



LERCH BATES

Building Insight

**GUARANTEED RATE FIELD
CHICAGO, IL**

**TRACTION ELEVATOR MODERNIZATION
SPECIFICATION**

AUGUST 10, 2021

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TABLE OF CONTENTS

SECTION 001000 – INSTRUCTIONS TO CONTRACTOR 4
PART 1 - GENERAL 4
1.1 EXAMINATION 4
1.2 EXISTING MAINTENANCE CONTRACT 5

SECTION 008000 – SUPPLEMENTAL CONDITIONS 6
PART 1 - GENERAL 6
1.1 DEFINITION OF TERMS 6
1.2 CONSULTANT'S STATUS 7
1.3 CONTRACT 7
1.4 MEASUREMENTS AND DRAWINGS 7
1.5 CODES AND ORDINANCES 7
1.6 CONTRACTOR'S INSURANCE 7
1.7 PURCHASER INSURANCE 8
1.8 TAXES, OLD AGE PENSIONS AND UNEMPLOYMENT INSURANCE 8
1.9 LABOR LAWS 8
1.10 PATENTS 8
1.11 ASSIGNMENTS 8
1.12 ADVERTISING 8
1.13 PROTECTION OF WORK AND PROPERTY 9
1.14 ACCIDENT REPORTS 9
1.15 STORAGE OF MATERIALS 10
1.16 REMOVAL OF EQUIPMENT AND RUBBISH 10
1.17 MATERIALS AND WORKMANSHIP 10
1.18 SUPERVISION 10
1.19 ROUTINE BUSINESS 10
1.20 CHANGES AND EXTRA WORK 10
1.21 PAYMENTS 10
1.22 PAYMENT WITHHELD 11
1.23 LIENS AND AFFIDAVITS 11
1.24 CLAIMS FOR EXTRA COST 11
1.25 DELAYS AND EXTENSION OF TIME 11
1.26 PERMITS 12
PART 2 - SPECIAL CONDITIONS 12
2.1 PROGRESS OF WORK 12

SECTION 010100 – SUMMARY OF WORK 13
PART 1 - GENERAL 13
1.1 WORK COVERED BY CONTRACT DOCUMENTS 13
1.2 PRIME CONTRACTOR'S DUTIES 13
1.3 WORK SEQUENCE 14
1.4 WORKING HOURS 14
1.5 CONTRACTOR USE OF PREMISES 14
1.6 CONCURRENT MODERNIZATION WORK AND BUILDING OPERATION 14

SECTION 010300 – ALTERNATES AND ALLOWANCES 16
PART 1 - GENERAL 16
1.1 ALTERNATES 16

SECTION 010400 – PROJECT PROCEDURES 18
PART 1 - GENERAL 18
1.1 APPLICABLE CODES 18
1.2 STAGING AREA 18
1.3 WORK PHASE 18

1.4	OCCUPANCY AND WORK BY OTHERS	18
SECTION 013000 – SUBMITTALS		19
PART 1 - GENERAL		19
1.1	ACTION SUBMITTALS	19
1.2	FINAL CONTRACT DOCUMENTS.....	21
SECTION 016000 – MATERIAL AND HANDLING		22
PART 1 - GENERAL		22
1.1	SITE CONDITION INSPECTION	22
1.2	PRODUCT DELIVERY, STORAGE, AND HANDLING	22
1.3	INSTALLATION REQUIREMENTS	22
1.4	MANUFACTURER’S NAMEPLATES	23
1.5	COLORS OF FACTORY-FINISHED EQUIPMENT	23
1.6	MATERIALS AND FINISHES	23
SECTION 017000 – FINAL CONTRACT COMPLIANCE REVIEW		25
PART 1 - GENERAL		25
1.1	FINAL CLEANING.....	25
1.2	CONSULTANT’S FINAL OBSERVATION AND REVIEW REQUIREMENTS	25
1.3	PURCHASER’S INFORMATION	26
SECTION 018000 – MAINTENANCE		28
PART 1 - GENERAL		28
1.1	INTERIM MAINTENANCE	28
1.2	WARRANTY MAINTENANCE	28
1.3	CONTRACT PREVENTIVE MAINTENANCE	28
SECTION 019000 – RELATED WORK		29
PART 1 - GENERAL		29
1.1	RELATED WORK BY CONTRACTOR PROVIDED BY OTHER TRADES.....	29
SECTION 142200 - ELECTRIC TRACTION ELEVATOR MODERNIZATION		32
PART 1 - GENERAL		32
1.1	SUMMARY	32
1.2	DEFINITIONS	32
1.3	WORK INCLUDED.....	32
1.4	ALTERNATES.....	33
1.5	RELATED WORK	33
1.6	ACTION AND INFORMATIONAL SUBMITTALS	33
1.7	CLOSEOUT SUBMITTALS.....	33
1.8	PERMITS, TESTS, AND CERTIFICATES.....	33
1.10	WARRANTY.....	33
1.11	MAINTENANCE	33
1.12	DELIVERY, STORAGE, AND HOISTING.....	34
1.13	COORDINATION	34
PART 2 - PRODUCTS		34
2.1	REFERENCES.....	34
2.2	MANUFACTURERS AND PRODUCTS.....	35
2.5	ELEVATOR ALTERATIONS.....	37
2.6	MATERIALS.....	37
2.7	OPERATION	37
2.8	MACHINE ROOM EQUIPMENT	39
2.9	HOISTWAY EQUIPMENT	42
2.10	HOISTWAY ENTRANCES.....	44
2.11	CAR EQUIPMENT	44

