1. Section 142400   
   Hydraulic Elevators
   1. PART 1  GENERAL
      1. RELATED REQUIREMENTS
         1. Section 260533.13 - Conduit for Electrical Systems:
         2. Section 260583 - Wiring Connections:
      2. REFERENCE STANDARDS
         1. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials; Current Edition.
         2. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.
         3. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
         4. AISC 360 - Specification for Structural Steel Buildings; 2022, with Errata (2023).
         5. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test; 2015 (Reaffirmed 2020).
         6. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2022.
         7. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, Dumbwaiters, and Material Lifts; 2023.
         8. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
         9. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
         10. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass; 2018.
         11. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2020, with Errata (2023).
         12. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
         13. NEMA MG 1 - Motors and Generators; 2021.
         14. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
         15. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
         16. PS 1 - Structural Plywood; 2023.
      3. SUBMITTALS
         1. See Section 013000 - Administrative Requirements for submittal procedures.
         2. Product Data:  Submit data on following items:
            1. Signal and operating fixtures, operating panels, and indicators.
            2. Car design, dimensions, layout, and components.
            3. Car and hoistway door and frame details.
            4. Electrical characteristics and connection requirements.
         3. Shop Drawings:  Include appropriate plans, elevations, sections, diagrams, and details on following items:
            1. Elevator Equipment and Machines:  Size and location of driving machines, power units, controllers, governors, and other components.
            2. Hoistway Components:  Size and location of car guide rails, buffers, jack unit and other components.
            3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
            4. Clearances and over-travel of car.
            5. Locations in hoistway and machine room of traveling cables and connections for car lighting, telephone, and \_\_\_\_\_.
            6. Location and sizes of hoistway and car doors and frames.
            7. Electrical characteristics and connection requirements.
            8. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
         4. Samples:  Submit samples illustrating ​car interior finishes, car and hoistway door and frame finishes, and handrail material and finish​ in the form of ​cut sheets or finish color selection brochures​.
         5. Testing Agency's Qualification Statement.
         6. Initial Maintenance Contract.
         7. Specimen warranty.
         8. Executed warranty.
      4. QUALITY ASSURANCE
         1. Testing Agency Qualifications:  Independent firm specializing in performing testing and inspections of type specified in this section.
      5. WARRANTY
         1. See Section 017800 - Closeout Submittals for additional warranty requirements.
         2. Manufacturer Warranty:  Provide 1-year manufacturer warranty for  elevator operating equipment and devices. Complete forms in Owner's name and register with manufacturer.
   2. PART 2  PRODUCTS
      1. HYDRAULIC ELEVATORS
         1. Hydraulic Passenger Elevator, Type Canton Elevator Model T2:
            1. Hydraulic Elevator Equipment:

Holeless hydraulic with cylinder mounted within hoistway.

* + - * 1. Drive System:

Variable voltage variable frequency (VVVF) to modulate motor speed.

* + - * 1. Operation Control Type:
        2. Service Control Type:

Standard service control only.

