic operation to cease.
  - 2. Group 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, 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. Manual operation causes automatic operation to cease.

3. Automatic Dispatching of Loaded Car: When car load exceeds 80 percent of rated capacity, doors begin closing.
  4. Loaded-Car Bypass: When car load exceeds 80 percent of rated capacity, car responds only to car calls, not to hall calls.
  5. Distributed Parking: When cars are not required for response to calls, they are parked with doors closed and distributed in predetermined zones throughout the building. One zone shall include the main floor and adjacent floors; remaining floors shall be divided into approximately equal zones.
  6. Independent Service: Keyswitch in car-control station removes car from group operation and allows it to respond only to car calls. When in independent service, doors close only in response to door close button.
  7. Emergency Hospital Service: Service is initiated by a keyswitch 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.
  8. Connect all elevator controllers to existing "Lift Net" system.
- D. Security Features: Provide the following security features, where indicated. Security features shall not affect emergency firefighters' service. Except code blue shall not be canceled
1. Card-Reader Operation: System uses card readers at car-control stations to authorize calls. Security system determines which landings and at what times calls require authorization by card reader. Provide required conductors in traveling cable and panel in control room for interconnecting card readers, other security access system equipment, and elevator controllers. Allow space as indicated for card reader in car.
    - a. Security access system equipment is specified in Section 281300 "Access Control."

## 2.6 DOOR REOPENING DEVICES

- A. Infrared Array: Provide door reopening device with uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams shall cause doors to stop and reopen.
- B. Nudging Feature: After car doors are prevented from closing for predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound and doors shall begin to close at reduced kinetic energy.

## 2.7 CAR ENCLOSURES

- A. General: Provide enameled-steel car enclosures to receive removable wall panels, with removable car roof, access doors, power door operators, and ventilation.

1. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.
- B. Materials and Finishes: Manufacturer's standards, but not less than the following:
1. Subfloor: Exterior, Grade A plywood, not less than 7/8-inch (22.2-mm) nominal thickness.
  2. Floor Finish: Refer to Materials Schedule.
  3. Stainless-Steel Wall Panels: Flush, hollow-metal construction; fabricated from stainless-steel sheet.
  4. Fabricate car with recesses and cutouts for signal equipment.
  5. Fabricate car door frame integrally with front wall of car.
  6. Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet.
  7. Sight Guards: Provide sight guards on car doors.
  8. Sills: Extruded metal, with grooved surface, 1/4 inch (6.4 mm) thick.
  9. Metal Ceiling: Flush panels, with LED downlights in the center of each panel. Align ceiling panel joints with joints between wall panels.
    - a. Lighting shall provide minimum of 5 foot candles at Medical Office and Parking Garage elevators.
    - b. Lighting shall provide minimum 20 foot candles at Hospital elevators.
  10. Handrails: Manufacturer's standard handrails, of shape, metal, and finish indicated.

## 2.8 HOISTWAY ENTRANCES

- A. Hoistway Entrance Assemblies: Manufacturer's standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Frame size and profile shall accommodate hoistway wall construction.
1. Where gypsum board wall construction is indicated, frames shall be self-supporting with reinforced head sections.
- B. Fire-Rated Hoistway Entrance Assemblies: Door and frame assemblies shall comply with NFPA 80 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing at as close-to-neutral pressure as possible according to NFPA 252 or UL 10B.
1. Fire-Protection Rating: 1-1/2 hours with 30-minute temperature rise of 450 deg F (250 deg C).
- C. Materials and Fabrication: Manufacturer's standards, but not less than the following:
1. Stainless-Steel Frames: Formed from stainless-steel sheet.
  2. Star of Life Symbol: Identify emergency elevators with star of life symbol, not less than 3 inches (76 mm) high, on both inside surfaces of hoistway door frames.
  3. Stainless-Steel Doors: Flush, hollow-metal construction; fabricated from stainless-steel sheet.
  4. Sight Guards: Provide sight guards on doors matching door edges.
  5. Sills: Extruded metal, with grooved surface, 1/4 inch (6.4 mm) thick.
  6. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

