DTMB-0414 (Rev 10/22)

DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
State Facilities Administration
Design and Construction Division

CONSTRUCTION BID ADDENDUM NO. 1

This form identifies an Addendum to Bidding Documents, and incorporates interpretations or clarifications, modifications, acceptance of proposed "or equal" materials, and other information into the Bidding Documents. Addenda will be numbered by the Professional and distributed through www.michigan.gov/SIGMAVSS as an attachment.

TO: **ALL BIDDERS**		DATE ISSUED 6/20/2024
PROJECT NAME Cadillac Place Elevators Upgrade – Phase 1		FILE NUMBER 171_21275_MNB
PROFESSIONAL Daniel Kohler, AIA Hobbs & Black	PROJECT DIRECTOR Chris M. Bahjet	BID OPENING DATE: 7/24/2024

ADDENDUM ITEMS: (attach additional sheets and drawings if required)

Please see attached Addendum 1 details.

ACKNOWLEDGEMENT: This Addendum must be acknowledged by the Bidder in the space provided in the Bid Summary and Bid Form. Failing to acknowledge Addenda may be cause for the Bid to be rejected. Addenda will become part of the Contract Documents.

PROFESSIONAL:	DATE: Click to enter date
APPROVED BY: Chris Bahjet PROJECT DIRECTOR:	DATE: 6/20/2024

HOBBS + BLACK ARCHITECTS
ARCHITECTURE | PLANNING | INTERIOR DESIGN

ADDENDUM ONE

DATE: June 20, 2024

PROJECT: Cadillac Place Elevators Upgrade – Phase 1

File No.: 171/21275.MNB

PROJECT #: 21323.00

This Addendum is issued for the purpose of modifying and/or clarifying the original drawings and specifications and shall take precedence over them.

All work included herein shall be in accordance with the original drawings and specifications except as specifically noted herein. All incidental items required to provide the following modifications shall be included even though not specifically described.

This Addendum is being sent to all bidders receiving plans and specifications. Receipt of this Addendum shall be noted on Proposal Form in appropriate locations.

SPECIFICATIONS

1. Technical section “142200 ELECTRIC TRACTION ELEVATOR MODERNIZATION”. Although the section was listed in the “Issued for Bids” table of contents, the pages were inadvertently omitted from the bid package. The entire section is included in this addendum for insertion into the “Issued for Bids” technical specifications document.

DRAWINGS

1. Not applicable for this addendum.

END OF ADDENDUM

Enclosure
cc: All Plan Holders, via SIGMA
Chris Bahjet, DTMB Project Director

SECTION 142200 –
ELECTRIC TRACTION ELEVATOR MODERNIZATION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Section includes modernization of traction elevators as follows:
1. Five (5) gearless traction passenger elevators, Cars #1-5.

B. Provide all engineering, materials, tools, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.

C. Provide all required staging, hoisting and movement of new equipment, reused equipment, or removal of existing equipment.

D. Applicable conditions of General, Special, and Supplemental Conditions.

E. Applicable conditions of Purchasers General, Special, and Supplemental Conditions.

F. 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.

G. Unless specifically identified as “Reuse,” “Retain,” or “Refurbish,” provide new equipment.

H. Provisions of this specification are applicable to all elevators unless identified otherwise.

I. Provide protective barriers between cars in normal operation and adjacent cars in the modernization process. Full depth and height of hoistway.

J. Hoistway, pit, and machine room barricades as required.

K. Alternates: Value engineering alternates to the base bid are to be listed separately.

1.2 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.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

A. Within 30 calendar days after award of contract and before beginning equipment fabrication submit shop drawings and required material samples for review. Allow 30 days for response to initial submittal.
1. Scaled or Fully Dimensioned Layout: Plan of machine room indicating equipment arrangement, details of car enclosures, hoistway entrances, 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: Shop drawings.
5. Finish Material: Submit 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.
   b. Adequacy of retained equipment relative to code requirements if car weight increased by more than 5%.
   c. Machine room heat emissions in B.T.U.
   d. Adequacy of existing retained elevator machine beams.
   e. Adequacy of existing car platform structure 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 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.

1.4 CLOSEOUT SUBMITTALS

A. Record Documents:
   1. The following record documents shall be furnished upon completion and before final payment:
   2. Shop Drawings:
      a. Complete sets of as installed plan and section layouts of hoistway, pit, overhead and equipment spaces, to include the following:
         a) Required clearances around equipment.
         b) Machine room heat release/diversity factor.
         c) Power requirements.
      2) Elevator cabs.
      3) Fixtures:
         a) Car fixtures.
         b) Hall fixtures.
         c) Remote fixtures.
   3. Machine room heat release and power requirements.

B. Wiring diagrams:
   1. Complete sets of as installed straight-line wiring diagrams, showing the electrical connections of all altered vertical transportation equipment, shall be furnished upon completion.
   2. A legend sheet shall be furnished with each set of drawings containing the following information:

a. Name and symbol of each relay, switch and other electrical or solid-state apparatus.
b. Location on drawings, drawing sheets, number and area of switches and relays, etc., and location of all contacts.
c. Location of apparatus whether on controller, hoistway or elevator cab.

C. Maintenance and Operating Manuals:
1. Description and sequence of operation of all equipment installed, including operating use for Building Personnel and tenants, as well as system troubleshooting manuals for technicians.
2. Maintenance instructions and procedures of all vertical transportation equipment installed, including parts lists, for each elevator system.
3. Lubrication charts indicating all lubricating points and type of lubricant recommended for all equipment.
4. Complete parts catalogs for all replaceable parts.

