

## SECTION 14 22 01 ELECTRIC TRACTION PASSENGER ELEVATOR MODERNIZATION

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. Section includes modernization of traction elevators as follows:
  - 1. One (1) geared passenger elevator, Car 1
- B. Products Installed but Not Furnished Under This Section:
  - 1. Emergency Voice/Alarm Communication System Provisions.
  - 2. CCTV camera provisions.
  - 3. Elevator security devices, control unit, mounting brackets, wiring materials, logic circuits, security system interface terminals, boxes, and relays.
  - 4. Car flooring.

#### 1.3 DEFINITIONS

- A. Technical terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1. or in this section.
- B. ELEVATOR CONSULTANT or CONSULTANT refers to Lerch Bates Inc. (Lerch Bates).
- C. OWNER refers to Cuyahoga County.
- D. CONTRACT or CONTRACT DOCUMENTS consists of the Agreement, Conditions of Contract, Specifications, Addenda, Drawings if included, and Alternates if accepted.
- E. CONTRACTOR or ELEVATOR CONTRACTOR refers to any persons, partners, firm, or corporation having a contract with Owner to furnish labor and materials for the execution of work required.
- F. CONTRACT AWARD refers to Owner's verbal or written award for work required.
- G. SUBCONTRACTOR refers to any persons, partners, firm, or corporation having a contract with Contractor to furnish labor and materials for the execution of work required.
- H. PROVIDE means "furnish and install."
- I. MANUFACTURER means either the Original Equipment Manufacturer (OEM) or the principal manufacturer of a component or system.
- J. RETAIN means, unless otherwise specified, the existing equipment is to be left in place with no alterations and no change in the original manufacturer's designed performance or functionality. Items that are "retained" shall be thoroughly cleaned in place and adjusted to achieve originally designed function.
- K. REFURBISH means, unless otherwise specified, the existing equipment is to be cleaned, repainted, repaired, and parts replaced to put the equipment into a condition to provide the same appearance, performance, and functionality as the equipment provided when it was originally installed. Unless otherwise specified, the scope of replacement of components is limited to those items currently available for purchase as replacement parts from the manufacturer or after-market suppliers approved by the manufacturer.

- L. REUSE means that the Contractor shall carefully remove equipment from the existing installation, avoiding any damage or additional wear. Store in a safe location to maintain equipment in its pre-removal condition. Reinstall and incorporate into the modernized elevator installation using the same procedures and recommendations provided by the manufacturer of the equipment.
- M. CALL BACK means a request from the Owner to the Contractor to provide a technician on site to evaluate an elevator that is out of service or not functioning properly, rectify the root cause of the malfunction, and place the unit back into normal service.
- N. INCLUDES or INCLUDING means including the items specified but not limited solely to those items if additional work or components are required to achieve the specified outcome.
- O. Words in the singular shall include the plural whenever applicable or context so indicates.

#### 1.4 WORK INCLUDED

- A. All engineering, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.
- B. Applicable conditions of General, Special, and Supplemental Conditions, Division 1, and all sections listed in Contract Documents "Table of Contents."
- C. Applicable conditions of Owner's General, Special, and Supplemental Conditions.
- D. Preventive maintenance as described herein.
- E. Cartage and Hoisting: All required staging, hoisting, and movement to, on, and from the site including new equipment, retained equipment, or dismantling and removal of existing equipment.
- F. Unless specifically identified as "Retain," "Reuse," or "Refurbish," provide new equipment. Contractor may, with approval prior to quotation, provide new equipment in lieu of refurbishing existing.
- G. Reference to a device or a part of the equipment applies to the number of devices or parts required to complete the installation.
- H. Provisions of this specification are applicable to all elevators unless identified otherwise.
- I. Provide hoistway, pit, and machine room barricades.
- J. Provide temporary and permanent pit ladders, working platforms, inspection platforms, and guard rails required to comply with applicable Building Code and AHJ requirements.

#### 1.5 ALTERNATES

- A. Alternate 05 – Gearless Traction Hoist machine. Refer to Section 4.2.D below.
  - 1. Base Bid – Geared Traction Hoist Machine.
  - 2. Deduct Alternate – Gearless Traction Hoist Machine as described in Section 4.2.D below.

#### 1.6 RELATED WORK COORDINATION

- A. General:
  - 1. Coordinate with other contractors for requirements for work completed by the other trades.
  - 2. Masonry Penetrations:
    - a) Provide locations in elevator machine room/hoistway walls where conduit, ropes, etc. shall penetrate walls and slabs.
    - b) Coordinate installation of sleeves, block outs, inserts, and items that are embedded in concrete or masonry for elevator equipment.

- c) Furnish inserts, templates and installation instructions and deliver to Project site in time for installation.
- 3. Structural Steel:
  - a) Including, but not limited to, elevator machine rooms, hoistways and pits, sill supports, rail supports.
  - b) Load calculations and temporary or permanent floor reinforcement required for movement and storage of elevator equipment in the building.
- 4. Miscellaneous Steel:
  - a) Pit ladders, working platforms, inspection platforms, guard rails, divider beams.
- 5. Electric:
  - a) Electrical service, outlets, lights, switches in elevator machine rooms and pits.
  - b) Provide a LAN line in the machine room for two-way video communication.
- 6. HVAC:
  - a) Provide necessary information to General Contractor and coordinate installation of equipment for elevator machine rooms.
- 7. Finishes:
  - a) Cab interiors, hoistway entrances, fixtures.
- 8. Elevator Cab Flooring:
  - a) Material and finish to be specified in other applicable section.
  - b) Flooring installation must be coordinated to ensure car saddle is installed at proper height (even with finished floor).
- 9. Security Equipment:
  - a) Coordinate location in elevator machine room and cabs where cables, conduit, components, etc. for CCTV and/or secure access interface equipment must be installed.

