

SECTION 14240 - HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Hydraulic passenger elevators.

1.2 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.

1.3 SUBMITTALS

- A. Material Safety Data (MSD): MSD Sheets are required for all materials with detailed information on content, product safety, and potentially harmful characteristics. MSD Sheets shall be submitted by Contractor to the Architect for review prior to delivery or use of such materials on the project site. Product approval will depend, in part, upon meeting the environmental requirements of this specification, based upon MSD information submitted to the Architect for review.
- B. Certification: Deliver an original copy of the Certificates of Operation from the State of Florida Division of Elevator Inspections to the Physical Plant Division Facilities Department located in Building 702 (Phone: 352-392-2855) at, or prior to, time of Final Inspection.
- C. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information.
- D. 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.
- E. Samples: For exposed finishes of cars, hoistway doors and frames, and signal equipment; 3-inch- square samples of sheet materials; and 4-inch lengths of running trim members.

- F. Manufacturer/Installer Certificates: Signed by elevator Manufacturer/Installer certifying that hoistway, pit, and machine room layout and dimensions, as shown in contract documents and supplemental submittals, and electrical service, including emergency generator, as shown and specified, function as a complete elevator system. Work shall result in a legal, operating system in accordance with State of Florida requirements.
- G. Maintenance Manuals: Include operation and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information. Submit for Owner's information at Project closeout as specified in Division 1.
 - 1. 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.

1.4 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."
- 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)."

1.5 COORDINATION

- A. Coordinate installation of sleeves, block outs, and items that are embedded in concrete or masonry for elevator equipment. Furnish templates and installation instructions and deliver to Project site in time for installation.
- B. Furnish well casing and coordinate delivery with related excavation work.
- C. Coordinate locations and dimensions of other work relating to hydraulic 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.

1.6 WARRANTY

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

1.7 SERVICE CONTRACT

- A. Monthly Service Contract: In addition to the standard warranty provide a monthly service contract beginning at Substantial Completion, provide a monthly service contract for a period of 12 months beginning on the date of Substantial Completion.
1. Maintenance service shall be accomplished 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.
 2. Perform maintenance, including emergency callback service, during normal working hours.
 3. Include 24-hour-per-day, 7-day-per-week emergency callback service.
 - a. Response Time: Two hours or less.

PART 2 - PRODUCTS

1.8 HYDRAULIC ELEVATORS

- A. Model and Manufacturers – Basis of Design: MX Series; KONE, Inc.
1. Capacity: 2500 pounds
 2. Speed: 125 feet per minute.
 3. Hydraulic Fluid: Non-toxic biodegradeable oil meeting or exceeding U.S. Government EPA section 101(14), known as CERCLA, an Sara title III, Section 313.
 4. Operation: MIPROM HS Selective Collective.
 5. Voltage: As indicated.
 6. Signal Fixture Design:
 7. Car Direction Lantern:
 8. Hall Lantern(s):
 9. Hall Position Indicator:
 10. Signal Fixture Faceplate/Trim Material and Finish: #4 Stainless steel.
 11. Elevator Cab: #4 Stainless steel.
 12. Handrail: 2-inch flat stainless steel at sides, #4 finish.
 13. Wall Panels: Flush, laminate plastic.

- B. Other Acceptable Manufacturers:
 - 1. Thyssen (Dover) Elevator Group North America
 - 2. Otis Elevator Company
 - 3. Schindler Elevator Company

1.9 MATERIALS AND COMPONENTS

- A. General: Provide standard elevator system. Where components are not otherwise indicated, provide standard components as required for a complete system.
- B. Piping: Provide size, type, and weight piping recommended by manufacturer, and provide flexible connectors to minimize sound and vibration transmissions from power unit.
 - 1. Provide dielectric couplings at plunger/cylinder units.
 - 2. Casing for Underground Piping: PVC pipe complying with ASTM D 1785 joined with PVC fittings complying with ASTM D 2466 and solvent cement complying with ASTM D 2564.
- C. 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.
- D. 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.
- E. 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. Satin Stainless Steel: ASTM A 666, Type 304, with No. 4, directional satin finish.
- F. Roller Guides: Provide roller guides at top and bottom of car and counterweight frames.

1.10 OPERATION SYSTEMS

- A. Passenger Elevators: Provide microprocessor based elevator control and operation system for each elevator or group of elevators as required to provide type of operation system indicated.