D. Tools:
1. The following equipment shall be furnished upon completion and before final payment:
a. The Elevator Contractor shall provide all the necessary tools, including laptop, hand-held devices, required software and manuals, required to troubleshoot, adjust, synchronize, calibrate, repair, and maintain the vertical transportation systems, as well as perform all necessary procedures to perform all safety tests as required by code and local governing authority.
b. Owner's equipment and software shall be updated regularly to properly troubleshoot, adjust, synchronize, calibrate, repair, maintain and test the vertical transportation systems. All equipment and/or software shall be of the same version as issued to technicians maintaining the vertical transportation systems.
c. The Elevator Contractor shall provide a backup copy of any software that resides on the troubleshooting tool.
d. Upon cancellation of service agreement, the Elevator Contractor shall provide all updates indicated above.

E. Keys:
1. Four sets of keys to operate all keyed switches and locks shall be furnished upon completion.
2. Keys shall be properly tagged.
3. All keying shall be arranged with the Contractor.

1.5 PERMITS, TESTS, AND CERTIFICATES

A. Permits:
1. Secure and pay for all permits required for Work to be performed, including but not limited to:
a. Municipal and State permits.
b. Device or equipment removal permits.
c. Hot works permits.
d. Confined space access permits.
2. Post, maintain, and renew all permits in compliance with local governmental requirements.
3. Obtain final close-out of all required permits.

B. Tests and Inspections:
   1. Schedule with the AHJ and perform tests 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 of the AHJ.
   2. Supply personnel and equipment for test and final review by Consultant.

C. Certificates: Obtain, pay for, and deliver to General Contractor with all temporary and final inspection certificates provided by proper governing authorities.

D. Violations: Resolve any outstanding violations on record with the AHJ on devices being removed prior to final acceptance by the Purchaser and General Contractor.

1.6 QUALITY ASSURANCE

A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of currently enforced codes, laws, and/or authorities, including revisions and changes in effect.

B. Inspections: Provide access to areas where work is being performed for the Consultant and General Contractor at any time throughout the project.

1.7 WARRANTY

A. 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 Purchaser and Consultant at no additional cost, unless due to ordinary wear and tear or improper use or care by Purchaser.

B. 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.

C. Retained Equipment: All retained components, parts, and materials shall be cleaned, checked, modified, repaired, or replaced in strict accordance with the specification requirements defined herein. Retained equipment must be compatible for integration with new systems.

D. Make modifications, requirements, adjustments, and improvements to meet performance requirements specified herein.

1.8 MAINTENANCE

A. If Contractor currently providing equipment maintenance under contract with Purchaser is included on the list of invited Contractors for this Contract, Contractor acknowledges and agrees that said contract shall be immediately null and void upon award of this Contract to Contractor or alternate invited Contractor. Further, if present Maintenance Contractor is not the successful firm in regard to this Contract, Maintenance Contractor agrees to deliver existing as modified control wiring diagrams to Purchaser and immediately remove its equipment and materials from the premises with the Purchaser or Purchasers' representative present. Purchaser shall withhold final maintenance payment due until Maintenance Contractor is in compliance with this requirement.

1.9 WARRANTY MAINTENANCE

A. Provide monthly preventive maintenance and 24-hour per day emergency callback service for one (1) year commencing on date of final acceptance of all modernized elevators by Purchaser. Warranty maintenance should expire concurrently for all elevators. 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.

B. Use competent personnel, acceptable to the Purchaser, supervised and employed by Contractor.

C. Warranty Maintenance Hours: Contractor shall perform two (2) hours of on-the-job preventive maintenance examinations per month for each elevator. Service required is per elevator and not per building.

D. Unless otherwise stated, the facility's normal working hours are 8:00 a.m. to 5:00 p.m. Monday through Friday.

E. Response Time for Callback Service:
1. During regular time hours, Contractor shall arrive at the property within 60 minutes from time of notification of equipment problem or failure by Purchaser.
2. During the hours of 5:00 p.m. and 8:00 a.m. Monday through Friday, Contractor shall arrive at the property within 2 hours from time of notification of equipment problem or failure by Purchaser.
3. The Contractor on Saturdays, Sundays and holidays shall arrive at the property within 2 hours from time of notification of equipment problem or failure by Purchaser.
4. Contractor shall arrive at Property in response to passenger entrapment calls within 30 minutes from time of notification by Purchaser.
5. The contractor must have adequate personnel available to provide the emergency service 24 hours per day, 365 days per year.
6. 24-Hour per day callback service shall be at no additional cost to the Purchaser.

F. Purchaser retains the option to delete cost of warranty maintenance from modernization equipment contract and remit twelve (12) equal installments directly to Contractor during period in which maintenance is being performed.

1.10 DOCUMENT AND SITE VERIFICATION

A. 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, 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.

1.11 CONCURRENT MODERNIZATION WORK AND BUILDING OPERATION

A. This project is a major elevator modernization in an existing building which is open for public business and will continue to operate throughout all phases of required work. It is essential that Contractor give special attention and priority to all matters concerning project safety, protection from dust and loose materials, reduction of noise level, protection from water and air infiltration into building, and maintenance of neat, sightly conditions in and around work areas inside and outside of building. Packaging, scrap materials, and demolition debris shall be promptly removed from building and site on a daily basis.

B. At all times Contractor shall provide clearly visible warning and directions signs, barricades, temporary lighting, overhead protection, and hazard-free walking surfaces throughout public area. At all times special attention must be given to building entrances, exits, and proper safe exiting through work areas as required by law.

C. Contractor shall consult Purchaser and other Contractors to establish and maintain safe temporary routes including, but not limited to, proper barricades, walking surfaces, lighting, fire protection, exiting, warning, and directional signs, and general protection of persons from all hazards in accordance with OSHA Standards due wholly or partially to its operations.

1.12 DELIVERY, STORAGE, AND HOISTING

A. General:
1. Protect all equipment and exposed finishes during delivery, handling, and installation until completion of project.
2. Replace damaged materials with new, at no additional cost for material or labor to Purchaser.

