

Seaside Rehabilitation and Health Care Center
Portland, Maine

SECTION 142400 - HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes hydraulic passenger, double post, holeless elevator with non-proprietary controller.
- B. Related Sections include the following:
 - 1. Division 03 Section "Cast-In-Place Concrete" for setting sleeves, inserts, and anchoring devices in concrete.
 - 2. Division 05 Section "Metal Fabrications" for the following:
 - a. Hoisting beams.
 - b. Structural steel shapes for subsills at each floor.
 - c. Pit ladders.
 - d. Sump pump cover and frame.
 - e. Attachment plates, angle brackets, and other steel framing for supporting guide-rail brackets.
 - 3. Division 07 Section "Cementitious Waterproofing" for waterproofing elevator pit.
 - 4. Division 09 Section "Resilient Flooring" for finish flooring in elevator cars.
 - 5. Division 23 Sections for ventilating of machine room.
 - 6. Division 26 Sections for electrical service to elevator, including fused disconnect switch, standby power source, transfer switch and telephone.
 - 7. Division 21 and 26 Sections for smoke detectors in elevator lobbies to initiate emergency recall operation and heat detectors in shafts and machine rooms to disconnect power from elevator equipment before sprinkler activation and for connection to elevator controllers.

1.3 DEFINITIONS

- A. Hydraulic Elevators: Elevators in which cars are hoisted by action of a double post telescoping hydraulic cylinder (jack); with other components of the Work, including fluid storage tank, pump, piping, valves, car enclosures, hoistway entrances, operation systems, signal equipment, guide rails, electrical wiring, buffers, and devices for operations, safety, security, required performance at rated speed and capacity, and for complete elevator installation.
- B. Defective Elevator Work: Operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.4 SUBMITTALS

- A. General: Submit in accordance with Division 01 Section "Submittal Procedures."

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- B. Product Data: Include capacities, sizes, performances, operations, safety features, controls, finishes, and similar information. Include product data for car enclosures, hoistway entrances, and operation, control, and signal systems.
 - C. Shop Drawings: Show plans, elevations, sections, and large-scale details indicating service at each landing, machine room layout, coordination with building structure, relationships with other construction, and locations of equipment and signals. Indicate variations from specified requirements, maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands.
 - D. Maintenance Manuals: Include operation and maintenance instructions, parts listing with sources indicated, recommended parts inventory listing, emergency instructions, and similar information. Include all diagnostic and repair information available to manufacturer's and Installer's maintenance personnel. Submit for Owner's information at project closeout as specified in Division 01 Section "Operation and Maintenance Data."
 - E. Inspection and Acceptance Certificates: Obtain and submit inspection and acceptance certificates and operating permits as required by governing authorities for normal, unrestricted elevator use.
- 1.5 QUALITY ASSURANCE
- A. Installer Qualifications: Engage elevator manufacturer or an experienced Installer approved by elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
 - B. Source Limitations: Obtain elevators from single manufacturer.
 - C. Regulatory Requirements: All work shall comply with the latest edition (as of date bids are taken) of ASME A17.1, Safety Code for Elevators and Escalators and the National Electrical Code.
 - D. Accessibility Requirements: Comply with Section 407 in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.
 - E. Seismic Performance: Elevator system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and shall comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1.
 - 1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event."
 - 2. See Structural Drawings for effective peak velocity acceleration, earthquake spectral response acceleration and seismic design category.
 - F. In the interest of unified responsibility, Elevator package shall be a nationally recognized United States company regularly engaged in the business of manufacturing elevators of type and character required by these Specifications, and shall manufacture entire power unit, controller, hydraulic cylinder and all other parts of the equipment, including door operators and signal fixtures, and shall so state in his request for approval listing the items he manufactures.

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- G. Design for Maintenance Requirements: Installation shall be a design that can be maintainable by any licensed elevator maintenance company employing journeymen mechanics, without need to purchase or lease additional diagnostic devices, special tools, or instructions from original equipment manufacturer.

1.6 COORDINATION

- A. Coordinate locations and dimensions of other work relating to hydraulic elevators including pit ladders and sumps; entrance subsills; and electrical service, electrical outlets, lights, and switches in pits and machine rooms.

