

**SECTION 14203****HYDRAULIC ELEVATORS****PART 1 GENERAL****1.01 SECTION INCLUDES**

- A. Complete elevator systems.
- B. Excavating and backfilling for hydraulic cylinder casing.
- C. Elevator maintenance.

**1.02 RELATED REQUIREMENTS**

- A. Section 01500 - Temporary Facilities and Controls: Temporary power supply.
- B. Section 05120 - Structural Steel: Hoistway framing.
- C. Section 05500 - Metal Fabrications: Pit ladder, Sill supports, divider beams, and overhead hoist beams.
- D. Section 07815 - Sprayed-On Fireproofing: Fireproofing of guide rail brackets where attached to building structural members.
- E. Section 08310 - Access Doors and Panels: Fire rated access doors into hoistway.
- F. Section 10523 - Fire Extinguishers, Cabinets and Accessories: Fire extinguisher in elevator machine room.
- G. See Mechanical and Electrical Specifications - Fire Alarm System:
  - 1. Fire and smoke detectors and interconnecting devices.
  - 2. Fire alarm signal lines to elevator controller cabinet.
- H. See Plumbing Specifications - Fire Suppression Sprinklers: Sprinkler heads in hoistway.
- I. See Plumbing specifications - Plumbing Equipment: Pit drain.
- J. See Mechanical Specifications - Power Ventilators: Mechanical fan for pressurization of elevator hoistway.
- K. See Electrical Specifications - Conduit:
  - 1. Empty conduit to elevator equipment devices remote from elevator machine room or hoistway.
- L. See Electrical Specifications - Equipment Wiring:
  - 1. Electrical characteristics and wiring connections.
  - 2. Electrical service to main disconnect in elevator machine room.
  - 3. Emergency power transfer cabinet.
  - 4. Electrical power for elevator installation and testing.
  - 5. Electrical disconnecting device to elevator equipment prior to activation of sprinkler system.
  - 6. Electrical service for machine room.
  - 7. Lighting in elevator pit.
  - 8. Empty conduit for telephone service to machine room.
  - 9. Finishes: See Interior Finish Documents.

**1.03 REFERENCE STANDARDS**

- A. AISC 360 - Specification for Structural Steel Buildings; American Institute of Steel Construction, Inc.; 2005.
- B. AISC S350L - Load and Resistance Factor Design Specification for Structural Steel Buildings; American Institute of Steel Construction, Inc.; 1999, with Supplement No.1 in 2001.

- C. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers; 2007.
- D. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.
- E. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.
- F. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association; 2010.
- G. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc.; current edition.
- H. UL (ECMD) - Electrical Construction Materials Directory; Underwriters Laboratories Inc.; current edition.
- I. All other local applicable codes.

#### **1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Preinstallation Meeting: Convene a meeting one week prior to starting work.
  - 1. Review schedule of installation, installation procedures and conditions, and coordination with related work.
  - 2. Review use of elevator for construction purposes, hours of use, scheduling of its use, cleanliness of cab, employment of operator, maintenance of system.
- B. Construction Use of Elevator: Elevator may be used for transport of construction personnel and materials.
  - 1. Enclose cab with protective plywood on floor, walls, and ceiling.
  - 2. Provide temporary lighting.
  - 3. Provide control panel with manual and emergency operation with key operation for attendant operator.

#### **1.05 SUBMITTALS**

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Indicate the following information:
  - 1. Locations of machine room equipment: driving machines, controllers, governors and other component.
  - 2. Hoistway components: Car, machine, beams, guide rails, buffers, ropes, and other components.
  - 3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
  - 4. Individual weight of principal components; load reaction at points of support.
  - 5. Loads on hoisting beams and location of trolley beams.
  - 6. Clearances and over-travel of car and counterweight.
  - 7. Locations in hoistway and machine room of traveling cables and connections for car light.
  - 8. Location and sizes of access doors, doors, and frames.
  - 9. Expected heat dissipation of elevator equipment in machine room.
  - 10. Applicable seismic design data; certified by a licensed Professional Structural Engineer.
  - 11. Interface with building security system.
  - 12. Electrical characteristics and connection requirements.
  - 13. Show arrangement of equipment in machine room so rotating elements, sheaves, and other equipment can be removed for repairs or replaced without disturbing other components. Arrange equipment for clear passage through access door.
- C. Product Data: Provide data on the following items:
  - 1. Signal and operating fixtures, operating panels, indicators.
  - 2. Cab design, dimensions, layout, and components.
  - 3. Cab and hoistway door and frame details.

