

Addendum #1 – 2.15.18

SECTION 142500

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HYDRAULIC ELEVATOR MODERNIZATION

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Two (2) hydraulic elevators as follows:
 - 1. One (1) Passenger Elevator, Clean Car, SE-4
 - 2. One (1) Passenger Elevator, Dirty Car, SE-3
- B. All engineering, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.
- C. Applicable conditions of General, Special, and Supplemental Conditions, Division 1, and all sections listed in Contract Documents "Table of Contents."
- D. Additional equipment or finishes furnished under other sections, installed under this section:
 - 1. Car interior finishes
 - 2. Car finish flooring
- E. Cartage and Hoisting: All required staging, hoisting and movement to, on, and from the site including new equipment, reused equipment, or dismantling and removal of existing equipment.
- F. Unless specifically identified as "Reuse," "Retain," or "Refurbish," provide new equipment.
- G. Hoistway, pit, and machine room barricades as required.

1.02 RELATED WORK BY CONTRACTOR

- A. Hoistway and Pit:
 - 1. Wall blockouts and fire rated closure for control and signal fixture boxes which penetrate walls.
 - 2. Cutting and patching walls and floors where required to maintain fire rating.
 - 3. Pit access stationary ladder for each elevator. Retractable ladder if provided shall include an electrical contact conforming to ASME A17.1, Rule 2.2.2.4.2.7.
 - 4. Waterproof pit. Indirect waste drain or sump with flush grate and pump. Sump pump/drain capacity minimum 3000 gallons per hour, per elevator.
 - 5. Protect open hoistways and entrances during construction per OSHA Regulations.
 - 6. Protect car enclosure, hoistway entrance assemblies, and special metal finishes from damage.
 - 7. Hoistway venting. Reprogram fire dampers as required.
 - 8. New illuminated light switches, accessible from pit access door.
 - 9. Increase lighting to 10 FC at the floor and properly guard.
 - 10. Patch and firestop existing access door at top of hoistway.
- B. Machine Room and Machinery Spaces:
 - 1. Enclosure with access.
 - a. Increase lighting to 19fc and properly guard.

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2. Ventilation and heating.
 - a. Remove existing vent ducts if not re-used with new system.
 - b. Install new thermostat controlled unit capable of maintaining a minimum temperature as required by the new controller. Maintain maximum 80% relative humidity, non-condensing.
 3. Paint walls and ceiling.
 4. Class "ABC" fire extinguisher in each elevator machine room.
 5. Seal fireproofing to prevent flaking.
 6. Self-closing and locking access door and frame.
 - a. Provide UL fire rated door.
- C. Electrical Service, Conductors, and Devices:
1. Lighting and GFCI convenience outlets in pit, machine room, and overhead machinery spaces. Provide one additional non-GFCI convenience outlet in pit for sump pump and oil return pump.
 2. Three-phase mainline copper power feeder with true earthen grounding to terminals of each elevator controller in the machine room with protected, lockable "open" disconnecting means.
 3. Single-phase copper power feeder to each elevator controller for car lighting and exhaust blower with individual protected, lockable "open" disconnecting means located in machine room.
 4. Emergency telephone line to each individual elevator control panel in elevator machine room.
 5. Fire alarm initiating devices in each elevator lobby for each group of elevators or single elevator and each machine room to initiate firefighters' return feature. Device at top of hoistway if sprinklered. Provide alarm initiating signal wiring from hoistway or machine room connection point to elevator controller terminals. Device in machine room and at top of hoistway to provide signal for general alarm and discrete signal for Phase II firefighters' operation.
 6. Temporary power and illumination to install, test, and adjust elevator equipment.
 7. Firefighters' telephone system and announcement speaker in car with connection to individual elevator control panels in elevator machine room.
 8. Means to automatically disconnect power to affected elevator pump unit and controller prior to activation of machine room fire sprinkler system and/or hoistway fire sprinkler system. Manual shut-off means shall be located outside bounds of machine room.
 9. When sprinklers are provided in the hoistway all electrical equipment located less than 4'-0" above the pit floor shall be identified for use in wet locations. Exception: seismic protection devices.
- D. Standby Power Provision:
1. Standby power of normal voltage characteristics via normal electrical feeders to run one elevator at a time and/or single elevator unit at full-contract car speed and capacity.
 2. Conductor from auxiliary form "C" dry contacts, located in the standby power transfer switch to a designated elevator control panel in each elevator group. Provide a time delay of 30 - 45 seconds for pre-transfer signal in either direction.
 3. Standby single-phase power to group controller, and each elevator controller for car lighting, exhaust blower, and emergency signaling device.
 4. Standby power to machine room, and pit lighting.
 5. Standby power to machine room ventilation or air conditioning.
 6. Standby power to emergency communications devices.

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1.03 DEFINITIONS

- A. Terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1.
- B. Reference to a device or a part of the equipment applies to the number of devices or parts required to complete the installation.
- C. Provisions of this specification are applicable to all elevators unless identified otherwise.

1.04 QUALITY ASSURANCE

- A. Compliance with Regulatory Agencies:
 - 1. APPLICABLE CODES
 - a. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of following codes, laws, and/or authorities, including revisions and changes in effect:
 - 1) Safety Code for Elevators and Escalators, ASME A17.1
 - 2) Guide for Inspection of Elevators, Escalators, and Moving Walks, ASME A17.2
 - 3) Elevator and Escalator Electrical Equipment, ASME A17.5
 - 4) National Electrical Code, NFPA 70
 - 5) Americans with Disabilities Act, ADA
 - 6) Local Fire Authority
 - 7) Requirements of IBC and all other codes, ordinances and laws applicable within the governing jurisdiction
 - 8) Life Safety Code, NFPA 101
 - 9) Uniform Federal Accessibility Standard, UFAS
 - 2. STAGING AREA
 - a. An equipment staging area will be available for use by Contractor. Contractor shall restrict usage to area designated and shall notify Purchaser/Property Management prior to storing of any large equipment which will impose heavy concentrated loading on floor area. Do not store such equipment until approval is received.
 - 3. OCCUPANCY AND WORK BY OTHERS
 - a. Contractor expressly affirms Purchaser's rights to let other contracts and employ other Contractors in connection with required work. Contractor will afford other Contractors and their workmen reasonable opportunity for introduction and storage of materials and equipment, for execution of their work and will properly connect and coordinate his work with theirs. Contractor will also incorporate comparable provisions in all its subcontracts.
 - b. Contractor declares that other Contractors employed by Purchaser on basis of separate contracts may proceed at such times as necessary to install items of work required by Purchaser.
- B. Contractor declares that it will cooperate with other Contractors employed by Purchaser and, in addition to other coordination and expediting efforts, will coordinate their work by written notices regarding necessity of such work to be done on or before certain dates.
- C. Contractor declares that it is responsible for review, stamped, and signed approval of all shop drawings for required work.