#### 1.7 ACTION AND INFORMATIONAL SUBMITTALS

- A. Within thirty (30) calendar days after award of contract and before beginning equipment fabrication submit field verified existing installation information for review.
  - 1. Traction Car and Counterweight Information:
    - a) Existing total car weight:
      - 1) Documented on crosshead data tag, all cars.
      - 2) Field Verified: weigh single cars and one car per group of each identical duty type.
    - b) Field verified counterweight total weight. Weigh or balance verify at vertical center of hoistway, single cars and one car per group of each identical duty type.
    - c) Estimated total weight of means of suspension.
    - d) Estimated total suspended compensation load on elevator traction machine drive sheave shaft.
- B. Within sixty (60) calendar days after award of contract and before beginning equipment fabrication submit planned modernization design information, shop drawings, and required material samples for review. Allow thirty (30) days for response to initial submittal.
  - 1. Equipment lists, structural reactions, and design information on layouts in table form, including:
    - a) Car and Counterweight:
      - 1) Total car weight to be included on new crosshead data tag.
      - 2) Total counterweight (pre-modernization weight plus or minus any added or removed weight sections).

- 3) Written confirmation that designed modernization total combined weight of car and rated load:
  - (a) Does not vary by more than 5% from that of the original installation.
  - (b) Is no more than the existing installation and no less than 95% of the existing installation.
- b) Verify buffer capacity via data tags or known manufacturing data.
- c) Verify car safety capacity via data tags.
2. Power Confirmation Information: Design for existing conditions.
  - a) Motor horsepower and code letter designation.
  - b) Motor drive starting current, full load running current, and demand factor.
  - c) Engineered power consumption based on traction elevator with 180 starts per hour full load, non-dynamic braking.
3. Written confirmation that existing electrical provisions are adequate for post modernization installation equipment requirements.
4. Written confirmation that total planned modernization reactions on building structure do not exceed originally designed reactions by more than 5%. If installation has been altered previously and original car top data tag is missing, confirm that new reactions will not exceed existing reactions. Reaction calculations shall include:
  - a) Traction machine and motor.
  - b) Total counterweight.
  - c) Blocking beams.
  - d) Sheaves.
  - e) Total car weight.
  - f) Suspension means.
  - g) Travelling cables.
  - h) Car Capacity.
5. Product Data, Including:
  - a) Capacities, sizes, performances, operation, control, signal systems operations, safety features, finishes, and similar information.
  - b) Product data for car enclosures and hoistway entrances.
  - c) Product data for signal fixtures, lights, graphics, tactile marking plates, and details of mounting.
  - d) Full details of ascending car protection means and installation.
  - e) Two-way conversation devices.
  - f) Post-modernization machine room heat emissions in BTU.
6. Shop Drawings:
  - a) Scaled or Fully Dimensioned Layout: Plan of machine room indicating equipment arrangement, details of car enclosures, hoistway entrances, and car/hall signal fixtures.
  - b) Fully Dimensioned Fixture Drawings:
    - 1) Car operating panel.
    - 2) Car floor indicator.
    - 3) Hall stations.
    - 4) Position indicators.
    - 5) Hall lanterns.
    - 6) Access key switch.

7. Rope Brake Mounting and Installation Drawings:
  - a) Details of all materials and installation design required.
  - b) Showing reactions incorporated into design.
8. Samples for Initial Selection: For finishes involving surface treatment or paint.
9. Samples for Verification:
  - a) For exposed car, hoistway door and frame, and signal equipment finishes.
  - b) Samples of Sheet Materials: 3" square.
  - c) Running Trim Members: 4" lengths.
  - d) Include full component samples, if requested:
    - 1) Signal fixtures.
    - 2) Lighting.
    - 3) Graphics.
    - 4) Braille plates.
10. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract.
  - a) Include any unique or product specific procedures or methods required to inspect or test the equipment.
  - b) Identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.

#### 1.8 CLOSEOUT SUBMITTALS

- A. Provide electronic copies (flash drive or Consultant-approved equivalent) of 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 Owner 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 Owner'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. Lubrication instructions, including recommended grade of lubricants.
  4. Parts catalogs for all replaceable parts, including ordering forms and instructions.
  5. Instructions explaining all operating features, including all apparatus in the car and lobby control panels.
  6. Maintenance Control Program documentation for all equipment.
- B. Provide Owner with the following:
  1. Any interface cards required for equipment maintenance, code mandated testing, and troubleshooting.
  2. Four sets of keys for all switches and control features properly tagged and marked.
  3. 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.
- C. Preventive Maintenance Contract:

1. Furnish an example maintenance contract displaying pricing and conditions for a five (5) year preventive maintenance agreement.
- D. Acceptance of such records by Owner/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.

#### 1.9 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) City and State permits.
    - b) Device or equipment removal permits.
    - c) Hot works permits.
  2. Post, maintain, and renew all permits in compliance with local governmental requirements.
  3. Obtain final close-out of all required permits.
  4. Tests and Inspections: 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.
- B. Certificates: Obtain, pay for, and deliver to Owner all temporary and final inspection certificates provided by proper governing authorities.
- C. Violations: Resolve any outstanding violations on record with the AHJ on devices being removed prior to final acceptance by the Owner.

