

## SECTION 14240 - HYDRAULIC ELEVATORS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes the following hydraulic elevators:
  - 1. Passenger elevators.
- B. Related Sections: The following sections contain requirements that relate to this Section:

#### 1.3 DEFINITIONS

- A. Hydraulic elevators are hereby defined to include systems in which cars are hoisted either directly or indirectly by action of hydraulic plunger and cylinder (jack): with other components of the work including fluid storage tank, pump, piping valves, car enclosures, hoistway entrances, control systems signal equipment, guide rails, electrical wiring, roping, buffers, and devices for operating, dispatching, safety, security, leveling, alarm, maintenance, and similar required performances and capabilities.

#### 1.4 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications Sections.
- B. Product Data for each principal component or product of each elevator, including certified test reports on required testing. Indicate capacities, sizes, performance and operating characteristics, features of control system, finishes, and similar information. Indicate any variations from specified requirements.
- C. Shop Drawings including dimensioned drawings showing plans, elevations, sections and large-scale details indicating service at each landing, coordination with building structure and relationships with other construction, and details of car enclosures and hoistway entrances. Including elevator diagrams to indicate elevator service to each level and include excavation requirements for jack.

- D. Wiring diagram detailing wiring for power, signal and control systems differentiating clearly between manufacturer-installed wiring and field installed wiring. Indicate maximum and average power demands.
- E. Maintenance Manuals: Bound manual for elevator with operating and maintenance instructions, parts listing, recommended parts inventory listing, purchase source listing for major and critical components, emergency instructions, and similar information.
- F. Certificates and Permits: Provide Owner with copies of all inspection/acceptance certificates and operating permits as required by governing authorities to allow normal, unrestricted use of the elevators.

## 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage the elevator manufacturer or an installer approved by the elevator manufacturer and who has completed elevator installations similar in material, design, and extent to that indicated for Project which have resulted in installations with a record of successful in service performance.
- B. Regulatory Requirements: In addition to local governing regulations, comply with applicable requirements of ASME/ANSI A17.1, Safety Code for Elevators and Escalators (\*hereafter referred to as the “Code”).

## 1.6 WARRANTY

- A. Special Project Warranty: Provide special project warranty, signed by Contractor, Installer, and Manufacturer agreeing to replace repair, or restore defective materials and workmanship of elevator work during warranty period. This warranty shall be in addition to, and not a limitation of, other rights the Owner may have against the Constructor under the Contract Documents.
  - 1. “Defective” is hereby defined to include, but no by way of limitation, operation or control system failures, performances below required minimums, 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.
  - 2. Warranty period is 12 months starting on date of Substantial Completion.
- B. Warranties: Provide coincidental project warranties where available for major components of elevator work. Submit with maintenance manuals.

## 1.7 MAINTENANCE SERVICE

- A. Initial Maintenance Service: Provide full maintenance service by skilled, competent employees of the elevator installer for period of 12 months following Date of Substantial Completion. Include monthly preventive maintenance performed during normal working hours. Include repair or replacement of worn or defective parts or components and lubricating, cleaning, and adjusting as required for proper elevator operation in conformance with specified requirements. Include 24-hours-per-day, 7-days-per-week emergency callback service. Exclude only repair or replacement due to misuse, abuse, accidents, or neglect caused by persons other than personnel.
  
- B. Continuing Maintenance Service: Installer shall provide a continuing maintenance proposal to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date construction contract maintenance requirements are concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

## 1.8 ELEVATOR REQUIREMENTS

- A. Provide the following requirements.
  - 1. Quantity and type - One holeless hydraulic
  - 2. Capacity - 2100 LBS
  - 3. Speed - 100 FPM
  - 4. Travel - 12'-0"
  - 5. Stops - Two
  - 6. Openings - In line
  - 7. Power - 208 Volt 3 Phase 0 Hertz
  - 8. Operation - Simplex selective collective