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- D. Contractor hereby declares that content of foregoing paragraphs and influence they may have on project:
 - 1. Shall not cause a change in stipulated Contract Sum
 - 2. Shall not cause a change in Construction Time Schedule
- E. Warranty:
 - 1. Material and workmanship of installation shall comply in every respect with Contract Documents. Correct defective material or workmanship which develops within one (1) year from date of final acceptance of all work to satisfaction of Architect, Purchaser and Consultant at no additional cost, unless due to ordinary wear and tear, or improper use or care by Purchaser. Perform maintenance in accordance with terms and conditions indicated in the Preventive Maintenance Agreement.
 - 2. Defective is defined to include, but not be limited to: operation or control system failures, car performance below required minimum, excessive wear, unusual deterioration, or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise, or vibration, and similar unsatisfactory conditions.
 - 3. Retained Equipment: All retained components, parts, and materials shall be cleaned, checked, modified, repaired or replaced, so each component and its parts are in like new operating condition. Retained equipment must be compatible for integration with new systems. All retained equipment shall be covered under the warranty provisions, of Article 1.04, G., 1. & 2. above.
 - 4. Make modifications, requirements, adjustments, and improvements to meet performance requirements of Sections 2.03 and 14250.

1.05 DOCUMENT AND SITE VERIFICATION

In order to discover and resolve conflicts or lack of definition which might create problems, Contractor must review Contract Documents and site conditions for compatibility with its product prior to submittal of quotation. Review existing structural, electrical provisions, and mechanical provisions for compatibility with Contractor's products. Purchaser will not pay for change to structural, mechanical, electrical, or other systems required to accommodate Contractor's equipment.

1.06 SUBMITTALS

- A. Within thirty (30) calendar days after award of contract and before beginning equipment fabrication, submit shop drawings, and required material samples for review. Allow fourteen (14) days for response to initial submittal.
 - 1. Scaled or Fully Dimensioned Layout: Plan of pit, hoistway, and machine room indicating equipment arrangement, elevation section of hoistway, details of car enclosures, and car/hall signal fixtures.
 - 2. Design Information: Indicate equipment lists, reactions, and design information on layouts.
 - 3. Power Confirmation Information: Design for existing conditions.
 - 4. Fixtures: Cuts or shop drawings.
 - 5. Finish Material: Submit 3" x 12" samples of actual finished material for review of color, pattern, and texture. Compliance with other requirements is the exclusive responsibility of the Contractor. Include, if requested, signal fixtures, lights, graphics, Braille plates, and detail of mounting provisions.
 - 6. Design Information: Provide calculations verifying the following:
 - a. Adequacy of existing electrical provisions.

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- b. Machine room heat emissions in B.T.U.
 - c. Adequacy of existing car platform structure for intended loading.
 - d. Adequacy of plunger wall thickness for intended loading.
- 7. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
- B. Submittal review shall not be construed as an indication that submittal is correct or suitable, or that the work represented by submittal complies with the Contract Documents. Compliance with Contract Documents, code requirements, dimensions, fit, and interface with other work is Contractor's responsibility.
- C. Acknowledge and/or respond to review comments within fourteen (14) calendar days of return. Promptly incorporate required changes due to inaccurate data or incomplete definition so that delivery and installation schedules are not affected. Identify and cloud drawing revisions, including Contractor elective revisions on each re-submittal. Contractor's revision response time is not justification for equipment delivery or installation delay.

1.07 PERMIT, TEST, AND INSPECTION

- A. Obtain and pay for permit, license, and inspection fee necessary to complete installation.
- B. Perform test required by governing authority in accordance with procedure described in ASME A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks in the presence of Authorized Representative.
- C. Supply personnel and equipment for test and final review by Consultant.

1.08 MAINTENANCE

- A. INTERIM MAINTENANCE
 - 1. Furnish preventive maintenance service on elevators described herein for a period from notice to proceed, verbal or written, until each unit is removed from building service for modernization. In addition, furnish interim preventive maintenance on completed units until the modernization of each group of elevators is complete and one-year warranty maintenance, defined in Item 1.08 B below, is commenced. Cost of interim maintenance shall not be included as part of modernization quotation. Indicate costs on a per-unit basis for interim maintenance as requested on quotation form. Costs for interim maintenance shall be paid by Purchaser separately and monthly based upon the number of units in service.
 - 2. Use competent personnel, acceptable to Purchaser, employed and supervised by the Contractor.
- B. WARRANTY MAINTENANCE
 - 1. Provide preventive maintenance and 24-hour emergency callback service for one year commencing on date of final acceptance by Purchaser. Systematically examine, adjust, clean, and lubricate all equipment. Repair or replace defective parts using parts produced by the Contractor of installed equipment. Maintain elevator machine room, hoistway, and pit in clean condition.

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2. Use competent personnel, acceptable to the Purchaser, supervised and employed by Contractor.
 3. The warranty maintenance period specified in Item 1.08, B. 1. above shall be extended one (1) month for each three (3) month period in which equipment related failures average more than one (1) per unit per quarter.
 4. Purchaser retains the option to delete cost of warranty maintenance from new equipment contract and remit twelve (12) equal installments directly to Contractor during period in which maintenance is being performed.
- C. CONTRACT PREVENTIVE MAINTENANCE
1. Quote monthly cost for five-year Preventive Maintenance Agreement commencing upon completion of the warranty period specified in Item 1.08, B. above. Base quotation on present labor and material cost. Price adjustment will be made at Agreement commencement date and thereafter as provided in Agreement.
 2. Use competent personnel, acceptable to the Purchaser, employed and supervised by Contractor.

PART 2 PRODUCTS

2.01 SUMMARY

- A. Two (2) Passenger Elevators, Clean Car: SE-4 and Dirty Car: SE-3.
- B. Unless specifically identified as "retain existing," provide new equipment.