B. Delivery and Storage:
1. Ensure manufacturers' original packing adequately protects materials during delivery.
2. Deliver materials, identical to accepted samples, to the site ready for use in the manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name and manufacturer's name.
3. Store materials under cover in a dry and clean location, off the ground. Remove delivered materials that are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.
4. Store and protect all materials in space provided or designated by the Purchaser and General Contractor against damage, stains, scratches, corrosion, weather, construction debris, and other environmental conditions.
5. Comply with Purchaser's requirements for access to and use of any building loading docks, parking lots, parking garages, and any interior spaces required for delivery and storage.

C. Hoisting: Arrange and pay for all required hoisting and movement of equipment.

D. Staging Area:
1. 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.

1.13 COORDINATION

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 its 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.

C. 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.

i. 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.

PART 2 - PRODUCTS

2.1 REFERENCES

A. American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.

B. American Society of Mechanical Engineers:
1. ASME A17.1, Safety Code for Elevators and Escalators.
2. ASME A17.2, Guide for Inspection of Elevators, Escalators, and Moving Walks.
3. ASME A17.5, Elevator and Escalator Electrical Equipment.
4. ASME A17.6, Standard for Elevator Suspension, Compensation, and Governor Systems.

C. National Fire Protection Association (NFPA):
1. NFPA 70, National Electric Code.
2. NFPA 80, Fire Doors and Windows.
3. NFPA 101, Life Safety Code.
4. NFPA 13, Installation of Sprinkler Systems.

D. International Building Code (IBC).

E. Accessibility:
1. American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.
2. ADAAG, Americans with Disabilities Act Accessibility Guidelines.

2.2 MATERIAL AND FINISHES

A. Steel:
1. Sheet Steel (Furniture Steel for Exposed Work): Stretcher-leveled, cold-rolled, commercial quality carbon steel, complying with ASTM A366, matte finish.
2. Sheet Steel (for Unexposed Work): Hot-rolled, commercial quality carbon steel, pickled and oiled, complying with ASTM A568/A568M-03.
3. Structural Steel Shapes and Plates: ASTM A36.

B. 1. Bronze: Stretcher-leveled, re-squared sheets composed of 60% copper and 40% zinc similar to Muntz Metal, Alloy Group 2, with standard temper and hardness required for fabrication, strength, and durability. Clean and treat bronze surfaces before mechanical finish. After completion of the final mechanical finish on the fabricated work, use a chemical cleaner to produce finish, Federal Standard, and NAAMM nomenclature, matching Architect's sample:

1. No. 4 Satin: Directional polish finish, fine-satin, clear-coated with clear-organic coating recommended by Fabricator. Provide graining direction as shown or, if not shown, in vertical dimension.

2. No. 8 Mirror: Reflective polish finish with no visible graining, bright-polished, clear-coated finish with clear-organic lacquer coating recommended by Fabricator.

3. Acid-Etched Pattern: Provide a No. 8 mirror reflective-polished background with selectively acid-etched, matte-textured, custom pattern as shown. Acid selection and dilution, if required, as recommended by Fabricator. After final finishing, coat bronze with clear-organic lacquer coating recommended by Fabricator.

C. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.

D. Plastic Laminate:
1. ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050" ±.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.

E. Paint:
1. 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. Provide one finish coat of industrial enamel paint. Galvanized metal need not be painted.

F. Prime Finish:
1. 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.

2.3 MANUFACTURER'S NAMEPLATES

A. 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.

B. 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.

2.4 MANUFACTURERS AND PRODUCTS

A. Approved Elevator Components:
In addition to products manufactured by the Principal Manufacturers specified above, the following Manufacturers are approved for the specific components listed below, subject to the requirements of the contract:
1. Controllers:
   a. GAL Galaxy.
   b. MCE.
2. Motor Drives
   a. KEB
   b. Magnetek
   c. Yaskawa
3. Passenger Elevator Door Equipment (Operators, Tracks, Hangers, and Closers):

a. GAL.
4. Car and Hall Signal Fixtures: Standard:
a. EPCO.
b. Innovation.
c. MAD Fixtures.
d. Monitor.
5. Hall Position Indicator:
a. Innovation.

6. Two-Way Communication Device:
a. EMS.
b. Rath Communications.
c. RingComm.
7. Hoist Machines:
a. Hollister Whitney.
b. Imperial.
c. Torin.
8. Rope Brakes:
a. Hollister Whitney.

2.5 PERFORMANCE REQUIREMENTS

A. Car Speed: ±3% of contract speed under any loading condition.

B. Car Capacity: Safely lower, stop, and hold 125% of rated load.

C. Car Stopping Zone: ±1/4" under any loading condition.

D. Door Times: Seconds from start to fully open or fully closed:
1. Cars #1-5: Door Open: 1.6 seconds. Door Close: 2.7 seconds.

E. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 3/4 open for center-opening doors or 1/2 open for side-opening doors, and car is level and stopped at next successive floor under any loading condition or travel direction:
1. Cars #1-5: 9.0 seconds. Floor Height: 13’-0” between floors 9 and 10.

F. Noise and Vibration Control:
1. Airborne Noise:
a. 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.
b. Limit noise level in the machine room relating to elevator equipment and its operation to no more than 80 dBA.
c. 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: Mechanically isolate all new elevator equipment from the building structure and other components. Minimize objectionable noise and transmission of vibrations to occupied areas of the building.

