

DIVISION 14

CONVEYING SYSTEMS

SECTION 14A

HYDRAULIC ELEVATORS

PART I GENERAL

14A1.01 GENERAL REQUIREMENTS

- A. Attention is directed to the printed form of the Contract and Division 1 of these specifications entitled "General Requirements", which are hereby made a part of this Section of the Specifications.
- B. Equality of material, article, assembly or system, other than those named or described in this Section will be determined in accordance with the provisions of the Contract Form.

14A1.02 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.
- B. Refer to other sections of these specifications for related work which is not work of this section, including electrical service with fused disconnect switches for elevator system, hoistway, pits, and machinery rooms with access, lighting, ventilation and services.

14A1.03 DESCRIPTION OF WORK:

- A. Extent of hydraulic elevator work is indicated on the drawings, in schedules and by provisions of this section.
- B. Types of hydraulic elevator service required include the following: Passenger elevator.
- C. **Definitions:** Hydraulic elevator work is hereby defined to include systems in which cars are hoisted either directly or indirectly by action of a hydraulic plunger and cylinder (jack); with other components of the work including fluid storage tank, pump, piping, valves, car enclosures, hoistway

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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.

14A1.04 QUALITY ASSURANCE:

A. Regulatory Requirements:

1. Elevator Code: Except for more stringent requirements as indicated or imposed by governing regulations (which must be complied with), comply with applicable requirements of ANSI/ASME A171.1, Safety Code for Elevators, and Escalators (hereinafter referred to as the "Code").
2. NFPA Code: Comply with applicable NFPA codes, and specifically with sections relating to electrical work and elevators.
3. Fire Resistance of Entrances: Comply with NFPA No. 80, and provide units bearing UL labels with 30-min. temperature rise on labels.
4. Commonwealth of Massachusetts: Comply with the requirements of the State Building Code, 780 CMR Articles 1 through 22; the Architectural Barriers Board, 521 CMR; and Elevator Regulations, 524 CMR 1.00 through 34.00.

14A1.05 SUBMITTALS:

- A. Product Data: Submit manufacturer's detailed technical product data and installation instructions for each principal component or product, and include certified test reports on required testing. List and describe features of control system, performances, and operating characteristics.
- B. Shop Drawings: Submit plans, elevations and details of car enclosures and hoistway entrances. Prepare elevating diagrams to show service to each level. Show excavation requirements for jack.
- C. Samples: Submit samples of exposed finishes of car enclosures, hoistway entrances, and signal equipment. Provide 6" to 8" square samples of sheet materials and 10" to 12" lengths of running trim members.
- D. Maintenance Manuals: Submit 3 bound manuals for each

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.

- E. **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 elevators.

14A1.06 INITIAL MAINTENANCE AND WARRANTY:

- A. **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/replacement of worn or defective parts or components and lubrication, cleaning and adjusting as required for proper elevator operation in conformance with specified requirements. Include 24 hour/day, 7 days/week emergency callback service. Exclude only repair/replacement due to misuse, abuse, accidents or neglect caused by persons other than Installer's personnel.
- B. **Warrenties:** Provide coincidental product warrenties where available for major components of elevator work. Submit with maintenance manuals.

PART II - PRODUCTS

14A2.01 ACCEPTABLE MANUFACTURERS:

- A. **Available Manufacturers:** Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
1. Beckwith Elevator Co.
 2. Dover Corp.
 3. Montgomery Elevator co.
 4. Otis Elevator Co.
 5. Westinghouse Elevator Co.

14A2.02 MATERIALS AND COMPONENTS:

- A. **General Requirement:** Provide manufacturer's standard pre-engineered elevator systems which will comply with

or fulfill the requirements of elevator schedule sheets at end of this section. Where components are not otherwise indicated, provide standard components, published by manufacturer as included in standard pre-engineered elevator systems, and as required for a complete system.