	Existing Equipment	Disposition
Number:	Clean Car: SE-4 Dirty Car: SE-3	Retain Existing
Capacity:	4,000 #	Retain Existing
Contract Speed:	75 F.P.M.	<i>Retain Existing (Addendum #1)</i>
Machine:	Hydraulic Pump	New, dry-mount
Machine Location:	Remote at Bottom Landing	Retain Existing
Operational Control:	Selective Collective Microprocessor/Relay-Based System	Selective Collective Microprocessor-Based System
Motor Control:	Single Speed AC with Wye Delta Start	Single Speed AC Electronic Soft Start
Power Characteristics:	480 Volts, 3 Phase, 60 Hertz, Field Verify	Retain Existing

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	Existing Equipment	Disposition
Stops:	Two (2) Front	Retain Existing
Openings:	Two (2) Front	Retain Existing
Floors Served:	Two (2) Front	Retain Existing
Travel:	12'±, Field Verify	Retain Existing
Minimum Clear Inside Car:	65" Wide X 92" Deep, Field Verify	Retain Existing
Entrance Size:	48" Wide X 84" High, Field Verify	Retain Existing
Entrance Type:	Two Speed, Side Opening Power	Retain Existing
Door Operation:	Medium Speed, Door Operator, Minimum Opening Speed 1-1/2 F.P.S.	High Speed, Heavy-Duty, Door Operator, Minimum Opening Speed 2-1/2 F.P.S.
Door Protection:	Infrared, Full Screen Device	Infrared, Full Screen Device, with Differential Interrupted Beam Time
Hydraulic Type:	Direct Plunger	Retain Existing
Guide Rails:	Planed Steel Tees	Retain Existing
Buffers:	Spring	Retain Existing
Car Enclosure:		Car Interior Finishes Furnished and Installed Under Other Sections
Signal Fixtures:		Battery Powered Emergency Car Lighting. Provide Separate Constant Pressure Test Button in Car Service Compartment
Hall and Car Pushbutton Stations:		LED Illumination Contractor's Standard Vandal Resistant Assembly Single Hall Pushbutton Riser Per Elevator Dual Car Operating Panels

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Existing Equipment	Disposition
	Vandal Resistant Car and Hall Pushbuttons
Car Position Indicators:	Single Digital with Car Direction Arrows
Hall Lanterns:	At All Floors with Volume Adjustable Electronic Chime or Tone. Sound Twice for Down Direction Vandal Resistant Assembly
Hall Car Position Indicator:	Digital Type with Car Direction Arrows at All Floors. Vandal Resistant Assembly
Communication System:	Self-Dialing, Vandal Resistant, Push To Call, Two-Way Communication System with Recall, Tracking and Voiceless Communication
Fixture Submittal:	Submit Brochure Depicting Contractor's Proposed Designs with Bid
Additional Features, All Cars:	Solid Slide Type Guides
	Car Top Inspection Station
	Firefighters' Service, Phase I And II, Including Alternate Floor Return
	Standby Power Transfer (Automatic to Main Floor) with Manual Override in Firefighters' Control Panel
	Accessibility and Emergency Medical Services Signage
	Stationary Car Return Panels Arranged for Surface Applied Main Car Operating Panels

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Existing Equipment	Disposition
	Recessed Side Wall Panels Arranged for Recessed Applied Auxiliary Car Operating Panels
	Hoistway Access Switches Top and Bottom Floors
	Hoistway Door Unlocking Device All Floors
	Platform Isolation Jack to Platen Connection
	Independent Service Feature
	Hydraulic Pump Unit, and Controller Sound Isolation
	Tamper Resistant Fasteners for All Fastenings Exposed to the Public
	One Year Warranty Maintenance with 24-Hour Call-Back Service
	No Visible Company Name or Logo
	Wiring Diagrams, Operating Instructions, and Parts Ordering Information
	System Diagnostic Means and Instructions
	Non-Proprietary Control System and Diagnostics Provisions

2.02 MATERIALS

- A. Site condition inspection
 - 1. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
 - 2. Do not proceed with installation until work in place conforms to project requirements.

- B. PRODUCT DELIVERY, STORAGE, AND HANDLING
 - 1. Deliver material in Contractor's original, unopened protective packaging.

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2. Store material in original protective packaging. Prevent soiling, physical damage, or moisture damage.
 3. Protect equipment and exposed finishes from damage and stains during transportation, erection, and construction.
 4. Allocate available site storage areas and coordinate their use with Purchaser and other Contractors.
 5. Provide suitable temporary weather-tight storage facilities as may be required for materials which will be stored in the open.
- C. INSTALLATION REQUIREMENTS
1. Install all equipment in accordance with Contractor's instructions, referenced codes, specification, and approved submittals.
 2. Install machine room equipment with clearances in accordance with referenced codes and specification.
 3. Install all equipment so it may be easily removed for maintenance and repair.
 4. Install all equipment for ease of maintenance.
 5. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
 6. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
 - a. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 - b. Machine room equipment, and pit equipment.
 - c. Hoistway equipment including guide rails, guide rail brackets, and pit equipment.
 - d. Neatly touch up damaged factory-painted surfaces with original paint color. Protect machine-finish surfaces against corrosion.
- D. MANUFACTURER'S NAMEPLATES
1. Manufacturer's name plates and other identifying markings shall not be affixed on surfaces exposed to public view. This requirement does not apply to Underwriter's Laboratories and code required labels.
 2. Each major component of mechanical and electrical equipment shall have identification plate with the Manufacturer's name, address, model number, rating, and any other information required by governing codes.
- E. COLORS OF FACTORY-FINISHED EQUIPMENT
1. All colors will be selected from the Manufacturer's standard range unless custom colors are specified herein.
 2. Submit samples of all standard colors available and/or specified custom colors for review and approval. See Section 1.06, Submittals
 3. Submit samples of all specified architectural metals specified for review and approval. See Section 1.06, Submittals.
- F. MATERIALS AND FINISHES
1. Steel:
 - a. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
 - b. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M-03.
 - c. Structural Steel Shapes and Plates: ASTM A36.