#### 1.10 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 including, but not limited to:
1. American Society of Mechanical Engineers:
    - a) ASME A17.1, Safety Code for Elevators and Escalators, 2019.
    - b) ASME A17.2, Guide for Inspection of Elevators, Escalators, and Moving Walks.
    - c) ASME A17.5, Elevator and Escalator Electrical Equipment.
    - d) ASME A17.6, Standard for Elevator Suspension, Compensation, and Governor Systems.
  2. National Fire Protection Association (NFPA):
    - a) NFPA 70, National Electric Code.
    - b) NFPA 80, Fire Doors and Windows.
    - c) NFPA 101, Life Safety Code.
    - d) NFPA 13, Installation of Sprinkler Systems.
  3. International Building Code (IBC).
  4. Accessibility:
    - a) American National Standard Institute (ANSI): A117.1, Accessible and Usable Buildings and Facilities.
    - b) Uniform Federal Accessibility Standards (UFAS).
    - c) ADAAG, Americans with Disabilities Act Accessibility Guidelines.
    - d) UDS, Cuyahoga County Universal Design Standards.

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

#### 1.11 WARRANTY

- A. Warranty all work for twelve (12) after final acceptance by the Owner.

#### 1.12 MAINTENANCE

- A. Warranty Maintenance:

1. Provide preventive maintenance and 24-hour emergency callback service for one (1) year commencing on date of final acceptance of the modernized elevator by Owner. 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.
2. Use competent personnel, acceptable to the Owner, supervised and employed by Contractor.
3. The warranty maintenance period specified above shall be extended one month for each three-month period in which equipment-related failures average more than .25 per unit per month.
4. Owner retains the option to delete cost of warranty maintenance from modernization equipment contract and remit twelve equal installments directly to Contractor during period in which maintenance is being performed.

#### 1.13 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 Owner.

- 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 Owner against damage, stains, scratches, corrosion, weather, construction debris, and other environmental conditions.
5. Comply with Owner'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.

### **PART 2 – PRODUCTS**

#### 2.1 MANUFACTURERS AND PRODUCTS

- A. Approved Elevator Systems:

1. Approved subject to compliance with the requirements of the contract, provide non-proprietary, third-party products.

- B. Approved Elevator Components:

The following Manufacturers are approved for the specific components listed below, subject to the requirements of the contract:

1. Traction Elevator Controllers (Two Button Dispatch):
  - a) GAL Galaxy.
  - b) MCE.
  - c) Smartrise.
  - d) EC Pixel.
2. Motor Drives:
  - a) KEB.
  - b) Magnetek.
  - c) Yaskawa.
3. Hoistway Entrances:
  - a) Columbia.
  - b) EDI-ECI.
  - c) National Elevator Cab and Doors.
  - d) Wittur.
4. Passenger Elevator Door Equipment (Operators, Tracks, Hangers, and Closers):
  - a) GAL.
  - b) Wittur.
5. Elevator Car Enclosures:
  - a) EDI/ECI.
  - b) Elite Cabs.
  - c) Globe Architectural & Metal.
  - d) National.
  - e) Regency Elevator Cabs.
  - f) G & R Elevator.
  - g) Gunderlin.
6. Car and Hall Signal Fixtures:
  - a) EPCO.
  - b) Innovation.
  - c) MAD Fixtures.
  - d) Monitor.
7. Hoist Machines:
  - a) Hollister Whitney.
  - b) Imperial.
  - c) Torin.
  - d) Wittur.
8. Rope Brakes:
  - a) Draka.
  - b) Hollister Whitney.
9. Door Edge Detector with Approaching Object Detection:
  - a) CEDES
  - b) Janus

## 2.2 MATERIALS

- 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. 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.
1. No. 4 Satin: Directional polish finish. Graining directions as shown or, if not shown, in vertical dimension.
  2. No. 8 Mirror: Reflective polish finish with no visible graining.
  3. Textured: 5WL as manufactured by Rigidized Metals or [PATTERN] as manufactured by Rimex Metals or approved equal with .050" mean pattern depth with bright directional polish (satin finish).
- C. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.
- D. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050"  $\pm$ .005" thick, color and texture as follows:
1. Exposed Surfaces: Color and texture selected by Architect.
  2. Concealed Surfaces: Contractor's standard color and finish.
- E. Fire-Retardant Treated Particle Board Panels: Minimum 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 "1" rating with a flame-spread rating of 25 or less, registered with Local Authorities for elevator finish materials.
- F. Natural Finish Wood Veneer: Standard thickness, 1/40" thoroughly dried conforming to ASME/HPMA HP-1983, Premium Grade. Place veneer, tapeless spliced with grain running in direction shown, belt and polish sanded, book-matched. Species and finish designated and approved by Architect.
- G. 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.
- H. 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.
- I. Baked Enamel Finish: Prime finish per above. Unless specified "prime finish" only, apply and bake three additional coats of enamel in the selected solid color.

## PART 3 – PERFORMANCE AND OPERATION

### 3.1 PERFORMANCE REQUIREMENTS

- A. Car Speed:  $\pm$ 3% 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 Times: Seconds from start to fully open or fully closed:
  - 1. Door Open: 2.1 seconds.
  - 2. Door Close: 3.4 seconds.
- E. Car Floor-to-Floor Performance Time: Seconds from start of doors closing until doors are 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. 15.5 seconds.
- 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 and control space 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.

