

SECTION 14200 - HYDRAULIC ELEVATORS

City of San Diego, CWP Guidelines

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NTS: This Section is intended primarily to accommodate the specifying of pre-engineered elevators, but is written more generically so that manufacturers can bid either custom or pre-engineered equipment, or hybrid combinations.

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PART 1 -GENERAL

1.1 WORK OF THIS SECTION

- A. The WORK of this Section includes providing hydraulic [passenger] [service] elevators and all appurtenant work as indicated, complete.
- B. Hydraulic elevator WORK shall be defined to include systems in which cars are hoisted either directly or indirectly by action of a hydraulic plunger and cylinder; 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 and maintenance.
- C. The WORK also requires that one manufacturer accept responsibility for furnishing the WORK as indicated but without altering or modifying the CONTRACTOR'S responsibilities under the Contract Documents.
- D. The WORK also includes coordination of design, assembly, testing and installation.

1.2 RELATED SECTIONS

- A. The WORK of the following Sections applies to the WORK of this Section. Other Sections of the Specifications, not referenced below, shall also apply to the extent required for proper performance of this WORK.
 - 1. 03300 Cast-In-Place Structural Concrete
 - 2. 09900 Architectural Paint Finishes
 - 3. 11000 Equipment General Provisions
 - 4. 16400 Low Voltage Electrical Service and Distribution

1.3 CODES

- A. The WORK of this Section shall comply with the current editions of the following codes as adopted by the City of San Diego Municipal Code:
 - 1. Uniform Building Code
 - 2. NFPA 80
 - 3. California Code of Regulations, Title 24

1.4 SPECIFICATIONS AND STANDARDS

A. Except as otherwise indicated, the current editions of the following apply to the WORK of this Section:

1. Federal Specifications:

FS SS-T-312B Tile, Floor, Asphalt, Rubber Vinyl and Vinyl Composition

2. Commercial Standards:

AISI American Iron and Steel Institute, Published Standards

ANSI A17.1 American Standard Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks

ASTM A 366 Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality

AWS American Welding Society, Published Standards

NEMA LD3 High Pressure Decorative Laminates

NEII Suggested Minimum Passenger Elevator Requirements for the Handicapped

1.5 SHOP DRAWINGS AND SAMPLES

A. The following shall be submitted in compliance with Section 01300:

1. Product Data: Manufacturer's detailed technical product data and installation instructions for each principal component or product. Submittal shall include a complete listing and description of all features of control system, performances, and operating characteristics.
2. Shop Drawings: Complete plans, elevations and details of car enclosures and hoistway entrances. Elevating diagrams shall show service to each level. Drawings shall include all excavation requirements for jack as well as clearly indicating all interface requirements necessary from other trades.
3. Samples: A full range of exposed finishes of car enclosures, hoistway entrances, and signal equipment; 8-inch squares of materials and 12-inch lengths of running trim members for the CONSTRUCTION MANAGER'S selection.
4. Documentation: Information on at least one successfully performing elevator of comparable size and complexity produced by the manufacturer in the recent past.
5. Documentation: Certificate from the elevator manufacturer that the installer is recognized and accepted as either an employee or licensee of the manufacturer.

1.6 OWNER'S MANUAL

A. The following shall be included in the OWNER'S MANUAL in compliance with Section 01300:

1. Maintenance Manuals: Manual for each elevator with operating and maintenance instructions, parts listings, recommended parts inventory listings, purchase source listings for major and critical components and emergency instructions.
2. Certificates and Permits: Copies of all inspection and acceptance certificates and operating permits as required by governing authorities to allow normal, unrestricted use of elevators.

1.7 SERVICES OF MANUFACTURER

- A. **Inspection, Startup, and Field Adjustment:** An authorized representative of the manufacturer shall visit the site for not less than [] day to furnish the indicated services.
- B. **Instruction of OWNER'S Personnel:** The authorized service representative shall also instruct the OWNER'S personnel in the proper use, operation and daily maintenance of the elevator systems for not less than [] days. Emergency access and procedures to be followed during power failure and other building emergencies shall be described. The OWNER'S personnel shall be trained to check for causes of operational malfunctions and failures.
- C. **Maintenance:** The CONTRACTOR shall furnish daily surveillance and necessary maintenance by the manufacturer's representative for 90 days beginning with the date of final acceptance. Operational faults shall be corrected and defective or deteriorated components and finishes shall be restored or replaced. Operational units shall be lubricated and expendable materials shall be furnished.

1.8 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Elevator components and assemblies shall be packaged in such a way as to prevent damage during shipment and handling.
- B. **Delivery of Materials:** Manufactured components and assemblies shall be delivered in original, unbroken packages or containers bearing the manufacturer's label. Packages or containers shall be delivered to the site with seals unbroken.
- C. **Storage:** All components and assemblies shall be carefully stored in an area that is protected from deleterious elements, in a manner recommended by the product manufacturer. Storage shall be in a manner that will prevent damage to components and assemblies or marring of finish surface.

