SECTION 14201

PASSENGER ELEVATORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Complete elevator systems.

B. Excavating and backfilling for hydraulic cylinder casing.

1.02 RELATED REQUIREMENTS

A. Section 03300 - Cast-in-Place Concrete.

B. Section 05120 - Structural Steel.

C. Section 05500 - Metal Fabrications.

D. Section 09260 - Gypsum Board Assemblies.

E. Section 15600 - Automatic Fire Sprinklers.

F. Section 15800 - Heating, Ventilating, and Air Conditioning.

G. Section 16010 - Electrical General Provisions.
   1. Empty conduit to elevator equipment devices remote from Elevator machine room or hoistway.
   2. Empty conduit between controller cabinet in machine room to remote group supervisory panel in lobby.

1.03 REFERENCE STANDARDS

A. AISC 360 - Specification for Structural Steel Buildings; American Institute of Steel Construction, Inc..

B. ASME A17.1 - Safety Code for Elevators and Escalators; The American Society of Mechanical Engineers.

C. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks; The American Society of Mechanical Engineers.

D. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society.

E. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc..

F. NFPA 70 - National Electrical Code; National fire Protection Association.

G. NFPA 80 - Standard for Fire Doors and Fire Windows; National Fire Protection Association.

H. UL (BMD) - Building Materials Directory; Underwriters Laboratories Inc..

I. UL (ECMD) - Electrical Construction Materials Directory; Underwriters Laboratories Inc..

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. Make elevator available for construction use if requested by General Contractor. The cost to provide this service is not part of this specification section.
2. Enclose cab with protective materials on floor, walls, and ceiling.
3. Provide temporary lighting.
4. Provide control panel with key operation for attendant operator.

1.05 SUBMITTALS

A. See Section 01350 - Submittals, for submittal procedures.

B. Shop Drawings: Indicate the following information:
1. Locations of machine room equipment: driving machines, controllers and other components.
2. Hoistway components: Car machine beams, guide rails, buffers 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.
6. Clearances and over-travel of car.
7. Locations in hoistway and machine room and connections for car light and telephone.
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 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. Samples:
1. Color Charts.
2. Finish Charts.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with applicable code.

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 California.

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. Perform welding of steel in accordance with AWS D1.1.

E. Fabricate and install door and frame assemblies in accordance with NFPA 80.

F. Perform electrical work in accordance with NFPA 70.

G. Maintain one copy of each quality standard document on site.

H. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum ten years documented experience.

I. Installer Qualifications: Employees and supervisor on payroll of elevator equipment manufacturer.

J. Installer Qualifications: Company specializing in performing the work of this section and approved by elevator equipment manufacturer.

K. Products Requiring Fire Resistance Rating: Listed and classified by UL, ITS (Warnock Hersey), or testing agency acceptable to the authority having jurisdiction.

L. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. or testing agency acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

1.07 WARRANTY

A. See Section 01700 - Contract Closeout, for additional warranty requirements.

B. Provide manufacturer warranty for a period of one (1) year. The warranty period is to begin upon Substantial Completion of the Contract. Warranty covers defects in materials and workmanship. Damage due to ordinary use, vandalism, improper or insufficient maintenance, misuse, or neglect do not constitute defective material or workmanship.

1.08 MAINTENANCE SERVICE

A. The elevator manufacturer shall provide maintenance service consisting of regular examinations and adjustments of the elevator equipment for a period of 12 months after date of substantial completion. Replacement parts shall be produced by the original equipment manufacturer.

B. Maintenance service shall be performed during regular working hours of regular working days and shall include regular time call back service.

C. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Mitsubishi Electric; Product IDH-S-H1 Hydraulic Elevator.

B. Other Acceptable Manufacturers:
   1. ThyssenKrupp Elevator: www.thyssenkruppelevator.com.
   2. Schindler Elevator Corp: www.us.schindler.com.
   3. Substitutions: See Section 01640 - Substitutions and Product Options.

C. All components to be manufactured by same entity.

2.02 ELEVATORS

A. Elevator: Passenger, hydraulic with cylinder in buried casing.
   1. Operation and Controls: Simplex Selective Collective.
   2. Hoistway Doors and Frames: Stainless steel #4 finish.
   3. Cab Height: 96 inches.
   4. Cab Walls: 14 gauge stainless steel frame, plastic laminate panels.
   5. Cab Ceiling Type: Eggcrate Drop Ceiling.
   6. Cab Ceiling Finish: Aluminum Frame with Diffuser.
   7. Hoistway Size: 102x83 inches.
   8. Door Type: Single leaf.
   9. Door Operation: Right Side opening.
   10. Rated Net Capacity: 3500 lbs.
   11. Rated Speed: 100 ft/min.
   12. Nominal Platform Size: 84x74 inches.