1.7 WARRANTY

- A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Manufacturer's Warranty: Submit a written warranty signed by manufacturer agreeing to repair, restore, or replace defective elevator work within 12 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide high frequency use hydraulic elevators by one of the following:
 1. ThyssenKrupp Elevator Group North America; local distributor, Stanley Elevator Co., Inc.; phone: (800) 258-1016.
 2. Canton Elevator Co.; local distributor, Pine State Elevator, phone: (800) 627-9706.

2.2 DESCRIPTION OF EQUIPMENT

- A. Passenger Elevators:
 1. Capacity: 3500 lbs. minimum.
 2. Speed: 95 feet per minute full load up.
 3. Operation: Selective collective.
 4. Clear Car Inside: 80 inches wide by 65-1/2 inches deep.
 5. Travel: 12 feet ±.
 6. Power Supply: 480 volts - 3 phase - 60 cycles.
 7. Stops and Openings: Front, 2 stops.
 8. Door Size and Type: 42 inches by 84 inches, single slide.
 9. Door Operation: D.C. Power Operation.
 10. Signals: Illuminated buttons, alarm bell, position indicator in car with audible signal, hall lantern and gong, with position indicator at main landing, brushed stainless steel.
 11. Special Features: Infrared light beam door protection system for full height of door, handicapped requirements, fire-fighters service, emergency lighting with power pack. Provide controller

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compatible with emergency generator provided under separate contract for emergency back-up power.

12. Motor: 25 HP maximum. Include closed transition solid state starting.

Note: Manufacturer providing elevator motor with greater H.P. shall be responsible for cost of upgrading disconnect and wiring.

2.3 PASSENGER ELEVATOR CAR ENCLOSURES

- A. General: Provide manufacturer's standard car enclosures of the selections indicated. Include ventilation, lighting, access doors, doors, power door operators, sills (thresholds), trim, accessories, and wall and ceiling finishes. Provide manufacturer's standard flush-panel horizontal-sliding doors of type indicated. Provide manufacturer's standard protective edge trim system for door and wall panels, except as otherwise indicated.
- B. Materials and Fabrication: Provide selections indicated or, if not otherwise indicated, manufacturer's standard welded steel construction with factory finish of synthetic enamel, and provide other materials and fabrication of not less than the following:
1. Walls: Flush wall plastic laminate pressure bonded to a wood core with a fire-retardant backing sheet.
 2. Canopy: 14-gage furniture steel painted white.
 3. Front and Transom: Brushed stainless steel.
 4. Doors: Hollow metal construction, brushed stainless steel.
 5. Ceiling and Lighting: Stainless steel with LED disk lighting.
 6. Sill: Aluminum.
 7. Flooring: Vinyl plank specified in Division 09 Section "Resilient Flooring."
 8. Handrails: Cylindrical metal bar, brushed stainless steel.
 9. Clear Cab Height: 88 inches.
 10. Accessories: Two-speed exhaust fan, brushed stainless steel certificate frame, and ADA compliant, two-way speakerphone.

2.4 PASSENGER HOISTWAY ENTRANCES

- A. General: Provide manufacturer's standard hollow-metal, sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Match car doors for size, number of panels, and door movement. Provide frame size and profile to coordinate with hoistway wall construction.
1. Where shaft wall construction is indicated, provide self-supporting frames with reinforced head sections.
- B. Materials and Fabrication: Provide the following materials and finishes for exposed parts of elevator car enclosures, car doors, hoistway entrance doors and frames, and signal equipment; provide manufacturer's standards, but not less than the following:
1. Satin Stainless-Steel Frames: Formed stainless-steel sheet, ASTM A 167, Type 302 or 304, with No. 4 satin finish.
 2. Satin Stainless-Steel Panels: Flush construction, fabricated from ASTM A 167, Type 302 or 304 stainless steel, with No. 4 satin finish.