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2. Stainless Steel: Type 304 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength, and durability. Apply mechanical finish on fabricated work in the locations shown or specified, Federal Standard and NAAMM nomenclature, with texture and reflectivity required to match Architect's sample. Protect with adhesive paper covering.
 - a. No. 4 Satin: Directional polish finish. Graining directions as shown or, if not shown, in vertical dimension.
3. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.
4. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050" \pm 0.005" thick, color and texture as follows:
 - a. Exposed Surfaces: Color and texture selected by Architect.
 - b. Concealed Surfaces: Contractor's standard color and finish.
5. Fire-Retardant Treated Particle Board Panels: Minimum $\frac{3}{4}$ " thick backup for natural finished wood and plastic laminate veneered panels, edged and faced as shown, provided with suitable anti-warp backing; meet ASTM E84 Class "I" rating with a flame-spread rating of 25 or less, registered with local authorities for elevator finish materials.
6. Paint: Clean exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.
7. Prime Finish: Clean all metal surfaces receiving a baked enamel paint finish of oil, grease, and scale. Apply one coat of rust-resistant primer followed by a filler coat over uneven surfaces. Sand smooth and apply final coat of primer.
8. Baked Enamel Finish: Prime finish per above. Unless specified "prime finish" only, apply and bake three (3) additional coats of enamel in the selected solid color.
9. Entrance Support Equipment within Hoistway: Include strut angles, headers, sill support angles, fascia, hanger covers, etc. Clean, remove, and check for corrosive activity. Replace components that exhibit severe deterioration. Tighten all fastenings. Repaint exposed surfaces with two coats of rust preventive primer.

2.03 CAR PERFORMANCE

- A. Car Speed: \pm 10% of contract speed under any loading condition.
- B. Car Capacity: Safely lower, stop and hold 125% of rated load.
- C. Car Stopping Zone: \pm 1/4" under any loading condition.
- D. Door Opening Time: Seconds from start of opening to fully open:
 1. All Cars: 2.3 seconds.
- E. Door Closing Time: Seconds from start of closing to fully closed:
 1. All Cars: 4.0 seconds.
- F. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open (1/2 open for side opening doors) and car level and stopped at next successive floor under any loading condition or travel direction (12' typical floor height):
 1. All Cars: 19.5 seconds.
- G. Pressure: Fluid system components shall be designed and factory tested for 500 p.s.i. Maximum operating pressure shall be 400 p.s.i.

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- H. Car Ride Quality:
 - 1. Horizontal and vertical acceleration within car during all riding and door operating conditions. Not more than 20 mg peak to peak (adjacent peaks) in the 1 - 10 Hz range.
 - 2. Acceleration and Deceleration: Smooth constant and not less than and not more than 3 feet/second² with an initial ramp between 0.5 and 0.75 second.
 - 3. Sustained Jerk: Not more than 6 feet/second³.
 - 4. Measurement Standards: Measure and evaluate ride quality consistent with ISO 18738, using low pass cutoff frequency of 10 Hz and A95 peak-to-peak average calculations.
- I. Noise and Vibration Control
 - 1. Airborne Noise: Measured noise level of elevator equipment and its operation shall not exceed 60 dBA inside car under any condition including door operation and car ventilation exhaust blower on its highest speed. Limit noise level in the machine room relating to elevator equipment and its operation to no more than 80 dBA. All dBA readings to be taken 3'-0" off the floor and 3'-0" from the equipment using the "A" weighted scale.
 - 2. Vibration Control: All elevator equipment provided under this contract, including power unit, controller, oil supply lines, and their support shall be mechanically isolated from the building structure and electrically isolated from the building power supply and to each other to minimize the possibility of objectionable noise and vibrations being transmitted to occupied areas of the building.

2.04 OPERATION

- A. Selective Collective Microprocessor-Based, All Cars:
 - 1. Operate car without attendant from pushbuttons in car and located at each floor. When car is available, automatically start car and dispatch it to floor corresponding to registered car or hall call. Once car starts, respond to registered calls in direction of travel and in the order the floors are reached.
 - 2. Do not reverse car direction until all car calls have been answered, or until all hall calls ahead of car and corresponding to the direction of car travel have been answered.
 - 3. Slow car and stop automatically at floors corresponding to registered calls, in the order in which they are approached in either direction of travel. As slowdown is initiated for a hall call, automatically cancel hall call. Cancel car calls in the same manner. Hold car at arrival floor an adjustable time interval to allow passenger transfer.
 - 4. Answer calls corresponding to direction in which car is traveling unless call in the opposite direction is highest (or lowest) call registered.
 - 5. Illuminate appropriate pushbutton to indicate call registration. Extinguish light when call is answered.
- B. Other Items:
 - 1. Low Oil Control: In the event oil level is insufficient for travel to the top floor, provide controls to return elevator to the main level and park until oil is added.
 - 2. Independent Service: Provide controls for operation of each car from its pushbuttons only. Close doors by constant pressure on desired destination floor button or door close button. Open doors automatically upon arrival at selected floor.

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- C. Firefighters' Service: Provide equipment and operation in accordance with code requirements.
- D. Automatic Car Stopping Zone: Stop car within 1/4" above or below the landing sill. Maintain stopping zone regardless of load in car, direction of travel, distance between landings.
- E. Remote Monitoring and Diagnostics: Equip each controller with standard ports, interface boards, and drivers to accept maintenance, data logging, fault finding diagnostic, and monitoring computers, keyboards, modems, and programming tools. The system shall be capable of driving remote color CRT monitor that continually scan and display the status of each car and call.
- F. Motion Control: AC type with unit valve suitable for operation specified and capable of providing smooth, comfortable car acceleration and retardation. Limit the difference in car speed between full load and no load to not more than $\pm 10\%$ of the contract speed in either direction of travel.
- G. Door Operation: Automatically open doors when car arrives at main floor. At expiration of normal dwell time, close doors. Reopen doors when car is designated for loading.
- H. Standby Lighting and Alarm: Car mounted battery unit with solid-state charger to operate alarm bell and car emergency lighting. Battery to be rechargeable with minimum 5-year life expectancy. Include required transformer. Provide constant pressure test button in service compartment of car operating panel.
- I. Standby Power Operation: Upon loss of normal power, adequate standby power will be supplied via building electrical feeders to simultaneously start and run one car in each group and single cars at contract car speed and capacity.
 - 1. Automatically return one car at a time in each group and single car, nonstop to designated floor, open doors for approximately 3.0 seconds, close doors, and park car. During return operation, car and hall call pushbuttons shall be rendered inoperative. As each car parks, system shall immediately select the next car until all cars in a group have returned to the designated floor. If a car fails to start or return within 30 seconds, system shall automatically select the next car in the group to automatically return.
 - 2. When all cars in a group have returned to the designated floor, one car in each group shall be designated for automatic operation. When a service demand exists for 30 seconds and designated car fails to start, next available car in the group shall be automatically selected for operation.
 - 3. Provide selection switches in main egress landing hall station.
 - a. Switches shall be labeled "ELEVATOR EMERGENCY POWER" with positions marked "AUTO" and appropriate car numbers controlled by each respective switch. Key shall be keyed same as key utilized for firefighters' Phase I and II key switch. Key shall be removable in "AUTO" position only.
 - b. Switch shall override automatic return and automatic selection functions and cause the manually selected car to operate. Manual selection shall cause car to start and proceed to designated floor and open and close its doors before standby power is manually transferred to next selected car.
 - c. Provide "ELEVATOR EMERGENCY POWER" indicator lights (one per car) in main egress hall station. Indicator light illuminates when corresponding car is selected, automatically or manually, to operate on standby power.