4. Electrical characteristics and connection requirements.
- D. Maintenance Contract:
1. Provide one year Maintenance Contract from date of substantial completion.
- E. Maintenance Data: Include:
1. Parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
  2. Technical information for servicing operating equipment.
  3. Legible schematic of hydraulic piping and wiring diagrams of installed electrical equipment and changes made in the Work. List symbols corresponding to identity or markings on machine room and hoistway apparatus.

### **1.06 QUALITY ASSURANCE**

- A. Perform Work in accordance with applicable code and as supplemented in this section.
- B. Designer Qualifications: Design guide rails, brackets, anchors, and machine anchors under direct supervision of a Professional Structural Engineer experienced in design of work of this type and licensed in State of Project.
- C. Perform structural steel design, fabrication, and installation in accordance with AISC 360, Specification for Structural Steel Buildings. Perform seismic design in accordance with applicable code.
- D. Fabricate and install door and frame assemblies in accordance with NFPA 80.
- E. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience. Elevator manufacturer shall be ISO 9002 certified.
- F. Installer Qualifications: Employees and supervisor on payroll of elevator equipment manufacturer.
- G. Products Requiring Fire Resistance Rating: Listed and classified by UL.
- H. Permits and Inspections: Provide licenses and permits and perform required inspections and tests.

### **1.07 WARRANTY**

- A. See Section 01780 - Closeout Submittals, for additional warranty requirements.
- B. Provide one year manufacturer warranty for elevator operating equipment and devices.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Acceptable Manufacturers:
1. ThyssenKrupp Elevator; Product AMEE 45: [www.thyssenkruppelevator.com](http://www.thyssenkruppelevator.com).
  2. Substitutions: See Section 01600 - Product Requirements.
- B. All components to be manufactured by same entity, unless otherwise indicated.

### **2.02 ELEVATORS**

- A. Elevator #1: Passenger, holeless hydraulic type with cylinder in hoistway.
1. Twin-post holeless jack design.
  2. Operation and Controls: Automatic group.
  3. Additional Service Controls: In addition, provide:
    - a. Independent service.
    - b. Hospital service.

- c. Independent riser service.
- d. Notification of elevator operating under emergency power both in cab and landing.
- 4. Cab Design: As selected from standard finishes.
- 5. Handrails: 2" Round Tubular - Satin Stainless Steel.
- 6. Hoistway Doors and Frames: Satin Stainless steel, rated as required by Drawings.
- 7. Cab Ceilings: Low Voltage Downlighting - Satin Stainless Steel.
- 8. Height under Ceiling: 7'-4"
- 9. Hoistway and Cab Entrance Frame Opening Size: 4' 0" x 7' 0" inches, stainless steel.  
Coordinate jamb thickness with drawings.
- 10. Door Type: Double leaf.
- 11. Door Operation: Side opening.
- 12. Rated Net Capacity: 4500 lbs.
- 13. Rated Speed: 125 ft/min.
- 14. Clear Net Platform Size: 5'-8" x 7'-9.5" inches.
- 15. Travel Distance: As indicated on drawings.
- 16. Number of Stops: 2.
- 17. Number of Openings: 1 Front
- 18. Elevator Machine Room: Remote.

### 2.03 CONTROLS

- A. Elevator Controls: Duplex collective operation. Provide landing buttons, hall lanterns, and with required ADA signage.
- B. Door Controls:
  - 1. All faceplates are to be Stainless Steel No. 4 brushed finish.
  - 2. Program door control to open doors automatically when car arrives at floor.
  - 3. Render "Door Close" button inoperative when car is standing at dispatching terminal with doors open.
  - 4. If doors are prevented from closing for approximately ten seconds because of an obstruction, automatically disconnect door reopening devices, close doors more slowly until obstruction is cleared. Sound buzzer.
  - 5. Door Safety Devices: Moveable, retractable safety edges, quiet in operation; equip with Micro light door protection with a minimum of forty (40) infrared beams..
- C. Landing Buttons: Classic Hall illuminating, vandal resistant type, one for originating UP and one for originating DOWN calls, one button only at terminating landings; marked with arrows.
- D. Landing Position Indicators: Classic Hall position indicators to be required at all floors for all elevators.
  - 1. Type: True Dot Matrix Digital units.
- E. Car Direction Indicators: Illuminating white. Classic fixtures.
- F. Interconnect elevator control system with building fire alarm systems.
- G. Provide "Firefighter's Operation" in accordance with applicable code. Designated Landing: First Floor.
- H. All cabs are to have ADA accessible telephones furnished and installed by elevator contractor.