2.6 ELEVATOR DUTY ALTERATIONS

A. Gearless Passenger Elevators:

ALTERATION SUMMARY		
CARS 1-5	**EXISTING INSTALLATION**	**MODERNIZED INSTALLATION**
Capacity:	4000 lbs.	No Change .
Class of Loading:	Class A	No Change
Contract Speed:	700 fpm	No Change
Roping Configuration:	1:1	No Change
Machine Type:	Gearless	Gearless
Machine Location:	Overhead	No Change
Motor Type:	DC	AC Induction or P.M.S.M. ACV³F
Motion Control:	SCR	ACV³F I.G.B.T. Drive
Operation Control:	Group automatic	No Change
Floors Served:	Car #1: C, L, 2-15 Cars #2-5: C, L, 2-13, 15	No Change
Total Entrances:	All Front	No Change
Entrance Type:	Single-Speed Center-Opening	No Change
Entrance Size:	4'-0" wide x 7'-0" high	No Change
Minimum Clear to Underside of Canopy:	9'-0" high	No Change

2.7 OPERATION

A. General:
1. Cars automatically slow down and stop level at floors in response to car and landing calls with stops made in sequence in the established direction of travel, regardless of order in which buttons are pressed.
2. Landing calls are canceled when the assigned car arrives at the landing.
3. Automatic Dispatch Failure: Provide auxiliary dispatch system to automatically dispatch elevators in the event of failure of the primary control system.
4. Hall Call Button Failure: Should failure of hall call button system occur, initiate operation providing predetermined service to all landings; elevators respond normally to car calls.
5. Automatic Leveling:
   a. When arriving at a floor cars level to within 1/8” above or below the landing sill prior to opening doors, without travelling past the landing during leveling
   b. Maintain leveling accuracy regardless of carload, direction of travel, rope slippage or stretch.
6. Power Conservation:

a. Shut off car interior illumination and ventilation after adjustable period (60-180 seconds) of no elevator demand.
b. Turn on prior to opening car doors when elevator demand returns.

B. Door Operation:
1. Automatically open doors when car arrives at a floor.
2. Stop and reopen doors or hold doors in open position upon activation of “door open” button.
3. At expiration of normal dwell time, or upon activation of “door close” button, close doors:
a. Prevent doors from closing and reverse doors at normal opening speed if door reopening device beams are obstructed while doors are closing, except during nudging operation.
b. In event of door reopening device failure, provide for automatic shutdown of car at floor level with doors open.
c. Close cycle does not begin upon activation of “door close” button until normal door dwell time for a car or hall call has expired, except firefighters’ operation.
4. Nudging Operation:
a. After beams of door reopening device are obstructed for a predetermined time interval (minimum 20.0-25.0 seconds), sound warning signal, and attempt to close doors with maximum of 2.5 foot-pounds kinetic energy.
b. Activation of the door open button overrides nudging operation and reopens doors.
5. Interrupted Beam Time:
a. When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds.
b. 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.
6. Differential Door Time:
a. Field adjustable time that doors remain open after stopping in response to calls.
b. Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
c. Hall Call:
1) Hold open time adjustable between 5.0 and 8.0 seconds.
2) Use hall call time when car responds to coincidental calls.

C. Group Operation – Two-Button, Cars #1-5:
1. Elevators operate via momentary pressure buttons to
a. place hall call by selecting direction of travel at each hall landing (up and down buttons at each intermediate landing, single buttons at each terminal landing).
b. place car call by selecting destination floor from inside the car (individual buttons for each floor served).
2. Operate cars as a group, capable of balancing service and providing continuity of group operation with one or more cars removed from the system.
3. Group control and supervisory system determines traffic levels and peak traffic conditions by continuously monitoring:
a. Quantity, location, and duration of hall calls.
b. Weight of current load in the elevator.
c. Anticipated time to respond to previously assigned car and hall calls.
d. Car speed and direction of travel.
4. Car assignments in response to hall calls are reviewed a minimum of ten times per second and revised while cars in the group are stationary or in motion to achieve the shortest possible:
a. Estimated time for a car to arrive at a floor in response to hall calls.
b. Estimated transit time for passengers inside each car in the group.

5. During peak traffic conditions priority is given to minimizing car arrival time in response to hall calls in the following order of priority:
   a. Main Landing Demands (of any type or duration).
   b. Long wait Down calls.
   c. Long wait Up calls.
   d. Up calls.
   e. Long wait calls are those that have been registered for over thirty seconds.
   f. Dynamic assignment of cars to serve specific floor zones is allowed to achieve required performance.
6. Car and Hall Lanterns:
   a. Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
   b. Visual signal remains active from commencement of door opening until doors are completely closed.
   c. Hall lantern visual signal activates as soon as a car is assigned to respond a hall call and remains active until car doors are completely closed.

D. Standby or Emergency Power Operation:
1. The terms Standby Power and Emergency Power are both referred to as Emergency Power in this Section. Elevator operation is the same when either is provided.
2. Where emergency power is provided to the elevator main disconnects and required by the Building Code the elevator installation shall comply with the Emergency Power Operation requirements of ASME A17.1 as modified by any superseding Building Code requirements.
3. Operation is activated by a signal from an Automatic Transfer Switch (ATS) to elevator controls indicating the Emergency power source is operational.
   a. Start and run one car in each group at contract car speed and capacity.
   b. Illuminate “ELEVATOR EMERGENCY POWER” signals.
4. Automatic Selection and Return to Designated Landing: Provide automatic selection and return to designated landing for elevator bank.
5. Once all elevators have completed the return sequence one or more individual elevators shall be returned to service.
6. Restoration of Normal Power:
   a. At least 20 seconds prior to transfer from emergency power to normal power at the ATS, a pre-transfer signal is supplied to the elevator control system from the ATS.
   b. Elevators operating on emergency power stop at the next available landing and remain there until normal power is restored.

E. Firefighters’ Emergency Operation: Provide equipment and operation in accordance with code requirements. Replace all Firefighters Emergency Operation key switches that control non-modernized elevators in this building to match modernized elevators when first car in group is returned to service.

F. Shunt Trip Operation: Provide necessary software and hardware for shunt trip operation.

G. Battery Backup Operation for Emergency Lighting, Communication, and Alarm:
1. Car mounted battery unit with solid-state charger to operate alarm bell, car emergency lighting, and voice communication system.
   a. Car lighting and communication shall be provided with a minimum of 4 hours of operation on back-up power during a loss of normal power, and a minimum of 1 hour of operation for car-mounted alarm and any remote alarm mounted at the designated level.
   b. Battery to be rechargeable with minimum five-year life expectancy.

c. Provide constant pressure test button in service compartment of car operating panel.