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4. Successive Starting: When normal power is restored or there has been a power interruption, individual cars in each bank shall restart at five-second intervals.

2.05 MACHINE ROOM EQUIPMENT

- A. Arrange equipment in existing machine room spaces.
- B. New Pump Unit: Assembled unit consisting of positive displacement pump, induction motor, master-type control valves combining safety features, holding, direction, bypass, stopping, manual lowering functions, shut off valve, oil reservoir with protected vent opening, oil level gauge, outlet strainer, drip pan, muffler, all mounted on isolating pads. Provide oil temperature thermostat to maintain oil at operating temperature. Enclose entire unit with removable sheet steel panels lined with sound-absorbing material. Provide SCR soft start with closed transition. Design unit for eighty (80) upstarts/hour.
- C. Landing Systems: Solid-state, magnetic, or optical type.
- D. Controller: UL/CSA labeled.
 1. Controller manufacturer must provide training and technical support to VA Maintenance providers.
 2. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclose equipment with covers. Provide means to prevent overheating.
 3. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
 4. Microprocessor-Related Hardware
 - a. Provide built-in noise suppression devices which provide a high level of noise immunity on all solid-state hardware and devices.
 - b. Provide power supplies with noise suppression devices.
 - c. Isolate inputs from external devices, such as pushbuttons, with opto-isolation modules.
 - d. Design control circuits with one leg of power supply grounded.
 - e. Safety circuits shall not be affected by accidental grounding of any part of the system.
 - f. System shall automatically restart when power is restored.
 - g. System memory shall be retained in the event of power failure or disturbance.
 - h. Equipment shall be provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
 5. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
 6. Permanently mark components, relays, fuses, PC boards, etc., with symbols shown on wiring diagrams.
 7. Provide controller or pump unit mounted auxiliary lockable "open," disconnect if mainline disconnect is not in sight of controller and/or pump unit.
- E. New Muffler: Provide in discharge oil line near pump unit. Design shall dampen and absorb pulsation and noise in the flow of hydraulic fluid.

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- F. Piping and Oil: Retain existing piping and provide new oil for the system.
- G. New Shutoff Valve: Manual valve in line adjacent to pump unit.

2.06 HOISTWAY EQUIPMENT

- A. Guide Rails: Retain main guide rails in place.
 - 1. Clean rails and brackets. Remove rust.
 - 2. Check all rail and bracket fastenings and tighten.
 - 3. Realign rails as required to provide smooth car ride.
 - 4. Provide supplemental rail brackets and/or backing as required by code or to enhance car ride quality.
- B. Buffers, All Cars: Retain existing.
 - 1. Rebuild as required and paint.
- C. Hydraulic Jack Assembly: Retain existing.
 - 1. Cylinders: Retain existing. Provide means to collect oil at cylinder head and return automatically to oil reservoir. Provide new packing.
 - 2. Plungers: Retain existing. Isolate plunger from car frames.
- D. Jack Support and Fluid Shut-Off Valves: Retain existing steel pit channels to support jack assembly and transmit loads to building structure.
- E. New Terminal Stopping: Provide normal and final devices.
- F. Electrical Wiring and Wiring Connections:
 - 1. Conductors and Connections: Copper throughout with individual wires coded and connections on identified studs or terminal blocks. Use no splices or similar connections in wiring except at terminal blocks, control compartments, or junction boxes. Provide 10% spare conductors throughout. Run spare wires from car connection points to individual elevator controllers in the machine room. Provide four (4) pair of spare shielded communication wires in addition to those required to connect specified items. Tag spares in machine room.
 - 2. Conduit: Painted or galvanized steel conduit, EMT, or duct. Conduit size, 1/2". Flexible heavy-duty service cord may be used between fixed car wiring and car door switches for door protective devices.
 - 3. Traveling Cables: Flame and moisture-resistant outer cover. Prevent traveling cable from rubbing or chafing against hoistway or equipment within hoistway. Provide five (5) pair of shielded wires and two (2) RG-6/U type coaxial cables for card reader. Provide two (2) RG-6/U coaxial CCTV cables within traveling cable from car controller to car top, plus 3'-0" excess loop at both ends. Provide two (2) pair 14-gauge wire for CCTV power.
 - 4. Auxiliary Wiring: Connect fire alarm initiating devices and emergency two-way communication system in each car controller in machine room.
- G. New Entrance Equipment:
 - 1. Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric up-thrust roller adjustment.
 - 2. Door Tracks: Bar or formed, cold-drawn removable steel tracks with smooth roller contact surface.
 - 3. Door Interlocks: Operable without retiring cam. Paint interlock box flat black.

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- 4. Door Closers: Spring, spirator, or jamb/strut mounted counterweight type. Design and adjust to insure smooth, quiet mechanical close of doors.
- H. New Hoistway Door Unlocking Device: Provide unlocking device with escutcheon in door panel at all floors, with finish to match adjacent surface.
- I. New Hoistway Access Switches: Mount in entrance frame side jamb at top and bottom floors. Provide switch with faceplate.
- J. Floor Numbers: Stencil paint 4" high floor designations in contrasting color on inside face of hoistway doors or hoistway fascia in location visible from within car.