14A2.03 Hydraulic Machines and Elevator Equipment:

- A. **General:** Elevator motor shall be part winding start, and except as otherwise indicated, provide manufacturer's standard single-acting under-the-car hydraulic plunger-cylinder unit for each elevator, with electric pump-tank-control system equipment in machine room as shown.
- B. **Piping:** Provide size, type and weight piping recommended by manufacturer, and provide isolation couplings to prevent sound/vibration transmissions from power unit.
- C. **Inserts:** Furnish required concrete inserts and similar anchorage devices for the installation of guide rails, machinery and other components of elevator work; where installation of devices is indicated as work of another specification section.
- D. **Car Frame and Platform:** Manufacturer's standard welded steel units; except provide special heavy-duty units where indicated for power truck loading (freight elevators), designed to withstand impacts and wheel loadings indicated.

14A2.04 Control Systems:

- A. **General:** Except as otherwise indicated, provide manufacturer's standard control system for each elevator, as required to provide automatic operation of the type indicated, and defined in the Code as "Operations."
- B. **Single Elevator Control:** Except as otherwise indicated, provide solid-state "Selective Collective Automatic Operation", as defined in ANSI A17.1.

14A2.05 Auxiliary Operations/Controls:

- A. **General:** In addition to primary control system features, provides the following controls or operational features for passenger elevators, except where otherwise indicated: Automatic 2-way leveling.

14A2.06 Signal Equipment:

- A. **General:** Except as otherwise indicated, provide manufacturer's standard signal equipment for each elevator. Provide car control station and car position indicator in each car, hall push-button station on each landing for each elevator. Provide illuminated buttons and signals, which light-up when activated and remain lighted until call or other function has been fulfilled; fabricate of acrylic or other permanent translucent plastic. Except for buttons and illuminated signal elements, fabricate signal equipment with exposed surfaces of stainless steel with manufacturer's standard satin finish.
- B. **Car Control Stations:** Provide flush-mounted metal faceplates, containing call button for each landing served, and containing other buttons, switches and controls required for specified car operation and control. Mount as shown, or scheduled, and at height complying with NEII "Suggested Minimum Passenger Elevator Requirements for the Handicapped". If not otherwise indicated, mount in return panel adjacent to car door. Provide operating device symbols as required by Code. Mark other buttons and switches with manufacturer's standard identification for required use or function.
- C. **Car Position Indicator:** For passenger elevator cars, provide either illuminated-signal type or digital-display type, located near top of car. Include direction-of-next travel signal if not provided in car control station.
1. In addition to visual indicator, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
- D. **Hall Push-Button Station:** For each passenger elevator, locate at position most convenient for approaching passengers. Provide type with flat face plate for surface mounting on wall finish (body of unit recessed). Provide 2-button station where passengers can travel either direction; 1-button station where only one direction of travel is available, and indicate which direction that is.
- E. **Hall Lanterns:** Provide units with illuminated "up" and "down" signal arrows, but provide single arrow

where only one direction is possible. Provide units projecting from face plate for ease of angular viewing, except provide flush units where a location in hoistway entrance frame is indicated. Match materials, finishes and mounting method with hall push-button stations.

1. At manufacturer's option, for single elevators, hall lantern signals may be placed with hall push-button station, except at entry floor.
2. 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.

F. **Hall Position Indicator:** Provide illuminated-signal type or digital-display type signal, located above hoistway entrance at entry floor. Match materials, finishes and mounting method with hall push-button stations.

1. At manufacturer's option, hall lantern signals may be integrated with hall position indicators.

G. **Telephone:** Provide rough-in for telephone hand set in each car, contained in flush-mounted cabinet and complete with identification and instructions for use.

H. **Alarm System:** Provide emergency alarm bell properly located within 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.

14A2.07 **Passenger Elevator Car Enclosures:**

A. **General:** Except as otherwise indicated, 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 flush panel type, with operation and number of panels as indicated. Provide manufacturer's standard protective edge trim system for door and wall panels, except as otherwise indicated.