H. Emergency Car Communication System Operation:
1. Hands-Free Phone System:
a. Two-way communication instrument in car to provide automatic dialing, tracking, and recall features.
1) Automatic dialer to include automatic rollover capability with minimum two numbers:
b. Activated by “Help” button in car or by external telephone call.
c. Adjacent light jewel l illuminates and flashes when call is acknowledged.

I. Restricted Floor Operation
1. Restrict elevator service to specific building floors when feature is active.
2. Allow registration of a car call to one or more secure floors upon receipt of authorization signal at the elevator control system.
3. Authorization signal is initiated by card reader activation for floor 15.
4. Car will not be assigned to respond to any subsequent hall or car calls until it reaches the secure floor and car doors open and fully close.
5. Operation of the following features override security system:
a. Firefighters’ Emergency Operation.
b. Independent Service.
6. Car #1: System accepts a minimum three-digit code, entered on car pushbuttons to allow registration of car call to access Floor 14. System allows for separate easily changed code for each floor or group of floors.

2.8 MACHINE ROOM EQUIPMENT

A. Provide and arrange equipment in existing machine room spaces.

B. Identification: Permanently identify (painted on or securely attached) machine room equipment with minimum 3" characters corresponding to elevator identification.
1. Driving machine.
2. Motor drive, transformer, choke/filter.
3. Controller.
4. Selector.
5. Governor.
6. Main line disconnect switch.
7. Elevator hoistway pit equipment.

C. Gearless Traction Hoist Machine:
1. Provide new gearless machine based on capacity, speed and duty designed to operate within specified machine room temperature range.
2. Provide motor, brake, and demountable drive sheave mounted in proper alignment on a common isolated bedplate. Provide bedplate blocking to elevate secondary or deflector sheave above machine room floor.
a. Motor:
1) AC induction or P.M.S.M. ACV³F gearless traction type motor
2) Machine or motor mounted direct drive, digital, closed-loop velocity encoder.
b. Electromechanical Brake:
1) Spring applied and electrically released.

2) Drum or disc type.
3) Spring applied and electrically released with removable manual brake release.
4) Brake shoes applied to the braking surface simultaneously and with equal pressure.
5) Adjusted to minimize noise during lifting and setting of brake shoes.
6) Prevent ascending car over-speed and unintended car movement via dual-redundant braking system.

c. Drive Sheave:
1) Machined with grooves, providing maximum traction with a minimum of cable and sheave wear.
2) Sealed bearings.

d. Deflector Sheave:
1) Machine bedplate mounted deflector sheave.
2) Machined grooves and sealed bearings.
3) Maintainable from inside machine room.

3. Installation includes:
a. Anti-friction bearings with easy access for lubrication.
b. Means to access and maintain deflector sheave from machine room.
c. Sheave guards to prevent ropes from leaving sheave grooves.
d. Sound isolation pads shall be installed to reduce vibration and noise transmission to the building structure.
e. Permanent ladders and platforms with handrails and toe boards for code required machine and sheave access.

D. Solid State Power Conversion and Regulation Unit:
1. Provide solid state, alternating current, variable voltage, variable frequency (ACV³F), I.G.B.T. drive designed to operate with the power supply available at the main disconnect.
2. Drive is regenerative and utilizes converter/inverter and dynamic braking during overhauling condition to return regenerated power to the building power grid.
3. Performance Requirements:
a. Conform to IEEE standards 519-2014 for line harmonics and switching noise.
b. Maximum audible noise in the machine room and surrounding areas not to exceed 80 dBA.
4. Power Factor: >0.95.
a. Minimum of 6 kHz switching frequency for SCR inverter and shunt transistors.
b. Sustained drive and motor overload protection rated at 250% of line current.
c. Capacitors utilized sized and located to avoid system resonance.
5. Limit current suppress noise and radio frequency interference and prevent transient voltage feedback into main building power supply or emergency power source. Provide internal heat sink cooling fans for the power drive portion of the converter panels.
6. Provide isolation transformers, filters, and chokes to completely isolate the system from the normal building power supply.
7. Isolate unit to minimize noise and vibration transmission.
8. Direct-current power for the operation of hoist machine brake, door operator, dispatch processor, signal fixtures, etc., supplied from separate static power supply.

E. Regenerated Power
1. Provide means to automatically divert regenerated power from being returned to the building electrical grid when emergency power operation is in effect.
2. Provide resistor bank on the demand side of the elevator main disconnect to absorb and dissipate the maximum sustained regenerated power from the motor drive during dynamic braking.

F. Encoder: Direct drive, solid-state, digital type. Update car position at each floor and automatically restore after power loss.

G. Controller: UL/CSA labeled.
1. 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.
2. 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.
3. Microprocessor-Related Hardware:
   a. Provide built-in noise suppression devices providing 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 are not to be affected by accidental grounding of any part of the system.
   f. System automatically restarts when power is restored.
   g. System memory is retained in the event of power failure or disturbance.
   h. Equipment is provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
5. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.
6. Monitoring System Interface: Provide controller with serial data link through RJ45 Ethernet connection and install all devices necessary to monitor items outlined herein. Connect monitoring system interface to machine room monitoring compartment and LAN. Wiring from the LAN to the machine room monitoring compartment by others. Provide full monitoring system as specified herein.

H. Auxiliary disconnect: Provide controller or machine mounted auxiliary, lockable “open,” disconnect if mainline disconnect is not in sight of controller and/or machine.