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3. Plastic-Laminate Wall Panels: Plastic laminate adhesively applied to 1/2-inch fire-retardant-treated particleboard with plastic-laminate panel backing and manufacturer's standard protective edge trim.
4. Aluminum Sills: Extruded aluminum, with grooved surface, 1/4-inch thickness, mill finish.
5. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107 for grouting door sills.

2.5 EQUIPMENT

- A. Passenger Elevator: ThyssenKrupp or Canton holeless hydraulic elevator using biodegradable oil and meeting the following minimum requirements. Interior car finishes shall match those specified; failure to comply will be reason for rejection.
 1. Platform and Sling: Platform shall have fabricated frame of formed and structural steel shapes, gusseted and rigidly welded. Provide fire-treated wood subfloor prepared for finish flooring. Finished flooring, installed on top of car platform, shall be provided in Division 09 Section "Resilient Flooring." Underside of platform shall be fireproofed. Sling shall consist of heavy steel channel stiles properly affixed to steel crosshead and bolster, with adequate bracing members, to remove all strain from car enclosure. Steel bumper plates shall be affixed to bottom of bolster channels, and a platen plate with clamps and cap screws shall be furnished for fastening sling to plunger.
 2. Passenger Car Doors: Car entrance shall be provided with horizontal sliding doors with panel rigidity obtained by suitable steel reinforcements. Doors shall be hung on sheave hangers with polyurethane tires and sheaves not less than 3-1/4 inch diameter, running on a polished steel track, and guided at bottom by non-metallic shoes sliding in smooth threshold groove.
 3. Alarm Bell: Emergency alarm bell shall be located in conformance with ASME A-17.1 Code requirements and connected to a plainly marked pushbutton in car. Connect alarm bell to emergency lighting power pack.
 4. Guide and Guide Shoes: Guides for elevator car shall be planed steel elevator guide rails, properly fastened to building structure with steel brackets. Car stile shall be fitted at top and bottom with guide shoes of self-aligning, swivel type, with metal body and removable, non-metallic liners.
 5. Power Unit (Oil Pumping and Control Mechanism): Shall be compactly and neatly designed with all components listed below combined in a self-contained unit; structural steel outer base with tank supports; floating inner base for mounting pump assembly; oil reservoir with tank cover and controller compartment with cover; metal drip pan; oil-hydraulic pump; electric motor; oil control unit with following components built into single housing; high pressure relief valve; check valve; automatic unloading upstart valve; lowering and leveling valve; and magnetic controller. Pump shall be especially designed and manufactured for oil-hydraulic elevator service. It shall be of the positive displacement type, inherently designed for steady discharge with minimum pulsations to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on elevator car. Motor shall be especially designed for oil-hydraulic elevator service, of standard manufacture, and of duty rating to comply with herein specified speeds and loads. Oil control unit shall consist of following components, all built into single housing. Welded manifolds with separate valves to accomplish each function will not be acceptable under this Specification. All adjustments shall be accessible and shall be made without removing assembly from oil line. Relief valve shall be externally adjustable, and shall be capable of bypassing total oil flow without

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increasing back pressure more than 10 percent above that required to barely open valve. Up start and stop valve shall be externally adjustable, and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from jack unit, insuring smooth up starts and up stops. Check valve shall be designed to close quietly without permitting any perceptible reverse flow. Lowering valve and leveling valve shall be externally adjustable for drop-away speed, lowering speed, leveling speed and stopping speed to insure smooth "Down" starts and stops. Leveling valve shall be designed to level car to floor in direction car is traveling when slowdown is initiated. Electric controller shall be microprocessor integrated circuitry. Silver to silver contacts shall be utilized on all relays and contactors (where provided). Provide thermal overload relays to protect motor. All component switches to be mounted in a steel panel designed for mounting on power unit, wall or floor.