### 3.2 ELEVATOR OPERATION REQUIREMENTS

- A. General:
  - 1. Car automatically slows 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 lighting and ventilation fan 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. Passenger Elevator:
    - a) Automatically open doors when car arrives at a floor.
    - b) Stop and reopen doors or hold doors in open position upon activation of "door open" button.
    - c) At expiration of normal dwell time, or upon activation of "door close" button, close doors:

- 1) 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.
  - 2) In event of door reopening device failure, provide for automatic shutdown of car at floor level with doors open.
  - 3) 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.
  - d) Nudging Operation:
    - 1) 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.
    - 2) Activation of the door open button overrides nudging operation and reopens doors.
  - e) Interrupted Beam Time:
    - 1) When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds.
    - 2) 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.
  - f) Differential Door Time:
    - 1) Field adjustable time that doors remain open after stopping in response to calls.
    - 2) Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
    - 3) Hall Call: Hold open time adjustable between 5.0 and 8.0 seconds.
  - g) Use hall call time when car responds to coincidental calls.
  - h) Reopen doors when car is designated for loading.
  - i) Integral device to detect passenger or vehicle approach from the elevator lobby.
- C. Independent Service:
1. When feature is activated from within the car allow control of car only from buttons and controls inside the car.
  2. Close doors by constant pressure on desired destination floor button or door close button.
- D. Load Weighing:
1. Provide car with adjustable cable tension monitoring load weighing device.
  2. Devices are to be self-calibrating for the time-dependent effects of compression in any resilient materials in the assemblies, transducers, etc.
  3. Provide dispatching at main floor in advance of normal intervals when car fills to capacity.
  4. Provide hall call by-pass when car is filled to a field adjustable (10%-100%) range of percentage of rated capacity and traveling in down direction.
  5. Elevator does not close doors or run when Overload signaling device is active.
- E. Selective Collective Operation, Single Car:
1. Elevator operates 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. Hall calls, other than calls placed at the landing at which car is standing, start car, and cause the car to stop at first landing for which a call is registered in the direction of travel.

3. Stops are made in order in which landings are reached, irrespective of sequence in which calls are registered.
  4. Parked Car (No Demand):
    - a) When feature is enabled elevator remains at landing of last assignment (if no further demand) with doors closed, for a predetermined amount of time (programmable for any amount of time). Upon expiration of time, the elevator returns to the main egress landing with the doors closed.
    - b) If feature is disabled, if no further demand, the elevator remains at landing of last assignment with the doors closed until a hall call is registered.
  5. 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.
- F. Firefighters' Emergency Operation: Provide equipment and operation in accordance with applicable 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.
- 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 floor 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.
    - d) Provide lighting integral with portion of normal car lighting system.
- H. Emergency Car Communication System Operation:
1. Comply with all requirements of ASME A17.1 2016 , or later editions if adopted by the AHJ.
  2. Hands-Free Phone System:
    - a) In Car System:
      - 1) Hands-free two-way audio communication system in each elevator car.
      - 2) Automatic dialer to include automatic rollover capability if call is not answered with minimum two numbers.
      - 3) Intercom type systems shall be capable of auto dialing out of the building to any active telephone number selected by Owner if intercom call is not answered.
      - 4) Means to identify building and car for Authorized Personnel and Emergency Personnel on demand.
      - 5) Activated by button in car identified with "PHONE" symbol or by external telephone call.
      - 6) Adjacent light jewel illuminates and flashes when call is acknowledged.
      - 7) Communication for Deaf, Hard of Hearing and Speech Impaired: on the same car operating panel as the phone pushbutton, provide capability to communicate with and obtain responses from passengers, including those passengers who cannot communicate verbally or hear.

**PART 4 – ELEVATOR ALTERATIONS**

4.1 Geared passenger Elevator:

<b>ALTERATION SUMMARY</b>		
<b>CAR 1</b>	<b>EXISTING INSTALLATION</b>	<b>MODERNIZED INSTALLATION</b>
Capacity:	1,200 lbs.	Retain Existing Capacity
Class of Loading:	Class A	Retain Existing Class of Loading
Duty Type:	Passenger	Retain Existing Duty Type
Contract Speed:	100 fpm	Retain Existing Contract Speed
Roping Configuration:	1:1	Retain Existing Roping Configuration
Machine Type:	Geared	Retain Existing Machine Type
Machine Location:	Overhead	Retain Existing Machine Location
Motor Type:	AC	AC
Motion Control:	Static	Static
Operation Control:	Two-Button Selective Collective	Two-Button Selective Collective
Floors Served:	2 Front (Floors 1 &2)	Retain Existing Floors Served
Total Entrances:	2 Front	Retain Existing Total Number of Entrances
Car Entrance Type:	Two Speed Side Opening (2SSO) Front	Retain Existing Car Entrance Type
Hoistway Entrance Type:	Two Speed Side Opening (2SSO) Front	Retain Existing Hoistway Entrance Type
Entrance Size:	36" Wide x 84" (7'-0") High	Retain Existing Entrance Sizes
Minimum Clear to Underside of Canopy:	96" High	Retain Existing Minimum Clear to Underside of Canopy Height

4.2 MACHINE ROOM EQUIPMENT

- A. Provide and arrange equipment in existing machine room space.
- 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. Geared Traction Hoist Machines:
  - 1. New:
    - a) Provide new geared machine based on specified capacity, speed, and duty.