I. Provide manual security override switch on the outside of the elevator controller to enable all car calls.

J. Provide minimum 14-gauge galvanized sheet metal enclosures over any holes or block outs, other than for hoist ropes, in machine room floor. Mount on underside of floor slab.

K. Sleeves and Guards: Provide 2" steel angle guards around cable or duct slots through floor slabs or grating. Provide rope and smoke guards for sheaves, cables, and cable slots in machine room.

L. Machine and Equipment Support Beams: Retain existing in place. Provide all required supplemental supports and attachments. Provide Structural Engineering certification validating size and location of all new support structure provided.

M. Governor, Car: Centrifugal-type, car driven with pull-through jaws and bi-directional shutdown switches. Calibrated and tested with manufacturers' certification data plate as required by code. Provide required bracketing and supports for attachment to building structure.

N. Emergency Brake:
1. Provide means to prevent ascending car over-speed and unintended car movement. Installation and operation to comply with Code requirements.
2. Acceptable emergency brake devices:
   a. Taction machine mounted auxiliary brake system.
   b. Hollister-Whitney rope gripper.
3. Install in compliance with approved drawings. See Section 013000 Submittals.
4. Mount on suitable structural steel supports in machine room.
5. Provide control circuits to enable the device to function as required by Code.

2.9 HOISTWAY EQUIPMENT

A. Provide and arrange equipment in existing hoistways.

B. Guide Rails: Retain main and counterweight guide rails in place.
1. Clean rails and brackets. Remove rust.
2. Check all rail and bracket fastenings and tighten.

C. Buffers, Car: Retain existing. Clean, remove rust and repaint non-machined surfaces.

D. Buffers, Counterweight: Retain existing. Clean, remove rust and repaint non-machined surfaces.

E. Access Ladders and Platforms: Provide permanent buffer and car safety access ladders and platforms to comply with Code requirements.

F. Deflector Sheaves, Secondary: Machined grooves and sealed bearings. Provide mounting means to machine beams, machine bedplate, car and counterweight structural members, or building structure.

G. Counterweight Frame: Retain existing.
1. Replace any damaged frame sections. Steel members and fastenings to match original manufacturers' engineered specifications.
2. Counterweight Weight Sections:
   a. Adjust or repair retention means to keep existing weight sections and any added weight sections in place during buffer impact.
   b. Add or replace weight sections as required to provide overbalance necessary to comply with traction machine manufacturers' requirements.

H. Counterweight Guide Shoes:
1. Spring dampened roller guide shoes.
2. Manufacturer, type, and size are subject to approval by Consultant.

I. Counterweight Guard: Metal guard in pit. Retain existing.

J. Governor Rope Tension Sheave and Frame: Mount sheave and support frame on pit floor or guide rail. Provide frame with guides or pivot point to enable free vertical movement, required

tension, and rope alignment. Adjust to provide quiet operation with no sound detectable from inside any car or outside of the hoistway.

K. Suspension Means: New Traction steel type wire ropes of type specified by machine or drive sheave manufacturer. Fasten with staggered length, adjustable, spring isolated wedge type shackles.

L. Governor Ropes: Governor rope of type specified by governor manufacturer.

M. Compensation: Refurbish existing. Retrofit travel limit switch. Clean compensation sheave and ropes.

N. Terminal Stopping: Provide normal and final devices.

O. 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 a minimum of 10% spare conductors throughout. A minimum of ten #18 AWG wires shall be provided. Run spare wires from car connection points to individual elevator controllers in the machine room. Provide eight pairs 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. 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 12 twisted shielded pairs in addition to wires needed to connect specified items and code required spares.
4. Auxiliary Wiring: Connect fire alarm initiating devices, emergency two-way communication system, firefighters' phone jack, paging speaker, CCTV, card reader, intercom, and announcement speaker and/or background music in each car controller in machine room.

P. Hoistway Entrance Equipment:
1. Door Hanger: Retain. Modify hangars to include door retainer mechanism to address failure of primary upper door panel guidance.
2. Door Hanger Rollers: Retain.
3. Door Track: Retain. Clean and sand for quiet operation.
4. Door Interlocks: Operable without retiring cam.
5. Door Closers: Retain: Clean and adjust for smooth and quiet mechanical close of doors.

Q. Hoistway Access Switches: Mount in wall at top and bottom floors. Provide switch with faceplate. Locate within easy reach to entrance so entrance can be guarded by one technician.

R. 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.

2.10 HOISTWAY ENTRANCES

A. Provide and arrange equipment in same location as existing entrances.

B. Frames: Retain existing.
1. Provide new Arabic floor designation/tactile marking plates:

a. Centered at 60" above finished floor.
b. Located on both side jambs of all entrances.
c. Minimum 4" high.
d. Tactile marking indications shall be below Arabic floor designation.

2. Provide plates at main egress landing with “Star” designation.
3. Provide car identification label:
   a. Mounted directly below floor designation/tactile marking plates.
   b. Located on both side jambs at the following levels:
      1) Designated level.
      2) Alternate level.
   c. Finish and design to match floor designation/tactile marking plates.

C. Transom Panels: Retain existing.

D. Hoistway Door Panels: Retain existing.
1. Provide new door gibs with fire tabs at all floors.
2. Minimum two gibs per panel, one at leading edge, and one at trailing edge of each panel.
3. Provide code required door panel retainer mechanism on lower edge of door panel.

E. Sight Guards: Retain existing. Replace damaged or missing sight guards.

F. Sills, Hoistway Entrance: Retain existing. Clean. Check and tighten all fastenings.

G. Sill Supports, Hoistway Entrance: Retain existing. Check and tighten all fastenings.

H. Fascia, Toe Guards, and Hanger Covers: Retain existing.
1. Provide as required where damaged or missing.
2. Check and tighten all fastenings.
3. Paint/Stencil floor number on fascia or hoistway wall all floors visible where car doors are initially opened.