- a. Hydraulic Fluid: Nontoxic, readily biodegradable, fire-resistant formulated with paraffinic base oils and ashless, non-zinc, antiwear additives and with antioxidant, anticorrosive, antifoaming, and metal-passivating additives. Hydraulic fluid shall be approved by elevator manufacturer for use with elevator equipment.
6. Jack Unit: Shall be double post design, designed and constructed in accordance with applicable requirements of ASME A-17.1 Code. It shall be of sufficient size to lift gross load the height specified and shall be factory tested to insure adequate strength and freedom from leakage. No brittle material, such as grey cast iron, shall be used in jack construction. Jack unit shall consist of following parts: plunger of heavy seamless steel tubing accurately turned and polished; stop ring shall be electrically welded to plunger to positively prevent plunger leaving casing; internal guide bearing; packing or seal of suitable design and quality; drip ring around cylinder top; cylinder made of steel pipe and provided with pipe connection and air bleeder. Brackets shall be welded to jack cylinder for supporting elevator on pit channels. Provide auxiliary safety bulkhead in lower end of cylinder, which will limit down car speed to safe value in event of leakage around external bulkhead.
7. Mainline Strainer: Shall be self-cleaning type, equipped with 40-mesh element, for installation in oil line.
8. Automatic Guide Rail Lubricators: Shall be provided and mounted on top of upper guide shoes. Wool felt wiper shall apply an even, uniform flow of oil which shall thoroughly lubricate faces of guide rail from a leak-proof oil reservoir.
9. Failure Protection: Electrical control circuit shall be designed so if malfunction should occur, due to motor starter failure, oil becoming low in system, or car failing to reach landing in up direction within predetermined time, elevator car will automatically descend to lowest terminal landing. If power operated doors are used, doors shall automatically open when car reaches landing to allow passengers to depart. Doors shall then automatically close and all control buttons, except "Door Open" button in car station, shall be made inoperative.
10. Sound Insulation Panels: Shall be manufactured of reinforced 16-gage steel with a 1-inch thick, 1-1/2 lb. core of fiberglass affixed to interior. Mount on all four open sides of power unit frame.
11. Sound Isolating Couplings: Provide a minimum of two installed in oil line in Machine Room between pump and jack.
12. Oil-Hydraulic Silencer (Muffler Device): Shall be installed in oil line near power unit. It shall contain pulsation-absorbing material inserted in blowout-proof housing arranged for inspecting interior parts without removing unit from oil line. A rubber hose without blowout-proof features will not be acceptable.
13. Vibration Pads: Mount under power unit assembly to isolate unit from building structure.

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14. Automatic Terminal Limits: Electric limit switches, placed in hatchway near terminal landings, shall be designed to cut off electric current and stop car should it run beyond either terminal landing.
15. Automatic Self-Leveling: Provide elevator with self-leveling feature that will automatically bring the car to floor landings. Self-leveling shall, within its zone, be entirely automatic and independent of operating device, and shall correct for overtravel or undertravel. Car shall also be maintained approximately level (within 1/2-inch) with landing irrespective of load.
16. Buffers: Provide buffers, complying with requirements of ASME A-17.1, under car in elevator pit. Mount buffers on continuous channels fastened to elevator guide rail or securely anchored to pit floor; provide substantial extensions, if required.
17. Car Top Inspection Station: Provide station with "emergency stop" switch and with constant pressure "up-down" direction buttons, which make normal operating devices inoperative and give inspector complete control of elevator.
18. Door Operation: Provide direct current motor-driven, heavy-duty operator designed to operate car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel and door operating mechanism shall be arranged for manual operation in event of power failure. Provide full height, infrared light beam door sensing device with automatic non-contact reversal of car and hoistway doors if obstruction enters path of travel for passenger elevators. Doors shall then resume closing cycle. Doors shall automatically open as car arrives at landing and shall automatically close after an adjustable time interval or when car is dispatched to another landing. Direct drive geared operators, AC controlled units with oil checks, or other deviations from above are not acceptable.
19. Interlocks: Each hoistway entrance shall be equipped with approved type interlock tested as required by code. Interlock shall be designed to prevent operation of car away from landing until doors are locked in closed position as defined by code. Interlock shall prevent opening of doors at any landing from corridor side unless car is at rest at that landing or is in leveling zone and is stopping at that landing. Interlocks shall bear Underwriters' Laboratories "B" label of approval.
20. Hoistway Door Unlocking Device: As specified by ASME A-17.1, shall be provided to permit authorized persons to gain access to hoistway when elevator car is away from landing.
21. Door Hangers and Tracks: For each hoistway sliding door, provide sheave type two-point suspension hangers and tracks complete. Sheaves shall be 3-1/4 inches in diameter and have polyurethane tires with ball bearings properly sealed to retain grease. Hangers shall have adjustable slide to take up-thrust of doors. Tracks shall be drawn steel shapes with smooth surfaces and shaped to conform to hanger sheaves.
22. Passenger Hoistway Entrances: Shall be hollow metal, horizontal sliding type provided complete at each hoistway opening. Entrances shall be manufacturer's standard design bearing Underwriters' Laboratories' "B" labels. They shall consist of frames, sills, doors, hangers, hanger supports, hanger covers, fascia plates, and all necessary hardware. Entire front wall of hoistway shall be left open or a rough opening provided which is 18 inches greater in width and 12 inches greater in height than finished opening, until after entrances are installed. After guide rails are set and lined, install entrance frames in perfect alignment with guide rails. Finish walls shall then be completed by others.
23. Passenger Operation (Selective Collective Automatic Pushbutton): Control of elevator car shall be automatic in operation by means of pushbutton in car marked for each landing level served, an "up-down" button at each intermediate landing, and a call button at each terminal landing, wherein all stops registered by momentary pressure of landing or car