## 2.9 SIGNAL EQUIPMENT

- A. General: Provide hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements with LEDs.
- B. Car-Control Stations: Provide manufacturer's standard recessed car-control stations. Mount in return panel adjacent to car door unless otherwise indicated.
  - 1. Mark buttons and switches for required use or function. Use both tactile symbols and Braille.
- C. Inset Car-Control Stations: Provide car-control stations mounted on rear of hinged return panel adjacent to car door and with buttons, switches, controls, and indicator lights projecting through return panel but substantially flush with face of return panel.
  - 1. Mark buttons and switches for function. Use both tactile symbols and Braille.
- D. Emergency Communication System: Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System is contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
- E. Firefighters' Two-Way Telephone Communication Service: Provide flush-mounted cabinet in each car and required conductors in traveling cable for firefighters' two-way telephone communication service specified in Section 283111 "Digital, Addressable Fire-Alarm System."
- F. Car Position Indicator: Provide illuminated, digital-type car position indicator with characters a minimum of two inches in height, integral with car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows a minimum of 2 inches in height if not provided in car-control station.
  - 1. Main Campus elevators shall have voice annunciation in lieu of audible signal in car-control station. Annunciation type and message content must have prior approval by the Owner.
- G. Hall Push-Button Stations: Provide one hall push-button station at each landing for each single or duplex elevator. With groups of three or more elevators, provide at least two hall stations at each landing.
  - 1. Provide units with flat faceplate for mounting with body of unit recessed in wall.
- H. Provide telephone jack in each unit for firefighters' two-way telephone communication service specified in Section 283111 "Digital, Addressable Fire-Alarm System."
- I. Hall Lanterns: At each landing, provide combination hall lanterns and position indicators with characters a minimum of two inches in height.
  - 1. Main Campus hall lanterns shall be Model GTCV provided by C.E. Electronics.

2. For all other locations, manufacturer's standard wall-mounted units. Install per the requirements of ADAAG and ANSI 17.1.
- J. Hall Annunciator: With each hall lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
    1. At manufacturer's option, audible signals may be placed on cars.
  - K. Hall Position Indicators: Integrated with hall lanterns. Provide units with faceplate for mounting and with body of unit recessed in wall.
    1. Integrate ground-floor hall lanterns with hall position indicators.
  - L. Standby Power Elevator Selector Switches: Provide switches, as required by ASME A17.1/CSA B44, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed. For each elevator, provide illuminated signals that indicate when they are operational and when they are at the designated emergency return level with doors open.
  - M. Fire-Command-Center Annunciator Panel: Provide panel containing illuminated position indicators for each elevator, clearly labeled with elevator designation; include illuminated signal that indicates when elevator is operational and when it is at the designated emergency return level with doors open. Provide standby power elevator selector switch(es), as required by ASME A17.1/CSA B44, adjacent to position indicators. Provide illuminated signal that indicates when normal power supply has failed.
  - N. Emergency Pictorial Signs: Fabricate from materials matching hall push-button stations, with text and graphics as required by authorities having jurisdiction, indicating that in case of fire, elevators are out of service and exits should be used instead. Provide one sign at each hall push-button station unless otherwise indicated.

## 2.10 FINISH MATERIALS

- A. General: Provide the following materials for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment as indicated.
- B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel, Type B, exposed, matte finish.
- C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, commercial steel, Type B, pickled.
- D. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.
- E. Stainless-Steel Bars: ASTM A 276, Type 304.
- F. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.
- G. Aluminum Extrusions: ASTM B 221 (ASTM B 221M), Alloy 6063.
- H. Nickel Silver Extrusions: ASTM B 151/B 151M, Alloy UNS No. C74500 or No. C77600.