- B. Elevator Operation:
 - 1. Single Elevator: Provide "selective collective automatic 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. Only one car may be moved upward 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 fire command station. Manual operation causes automatic operation to cease.
- D. Automatic Leveling: Provide with automatic leveling devices.

1.11 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. Car Control Stations: Provide semi-recessed car control stations. Mount in return panel adjacent to car door, if not otherwise indicated.
 - 1. Buttons shall be lighted and vandal-proof.
- C. Emergency Communication System – Hands Free Phone Only: 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.
- D. Fire Department Communication System: Provide stainless steel flush-mounted cabinet in each car and required conductors in traveling cable for fire department communication system specified in Division 16 Sections.
- E. Telephone Cabinet: Provide stainless steel recessed telephone cabinet with door mounted at handicap height.

- F. Car Position Indicator: For all 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.
- G. 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.
- H. Directional Lanterns: Provide units with illuminated arrows.
 - 1. Place lanterns in both jambs of entrance frame for each elevator. Mount at a minimum of 72 inches above finished floor.
 - 2. With each lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.
- I. 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.
- J. Corridor Call Station Pictograph Signs: Provide signs matching hall push-button stations with text and graphics according to ASME A17.1, Appendix H.

1.12 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.

1.13 PASSENGER ELEVATOR CAR ENCLOSURES

- A. General: Provide manufacturer's standard enameled-steel car enclosures with removable wall panels, suspended ceiling, trim, accessories, access doors, doors, power door operators, sills (thresholds), lighting, and ventilation.
 - 1. Floor Finish: Vinyl composition tile.
 - 2. Wall Panels:
 - a. Stainless Steel Panels: Textured stainless steel equal to 5WL Rigidtex.

3. Stainless-Steel Doors: Flush, hollow-metal construction, fabricated from stainless steel sheet; #4 finish.
4. Sills: Extruded metal, with grooved surface, 1/4 inch thick.
5. Ceiling: Acrylic eggcrate lens.
6. Lighting: Fluorescent lighting.
7. Handrails: Stainless steel, profile as indicated; #4 finish; continuous along width of wall.
8. Trim: Stainless steel.
9. Base: Stainless steel, #4 finish.

1.14 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. Stainless-Steel Frames: Formed stainless-steel sheet.
 2. Stainless-Steel Doors: Flush, hollow-metal construction, fabricated from stainless steel.
 3. Sills: Extruded metal, with grooved surface, 1/4 inch thick.
 4. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107.

PART 3 - EXECUTION

1.15 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance. 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.

1.16 INSTALLATION

- A. Excavation for Jack: Drill excavation in each elevator pit to accommodate installation of cylinders; comply with applicable requirements in Division 2 Section "Earthwork."

1. Provide waterproof well casings as necessary to retain walls of well hole.
 - B. Install cylinders in protective casings within well hole or casing. Before installing protective casing, remove water and debris from well hole or casing and provide permanent waterproof seal at bottom of well casing. Fill void space between protective casing and cylinder with corrosion-protective filler.
 1. Align cylinders and fill space between well casing and protective casing with fine sand.
 - C. Install cylinders plumb and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor. Seal between well casing and pit floor with 4 inches of nonshrink, nonmetallic grout.
 - D. 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.
 - E. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to effectively prevent transmission of vibrations to structure and thereby eliminate sources of structure-borne noise from elevator system.
 - F. Piping: Install piping above the floor. No underground hydraulic oil lines are acceptable.
 - G. Install piping above the floor, where possible. Where not possible, cover underground piping with permanent protective wrapping before backfilling.
 - H. Lubricate operating parts of systems as recommended by manufacturers.
 - I. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
 - J. Leveling Tolerance: 1/4 inch, up or down, regardless of load and direction of travel.
 - K. Set sills flush with finished floor surface at landing. Fill space under sill solidly with nonshrink, nonmetallic grout.
- 1.17 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 by governing regulations and agencies.
 - B. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.

1.18 DEMONSTRATION

- A. Instruct Owner's personnel in proper use, operations, 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.
 - 1. Provide a minimum of 4 hours of training, contained in one session, to University maintenance personnel on the proper operation and maintenance of the installation.
- 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.

1.19 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.
- B. Protections: 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 that 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 14240