13. Clear Net Platform Size: 80x64 inches.
14. Travel Distance: As indicated on drawings.
15. Number of Stops: 2.
16. Number of Openings: 1 Front.
17. Hydraulic Motor and Pump Location: Adjacent to hoistway.

2.03 CONTROLS

A. Elevator Controls: Provide landing buttons.

B. Door Controls:
   1. Program door control to open doors automatically when car arrives at floor.
   2. Render "Door Close" button inoperative when car is standing at dispatching terminal with doors open.
   3. 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.
   4. Door Safety Devices: A fixed, multi-beam infra-red curtain door reopening device.

C. Landing Buttons: Stainless steel type, one for originating UP and one for originating DOWN calls, one button only at terminating landings; marked with arrows.

D. Hall Position Indicators: Illuminating white.

E. Interconnect elevator control system with building fire alarm systems.

2.04 EMERGENCY POWER

A. Arrange elevator operation to operate under emergency power when normal power supply fails.

B. Emergency Power Supply: Building emergency power; provide for emergency power characteristics and phase rotation same as for normal power. Provide transfer switches and auxiliary contacts in accordance with Electrical documents. Install connections to power feeders.

C. Provide operational control circuitry for adapting the change from normal to emergency power.

D. Upon transfer to emergency power, advance one elevator at a time to a pre-selected landing, stop car, open doors, disable operating circuits, and hold in standby condition.

E. After the above operation has completed one complete cycle, operate one pre-selected elevator in normal operation from the emergency power supply. If the pre-selected car fails to operate, automatically select another car to operate.

F. Provide manual switch to override the automatic selection procedure.

2.05 ELECTRICAL CHARACTERISTICS AND COMPONENTS

A. Electrical Characteristics:
   1. 25 hp.
   2. 100 rated load amperes.
   3. 480 volts, single phase, 60 Hz.
   4. 125 amperes maximum fuse size.

2.06 MACHINE ROOM FITTINGS

A. Wall-Mounted Frames: Glazed with clear glass; sized as required. Provide one for master 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 to have General Contractor provide temporary electrical power for installation work and testing of elevator components.

B. Excavate for hydraulic cylinder casing in accordance with Section 02315.

3.03 INSTALLATION

A. Install system components. Connect equipment to building utilities.

B. Provide conduit, boxes, wiring, and accessories.

C. Install hydraulic piping between cylinder and pump unit.

D. Mount machines, motors, and pumps 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.

E. Accommodate equipment in space indicated.

F. Install guide rails using threaded bolts with metal shims and lock washers under nuts. Compensate for expansion and contraction movement of guide rails.

G. Accurately machine and align guide rails. Form smooth joints with machined splice plates.

H. Bolt or weld brackets directly to structural steel hoistway framing.

I. Bolt brackets to inserts placed in concrete form work or self drilling expansion shell anchors that will perform to four times the rated pull-out load.

J. Field Welds: Chip and clean away oxidation and residue, wire brush; spot prime with two coats.

K. Coordinate installation of hoistway wall construction.

L. Install hoistway door sills, frames, and headers in hoistway walls. Set entrances in vertical alignment with car openings and aligned with plumb hoistway lines.

M. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.

N. Machine Room Components: Clean and degrease; prime one coat, finish with two coats of enamel.

O. Adjust equipment for smooth and quiet operation.

3.04 TOLERANCES

A. Guide Rail Alignment: Plumb and parallel to each other in accordance with ASME A17.1, ASME A17.2.1, and ASME A17.2.2.

B. Guide Rail Alignment: Plumb and parallel to each other within 1/8 inch.

C. 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 County of Orange/OC Public Works and Alexander + Hibbs AIA, Inc..
   2. Obtain permits required to perform tests.
   3. Document regulatory agency tests and inspections in accordance with the requirements of Section 01410.
   4. Perform tests required by regulatory agencies.
   5. Furnish test and approval certificates issued by authorities having jurisdiction.

B. Perform testing and inspection in accordance with requirements of Section 01410.
   1. Perform tests as required by ASME A17.2.
   2. Provide two weeks written notice of date and time of tests.
   3. Supply instruments and execute specific tests.

C. Perform operational tests in the presence of County of Orange/OC Public Works and Alexander + Hibbs AIA, Inc..

D. Operational Tests:
   1. Test single elevator system by transporting at least 2 persons up from main floor during a five minute period.
   2. At an agreed time during the contract warranty period, and with the building normally occupied using normal building traffic, conduct tests to verify performance. Furnish event recording of all hall call registrations, time initiated, and response time throughout entire normal working day.
   3. Time elevator travel between typical floors at not more than 10 seconds. Measure time from moment doors start to close until car has stopped level at next floor and doors are opening.

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.

END OF SECTION