## 2.11 LIFTNET COMPATIBILITY

- A. General: For Liftnet capability, suppliers shall utilize the following, unless more current software is available.
  - 1. For Otis, utilize ICSS box with the Lift-Net software.
  - 2. For Schindler, utilize Lobby Vision for Lift-Net
  - 3. For Kone, utilize Lift-Net re3ady KIC

## 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 of the Work. Examine hoistways, hoistway openings, pits, and control rooms as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
- B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. Comply with manufacturer's written instructions.
- B. Maintainability: The elevator control system shall be serviceable and maintainable by a trained elevator mechanic of the Owner's choice. A complete set of as-built, adjuster's level wiring diagrams and all service tools and software necessary to perform safety tests, diagnose problems, view or reset codes and/or change operational parameters of the elevator control system shall be provided to the Owner as part of the contract and shall be retained by the Owner and shall function for the life of the equipment. Hardware and software needed for diagnosis and operating parameter modification shall be products offered as standard by the manufacturer of the control system. No substitutions of proprietary circuit boards, EPROMS, hardware locks, software passwords or coding shall be allowed.
  - 1. As a condition of installation, the original equipment manufacturer shall guarantee to sell and deliver, on a timely basis, proprietary component repair services, replacement and stock parts, and software updates to the Owner and/or to a third-party elevator maintenance company of the Owner's choice at a fair market price and provide same with whatever technical notices or bulletins as would be provided to the OEM organization in order to keep the equipment current. Technical and engineering support and assistance for control adjustment, maintenance or troubleshooting shall be provided by the original equipment manufacturer to any maintaining contractor designated by the Owner.

2. Elevator manuals, drawings, diagrams and prints shall be provided with the equipment at time of delivery. All documentation shall be available for replacement purchase, at a reasonable cost, by any maintaining elevator contractor designated by the Owner.
- 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 to minimize vibration transmission to structure and structure-borne noise due to 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 car. 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 travel direction.
  - G. **Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.**
  - H. **Locate hall signal equipment for elevators as follows unless otherwise indicated:**
    1. For groups of elevators, locate hall push-button stations between two elevators at center of group or at location most convenient for approaching passengers.
    2. Place hall lanterns either above or beside each hoistway entrance.
    3. Mount hall lanterns at a minimum of 72 inches (1829 mm) above finished floor.

### 3.3 FIELD QUALITY CONTROL

- A. **Acceptance Testing:** On completion of elevator installation and before permitting elevator use (either temporary or permanent), perform acceptance tests as required and recommended by ASME A17.1/CSA B44 and by governing regulations and agencies.
- B. **Operating Test:** Load each elevator 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 machine during 30-minute test period. Record failure to perform as required.
- C. **NEII performance standards shall be the basis to which ride quality be measured. Such performance requirements shall include but not be limited to:**
  1. Door time
  2. Floor to floor flight time.
  3. Acceleration / deceleration.

- D. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times that tests are to be performed on elevators.

### 3.4 PROTECTION

- A. Temporary Use: Limit temporary use for construction purposes to one elevator. Comply with the following requirements for each elevator used for construction purposes:
  - 1. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
  - 2. Provide strippable protective film on entrance and car doors and frames.
  - 3. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
  - 4. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
  - 5. Do not load elevators beyond their rated weight capacity.
  - 6. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair or replacement of worn or defective components, lubrication, cleanup, and adjustment as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
  - 7. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. 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.

### 3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate elevator(s).
- B. Check operation of each elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

### 3.6 MAINTENANCE

- A. Initial Maintenance Service: Beginning at Substantial Completion as defined in Division 1 of the contract documents, maintenance service shall include 12 months' full maintenance by skilled employees of 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. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
  - 1. Perform maintenance during normal working hours.
  - 2. Perform emergency callback service during normal working hours with response time of one hour or less.
  - 3. Include 24-hour-per-day, 7-day-per-week emergency callback service with response time of one hour or less.

END