1.9 QUALIFICATIONS

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NTS: In the paragraph below, define the terms "comparable size and complexity" for the equipment or system specified. Requiring experience of more than one successful project requires sound justification and prior written approval from the City Project Manager.

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- A. **Manufacturer:** Company specializing in manufacture of elevator systems with minimum of one successfully performing installation of comparable size and complexity produced by

the manufacturer and constructed in the recent past. Systems of comparable size and complexity shall have the following characteristics: [].

- B. **Installer:** Either an employee or a licensee of the elevator manufacturer.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Manufacturer's standard pre-engineered elevator system[s] shall be provided or, at the CONTRACTOR'S option, custom manufactured elevator systems shall be provided. Where components are not otherwise indicated, components shall be provided as required for a complete and fully functioning system.

2.2 PASSENGER ELEVATOR REQUIREMENTS

- A. Passenger elevator shall comply with the following:

1. Elevator No. - [One]
2. Capacity - [] pounds
3. Speed - [75 feet per minute up;
125 feet per minute down]
4. Travel distance - [] feet
5. Landings served - [Basement, first and second floors, as indicated]
6. Power supply - [208 VAC, 3 Phase, 60 Hertz]
7. Hoistway entrances - [Counterbalanced, vertical bi-parting, automatic, rated and labeled for 30 minute temperature rise of 650 degrees F.

2.3 HYDRAULICS

- A. **Cylinder Unit:** Cylinder shall be manufacturer's standard single-acting, under-the-car, hydraulic plunger-cylinder unit, with electric pump-tank-control system equipment in machine room as indicated.
- B. **Piping:** Size, type and weight of piping shall be as recommended by the manufacturer. Isolation couplings shall be provided to prevent sound and vibration transmissions from the power unit.

2.4 CONTROL SYSTEMS

- A. Unless indicated otherwise, manufacturer's standard control system shall be provided as required for automatic operation as defined in ANSI A17.1.

2.5 AUXILIARY OPERATION

- A. The CONTRACTOR shall provide the following controls or operational features except where otherwise indicated:
 - 1. Top-of-car inspection and operation.
 - 2. Emergency power operation.
 - 3. Automatic 2-way leveling.
 - 4. Automatic dispatching of loaded car in conjunction with load weighing device.

2.6 SIGNAL EQUIPMENT

- A. **General:** Except as otherwise indicated, manufacturer's standard signal equipment shall be provided. Car control station and car position indicator shall be provided in each car; hall pushbutton station shall be provided on each landing. Illuminated buttons and signals shall be provided, which light up when activated and remain lighted until call or other function has been fulfilled. Buttons and signals shall be fabricated of acrylic or other permanent translucent plastic. Except for buttons and illuminated signal elements, signal equipment shall be fabricated with exposed surfaces of [stainless steel with manufacturer's standard directional polish or satin finish].
- B. **Car Control Stations:** Flush mounted metal panels shall be provided, containing call button for each landing served and containing other buttons, switches and controls required for indicated car operation and control. Controls shall be mounted as indicated, at height complying with California Administrative Code, Title 24. If not otherwise indicated, controls shall be mounted in the return panel adjacent to the car door. Operating device symbols shall be as required by Code. Other buttons and switches shall be marked with manufacturer's standard identification of use or function.
- C. **Car Position Indicator:** Either illuminated-signal type or digital-display type car position indicator shall be provided, located near the top of the car. Direction-of-next travel signal shall be included if not provided in the car control station.
- D. **Hall Pushbutton Station:** Hall pushbutton station shall be provided at location most convenient for approaching passengers. Station shall be recessed body type with flat face plate for surface mounting on wall. Two-button station shall be provided where passengers can travel either direction; one-button shall be provided where only one direction of travel is available. That direction shall be indicated.
- E. **Hall Lanterns:** Units shall be provided with illuminated "UP" and "DOWN" signal arrows, but a single arrow shall be provided where only one direction is possible. Units shall be provided which project from the face plate for each of angular viewing. Hall lanterns shall be placed above the hoistway entrance. Each hall lantern signal shall sound a tone-gong with adjustable volume in response to hall calls when car is approaching in the called direction and is set to stop.
- F. **Hall Position Indicator:** [Illuminated-signal type] [Digital-display type signal] shall be located above hoistway entrance at the ground floor.
- G. **Telephone:** Telephone handset shall be provided in each car, contained in a flush-mounted cabinet and complete with identification and instructions for use.