### 2.04 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Electrical Characteristics:
  - 1. See Division 16 - ELECTRICAL
  - 2. 208 volts, three phase, 60 Hz.

### 2.05 MACHINE ROOM FITTINGS

- A. Wall-Mounted Frames: Glazed with clear plastic; sized as required. Provide one for master

electric and hydraulic schematic and one for lubrication chart. Install charts.

- B. Key Cabinet: Wall-mounted, lockable, keyed to building keying system, for control/operating panel keys.
  - 1. Provide two extra key cabinet keys.
  - 2. Provide two extra control/operating panel keys.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions before starting work.
- B. Verify that hoistway, pit, and machine room are ready for work of this section.
- C. Verify hoistway shaft and openings are of correct size and within tolerance.
- D. Verify location and size of machine foundation and position of machine foundation bolts.
- E. Verify that electrical power is available and of the correct characteristics.

#### **3.02 PREPARATION**

- A. Arrange for temporary electrical power for installation work and testing of elevator components.

#### **3.03 INSTALLATION**

- A. Install system components. Connect equipment to building utilities.
- B. Provide conduit, boxes, wiring, and accessories.
- C. Mount machines on vibration and acoustic isolators, on bed plate and concrete pad. Place on structural supports and bearing plates. Securely fasten to building supports. Prevent lateral displacement.
- D. Accommodate equipment in space indicated.
- E. Install guide rails using threaded bolts with metal shims and lock washers under nuts. Compensate for expansion and contraction movement of guide rails.
- F. Accurately machine and align guide rails. Form smooth joints with machined splice plates.
- G. Bolt or weld brackets directly to structural steel hoistway framing.
- H. Field Welds: Chip and clean away oxidation and residue, wire brush; spot prime with two coats.
- I. Coordinate installation of hoistway wall construction.
- J. Install hoistway door sills, frames, and headers in hoistway walls. Grout sills in place. Set entrances in vertical alignment with car openings and aligned with plumb hoistway lines.
- K. Well for cylinder: The cylinder well, including a casing if necessary, shall be provided by elevator subcontractor.
- L. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
- M. Machine Room Components: Clean and degrease; prime one coat, finish with one coat of enamel.
- N. Adjust equipment for smooth and quiet operation.

#### **3.04 ERECTION TOLERANCES**

- A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1.
- B. Cab Movement on Aligned Guide Rails: Smooth movement, with no objectionable lateral or

oscillating movement or vibration.

### **3.05 FIELD QUALITY CONTROL**

- A. Testing and inspection by regulatory agencies will be performed at their discretion.
  - 1. Schedule tests with agencies and notify Owner and Architect.
  - 2. Obtain permits required to perform tests.
  - 3. Document regulatory agency tests and inspections in accordance with the requirements of Section 01400.
  - 4. Perform tests required by regulatory agencies.
  - 5. Furnish test and approval certificates issued by authorities having jurisdiction.

### **3.06 ADJUSTING**

- A. Adjust for smooth acceleration and deceleration of car so not to cause passenger discomfort.
- B. Adjust automatic floor leveling feature at each floor to achieve 1/4 inch from flush.

### **3.07 CLEANING**

- A. Remove protective coverings from finished surfaces.
- B. Clean surfaces and components ready for inspection.

### **3.08 PROTECTION**

- A. Do not permit construction traffic within cab after cleaning.
- B. Protect installed products until project completion.
- C. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

### **3.09 MAINTENANCE**

- A. See Section 01700 - Execution Requirements, for additional requirements relating to maintenance service.
- B. Provide a separate maintenance contract for specified maintenance service.
- C. Perform maintenance work using competent and qualified personnel under the supervision and in the direct employ of the elevator manufacturer or original installer.
- D. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of Owner.
- E. Provide service and maintenance of elevator system and components for one year from Date of Substantial Completion.
  - 1. This service shall not be subcontracted but shall be performed by the elevator subcontractor.
  - 2. All work shall be performed by competent employees and provide emergency call back service.
- F. Include systematic examination, adjustment, and lubrication of elevator equipment. Maintain hydraulic fluid levels. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original equipment. Replace wire ropes when necessary to maintain the required factor of safety.
- G. Perform work without removing cars during peak traffic periods.
- H. Provide emergency call back service at all hours for this maintenance period.
- I. Maintain an adequate stock of parts for replacement or emergency purposes locally, near the place of the Work. Have personnel available to ensure the fulfillment of this maintenance service, without unreasonable loss of time.

**END OF SECTION**