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buttons shall be maintained until car answers call. Provide emergency stop switch in car pushbutton station, which, when in off position, will render elevator inoperative, and which will enable attendant or passenger to stop car at any point during its travel. Opening of this switch shall not cancel registered calls, and when switch is closed, car will continue to answer calls that have been registered. Each landing station shall contain an illuminated pushbutton, which shall "light up" when pressed to indicate that a call has been registered to bring car to that particular landing. A time delay, noninterference feature, shall be incorporated in control mechanism to allow ample time for opening and closing car and hoistway doors before it is again placed in motion.

2.6 SIGNAL EQUIPMENT

- A. General: Provide signal equipment for each elevator or group of elevators with hall-call and car-call buttons that light when activated and remain lit until call has been fulfilled. Fabricate lighted elements of acrylic or other permanent, non-yellowing translucent plastic.
- B. Car Control Stations: Provide manufacturer's standard semi-recessed car control stations. Mount in return panel adjacent to car door, if not otherwise indicated.
- C. Emergency Communication System: Provide system that complies with ASME A17.1 and U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)." On activation, system shall dial preprogrammed number of monitoring station and identify elevator location to monitoring station. System shall provide two-way voice communication without using handset and provide visible signals that indicate when system has been activated and when monitoring station has responded. Provide system contained in flush-mounted cabinet, with identification, instructions for use, and battery backup power supply.
- D. Fire Department Communication System: Provide in each car and required conductors in traveling cable for fire department communication system specified in Division 26 Sections.
- E. Car Position Indicator: For passenger elevator cars, provide illuminated-signal type, digital-display type, or segmented type, located above car door or above car control station. Also provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served.
 - 1. Include travel direction arrows if not provided in car control station.
- F. Hall Push-Button Stations: Provide hall push-button stations at each landing for elevator.
 - 1. Provide units with flat faceplate, satin stainless steel for mounting with body of unit recessed in wall.
 - 2. Provide units with direction-indicating buttons; two buttons at intermediate landings; one button at terminal landings.
- G. Hall Lanterns: Provide units with illuminated arrows, but provide single arrow at terminal landings.
 - 1. Provide units with flat, satin stainless steel faceplate for mounting with body of unit recessed in wall and with illuminated elements projecting from faceplate for ease of angular viewing.
 - 2. Place lanterns either above or beside each hoistway entrance, unless otherwise indicated. Mount at a minimum of 72 inches above finished floor.
 - 3. With each lantern, provide audible signals indicating car arrival and direction of travel. Signals sound once for up and twice for down.