- b) Provide motor, brake, gears, and demountable drive sheave mounted in proper alignment on a common bedplate.
  - c) Motor:
    - 1) Permanent magnet or AC induction motor connected through worm and gear to drive sheave.
    - 2) Direct drive, digital, closed-loop velocity encoder.
    - 3) Include approved manufacturers label as required by the local Authority Having Jurisdiction.
  - d) Electromechanical Brake:
    - 1) Drum or disc type.
    - 2) Spring applied and electrically released with removable manual brake release.
    - 3) Brake shoes apply to the braking surface simultaneously and with equal pressure.
    - 4) Minimize noise during lifting and setting of brake shoes to be undetectable inside any car or outside of the machine room or hoistway.
  - e) Gears:
    - 1) Worm gear accurately machined from steel and provided with a single end double race ball bearing thrust.
    - 2) Ring gear made from a phosphor bronze, accurately cut, fitted, and bolted to a cast iron spider.
    - 3) Gear housing with a gasketed port to inspect the gear.
  - f) Drive Sheave:
    - 1) Demountable casting from the best grade of metal with a Brinell hardness of 215 to 230.
    - 2) Machined with grooves, providing maximum traction with a minimum of cable and sheave wear.
    - 3) Sealed bearings.
  - g) Deflector Sheave:
    - 1) Machine bedplate mounted deflector sheave.
    - 2) Machined grooves and sealed bearings.
    - 3) Maintainable from inside machine room.
    - 4) Installation Includes:
      - (a) Anti-friction bearings with easy access for lubrication.
      - (b) Drip pans to collect lubricant seepage.
      - (c) Means to access and maintain deflector sheave from machine room.
      - (d) Sheave guards to prevent ropes from leaving sheave grooves.
      - (e) Sound isolation pads to reduce vibration and noise transmission to the building structure.
      - (f) Permanent ladders and platforms with handrails and toe boards for code required machine and sheave access.
- D. Alternate 05 – New – 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. ACVVVF 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 shave 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. Battery Rescue System:
  1. Auxiliary power source shall be provided via 12-volt D.C. battery units installed in machine room or controller space.
  2. Include solid-state charger and testing means mounted in a common metal container.
  3. Battery to be rechargeable lead acid or nickel cadmium with a ten-year life expectancy.
- F. Regenerated Power:
  1. Provide resistor bank installed on the demand side of the elevator main disconnect to absorb the maximum sustained regenerated power from the motor drive during dynamic braking.
  2. Provide means to automatically divert regenerated power from being returned to the building electrical grid when emergency power operation is in effect.
- G. Encoder: Direct drive, solid-state, digital type. Update car position at each floor and automatically restore after power loss.
- H. 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.
- I. Auxiliary disconnect: Provide controller or machine mounted auxiliary, lockable "open," disconnect if mainline disconnect is not in sight of controller and/or machine.
- 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 [and secondary machinery levels].
- L. Machine Beams and Equipment Support Beams:
1. Retain:
    - a) Provide all required supplemental supports and attachments.
    - b) Provide Structural Engineering certification validating size and location of all new support structure provided.
- M. Governor, Car:
1. New:
    - a) Centrifugal-type, car driven with pull-through jaws and bi-directional shutdown switches.
    - b) Calibrated and tested with manufacturers' certification data plate as required by code.
    - c) Provide required bracketing and supports for attachment to building structure.
- N. Emergency Brake:
1. Provide means to prevent Ascending Car Over-speed (ACOP):
    - a) Acceptable emergency brake devices for ACOP:
      - 1) Traction machine sheave mounted secondary brake system.
      - 2) Hollister-Whitney rope gripper.
      - 3) Existing or new counterweight safety and dedicated overspeed governor.
  2. Provide means to prevent Unintended Car Movement (UCMP):
    - a) Acceptable emergency brake devices for UCMP:
      - 1) Traction machine sheave mounted secondary brake system.
      - 2) Hollister-Whitney rope gripper.
  3. Install in compliance with approved drawings.
  4. Mount on suitable structural steel supports in machine room.

5. Provide all control circuits and controller interface to enable the devices to function as required by Code.

#### 4.3 HOISTWAY EQUIPMENT

- A. Provide and arrange equipment in existing hoistway space.
- B. Guide Rails:
  1. Retain:
    - a) Clean rails and brackets.
    - b) Remove Rust.
    - c) Repaint non-machined surfaces.
    - d) Check and tighten all rail and bracket fastenings.
- C. Buffers, Car:
  1. Retain:
    - a) Remove rust and repaint non-machined surfaces.
- D. Buffers, Counterweight:
  1. Retain:
    - a) Remove rust and repaint non-machined surfaces.
- E. Counterweight Frame:
  1. Retain:
    - a) Replace any damaged frame sections.
    - b) Steel members and fastenings to match original manufacturers' specifications.
    - c) Groove depth and shape within manufacturer's specified limits.
    - d) Structurally sound fastenings.
    - e) Rope retainers that prevent ropes from leaving sheave grooves.
    - f) Smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
    - g) Counterweight Weight Sections:
      - 1) Adjust or repair means to keep existing and added weight sections in place during buffer impact or application of counterweight safety.
      - 2) Add or remove weight sections to provide overbalance necessary to comply with traction machine manufacturer requirements.
- F. Counterweight Roller Guides:
  1. New:
    - a) Roller type, 3.25" minimum roller diameter.
    - b) Three (3) spring dampened, sound-deadening rollers per assembly.
    - c) Manufacturer, type, and size are subject to approval by Consultant.
- G. Counterweight Guard:
  1. Retain:
    - a) Check and tighten all fastenings.
    - b) Repair or replace damaged or rusted components.
- H. Governor Rope Tension Sheave and Frame:
  1. Retain:

- a) Refurbish or replace.
- b) Provide quiet operation with no sound detectable from inside any car or outside of the hoistway.
- c) Adjust mounting bracket to allow sheave to align with rope drop.

I. Suspension Means:

1. New:

- a) New traction steel wire ropes fastened with staggered length, adjustable, spring isolated wedge type shackles of type and quantity specified by machine or drive sheave manufacturer.

J. Governor Rope:

1. New:

- a) Governor rope of type specified by governor manufacturer.

K. Terminal Stopping Devices:

1. New:

- a) Normal and final devices.
- b) Emergency terminal speed limiting devices.

L. Electrical Wiring and Wiring Connections:

1. Conductors and Connections:

- a) Copper throughout with individual wires coded and connections on identified studs or terminal blocks.
- b) Use no splices or similar connections in wiring except at terminal blocks, control compartments, or junction boxes.