I. Struts and Headers: Retain existing. Check and tighten all fastenings.

J. Finish of Frames and Doors: Retain existing.

2.11 CAR EQUIPMENT

A. Frame: Retain Existing. Check and tighten all fastenings. Adjust as required for plumb and square alignment.

B. Safety Device: Refurbish existing.
1. Check and tighten all fastenings.
2. Disassemble, clean, lubricate, and inspect components in compliance with manufacturer’s recommended procedures.

C. Platform: Retain existing.
1. Adjust as necessary for plumb and level alignment.
2. Reinforce if required.
3. Check and tighten all fastenings.
4. Inspect after existing finished flooring is removed. Immediately notify Purchaser and Consultant if any damage or deterioration requiring repairs is observed.
5. Replace isolation pads.

D. Platform Guard:
   1. New extended platform guard to meet Code requirements.
   2. Minimum 0.059" (1.5 mm) thick steel, or material of equivalent strength and stiffness.
   3. Reinforced and braced to car platform front.
   4. Contractor's standard finish.

E. Guide Shoes: Roller type, 10" with three or more spring dampened, sound-deadening rollers per shoe.

F. Finish Floor Covering: Reference Article 2.13.B.8.

G. Car Sills: Retain existing. Clean full width. Check and tighten all fastenings.

H. Car Door Panels: Retain existing.
   1. Retrofit dual gibs, one at trailing edge and one at leading edge of each panel, removable without panel displacement.
   2. Adjust vertical and horizontal clearances to meet Code requirements.

I. Door Hangers: Retain existing. Modify to include door retainer mechanism to address failure of primary upper door panel guidance. Replace all rollers. Check and tighten all fastenings.

J. Door Track: Retain existing. Clean and sand for smooth, quiet operation. Check and tighten all fastenings. Retrofit means to prevent hangers from overrunning ends of track.

K. Door Header: Retain existing. Check and tighten all fastenings.

L. Door Clutch: Retain existing. Check and tighten all fastenings.

M. Restricted Opening Device:
   1. Restrict opening of car doors to Code required limit outside unlocking zone.
   2. Adjust for smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
   3. Plunger type restrictors not acceptable.
   4. Utilize mechanical angle to prevent door opening.

N. Door Operator: Retain existing. Check and tighten all fastenings. Automatically adjust and maintain appropriate torque regardless of variable door weight or air pressure.

O. Door Reopening Device:
   1. Black fully enclosed infrared 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.

P. Car Operating Panel, Cars #1-5:
   1. One car operating panel with faceplate:
      a. Consisting of a metal box containing operating fixtures, mounted behind the car stationary front rear return panel.
      b. Faceplate shall be hinged and constructed of bronze.
   2. Provide Exposed Pushbuttons to Initiate:
      a. Car call registration.
      b. Alarm.
      c. Door open.
      d. Door close.

e. Emergency push-to-call communication.

3. Pushbuttons:
   a. Provide minimum 3/4" diameter raised floor pushbuttons which illuminate to indicate call registration.
   b. Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
   c. Identify buttons with flat stainless tactile symbols rear mounted.
4. Locked Firefighters' Emergency Operation Panel:
   a. Openable by the same key which operates the Fire Operation switch.
   b. Including the following features:
      1) Phase II fire access switch.
      2) Firefighters' visual indication.
      3) Call cancel button.
      4) Stop switch, manually operated.
      5) Door open button.
      6) Door close button.
      7) Floors served.
      8) Fire communication jack.
5. Service Compartment:
   a. Provide lockable service compartment with recessed flush door.
   b. Door material and finish to match car return panel or car operating panel faceplate.
   c. Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
      1) Access switch.
      2) Light switch.
      3) Four-position exhaust blower switch.
      4) Independent service switch.
      5) Constant pressure test button for battery pack emergency lighting.
      6) 120-volt, AC, GFCI protected electrical convenience duplex outlet.
      7) Card reader override switch.
      8) Switch to select either floor voice annunciation, floor passing tone, or chime.
6. Provide black paint filled (except as noted), engraved, or approved etched signage as follows with approved size and font:
   a. Phase II firefighters' operating instructions on inside face of firefighters' compartment door.
   b. Engrave filled red firefighters' operation on outside face of compartment door.
   c. Building identification car number on main and auxiliary car operating panel.
   d. "No Smoking" auxiliary and main car operating panel.
   e. Car capacity in pounds on main car operating panel service compartment door.

Q. Car Top Control Station:
1. Mount to provide safe access and utilization while standing on car top.
2. Operating device with Up and Down direction buttons, a Run button, an Inspection/Automatic switch and Emergency Stop switch.
3. Operating device provides an audible and visible indicator that fire recall has been initiated.
4. Fix station to the car crosshead or provide portable station provided the extension cord and housing is permanently attached to the car crosshead.
5. The car will be operated by constant pressure on the appropriate directional button and the Run button simultaneously.
6. Normal operating devices will be inoperative while this device is in use.

R. Car Top Emergency Audible Signal:
1. Provide on top of each elevator.

2. Activation of Alarm Button or Emergency Stop switch will cause Emergency Audible Signal.
3. Provide auxiliary power supply to provide 1-hr. power in the event of loss of normal power.
4. Provide second alarm at pit level.

2.12 COMMUNICATION

A. Car Communication System:
1. Hands-Free Phone System:
a. Two-way communication instrument in car with automatic dialing, tracking, and recall features, with shielded wiring to car controller in machine room. System includes:
1) “Help” button on car operating panel to initiate two-way communication from Car. Button shall match car operating panel pushbutton design.
2) Auto dialer with automatic rollover capability with minimum two numbers:
3) Adjacent light jewel illuminates and flashes when call is acknowledged.
4) “Help” button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.

2.13 CAR ENCLOSURE AND INTERIOR FINISHES

A. Unless specifically identified as “Retain,” “Reuse,” or “Refurbish,” provide new equipment. Contractor may, with Consultant approval, provide new equipment in lieu of refurbishing existing.