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- H. Hall Position Indicators: Provide illuminated-signal type or digital-display type, located above each hoistway entrance at main floor landing. Provide units with flat, satin stainless steel faceplate for mounting with body of unit recessed in wall.
 - 1. Integrate hall lanterns with hall position indicators.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine elevator areas, with Installer present, for compliance with requirements, installation tolerances, and other conditions affecting performance of elevator work. Examine hoistways, hoistway openings, pits, and machine rooms, as constructed. Verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.
 - 1. If unacceptable conditions are encountered, prepare written report, endorsed by Installer, listing dimensional discrepancies and conditions detrimental to performance of work.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. Comply with manufacturer's instructions and recommendations.
- B. Coordination: Coordinate elevator work with work of other trades for proper time and sequence to avoid construction delays. Use established benchmarks, lines, and levels to ensure dimensional coordination of the Work.
- C. Install cylinders for holeless elevator plumb and accurately centered for elevator car position and travel. Anchor securely in place, supported at pit floor and braced at intervals as needed to maintain alignment. Anchor cylinder guides at spacing needed to maintain alignment and avoid overstressing guides.
- D. Welded Construction: Provide welded connections for installing 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. Sound Isolation: Mount rotating and vibrating equipment on vibration-isolating mounts designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.
- F. Install piping above the floor, where possible. Where not possible, install underground piping in Schedule 40 PVC pipe casing assembled with solvent cement fittings.
- G. Lubricate operating parts of systems as recommended by manufacturers.
- H. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay installation of sills and frames until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.
- I. Leveling Tolerance: 1/4-inch, up or down, regardless of load and direction of travel.

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- J. Set sills flush with finished floor surface at landings. Fill space under sills solidly with nonshrink, nonmetallic grout.
- K. Wiring, Piping and Oil: All necessary wiring shall be furnished and installed in the hoistway in accordance with the National Electrical Code, to connect the operating buttons and switches to the control board in the power unit. All wiring shall be in rigid conduit or electric metallic tubing except to movable apparatus, which shall be connected by short lengths of flexible conduit. Provide all necessary pipe and fittings to connect the power unit to jack unit and oil in proper grade. All underground conduit and piping shall be adequately protected against corrosion.
- L. Controls: Shall be placed for convenient use of wheelchair operators as required by the State Handicapped Code.

3.3 FIELD QUALITY CONTROL

- A. Acceptance Testing: Upon nominal completion of elevator installation, and before permitting use (either temporary or permanent) of elevators, perform acceptance tests as required and recommended by the ASME A17.1 and by governing regulations and agencies.
- B. Advise Owner, Architect, and authorities having jurisdiction in advance of dates and times tests are to be performed on elevators.
- C. In addition to other requirements, inspections, tests and remedies herein provided, upon completion of elevator installation and before final approval and final payment, the Elevator Subcontractor shall make, in the presence of the Architect or his designated representative, a running speed test with full maximum load on the elevator car to determine whether the elevator equipment, as installed, meets the speed, capacity and all other requirements of the Specifications.
- D. In the event the equipment does not meet all requirements of the Specifications, Elevator Subcontractor shall promptly remove from premises, all work condemned by Architect as failing to conform to Contract, and shall promptly replace and re-execute work in accordance with Contract without expense to Owner. Elevator Subcontractor shall bear all expense of making good all work of other Contractors destroyed or damaged by such removal or replacement.
- E. Obtain State of Maine elevator inspection certificate.

3.4 DEMONSTRATION

- 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 procedures to follow in identifying sources of operational failures or malfunctions. Confer with Owner on requirements for a complete elevator maintenance program. Coordinate instruction with the availability of the Owner's personnel.
- B. Make a final check of each elevator operation with Owner's personnel present and just prior to date of Substantial Completion. Determine that operation systems and devices are functioning properly.

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3.5 PROTECTION

- A. Temporary Use: Do not use elevators for construction purposes.
- B. Provide protective coverings, barriers, devices, signs, and other procedures to protect elevator. If, despite such protection, elevator becomes damaged, engage elevator Installer to restore damaged work so no evidence remains of corrective work. Return items that cannot be refinished in field to shop, make required repairs and refinish entire unit, or provide new units as required.
- C. Provide final protection and maintain conditions, in a manner acceptable to elevator manufacturer and Installer that ensure elevators are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 142400