* + - * 1. Interior Car Height:  96 inch.
        2. Electrical Power:  ​120/240​ volts; ​alternating current (AC)​; ​single​ phase; ​60 Hz​​​.
        3. Rated Net Capacity:  2100 pounds.
        4. Rated Speed:  90 feet per minute.
        5. Hoistway Size:  As indicated on drawings.
        6. Interior Car Platform Size:  As indicated on drawings.
        7. Elevator Pit Depth:  48 inch.
        8. Overhead Clearance at Top Floor:  144 inch.
        9. Travel Distance:  As indicated on drawings.
        10. Number of Stops:  ​2​.
        11. Number of Openings:  \_\_\_\_ Front; \_\_\_\_ Rear.
        12. Hydraulic Equipment Location:  As indicated on drawings
    1. COMPONENTS
       1. Elevator Equipment:
          1. Motors, Hydraulic Equipment, Controllers, Controls, Buttons, Wiring, Devices, and Indicators:  Comply with NFPA 70.
          2. Guide Rails, Cables, Buffers, Attachment Brackets and Anchors:  Design criteria for components includes safety factors in accordance with applicable requirements of Elevator Code, ASME A17.1.
          3. Buffers:
          4. Lubrication Equipment:
       2. Electrical Equipment:
          1. Motors:  NEMA MG 1.
          2. Boxes, Conduit, Wiring, and Devices:  As required by NFPA 70.
          3. Spare Conductors:  Provide ten percent in extra conductors and two pairs of shielded audio cables in traveling cables.
          4. Include wiring and connections to elevator devices remote from hoistway and between elevator machine room. Provide additional components and wiring to suit machine room layout. See Section 260583.
    2. PERFORMANCE REQUIREMENTS
       1. Regulatory Requirements:  Comply with ASME A17.1, applicable local codes, authorities having jurisdiction (AHJ), and \_\_\_\_\_.
       2. Accessibility Requirements:  Comply with ADA Standards.
       3. Perform structural steel design, fabrication, and installation in accordance with AISC 360.
       4. Perform welding of steel in accordance with AWS D1.1/D1.1M.
       5. Fabricate and install door and frame assemblies in accordance with NFPA 80 and in compliance with requirements of authorities having jurisdiction.
       6. Perform electrical work in accordance with NFPA 70.
    3. OPERATION  CONTROLS
       1. Elevator Controls:  Provide landing operating panels, landing indicator panels, and \_\_\_\_\_.
          1. Landing Operating Panels:   Metallic  type, one for originating "Up" and one for originating "Down" calls, one button only at terminating landings; with illuminating indicators.
          2. Landing Indicator Panels:  Illuminating.
          3. Comply with ADA Standards for elevator controls.
       2. Interconnect elevator control system with building security, fire alarm, card access, smoke alarm, building management control, and \_\_\_\_\_ systems.
       3. Door Operation Controls:
          1. Program door control to open doors automatically when car arrives at floor landing.
          2. Render "Door Close" button inoperative when car is standing at dispatch landing with doors open.
          3. Door Safety Devices:  Moveable, retractable safety edges, quiet in operation; equipped with photo-electric light rays.
    4. OPERATION CONTROL TYPE
       1. Single Automatic (Push Button) Operation Control:  Applies to car in single elevator shaft.
          1. Refer to description provided in ASME A17.1.
          2. Set system operation so that momentary pressure of landing button dispatches car from other landing to that landing.
          3. Allow call registered by momentary pressure of landing button at any time to remain registered until car stops in response to that landing call.
          4. If elevator car door is not opened within predetermined period of time after car has stopped at terminal landing allow car to respond to call registered from other landing.
    5. MATERIALS
       1. Extruded Aluminum:  ASTM B221 (ASTM B221M), natural anodized finish unless otherwise indicated.
       2. Plywood:  PS 1, Structural I, Grade C-D or better, sanded.
       3. Tempered Glass:  3/8 inch minimum thickness, fully tempered in compliance with ASME A17.1, 16 CFR 1201, ANSI Z97.1, and ASTM C1048 tempered glass requirements.
       4. Plastic Laminate:  NEMA LD 3, Type HGS, color as selected by Architect from manufacturer's standard line of colors.
    6. CAR AND HOISTWAY ENTRANCES
       1. Elevator, No. \_\_\_:
          1. Car and Hoistway Entrances, Main Elevator Lobby:

Framed Opening Finish and Material:  Alkyd enamel on steel.

Car Door Material:  Powder coat on steel, with rigid sandwich panel construction.

Hoistway Door Material:  Powder coat on steel, with rigid sandwich panel construction.

* + 1. CAR EQUIPMENT AND MATERIALS
       1. Elevator Car, No. \_\_\_:
          1. Car Operating Panel:  Provide main and auxiliary; flush-mounted applied face plate, with illuminated call buttons corresponding to floors served with "Door Open/Door Close" buttons, "Door Open" button, "Door Close" button, alarm button, and \_\_\_\_\_.

Panel Material:  Integral with front return; one per car.

Car Floor Position Indicator:  Above door with illuminating position indicators.

Locate alarm button where it is unlikely to be accidentally actuated; not more than 54 inch above car finished floor.