2. Conduit:

- a) Galvanized steel conduit, EMT, or duct.
- b) Flexible conduit length not to exceed 3'-0".

3. Traveling Cables:

- a) Provide 12 twisted shielded pairs in addition to wires needed to connect specified items and code required spares.
- b) Tag spares in machine room.
- c) Provide cables from controller to car top.

4. Auxiliary Wiring:

- a) Provide conduit, wiring, connections, and machine room demarcation junction boxes for:
  - 1) Fire alarm initiating devices.
  - 2) Emergency two-way communication system.
  - 3) Security video camera.
  - 4) Security system and card reader interface terminals and relays.

#### 4.4 HOISTWAY DOOR OPERATING EQUIPMENT

A. Horizontal Sliding Passenger Entrances:

1. Door Hangers, Hoistway:

a) New:

- 1) Two-point suspension design.
- 2) New rollers with neoprene roller surface.

- 3) Eccentric upthrust roller adjustment.
  2. Door Tracks, Hoistway:
    - a) New:
      - 1) Bar or formed with smooth roller contact surface.
      - 2) Constructed of cold drawn steel.
  3. Door Interlocks:
    - a) New.
  4. Door Closers:
    - a) New:
      - 1) Spring activated spirator type.
  5. Door Unlocking Devices:
    - a) New:
      - 1) Unlocking device including new escutcheon at all floors.
      - 2) Locking plug at all floors.
        - (a) Finish to match adjacent door panel surface.
  6. Hoistway Access Switches:
    - a) New:
      - 1) Top and bottom floors.
      - 2) Mount in wall located within easy reach of entrance to allow safe car top access by one person.
      - 3) Provide switch with faceplate.
- B. 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.

#### 4.5 HOISTWAY ENTRANCE FRAMES AND DOOR PANELS

- A. Provide and arrange equipment in same location as existing entrances.
- B. Passenger Elevator Entrance Frames:
  1. Retain:
    - a) Repaint. Color selected by the Architect.
    - b) Arabic floor designation/tactile marking plates:
      - 1) Centered at 60" above finished floor.
      - 2) Located on both side jambs of all entrances.
      - 3) Minimum 4" high.
      - 4) Tactile marking indications shall be below Arabic floor designation.
      - 5) Permanently fastened.
      - 6) Provide plates at main egress landing with "Star" designation.
    - c) Car identification plate with Braille:
      - 1) Mounted directly below floor designation/tactile marking plates.
      - 2) Located on both side jambs at Designated and Alternate levels.
      - 3) Finish and design to match floor designation/tactile marking plates.
    - d) Background of indication painted selected color in epoxy paint.
- C. Horizontal Sliding Hoistway Door Panels:

1. New:
  - a) 16-gauge steel, sandwich or pressed with ribbed construction and without binder angles.
  - b) Provide one leading edge of doors with rubber astragal.
  - c) Provide a minimum of two gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel.
  - d) Provide one separate 4" steel reinforcement safety gib mounted between door gibs, where not integrated with door gibs.

D. Sight Guards:

1. New:
  - a) 14-gauge steel.
  - b) Same material and finish as hoistway entrance door panels.
  - c) Construct without sharp edges.

E. Frame and Door Panel Finishes:

1. Entrance Frames and Doors:
  - a) Painted. Color selected by the Architect.

#### 4.6 HOISTWAY ENTRANCE SILLS AND SUPPORT

A. Sills, Hoistway Entrance:

1. Retain.
  - a) Clean entire length of sill.
  - b) Check and tighten all fastenings.

B. Sill Supports, Hoistway Entrance:

1. Retain:
  - a) Check and tighten all fastenings.

C. Fascia, Toe Guards, and Hanger Covers:

1. Retain:
  - a) Replace damaged or missing sections.
  - b) Check and tighten all fastenings.
  - c) Paint/Stencil floor number on fascia or hoistway wall all floors visible where car doors are initially opened.

D. Struts and Headers:

1. Retain existing. Modify as necessary.
  - a) Constructed for vertical support of entrances and related material.
  - b) Provide door open bumpers on entrances equipped with vertical struts.

#### 4.7 CAR EQUIPMENT

A. Frame:

1. Retain:
  - a) Check and tighten all fastenings.
  - b) Adjust as required for plumb and square alignment.

B. Car Safety Device:

1. Retain:

- a) Refurbish existing.
  - b) Check and tighten all fastenings.
  - c) Disassemble, clean, lubricate, and inspect components in compliance with manufacturer's recommended procedures.
- C. Platform:
- 1. Retain:
    - a) Adjust as necessary for plumb and level alignment.
    - b) Reinforce if required.
    - c) Check and tighten all fastenings.
    - d) Inspect after existing finished flooring is removed. Immediately notify Owner and Consultant if any damage or deterioration requiring repairs is observed.
- D. Platform Guard:
- 1. Retain:
    - a) Remove any rust and repaint.
- E. Car Rail Guide Roller or Shoe Assemblies:
- 1. New:
    - a) Three or more 6" spring dampened, sound-deadening rollers per guide assembly.
- F. Top of Car Guardrail:
- 1. Provide New.
- G. 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.
- H. 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.
- I. Work Light and Duplex Plug Receptacle:
- 1. Work light on top and bottom of car.
  - 2. Car top light mounted to provide illumination of all car top equipment.
  - 3. GFCI protected duplex outlet. One (1) at top and one (1) at bottom of car.
  - 4. Include on/off switch and lamp guard.
- J. Car Sills – Passenger or Service Duty:
- 1. Retain:
    - a) Clean full width.
    - b) Check and tighten all fastenings.