2.07 HOISTWAY ENTRANCES

- A. Frames: Retain existing. Re-clad in Stainless Steel Satin Finish.
- B. New Door Panels: Stainless steel, satin finish, 16-gauge steel, sandwich construction without binder angles. Provide a minimum of two (2) gibs per panel with integral fire tabs, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel. Construct door panels with interlocking, stiffening ribs.
- C. New Sight Guards: 14-gauge, same material and finish as hoistway entrance door panels. Construct without sharp edges.
- D. Sills: Retain existing. Clean and polish. Check and tighten all fastenings.
- E. Sill Supports: Retain existing. Check and tighten all fastenings.
- F. Fascia, Toe Guards, and Hanger Covers: Retain existing. Provide as required where damaged or missing. Check and tighten all fastenings.
- G. Struts and Headers: Retain existing. Check and tighten all fastenings.
- H. Finish of Frames and Doors:

Car	Floor	Frames	Door Panels
All	All	Satin Stainless Steel	Satin Stainless Steel

2.08 CAR EQUIPMENT

- A. Frame: Retain Existing. Check and tighten all fastenings.
- B. Platform: Retain existing. Reinforce if required. Check and tighten all fastenings.
- C. New Platform Apron: Provide new extended platform apron per code. Minimum 14-gauge steel, reinforced and braced to car platform with black enamel finish.
- D. New Guide Shoes: Solid Slide Type Guides

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- E. Finish Floor Covering: Refer to drawings.
- F. Sills: Retain existing. Clean and polish. Check and tighten all fastenings.
- G. New Doors: 16-gauge steel, sandwich construction without binder angles. Provide a minimum of two (2) gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel. Construct door panels with interlocking, stiffening ribs.
- H. New Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric up-thrust roller adjustment.
- I. New Door Track: Bar or formed, cold-drawn removable steel track with smooth roller contact surface.
- J. New Door Header: Construct of minimum 12-gauge steel, shape to provide stiffening flanges.
- K. New Door Electrical Contact: Prohibit car operation unless car door is closed.
- L. New Door Clutch: Heavy-duty clutch, linkage arms, drive blocks and pickup rollers or cams to provide positive, smooth, quiet door operation. Design clutch so car doors can be closed, while hoistway doors remain open.
- M. Restricted Opening Device: Provide car-door interlock per code to prevent opening of car door outside unlocking zone. Plunger type restrictors not acceptable.
- N. New Door Operator: High speed, heavy-duty door operator capable of opening doors at no less than 2-1/2 f.p.s. Accomplish reversal in no more than 2-1/2" of door movement. Provide solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current. Provide a minimum of four (4) controller-activated motion profiles, per floor, per door, to maintain consistent, smooth, and quiet door operation at all floors, regardless of door weight or varying air pressure.
- O. Door Control Device:
 - 1. Infrared Reopening Device: Black, fully enclosed device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor. Device shall prevent doors from closing and reverse doors at normal opening speed if beams are obstructed while doors are closing. In event of device failure, provide for automatic shutdown of car at floor level with doors open.
 - 2. Interrupted Beam Time: When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds. When beams are interrupted after the initial 3.0 second hold open time, reduce time doors remain open to an adjustable time of approximately 1.0 - 1.5 seconds after beams are reestablished.
 - 3. Differential Door Time: Provide separately adjustable timers to vary time that doors remain open after stopping in response to calls.
 - a. Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
 - b. Hall Call: Hold open time adjustable between 5.0 and 8.0 seconds. Use hall call time when car responds to coincidental calls.

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- P. Car Operating Panel:
1. Two car operating panels with faceplates, consisting of a metal box containing vandal resistant operating fixtures. Main car operating panel mounted behind the car stationary front return panel. Auxiliary car operating panel flush mounted behind the stationary sidewall. Faceplates shall be hinged and constructed of stainless steel, satin finish. Provide Emergency Light on main car operating panel as required by code.
 2. Suitably identify floor buttons, alarm button, door open button, door close button, and emergency push-to-call button surface or recessed flush mounted. Configure plates per local building code accessibility standards including Braille. Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
 3. Provide minimum 1" diameter raised or flush floor pushbuttons which illuminate to indicate call registration. Include 5/8" high floor designation on face of pushbutton.
 4. Provide alarm button to ring bell located on car, and sound distress signal at control panel. Illuminate button when actuated.
 5. Provide keyed stop switch in locked car service compartment. Arrange switch to sound main control panel distress signal when actuated. Mark device to indicate "run" and "stop" positions.
 6. Provide "door open" button to stop and reopen doors or hold doors in open position.
 7. Provide "door close" button to activate door close cycle. Cycle shall not begin until normal door dwell time for a car or hall call has expired, except firefighters' operation.
 8. Provide firefighters' locked box.
 - a. Engraved Phase II firefighters' operating instructions behind locked box door, filled red. Include light jewel, audible signal, and call cancel button.
 9. Provide lockable service compartment with recessed flush door. Door material and finish shall match car return panel or car operating panel faceplate.
 10. Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
 - a. Light switch.
 - b. Three-position exhaust blower switch.
 - c. Independent service switch.
 - d. Constant pressure test button for battery pack emergency lighting.
 - e. 120-volt, AC, GFCI protected electrical convenience outlet.
 - f. Stop switch.
 11. Provide black paint filled, engraved, or approved etched signage as follows with approved size and font:
 - a. Car number on main car operating panel.
 - b. "Certificate of Inspection on File in Building Office" on main car operating panel.
 - c. Car capacity in pounds on main car operating panel.
- Q. New Car Top Control Station: Mount to provide safe access and utilization while standing in an upright position on car top.
- R. New Work Light and Duplex Plug Receptacle: GFCI protected outlet at top and bottom of car. Include on/off switch and lamp guard.
- S. Communication System:
1. "Push to Call," two-way communication instrument in car with automatic dialing, tracking, and recall features with shielded wiring to car controller in machine room. Provide dialer with automatic rollover capability with minimum two numbers.

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- a. "Push to Call" button or adjacent light jewel shall illuminate and flash when call is acknowledged. Button shall match car operating panel pushbutton design. Provide uppercase "PUSH TO CALL," "HELP ON THE WAY" engraved signage adjacent to button.
- b. Provide "Push to Call" button tactile symbol, engraved signage, and Braille adjacent to button mounted integral with car front return panel.
2. Provide two-way communication between car and machine room.
3. Phone must be compatible with VA Phone system.