## PART 2- PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include

- 1. Mowrey Elevator

### 2.2 Materials And Components

- A. General Requirement: Provide manufacturer's standard pre-engineered elevator systems that will comply with or fulfill the requirements of elevator schedule sheets at end of the Section or, at manufacturer's option, provide custom-manufactured elevator systems that will fulfill requirements. Where components are not otherwise indicated, provide standard components published by manufacture as included in standard pre-engineered elevator systems and as required for complete system.
- B. Hydraulic Machines and Elevator Equipment: Provide manufacturers standard dual piston holeless hydraulic plunger-cylinder unit for each elevator, with electric pump-tank-control-system equipment in machine room as indicated.
- C. Piping: Provide size, type, and weight piping recommended by manufacture, and provide isolation couplings to prevent sound/vibration transmission from power unit.
- D. Inserts: Furnish required concrete inserts and similar anchorage devices for the installation of guide rails, machinery, another components of another specification section.
- E. Car Frame and Platform: Manufacturer's standard welded steel units.

### 2.3 SIGNAL EQUIPMENT

- A. General: Provide signal equipment for elevator to comply with requirements indicated below.
  - 1. Provide illuminated hall-call and car-call buttons that light up when activated and remain lighted until call or other function has been fulfilled; fabricate of acrylic or other permanent translucent plastic.
  - 2. Except for buttons and illuminated signal equipment with exposed surfaces of stainless steel with manufacture's standard directional polish or satin finish.

3. Car Control Stations: Provide car control station in car with flush-mounted metal faceplate containing call button for each landing served and other buttons, switches, and controls required for specified car operation and control. Mount at height complying with ASME/ANSI A117.1. Mount in return panel adjacent to car door. Provide operation device symbols as required by Code. Mark other buttons and switches with manufacturers standard identification for required use or function.
4. Car Position Indicator: For Passenger elevators car, provide either illuminated-signal type or digital- display type, located near top of each car or in car control station. Include direction-of next signal if not provided in car control station.
  - a. In addition to visual indicator, provide audible signal to indicate to passengers that car is stopping at floors served.
5. Hall Push-Button Indicator: Provide hall push-button station at each landing for elevator.
  - a. Provide unit with flat faceplate designed for flush-mounting on wall with body of unit recessed in wall.
  - b. Provide 1-button station and indicate which direction that is.
  - c. Provide special oversized hall lantern signals at each floor.
  - d. In conjunction with each hall lantern device, provide an audible signal to indicate that a car is arriving in response to a hall call and to indicate direction of car travel. Signal shall sound one for up direction of travel and twice for down direction.
6. Telephone: Provide rough-in for telephone hand set in each car, contained in flush-mounted cabinet and complete with identification and instructions for use.
7. Alarm System: Provide emergency alarm bell properly located with building and audible outside hoistways, equipped to sound automatically in response to emergency stops and in response to "Alarm" button on each car control station.
8. Elevator Cab signage: Provide signage in cab prohibiting smoking in elevator cab at all times.

## 2.5 PASSENGER ELEVATOR CAR ENCLOSURES

- A. General: Provide manufacturer's standard pre-engineered car enclosures of the selections indicated. Include ventilation, lighting, ceiling finish, wall finish, access doors, doors, power door operators, sill(threshold), trim, accessories, and floor finish unless indicated as not work of this Section. Provide horizontal sliding doors of manufacturer's standard protective edge trim system for door and wall panels, except as otherwise indicated.
1. Materials and Fabrication: Provide selections as indicated for each car enclosure surface; provide manufacturer's standards, but not less than the following:
- a. Stainless Steel: AISI Type 302/304 with No. 4 satin finish. Cab door.
  - b. Aluminum Sills: Cast or extruded aluminum, with grooved surfaces, 1/4-inch thickness, mill finish.
  - c. Plastic Laminate: High-pressure type complying with NEMA LD3, Type GP-50 (0.050-inch nominal thickness); color, texture, and pattern as selected by Architect from standard products available in the industry. Wall panels.
  - d. Fabricate car door frame integrally with front wall of car.
  - e. Fabricate car with recesses and cutouts for signal equipment.
  - f. Luminous Ceiling: Fluorescent light fixtures and ceiling panels of translucent of egg-crate plastic, of acrylic or other permanent rigid plastic complying with flammability requirements.
  - g. Floor Covering: By other.
  - h. Elevator Lock: Elevator controls shall include the ability to lock elevator doors with the elevator is locked in the mode, it shall only be accessible with a key.