B. Car Enclosure and Interior Finishes, Passenger Elevators:
1. Retain existing car enclosure and interior finishes.
2. Modify as required for application of new signal and pushbutton fixtures.
3. Verify and document overall car weight prior to removal of any equipment from the existing car frame or car enclosure. Check and tighten all fasteners.
4. Suspended Ceiling: New six-section bronze finish panels with lighting cutouts in each panel.
5. Lighting: New LED fixtures with wiring and hookup. Coordinate with emergency lighting requirements.
6. Remove auxiliary car operating panel on rear wall. Install a satin finish bronze faceplate with etched symbol in its place. Coordinate symbol design with Purchaser.
7. Handrails: New. Minimum 1½" diameter bronze tubular grab bar across rear and side walls.
8. Flooring: Retain existing.

C. Top of Car Guardrail: Provide car top railings where fall hazard exceeds 12". Install guardrails, necessary hardware, and toe board to meet code requirements.

D. Card/Proximity Reader Security Provisions, Cars #1-5:
1. Mount reader unit inside car as directed by Purchaser and cross connect from car pushbuttons to control module in machine room.
2. Reader control unit, mounting brackets, wiring materials, logic circuits, etc., provided by others.

2.14 HALL CONTROL STATIONS

A. Pushbuttons:
1. Provide 2 risers with flush mounted enlarged faceplate to cover existing wall block out. Provide any cutting and patching required.
2. Approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency as part of faceplate.
3. Pushbutton design to match car operating panel pushbuttons.

2.15 SIGNALS

A. Hall Direction Lantern, All Cars:
1. Provide digital hall lantern at each entrance to indicate travel direction of arriving car.
2. Illuminate up or down LED lights and sound tone once for up and twice for down direction prior to car arrival at floor.
3. Illuminate light until the car doors start to close.
4. Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor.
5. Provide adjustable car door dwell time to comply with ADA requirements relative to hall call notification time.
6. Arrows shall be minimum 2½" in their smallest dimension.
7. Repair hall lantern at the Main Lobby for Elevator #3.

B. Hall Position Indicator, All Cars:
1. Refurbish dial indicator at Main Lobby. Replace the existing cast arrow with a similar design to distribute weight correctly. Replace drive shaft if necessary for proper operation.
2. Provide only at the main landing.

C. Car Position Indicator:
1. Alpha-numeric digital indicator containing floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel.
2. Locate fixture above each car operating panel.
3. When a car leaves or passes a floor, illuminate indication representing position of car in hoistway.
4. Illuminate proper direction arrow to indicate direction of travel.

D. Voice Synthesizer:
1. Provide electronic device with easily reprogrammable message and female voice to announce car direction, floor, emergency exiting instructions, etc.
2. Once the doors close, the destinations remain illuminated until the car approaches the next destination floor, whereupon the floor numeral or light flashes and the audible signal sounds to denote the next stopping floor.
3. When the doors open, Destination Indicator displays the next floors to be served.

E. Fixture Faceplate Material and Finish:
1. Satin finish bronze, all fixtures.
2. Tamper resistant fasteners for all public facing fastenings.

2.16 FIREFIGHTERS CONTROL AND EMERGENCY POWER PANEL

A. Provide and arrange new equipment in same location as existing panel.

B. Firefighters' Control Panel:
1. Retain existing panel.
2. Upgrade all switches and devices to meet current code.

C. Firefighters' Key Box: Flush-mounted box with lockable hinged cover. Engrave instructions for use on cover per Local Fire Authority requirements.

D. .

PART 3 - EXECUTION

3.1 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. Inform Purchaser of any irregularities in writing prior to commencing work.

C. Do not proceed with installation until work in place conforms to project requirements.

3.2 INSTALLATION

A. Install all equipment as follows:
1. in accordance with Contractor's instructions, referenced codes, specifications, and approved submittals.
2. with clearances in accordance with referenced codes, and specifications.
3. to be easily maintained and/or removed.
4. to afford maximum accessibility, safety, and continuity of operation.

B. 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.
2. Machine room equipment, and pit equipment.
3. Neatly touch up damaged factory-painted surfaces with original paint color.
4. Protect machine-finish surfaces against corrosion.

C. Paint machine room lower and upper floors, wall, and railing with an industrial enamel paint. Color(s) to be approved by Architect.

D. Paint pit floor with an industrial enamel paint. Color to be approved by Architect.

3.3 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. Perform complete “Acceptance” level pre-testing as specified in the latest edition of ASME A17.2 “Guide for Inspection of Elevators, Escalators, and Moving Walks” prior to AHJ witnessed acceptance testing. Complete any adjustments, repairs, or replacements necessary to achieve code compliant operation including but not limited to:
   1. Car safety.
   2. Car emergency communications. Inform Purchaser and Consultant of any noted failures of Purchaser provided and maintained equipment or systems.
   3. Car and counterweight buffers.
   4. Phase I and II Firefighters’ Emergency Operation. Phase I initiated by smoke sensing devices.
   5. Power car door operation including door closing force, reopening device, and restricted opening.
   6. Suspension members.
   7. Compensation members.

C. Have Code Authority acceptance inspection performed and complete corrective work.

D. Provide access to installed equipment and elevator personnel assistance for Consultants final observation and review requirements.

E. ADJUSTMENTS

F. Static balance car to equalize pressure of guide shoes on guide rails.

G. Verify that weights of existing or altered cars, counterweights, and compensation comply with traction machine manufacturers’ requirements and do not exceed total weights indicated on approved submittals.

H. Lubricate all equipment in accordance with Contractor’s instructions.

I. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

3.4 CLEANUP

A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials daily.

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.

3.5 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.

3.6 PURCHASER'S INFORMATION

A. Provide a digital and three (3) 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.
   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.

END OF SECTION