H. Alarm System

1. An emergency alarm bell shall be properly located within the building such that it is clearly audible outside of the hoistways. Alarm bell shall sound automatically in response to actuation of "EMERGENCY STOP" AND "ALARM" buttons in the car control station.
2. An additional exterior-mounted weatherproof emergency signalling device shall be provided with a minimum rating of 80 decibels. Device shall comply with Code and be mounted on the building exterior as indicated.
3. A white [12-inch by 18-inch] sign with black letters reading ["Elevator Alarm - Call []"] shall be attached to the building exterior next to the exterior alarm.

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NTS: Insert other signals and graphics as desired or required by local code; e.g., "No Smoking," "Emergency Use of Stairways," etc.

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2.7 ELEVATOR CAR ENCLOSURES

- A. **General:** Except as indicated otherwise, manufacturer's standard pre-engineered car enclosures shall be provided with ventilation, lighting, ceiling finish, wall finish, access doors, doors, power door operators, sill, trim, accessories, and floor finish. Horizontal sliding doors of manufacturer's standard flush panel type shall be provided, with operation and number of panels as indicated. Manufacturer's standard protective edge trim system shall be provided for door and wall panels.
- B. **Materials and Fabrication:** CONSTRUCTION MANAGER'S selections shall be from manufacturer's standard products or the following, as a minimum:
 1. Enameled steel panels shall conform to ASTM A 366, stretcher leveled, matte finish, with manufacturer's standard baked synthetic enamel finish; colors as selected by the CONSTRUCTION MANAGER.
 2. Stainless steel shall conform to AISI, Type [302] [304] with manufacturer's standard directional polish or satin finish.
 3. Aluminum sills shall be cast or extruded aluminum, with grooved surface, 1/4-inch thickness, mill finish.
 4. Plastic laminate shall be high-pressure type, complying with NEMA LD3, 0.05-inch thickness; color, texture and pattern as selected by the CONSTRUCTION MANAGER from standard products available in the industry.
 5. Car door frame shall be fabricated integrally with the front wall of the car.
 6. Car shall be fabricated with recesses and cutouts for signal equipment.

7. Luminous ceiling shall consist of fluorescent light fixtures and ceiling panels of translucent or open egg-crate plastic, or acrylic or other permanent rigid plastic complying with applicable flammability requirements.
8. Vinyl composition tile floor covering shall conform to FS SS-T-312B, Type IV, Composition 1 or 2, 12-inch by 12-inch by 1/8-inch thick; color and pattern as selected by the CONSTRUCTION MANAGER from available choices in the tile industry.

C. **Handrails:** Manufacturer's standard [continuous] [panelized] stainless steel handrails shall be provided on side walls and back walls unless otherwise indicated.

D. **Door Edge Protective Device:** A retractable edge shoe shall be provided on the leading edges of both elevator entrance doors which, upon contacting an obstruction in the entrance, shall cause the doors to stop closing and reopen.

E. **Photo-Electric Detection Device:** Photo-electric devices shall be provided with timed cut-out relays. They shall project dual light beams across the car entrance opening, which when interrupted, will cause the doors to stop closing and reopen. A keyed switch shall be provided in the car operating panel for disconnecting the photo-eye devices.

1. **Nudging Feature:** After the car doors are prevented from closing for a predetermined adjustable time period, through activation of the photo-electric detection device or the door edge protective device, a loud buzzer shall sound and the doors shall begin to close at a reduced rate of speed. Doors shall continue to close unless the door edge protective device is again activated, which shall cause the doors to reopen. The process shall repeat continuously until the obstruction is removed from the entrance.

2.8 HOISTWAY ENTRANCES

A. **General:** Except as indicated otherwise, manufacturer's standard, pre-engineered hollow metal type, sliding, door-and-frame hoistway entrances shall be provided, complete with track systems, hardware, safeties, sills and accessories. Hoistway entrance doors shall match car enclosure doors for size, number of door panels and door panel movement. Frame-section size and profile shall be coordinated with hoistway wall construction as indicated.

1. Where gypsum board type wall construction is indicated, frames shall be fabricated with reinforced head sections. Head sections shall have sufficient strength to span openings without support from wall lintels.

B. **Materials and Fabrication:** CONSTRUCTION MANAGER'S selections shall be from manufacturer's standard products or the following, as a minimum:

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NTS: Select from the following frame options.

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- [1. **Enameled Frames:** Frames shall be fabricated of formed steel, with manufacturer's baked synthetic enamel finish, colors selected by the CONSTRUCTION MANAGER.]

- [1. Stainless Steel Frames: Frames shall be fabricated of formed steel sheet, AISI Type [302] [304] with manufacturer's standard directional polish or satin finish.]

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NTS: Select from the following door panel options.