## 2.6 PERSONAL PROTECTIVE DEVICES

- A. Handrails: Provide manufacturer's standard stainless steel handrails on back wall.
- B. Door Edge Protective Device: Provide retractable edge shoe on leading edges of elevator entrance doors to stop and reopen upon contacting an obstruction in entrance.
- C. 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.

## 2.7 PASSENGER HOISTWAY ENTRANCES

- A. General: Provide manufacture's standard, pre-engineered, hollow metal type, sliding, door-and frame hoistway entrances complete with track systems, hardware, safeties, sills, and accessories. Match car enclosure doors for size and door panel movement. Provide frame-section size and profile to coordinate with hoistway wall construction as indicated.
- B. Materials and Fabrication: Provide selections indicated that comply with manufacture's standards, but not less than the following:
  - 1. Stainless Steel Frames: Formed stainless steel sheet, AISI Type 302/304 with No. 4 satin finish.
  - 2. Stainless steel door panels. No. 4 satin finish.
  - 3. Aluminum Sills: Extruded aluminum, with grooved surface, ¼-inch thickness, mill finish.

## PART 3-EXECUTION

### 3.1 EXAMINATION

- A. Prior to commencing elevator installation, examine hoistways, hoistway openings, pits, and machine rooms, as constructed; verify all critical dimensions and examine supporting structure and all other conditions under which elevator work is to be installed. Notify Contractor in writing of any dimensional discrepancies or other conditions detrimental to the proper installation or performance of elevator work. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

### 3.2 INSTALLATION OF ELEVATOR SYSTEM

- A. General: Comply with manufacturer's instructions and recommendations for work required during installation.
- B. Excavation for Jack: Drill excavation in elevator pit to accommodate installation of plunger-cylinder unit.
  - 1. Install casings with waterproof seals at pit floor and with waterproof, high-pressure seal at bottom of casings.
  - 2. Provide manufacture's standard second (inner) casing of fiberglass or PVC with waterproof, high-pressure seal at bottom and set inside outer (initial) casing.
- C. Install plunger-cylinder units plumb and accurately centered for elevator car position and travel; anchor securely on place.

- D. Welded Construction: Provide welded connections for installation of 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. Coordination: Coordinate elevator work with work of other trades for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by Contractor to ensure dimensional coordination of the work.
- F. Sound Isolation: Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby to eliminate sources of structure-borne noise from elevator.
- G. Install piping without routing underground, where possible. Where not possible, cover underground piping with permanent protective wrapping before backfilling.
- H. Lubricate operating parts of systems, including ropes, if any, as recommended by manufactures.
- 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:  $\frac{1}{4}$  inch, up or down, regardless of load and direction of travel.
- K. Set sills flush with finished floor surface at landings. Coordinate with other trades to facilitate and ensure proper grouting of sills.

### 3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: Upon nominal completion of elevator installation, and before permitting use of elevator (either temporary or permanent), perform acceptance test as required and recommended by Code and by governing regulations or agencies.
- B. Advise Constructor, Owner, Architect and inspection department of governing agencies in advance of dates and times test are to be performed on elevators.

### 3.4 PROTECTION

- A. At time of Substantial Completion of elevator work (or portion thereof), provide suitable protective coverings, barriers, devices, signs, or such other methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.



### 3.5 DEMONSTRATION

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

END OF SECTION 14240