

## 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 directly by action of hydraulic plunger and cylinder (jack unit): 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, signals and control systems.
- 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, and abnormal noise or vibration.

**2. Warranty period is 12 months starting on date of Substantial Completion.**

#### 1.7 MAINTENANCE SERVICE

Initial Maintenance Service: Provide full maintenance service by skilled, competent employees of the elevator installer for period of **3 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.

- A.** 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 is 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 (1) Standard hydraulic (in-ground piston)
  2. **Hoist way size -7'4" x 5'9"**
  3. **Pit depth – 4'0" Minimum**
  4. **Overhead -12'7" minimum**
  5. Capacity: 2100 LBS
  6. Speed: 55 FPM
  7. Travel: 15'-8" approx.
  8. Stops: Two (2)
  9. Openings: Two (2) same side
  10. Power Supply: 208/240/480v/ 3 PH /60 Hz or 220v single phase
  11. **Motor horse power-TBD hp.**
  12. **Service Amps -TBD**
  13. Operation: Simplex Selective Collective
  14. **Cab model: ME-200** Cab Design (plastic laminated flush walls)
  15. Cab Height-8'0"
  16. Front wall (Return panels): #4 stainless steel
  17. Side and rear wall panels: plastic laminated from Formica Chart
  18. Handrails: Round satin stainless steel, No. 4 finish on rear wall
  19. Door Sills: Aluminum
  20. Door faces (interior): #4 stainless steel
  21. Hall doors: #4 stainless steel
  22. Ceiling: Prismatic light diffuser panels with fluorescent lighting
  23. Hoist way Entrances: 36" X 84" single slide
  24. Machine size/location: 5'6" x 7'0" min./ at ground floor
  25. **Sump pit dimensions-18" x 18" x 24"**
  26. **Sump pump capacity-3000 gal per hour (50 gal/min.) - by GC**
  27. **ADA phone with visual communication. Building internet is required**

## 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. Otis Elevator Company
  - 3. Schindler
  - 4. ThyssenKrupp

### 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 these specifications 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 manufacturer as included in standard pre-engineered elevator systems and as required for complete system.
- B. Hydraulic Machines and Elevator Equipment: Provide manufacturers standard hydraulic elevator, with electric pump-tank-control-system equipment in machine room as indicated.
- C. Piping: Provide size, type, and weight piping recommended by manufacturer, 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 and machinery.
- E. Car Frame and Platform: Manufacturer's standard welded steel units.

### 2.3 SIGNAL EQUIPMENT

- A. General: All signal equipment including car stations, hall stations, position indicators and lanterns shall operate by serial link communications. Provide signal equipment for elevator to comply with requirements indicated below.
  - 1. Hall-call and car-call pushbuttons will be the vandal link type.
  - 2. Exposed surfaces of stainless steel with # 4 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 voice announcer to indicate to passengers the car position and direction of travel.

5. Hall Push-Button Indicator: Provide Hall push-button station at each landing for elevator.
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.

#### 2.4 MICROPROCESSOR CONTROLLER

1. Provide a "state of the art" manufacturer's standard microprocessor-based controller. All connections to signal fixtures/pushbuttons shall be via serial communication. Diagnostics shall be by a visual display. Controller shall have built in capacity for remote monitoring via modem without any modifications.
2. Door operator shall be closed loop microprocessor type that communicates with the main control panel via serial link.
3. Motor starter shall be solid state "soft start" type.

#### 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.
    - b. Aluminum Sills: Cast or extruded aluminum, with grooved surfaces, 1/4-inch thickness, mill finish.
    - c. Plastic Laminate Wall Panels: 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.
    - d. Plastic Laminate Door Finish.
    - e. Fabricate car door frame integrally with front wall of car.
    - f. Fabricate car with recesses and cutouts for signal equipment.
    - g. Luminous Ceiling: Fluorescent light fixtures and prismatic light diffuser ceiling panels with aluminum frame complying with flammability requirements.
    - h. Vinyl Composition Tile Floor Covering: ASTM F 1066, Composition, 12 inch by 12 by 1/8 inch thick; color and pattern as selected by architect from manufacturer's standard range.

#### 2.6 PERSONAL PROTECTIVE DEVICES

- A. Handrails: Provide manufacturer's standard stainless-steel handrails on back wall.
- B. Door Edge Protective Device: Provide proximity type door protection devices.

#### 2.7 PASSENGER HOISTWAY ENTRANCES

- A. General: Provide manufacturer'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 manufacturer'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. Plastic laminate door panels.
  - 3. Aluminum Sills: Extruded aluminum, with grooved surface,  $\frac{1}{4}$ -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 manufacturer'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 manufacturer.
- 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. Advice 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