2.09 CAR ENCLOSURE

- A. Car Enclosure Passenger Elevator: Provide complete as specified herein and detailed on architectural drawings. Provide the following features.
 1. Front Return Panels: As detailed on architectural drawings.
 2. Entrance Columns: As detailed on architectural drawings.
 3. Transom: As detailed on architectural drawings.
 4. Car Door Panels: Reinforced minimum 16 gauge stainless steel satin finish.
 5. Ventilation: Morrison Products, Inc. two-speed, SOE No. 06-01055 exhaust blower, or approved equal, mounted to car canopy on isolated rubber grommets. Exhaust blower shall meet requirements of Item 2.03, I. Ventilation shall shut off after adjustable period (60 – 180 seconds) of no elevator demand.
 6. Lighting: As detailed on architectural drawings. Lighting shall shut off after adjustable period (60 – 180 seconds) of no elevator demand. Provide temporary lighting as required.
 7. Perimeter Ceiling: As detailed on architectural drawings.
 8. Handrails: As detailed on architectural drawings.

2.10 HALL CONTROL STATIONS

- A. Pushbuttons: Provide one (1) riser per car with flush mounted faceplates. Include pushbuttons for each direction of travel which illuminate to indicate call registration. Include approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency situation as part of faceplate. Pushbutton design shall match car operating panel pushbuttons. Provide vandal resistant pushbutton and light assemblies. Provide enlarged faceplate to cover existing wall blockout and facilitate handicapped access requirements. Include approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency situation as part of faceplate. Provide any cutting and patching required.

2.11 SIGNALS

- A. New Hall Lantern, All Cars: Provide at each entrance to indicate travel direction of arriving car. Illuminate up or down LED lights and sound tone once for up and twice for down direction prior to car arrival at floor. Sound level shall be adjustable from 20 - 80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor. Illuminate light until the car doors start to close. Provide advanced hall lantern notification to comply with ADA hall call notification time. Car direction lenses shall be arrow shaped with faceplates. Lenses shall be minimum 2-1/2" in their smallest dimension.
- B. New Car Position Indicator: Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 1/2" high to indicate floor served and direction of car travel. Locate fixture above car entrance. When a car leaves or passes a floor, illuminate

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indication representing position of car in hoistway. Illuminate proper direction arrow to indicate direction of travel.

- C. Hall Position Indicator, All Cars: Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 1/2" high to indicate floor served and direction of car travel. Mount integral with hall lanterns all floors.
- D. Faceplate Material and Finish: Stainless steel Satin finish all fixtures.
- E. Floor Passing Tone: Provide an audible tone of no less than 20 decibels and frequency of no higher than 1500 Hz, to sound as the car passes or stops at a floor served.

2.12 INTERCOM AND DISTRESS SIGNAL SYSTEM

- A. General: Provide intercommunication system for All Cars. Include all wiring between elevator hoistways and control panels.

Include the following stations:

Station Location	Type Station	Selection Buttons to Call
Elevator Machine Room	Master	Control Panels, All Cars

- B. Basic Equipment:
 - 1. Amplifier providing static-free voice transmission with adequate volume and minimum distortion at all stations, with pre-amplifier capable of receiving voice and music inputs from building and emergency building communication system.
 - 2. Activation of emergency building communication system overrides all other conversations and permits one-way conversation to all master stations in system.
 - 3. Master Stations:
 - a. Speaker-microphone combination and/or handset for two-way communication.
 - b. Selection buttons to enable communication with all master stations. Maintain continual reception of hands-free reply from station when a selected button is depressed.
 - c. Two-Position "Talk/Listen" Button: Press to talk; release to listen.
 - d. Illuminate "in use" light when any master station is being used.
 - e. Reset button to make system available for use by any master station.
 - f. Volume control knob for adjustment of incoming volume.
 - g. Button to establish communications with all stations.
 - h. Distress light in lobby panel which illuminates when "push to call" button or alarm button in car is actuated. Energize distress light and buzzer or chime until intercom selection button for that car has been depressed. Sound buzzer or chime in lobby panel simultaneously with illumination of distress light.
 - 4. Remote Stations:
 - a. Station in car shall be activated by "push to call," two-way communication button. "Push to call" button shall illuminate and flash when call is acknowledged. Button shall match car operating panel pushbutton design. Provide uppercase "PUSH TO CALL," "HELP ON THE WAY" engraved signage adjacent to button. Provide "push to call" button tactile symbol, engraved signage, and Braille adjacent to button.

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- b. Locate car microphone and speaker, or transceiver/speaker combination in car canopy behind front return panel with drilled speaker pattern with shielded wiring to machine room junction box.
- C. Station Housings:
 - 1. House master station in machine room in a metal compartment with baked enamel finish. Attach to the group elevator supervisory control panel or wall mount. Provide communication handset with 25'-0" long cord.
 - 2. Provide control center master intercoms with satin finish stainless steel faceplates and engraved operating instructions. Coordinate faceplate size and installation of units with building Console Supplier.

PART 3 EXECUTION

3.01 SITE CONDITION INSPECTION

- A. Prior to beginning installation of equipment, examine hoistway and machine room areas. Verify no irregularities exist which affect execution of work specified.
- B. Do not proceed with installation until work in place conforms to project requirements.

3.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver material in Contractor's original, unopened protective packaging.
- B. Store material in original protective packaging. Prevent soiling, physical damage, or moisture damage.
- C. Protect equipment and exposed finishes from damage and stains during transportation, erection, and construction.

3.03 INSTALLATION

- A. Install all equipment in accordance with Contractor's instructions, referenced codes, specification, and approved submittals.
- B. Install machine room equipment with clearances in accordance with referenced codes and specification.
- C. Install all equipment so it may be easily removed for maintenance and repair.
- D. Install all equipment for ease of maintenance.
- E. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- F. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel.
 - 1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.

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2. Neatly touch up damaged factory-painted surfaces with original paint color. Protect machine-finish surfaces against corrosion.

3.04 FIELD QUALITY CONTROL

- A. Work at jobsite will be checked during course of installation. Full cooperation with reviewing personnel is mandatory. Accomplish corrective work required prior to performing further installation.
- B. Have Code Authority acceptance inspection performed and complete corrective work.