- K. Car Door Panels – Passenger or Service Duty:
1. New:
    - a) Fully enclosed 16-gauge steel, sandwich construction without binder angles
    - b) Constructed with interlocking, stiffening ribs.
    - c) Minimum of two gibs per panel, one at leading and one at trailing edge with gibs in the sill groove entire length of door travel.
    - d) Stainless steel satin finish.
- L. Car Door Hangers – Passenger or Service Duty:
1. New:
    - a) Two-point hanger roller with
    - b) Neoprene roller surface
    - c) Suspension with eccentric upthrust roller adjustment.
- M. Car Door Track – Passenger or Service Duty:
1. New:
    - a) Bar or formed cold-drawn steel.
    - b) Removable steel track with smooth roller contact surface.
- N. Car Door Header – Passenger or Service Duty:
1. New:
    - a) Minimum 12-gauge steel.
    - b) Shaped with stiffening flanges.
- O. Car Door/Gate Electrical Contact:
1. New:
    - a) Prohibit car operation unless car door or gate is closed.
- P. Door Clutch – Passenger or Service Duty:
1. New:
    - a) Heavy-duty clutch, linkage arms, drive blocks and pickup rollers or cams to provide positive, smooth, quiet door operation.
    - b) Design clutch so car doors can be closed, while hoistway doors remain open.
- Q. Restricted Opening Device:
1. New:
    - a) Restrict opening of car doors to Code required limit outside unlocking zone.
    - b) Adjust for smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
    - c) Plunger type restrictors not acceptable.
    - d) Mechanical angle to prevent door opening is acceptable.
- R. Passenger Door Operator:
1. New:
    - a) High-speed, heavy-duty door harmonic type operator capable of opening doors at no less than 2.5 fps.
    - b) Accomplish reversal in no more than 2½" of door movement.
    - c) Solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current.

- d) Maintain consistent, smooth, and quiet car door operation at all floors, regardless of door weight or varying air pressure.

S. Passenger Door Reopening Device:

1. New:

- a) 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.
- b) Include integral device to detect passenger or vehicle approach from the elevator lobby.

T. Car Operating Panel, Two Button Dispatching:

1. New:

- a) One (1) car operating panel.
- b) Mounted in stationary return panel(s) with separate hinged faceplate.
- c) Metal box containing operating fixtures mounted behind the car return panel.
  - 1) Vandal resistant.
- d) Provide Exposed Pushbuttons to Initiate:
  - 1) Car call registration.
  - 2) Alarm.
  - 3) Door open.
  - 4) Door close.
  - 5) Emergency push-to-call communication.
- e) Pushbuttons:
  - 1) Provide minimum 3/4" diameter raised or flush floor pushbuttons which illuminate to indicate call registration.
  - 2) Brushed stainless buttons with illuminated LED halo.
  - 3) Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
  - 4) Identify buttons with flat stainless steel tactile symbols surface mounted.
- f) Locked Firefighters' Emergency Operation Panel:
  - 1) Openable by the same key which operates the Fire Operation switch.
  - 2) Including the following features:
    - (a) Phase II fire access switch.
    - (b) Firefighters' visual indication.
    - (c) Call cancel button.
    - (d) Stop switch, manually operated.
    - (e) Door open button.
    - (f) Door close button.
    - (g) Floors served signage.
- g) Service Compartment:
  - 1) Provide lockable service compartment with recessed flush door.
  - 2) Door material and finish to match car return panel or car operating panel faceplate.
  - 3) Include the following controls in lockable service cabinet with function and operating positions identified by permanent signage or engraved legend:
    - (a) Access switch.
    - (b) Light switch.

- (c) Three position exhaust blower switch.
  - (d) Independent service switch.
  - (e) Constant pressure test button for battery pack emergency lighting.
  - (f) 120-volt, AC, GFCI protected electrical convenience duplex outlet.
  - (g) Card reader override switch.
  - (h) Keyed stop switch.
- h) Provide black paint filled (except as noted), engraved, or approved etched signage as follows with approved size and font:
- 1) Phase II firefighters' operating instructions on inside face of firefighters' compartment door.
  - 2) Engrave filled red firefighters' operation on outside face of compartment door.
  - 3) Building identification car number on main car operating panel.
  - 4) "No Smoking" on main car operating panel.
  - 5) Car capacity in pounds on service compartment door.

#### 4.8 COMMUNICATION

##### A. Car Communication System:

- 1. Hands free two-way communication instrument in car:
  - a) Mounted behind car operating panel.
  - b) Button on car operating panel to initiate two-way communication from Car.
  - c) Match car operating panel pushbutton design.
  - d) System includes:
    - 1) Auto dialer.
    - 2) Speaker.
    - 3) Microphone.
    - 4) Adjacent light jewel that illuminates and flashes when call is acknowledged.
    - 5) Call button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
    - 6) Rechargeable back-up battery and charging system.
    - 7) Wiring and connections between all devices inside the car and the elevator controller.
    - 8) Communication for Deaf, Hard of Hearing, and Speech Impaired: Provide capability to communicate with and obtain responses from passengers, including those passengers who cannot communicate verbally or hear.