* + - * 1. Flooring:  ​Match LVT​.
        2. Front Return Panel:  Match material of car door.
        3. Door Wall:  Plastic laminate on plywood.
        4. Side Walls:  Plastic laminate on plywood.
        5. Rear Wall:  Plastic laminate on plywood.
        6. Hand Rail:  Aluminum, at all three sides. Provide open clearance space 1-1/2 inch (38 mm) wide to face of wall.

Flat Bar Stock

Aluminum Finish:  Clear anodized.

* + - * 1. Ceiling:

Frame Finish:  Color anodized aluminum.

Panel Finish:  Baked enamel, color \_\_\_\_\_.

Lighting:  Compact fluorescent downlights.

* + - 1. Car Accessories:
         1. Certificate Frame:  Stainless steel frame glazed with tempered glass, and attached with tamper-proof screws.
    1. MACHINE ROOM FITTINGS
       1. Wall-Mounted Frames:  Glazed with clear plastic; sized as required.  Provide one chart each for master electric and hydraulic schematic and for lubrication chart.  Install charts.
       2. Key Cabinet:  Wall-mounted, lockable, keyed to building keying system, for control and operating panel keys.
    2. FINISHES
       1. Powder Coat on Steel:  Clean and degrease metal surface; apply one coat of primer; two coats of powder coat.
       2. Baked Enamel on Steel:  Clean and degrease metal surface; apply one coat of primer sprayed and baked; two coats of enamel sprayed and baked.
       3. Finish Paint for Metal Surfaces:  Alkyd enamel, semi-gloss, color as selected, complying with VOC limitations of authorities having jurisdiction (AHJ).
       4. Clear Anodized Finish:  Class I, AAMA 611 AA-M12C22A41, clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mil, 0.0007 inch thick.
       5. Color Anodized Finish:  Class I, AAMA 611 AA-M12C22A44, electrolytically deposited colored anodic coating not less than 0.7 mil, 0.0007 inch thick.
  1. PART 3  EXECUTION
     1. INSTALLATION
        1. Coordinate this work with installation of hoistway wall construction.
        2. Install system components, and connect equipment to building utilities.
        3. Provide conduit, electrical boxes, wiring, and accessories; see Sections 260533.13 and 260583.
        4. Install hydraulic piping between cylinder and pump unit.
        5. Mount ​machines, motors, and pumps​ on vibration and acoustic isolators.
           1. Place on structural supports and bearing plates.
           2. Securely fasten to building supports.
           3. Prevent lateral displacement.
        6. Install hoistway, elevator equipment, and components in accordance with approved shop drawings.
        7. Install guide rails to allow for thermal expansion and contraction movement of guide rails.
        8. Accurately machine and align guide rails, forming smooth joints with machined splice plates.
        9. Install hoistway door sills, frames, and headers in hoistway walls; grout sills in place, set hoistway floor entrances in alignment with car openings, and align plumb with hoistway.
        10. Structural Metal Surfaces:  Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.
        11. Wood Surfaces not Exposed to Public View:  Finish with one coat primer; one coat enamel.
        12. Adjust equipment for smooth and quiet operation.
     2. TOLERANCES
        1. Guide Rail Alignment:  Plumb and parallel to each other in accordance with ASME A17.1 and ASME A17.2.
        2. Car Movement on Aligned Guide Rails:  Smooth movement, without any objectionable lateral or oscillating movement or vibration.
     3. FIELD QUALITY CONTROL
        1. See Section 014000 - Quality Requirements for additional requirements.
        2. Testing and inspection performed at discretion of regulatory agencies certified in accordance with ASME QEI 1.
        3. Perform testing and inspection in accordance with requirements.
     4. ADJUSTING
        1. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.
        2. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch maximum from flush with sill.
     5. MAINTENANCE
        1. Provide Initial Maintenance Contract of elevator system and components in accordance with ASME A17.1 and requirements as indicated for 3 months from Date of Substantial Completion.
        2. Perform maintenance contract services using competent and qualified personnel under the supervision and direct employ of the elevator manufacturer or original installer.
        3. Include systematic examination, adjustment, and lubrication of elevator equipment.
        4. Perform work without removing cars from use during peak traffic periods.

1. END OF SECTION