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- [2. Enameled Door Panels: Door panels shall be fabricated of flush cold-rolled steel construction, ASTM A 366, stretcher leveled, matte finish, with manufacturer's standard baked synthetic enamel finish, colors as selected by the CONSTRUCTION MANAGER.]
- [2. Stainless Steel Door Panels: Door panels shall be fabricated of flush stainless steel construction, AISI Type [302] [304] with manufacturer's standard directional polish or satin finish.]
- [2. Plastic Laminate Door Panels: Door panels shall be fabricated of flush steel construction, with applied finish of high-pressure type 0.05-inch thick plastic laminate complying with NEMA LD3, color and pattern and texture as selected by the CONSTRUCTION MANAGER from standard products available in the industry; manufacturer's standard exposed door panel edge trim shall be provided.]
3. Aluminum Sills: Sills shall be cast or extruded aluminum, 1/4-inch thick, mill finish, with grooved surface.

2.9 MANUFACTURERS

- A. Products of the type indicated shall be manufactured by one of the following (or equal):
 1. Dover Corporation
 2. Montgomery Elevator Company
 3. U.S. Elevator

PART 3 - EXECUTION

3.1 INSPECTION

- A. Prior to commencing elevator installation, CONTRACTOR shall require installer to inspect hoistways, hoistway openings, pits and machine rooms, and all other interfaces with WORK of this Section, as constructed. All critical dimensions and clearances shall be verified. Supporting structure and all other conditions under which elevator WORK is to be undertaken shall be confirmed as satisfactory. Any conditions detrimental to the proper installation or performance of elevator WORK shall be reported in writing and corrected satisfactorily before any installation work begins.

3.2 INSTALLATION

- A. **General:** Installation shall be in strict conformance with the manufacturer's instructions.

- [B. **Excavation for Jack:** Excavation in elevator pit shall accommodate installation of plunger-cylinder unit. Casings shall be installed with waterproof seals at pit floor, and with waterproof, high-pressure seal at bottom of casings.]
- C. Plunger-cylinder units shall be installed plumb and accurately centered for elevator car position and travel; units shall be anchored securely in place.
- D. **Welded Construction:** Welded connections shall be provided where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance and replacement of parts. Welding and welding operators shall comply with Section 05120.
- E. **Sound Isolation:** Rotating and vibrating elevator equipment and components shall be mounted on vibration-absorption mounts, specifically designed to effectively prevent transmission of vibrations to the building structural frame. Structure-borne noise or vibration which arises from operation of the elevator system shall not be accepted.
- F. Piping shall be installed without routing underground.
- G. Operating parts of systems, including ropes, if any, shall be lubricated as recommended by the manufacturer.
- H. **Alignment:** Installation of hoistway entrances shall be coordinated with installation of elevator guide rails, for accurate alignment of entrances with cars. Where possible, final adjustment of sills and doors shall be delayed until car is operable in the shaft. Clearances shall be reduced to a minimum, safe, workable dimension at each landing.
- I. **Leveling Tolerance:** Tolerance shall be less than 1/2-inch, regardless of car loading or direction of travel.
- J. Sills shall be grouted with non-staining, non-shrinking grout. Units shall be set accurately and aligned with and slightly above the finished floor at each landing.

3.3 TESTING

- A. **Regulatory Testing:** Upon nominal completion of elevator installation, and before permitting use of the elevator by anyone other than Installer's employees, regulatory tests shall be performed as required by Code and by governing regulations or agencies having jurisdiction.
 - 1. CONTRACTOR shall advise CONSTRUCTION MANGER, and inspection departments of governing agencies having jurisdiction, 2 weeks in advance of dates and times when tests are to be performed on elevators. Tests shall not be undertaken without appropriate witnesses.
- B. **Operating Tests:** Each elevator shall be loaded to its rated capacity and operated continuously for 30 minutes over its full travel distance, stopping at each level and proceeding immediately to the next. The temperature curve of the pump motor shall be recorded during the entire 30 minute test period.
 - 1. Failure of the elevator or any of its components to perform in conformance with specifications shall be noted and steps undertaken immediately to correct the deficiencies. Testing shall be repeated until completed successfully.

3.4 PROTECTION

- A. Suitable protective coverings, barriers, signs or such other methods or procedures as may be necessary, shall be provided to protect elevator WORK from damage or deterioration during temporary service, including inspection and maintenance service. Such protective measures shall be maintained in place throughout the remainder of the construction period.

3.5 ADJUST AND CLEAN

- A. **Protection Removal:** Immediately prior to final inspection, all protective coverings shall be removed.
- B. All exposed and finished surfaces of elevator cabs, doors, frames, and related accessories shall be finally cleaned and inspected for damage, flaws, blemishes or other defects detrimental to appearance. Surfaces, joints, and exposed trim shall be in correct position and alignment and be uniform in plane, color, texture and finish.
- C, **Final Adjustments:** Prior to final inspection, check and readjust operating items to comply with requirements.

** END OF SECTION **