- B. **Materials and Fabrication:** Provide selections as indicated for each car enclosure surface; manufacturer's standards, but not less than the following:
1. **Enameled Steel Panels:** Flush hollow-metal construction, fabricated from ASTM A 366 cold-rolled steel, commercial quality, Class 1, matte finish, stretcher leveled. Provide with factory-applied baked-on enamel finish; colors as selected by Architect.
 2. **Stainless Steel:** AISI type 302/304; with manufacturer's standard directional polish or satin finish.
 3. **Aluminum Sills:** Cast or extruded aluminum, with grooved surface, 1/4" thickness; mill finish.
 4. **Plastic Laminate:** High-pressure type complying with NEMA LD3, 0.05" thickness; color, texture and pattern as selected by Architect from standard products available in the industry.
 5. **Fabricate car with recesses and cutouts** for signal equipment.
 6. **Fabricate car ceiling with plastic laminate panels and recessed down lighting** to be selected by Architect from manufacturer's standard fixtures.
 7. **Motor shall be park wind start.**
- C. **Handrails:** Provide manufacturer's standard stainless steel handrails, on side walls and back wall unless otherwise indicated; either continuous or panelized.
- D. **Door Edge Protective Device:** Provide retractable edge shoe on leading edges of elevator entrance doors which, upon contacting an obstruction in entrance, causes doors to stop and reopen.
- E. **Photo-Eye Detection Device:** Provide electronic photo-eye device with timed cut-out, projecting dual light beams across car entrance at 5" and 29" heights, which, when interrupted, will cause closing doors to stop and reopen. Provide keyed switch in car operating panel for disconnecting photo-eye device.

14A2.08 **Passenger Hoistway Entrances:**

- A. **General:** Except as otherwise indicated, 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, number of door panels 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; manufacturer's standards, but not less than the following:
1. **Enameled Frames:** Formed steel; with manufacturer's standard baked synthetic enamel finish, colors as selected by Architect.
 2. **Enameled Steel Panels:** Flush hollow-metal construction, fabricated from ASTM A 366 cold-rolled steel, commercial quality, Class 1, matte finish, stretcher leveled. Provide with factory applied baked-on enamel finish; colors as selected by Architect.
 3. **Aluminum Sills:** Cast or extruded aluminum, with grooved surface, 1/4" thickness; mill finish.

PART III - EXECUTION

14A3.01 INSPECTION:

- A. Prior to commencing elevator installation, inspect 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.

14A3.02 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 each elevator pit to accommodate installation of plunger-cylinder

unit; comply with applicable requirements of Division-2 "Excavation" sections.

1. Install casings with waterproof seals at pit floor, and with waterproof, high-pressure seal at bottom of casings.
- C. Install plunger-cylinder units plumb and accurately centered for elevator car position and travel; anchor securely in 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 eliminate sources of structure-borne noise from elevator system.
- 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 manufacturers.
- I. **Alignment:** Coordinate installation of hoistway entrances with installation of elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- J. **Leveling Tolerance:** 1/2", up or down, regardless of load and direction of travel.
- K. Grout sills with non-staining, non-shrink grout. Set units accurately aligned with and slightly above finished floor at landings.

14A3.03 FIELD QUALITY CONTROL:

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

14A3.04 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.
- B. Provide similar protective measures for elevator units which will be placed in temporary service, including inspection and maintenance service during period of temporary service.

14A3.05 INSTRUCTION AND MAINTENANCE:

- 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 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 each 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.
- C. Continuing Maintenance: 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 renewal options.

14A3.06 ELEVATOR SCHEDULE

- A. **Description of Equipment:** One (1) hydraulic passenger elevator, Dover Model Cimarron 20H. Note: Reference to one manufacturer's model numbers are for convenience only. Similar products by the listed manufacturers will be considered equal.
- A. **Motor:** Part winding start.
- B. **Control:** Across the line starting.
- C. **Capacity:** 2,000 pounds.
- D. **Speed:** 115 FPM.
- E. **Operation:** Single car collective.
- F. **Travel:** As shown on drawings.
- G. **Machine Location:** As shown on drawings.
- H. **Stops:** Three (3).
- I. **Openings:** Three (3) in line.
- J. **Hoistway Doors:** 3'-0" x 7'-0", single-slide type.
- K. **Door Operation:** Automatic direct current powered with with proximity-type door reversal device.
- L. **Car Enclosure:** Manufacturer's series with fan, emergency car light, plastic laminate wall panels, panel ceiling with recessed lighting, rear handrail, and stainless steel front returns.
- M. **Signals:** Illuminated car and landing return buttons, car direction lanterns, double stroke gong, audible signal, car position indicator, alarm bell.
- N. **Special Features:** Dual beam photo eyes, handicapped features necessary for full compliance with the requirements of the Architectural Barriers Board and ANSI A117.1-1980.

END OF SECTION 14A