3.05 ADJUSTMENTS

- A. Install hydraulic jack assembly and guide rails plumb and align vertically with tolerance of 1/16" in 100'-0". Secure guide rail joints without gaps and file any irregularities to a smooth surface.
- B. Static balance car to equalize pressure of guide shoes on guide rails.
- C. Lubricate all equipment in accordance with Contractor's instructions.
- D. Adjust motors, valves, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.06 CLEANUP

- A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials on a daily basis.
- B. Remove all loose materials and filings resulting from work.
- C. Clean machine room equipment and floor.
- D. Clean hoistways, car, car enclosure, entrances, operating and signal fixtures.

3.07 ACCEPTANCE REVIEW AND TESTS

- A. Review procedure shall apply for individual elevators, portions of groups of elevators and completed groups of elevators accepted on an interim basis, or elevators and groups of elevators completed, accepted, and placed in operation.
- B. Contractor shall perform review and evaluation of all aspects of its work prior to requesting Consultant's final review. Work shall be considered ready for Consultant's final contract compliance review when all Contractor's tests are complete and all elements of work or a designated portion thereof are in place and elevator or group of elevators are deemed ready for service as intended.
- C. Furnish labor, materials, and equipment necessary for Consultant's review. Notify Consultant five (5) working days in advance when ready for final review of elevator or group of elevators.

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- D. Consultant's written list of observed deficiencies of materials, equipment, and operating systems will be submitted to Contractor for corrective action. Consultant's review shall include as a minimum:
1. Workmanship and equipment compliance with Contract Documents.
 2. Contract speed, capacity, floor-to-floor, and door performance comply with Contract Documents.
 3. Performance of following is satisfactory:
 - a. Starting, accelerating, running
 - b. Decelerating and stopping accuracy
 - c. Door operation and closing force
 - d. Equipment noise levels
 - e. Signal fixture utility
 - f. Overall ride quality
 - g. Performance of door control devices
 - h. Operations of emergency two-way communication device
 - i. Operations of firefighters' service
 4. Test Results:
 - a. In all test conditions, obtain specified contract speed, performance times, stopping accuracy without re-leveling, and ride quality to satisfaction of Purchaser and Consultant. Tests shall be conducted under both no load and full load condition.
 - b. Temperature rise in motor windings limited to 50° Celsius above ambient. A full-capacity one (1) hour running test, stopping at each floor for ten (10) seconds in up and down directions, may be required.
- E. Performance Guarantee: Should Consultant's review identify defects, poor workmanship, variance or noncompliance with requirements of specified codes and/or ordinances, or variance or noncompliance with the requirements of Contract Documents, Contractor shall complete corrective work in an expedient manner to satisfaction of Purchaser and Consultant at no cost as follows:
1. Replace equipment that does not meet code or Contract Document requirements.
 2. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
 3. Perform retesting required by Governing Code Authority, Purchaser, and Consultant.
- F. A follow-up final contract compliance review shall be performed by Consultant after notification by Contractor that all deficiencies have been corrected. Provide Consultant with copies of the initial deficiency report marked to indicate items which Contractor considers complete.

3.08 PURCHASER'S INFORMATION

- A. Provide three sets of neatly bound written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Purchaser and reviewed by Consultant. Include the following as minimums:
1. Straight-line wiring diagrams of "as-installed" elevator circuits with index of location and function of components. Provide one set reproducible master. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Purchaser's property.

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2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
 3. Provide any necessary interface cards required for equipment maintenance, code mandated testing, and troubleshooting.
 4. Lubrication instructions including recommended grade of lubricants.
 5. Parts catalogs for all replaceable parts including ordering forms and instructions.
 6. Four sets of keys for all switches and control features properly tagged and marked.
 7. Neatly bound instructions explaining all operating features including all apparatus in the car and lobby control panels.
 8. Neatly bound maintenance and adjustment instructions explaining areas to be addressed, methods and procedures to be used, and specified tolerances to be maintained for all equipment.
 9. Diagnostic equipment complete with access codes, adjusters manuals and set-up manuals for adjustment, diagnosis and troubleshooting of elevator system, and performance of routine safety tests.
- B. Non-Proprietary Equipment Design: Provide three sets of neatly bound written information necessary for proper maintenance and adjustment of equipment within 30 days following final acceptance. Final retention will be withheld until data is received by Purchaser and reviewed by Consultant. Include the following as minimums:
1. Straight-line wiring diagrams of “as-installed” elevator circuits with index of location and function of components. Mount one set wiring diagrams on panels, racked, or similarly protected, in elevator machine room. Provide remaining set rolled and in a protective drawing tube. Maintain all drawing sets with addition of all subsequent changes. These diagrams are Purchaser’s property. A legend sheet shall be furnished with each set of drawings to provide the following information:
 - a. Name and symbol of each relay, switch, or other apparatus.
 - b. Location on drawings, drawing sheet number and area, and location of all contacts.
 - c. Location of apparatus, whether on controller or on car.
 2. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract. Include any unique or product specific procedures or methods required to inspect or test the equipment. In addition, identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
 3. Printed instructions explaining all operating features.
 4. Complete software documentation for all installed equipment.
 5. Lubrication instructions, including recommended grade of lubricants.
 6. Parts catalogs listing all replaceable parts including Contractor's identifying numbers and ordering instructions.
 7. Four sets of keys for all switches and control features properly tagged and marked.
 8. Diagnostic test devices together with all supporting information necessary for interpretation of test data, troubleshooting of elevator system, and performance of routine safety tests.
 9. The elevator installation shall be a design which can be maintained by any licensed elevator maintenance company employing journeymen mechanics, without the need to purchase or lease additional diagnostic devices, special tools, or instructions from the original equipment Contractor.

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- a. Provide on-site capability to diagnose faults to the level of individual circuit boards and individual discrete components for the solid-state elevator controller.
 - b. Provide a separate, detachable device, as required, to the Purchaser as part of this installation if the equipment for fault diagnosis is not completely self-contained within the controller. Such device shall be in possession of and become property of the Purchaser.
 - c. Installed equipment not meeting this requirement shall be removed and replaced with conforming equipment at no cost to the Purchaser.
 10. Provide upgrades and/or revisions of software during the progress of the work, warranty period and the term of the ongoing maintenance agreement between the Purchaser and Contractor.
- C. Acceptance of such records by Purchaser/Consultant shall not be a waiver of any Contractor deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents.

END OF SECTION