#### 4.9 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 (Cab Shell):
  - 1. Retain existing. Repaint. Color selected by the Architect.
- C. Passenger Car Fronts:
  - 1. Car Front Return:
    - a) New:
      - 1) 14-gauge reinforced stainless steel construction satin stainless steel finish.
      - 2) Stationary Type:

- (a) Include cutouts for car operating panels and other equipment.
- 2. Front Transom:
  - a) New:
    - 1) 14-gauge reinforced stainless steel construction satin stainless steel finish.
    - 2) Full width of car enclosure.
- D. Passenger Car Interior Side and Rear Wall Finishes:
  - 1. New:
    - a) Removable panels faced and edged with Color Core plastic laminate as selected by Architect/Owner.
    - b) Satin stainless steel finish metal reveal strips fastened to enclosure between and above panels.
- E. Cab Wall Base:
  - 1. Retain.
- F. Handrails:
  - 1. New:
    - a) Minimum 1½" diameter stainless steel tubular grab bar across side and rear cab walls.
- G. Lighting:
  - 1. New:
    - a) Four (4) LED fixtures with all required wiring connections and controls.
    - b) Coordinate with emergency lighting requirements.
    - c) Provide emergency lighting integral with portion of normal car lighting system.
    - d) Recessed LED down lights with on/off switch in car operating panel. Recess mount fixture flush with inside surface of car top. Provide steel guard on car top over fixture.
- H. Ceiling:
  - 1. Retain:
    - a) Paint the ceiling with a reflective white finish.
    - b) Furnish and install LED cove lights on both sides of the cab interior.
- I. Ventilation:
  - 1. New:
    - a) Two-speed type OE exhaust blower.
    - b) Mount to car canopy on isolated rubber grommets.
    - c) Meet noise requirements specified herein.
- J. Car Finish Floor Covering:
  - 1. New:
    - a) Provided and furnished under other sections.
- K. Pads and Buttons, Car 1:
  - 1. Two pads covering side walls and adjacent front returns and one covering rear wall.
  - 2. Provide cutouts to access main car operating panel.

#### 4.10 HALL CONTROLS.

- A. Hall Pushbutton Station Fixtures:

1. Flush mounted pushbutton station fixtures with faceplate to cover existing wall block out.
2. Provide any cutting and patching required.
3. Pushbuttons for each direction of travel which illuminate to indicate call registration. Provide LED illumination.
4. Approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency as part of faceplate.
5. Pushbutton design to match car operating panel pushbuttons.

#### 4.11 CAR ARRIVAL AND TRAVEL DIRECTION SIGNALS

##### A. Car Direction Lantern:

1. New:
  - a) Provide flush-mounted car lantern in all car entrance columns.
  - b) Illuminate up or down LED lights and sound tone once for up and twice for down direction.
  - c) Provide advanced hall lantern notification to comply with ADA hall call notification time.
  - d) Illuminate light until the car doors start to close.
  - e) Sound level shall be adjustable from 20-80 dBA measured at 5'-0" in front of hall control station and 3'-0" off floor.
  - f) Car direction lenses shall be arrow shaped with faceplates.
  - g) Lenses shall be minimum 2½" in their smallest dimension.
  - h) Provide vandal resistant lantern and light assemblies consisting of series of dots or lines for maximum visibility.

##### B. Car Position Indicator:

1. New:
  - a) Alpha-numeric digital indicator type.
  - b) Floor designations and direction arrows a minimum of 2" high to indicate floor served and direction of car travel.
  - c) Vandal resistant fixture and faceplate.
  - d) Locate above car operating panel.
  - e) When a car leaves or passes a floor, illuminate indication representing position of car in hoistway.
  - f) Illuminate proper direction arrow to indicate direction of travel.

#### 4.12 SIGNAL FIXTURE FACEPLATE FINISHES

##### A. All Fixtures:

1. Stainless steel satin finish.

### **PART 5 – EXECUTION**

#### 5.1 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 Owner of any irregularities in writing prior to commencing work.
- C. Do not proceed with installation until work in place conforms to project requirements.

## 5.2 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 the machine room and pit floors.

## 5.3 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 Owner and Consultant of any noted failures of Owner 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.
- C. Have Code Authority acceptance inspection performed and complete corrective work.
- D. Provide access to installed equipment and elevator personnel assistance for Consultant's final observation and review requirements.

## 5.4 ADJUSTMENTS

- A. Static balance car to equalize pressure of guide shoes on guide rails.
- B. 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.
- C. Lubricate all equipment in accordance with Contractor's instructions.
- D. Adjust motors, power conversion units, brakes, controllers, leveling switches, limit switches, stopping switches, door operators, interlocks, and safety devices to achieve required performance levels.

## 5.5 CLEANUP

- A. Keep work areas orderly and free from debris during progress of project. Remove packaging materials daily.
- B. Elevator hoistways and all equipment therein shall be cleaned and left free of rust, filings, welding slag, rubbish, loose plaster, mortar drippings, extraneous construction materials, dirt, and dust, including walls, building beams, sill ledges, and hoistway divider beams.
- C. Care shall be to not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
- D. Clean down surfaces and areas which require final painting and finishing work. Cleaning includes removal of rubbish, broom cleaning of floors, removal of any loose plaster or mortar, dust, and other extraneous materials from finish surfaces, and surfaces which will remain visible after the work is complete.
- E. Paint machine room walls and floors.
- F. Remove all loose materials and filings resulting from work.
- G. Clean machine room equipment and floor.
- H. Clean car, car enclosure, entrances, operating and signal fixtures.

## 5.6 FINAL COMPLIANCE REVIEW

- 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, all deficiencies noted by the AHJ have been rectified, 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. Contractor shall perform review and evaluation of all aspects of its work prior to requesting consultant's review.
- D. Furnish labor, materials, and equipment necessary for Consultant's review. Notify Consultant five working days in advance when ready for final review of elevator or group of elevators.
- E. 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 times, and door performance compliance with Contract Documents.
  - 3. Performance of following is satisfactory:
    - a) Starting, accelerating, running.
    - b) Decelerating, 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.
  - j) Operations of special security features and floor lock-off provisions.
  - k) Operations of emergency brake device.
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 Owner and Consultant. Tests will be conducted under both no load and full load condition.

END OF SECTION

ADDENDUM NO. 1