2.12	COMMUNICATION	47
2.13	CAR ENCLOSURE AND INTERIOR FINISHES	48
2.14	HALL CONTROL INPUT STATIONS.....	48
2.15	SIGNALS.....	49
2.16	FIREFIGHTERS CONTROL AND EMERGENCY POWER PANEL	49
PART 3 - EXECUTION.....		50
3.1	SITE CONDITION INSPECTION	50
3.2	INSTALLATION.....	50
3.3	FIELD QUALITY CONTROL.....	51
3.4	CLEANUP	51
3.5	PURCHASER'S INFORMATION	52



SECTION 001000 – INSTRUCTIONS TO CONTRACTOR

PART 1 - GENERAL

1.1 EXAMINATION

- A. In order to discover and resolve conflicts or lack of definition which might create problems, Contractor must review Contract Documents, existing site conditions, and existing equipment specified to be retained for compatibility with its product prior to submitting quotation. Site review shall include, but not be limited to:
1. Adequacy of access.
 2. Retained equipment.
 3. Elevator hoistways.
 4. Pits.
 5. Machine rooms.
 6. Overhead clearances.
 7. Electrical power characteristics.
 8. Structural supports.
- B. Investigation and structural calculations required to determine compliance of existing elevator components, including machine support beams, with ASME A17.1, Rule 8.7.2.15.2 are responsibility of Contractor. The design of the scope of work included in the Contract Documents is not intended to result in a change in total car weight plus rated load of more than 5%.
- C. If Contractor is in doubt as to the meaning of any requirement included in the Contract Documents, they shall contact the Consultant in writing for clarification at least five working days prior to quotation due date.
- D. Compliance with all provisions of Contract Documents is assumed and required in absence of written exception.
1. Purchaser will not pay for change to building structure, structural supports, mechanical, electrical, or other systems required to accommodate Contractor's equipment if not identified before Contract award and authorized as stipulated above.
 2. Provide notification of exceptions no less than five days prior to submittal of quotation.
- E. Submission of quotation is considered evidence that Contractor:
1. Has visited the site facilities and was allowed adequate time and access to comply with 1.1 A and B above.
 2. Is conversant with the site facilities, site conditions, requirements of the Contract Documents, pertinent state and local codes, state of labor and material markets, and has made due allowance in their quotation for all contingencies.
 3. Contractor shall contact the Consultant for clarification at least ten working days prior to the quotation due date if Contractor's investigation of site conditions or local code reveals:
 - a. Code requirements contrary to Contract Documents.
 - b. Any discrepancies or omissions from Contract Documents.
- F. No oral explanation will be made, and no oral instructions will be given before quotation due date. Contractor shall act promptly and allow sufficient time for Consultant to reply before submission of quotation. Any required interpretation or supplemental instructions will be issued in the form of an addendum to the specifications and forwarded to all pre-qualified Contractors.

- G. Provide everything necessary for and incidental to the satisfactory completion of work required by Contract Documents. All required preparations, hoisting and movement of new equipment, reused equipment, or removal of existing equipment shall be the responsibility of Contractor.

1.2 EXISTING MAINTENANCE CONTRACT

- A. Purchaser shall affect cancellation of existing Maintenance Contract.

END OF SECTION



SECTION 008000 – SUPPLEMENTAL CONDITIONS

PART 1 - GENERAL

1.1 DEFINITION OF TERMS

- A. ELEVATOR CONSULTANT or CONSULTANT refers to Lerch Bates Inc. (Lerch Bates).
- B. PURCHASER refers to Illinois Sports Facilities Authority
- C. CONTRACT or CONTRACT DOCUMENTS consists of the Agreement, Conditions of Contract, Specifications, Addenda, Drawings if included, and Alternates if accepted.
- D. CONTRACTOR or ELEVATOR CONTRACTOR refers to any persons, partners, firm, or corporation having a contract with Purchaser to furnish labor and materials for the execution of work required.
- E. CONTRACT AWARD refers to Purchaser’s verbal or written award for work required.
- F. 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.
- G. PROVIDE means “furnish and install.”
- H. MANUFACTURER means either the Original Equipment Manufacturer (OEM) or the principal manufacturer of a component or system.
- I. 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.
- J. 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.
- K. 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.
- L. CALL BACK means a request from the Purchaser 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.
- M. 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.
- N. Words in the singular shall include the plural whenever applicable or context so indicates.

- O. All technical terms in these Contract Documents are used as defined in the latest edition of American National Standard Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks ASME A17.1. and A17.2.

1.2 CONSULTANT'S STATUS

- A. Consultant shall act as Purchaser's and/or Building Management's representative on all matters pertaining to required work. Consultant shall interpret Contract Documents, analyze Contractor's quotations, review Contractor's suggested alternates, review all Contractor's submittals, approve billings, review technical details and construction procedure, perform work progress reviews, and review and test completed work for compliance with Contract Documents prior to acceptance of work by Purchaser.
- B. Field Review Scheduling: Schedule progress and final work reviews with Consultant. Reply promptly, in writing, to corrective work indicated on Consultant's progress and/or final review reports, indicating status and schedule for completion. Consultant anticipates scheduled site review appointments will be met.

1.3 CONTRACT

- A. Contract includes all engineering, labor, tools, and material required to complete the work in every respect. Contractor is cautioned to familiarize itself with existing site conditions and to include all incidental work that might occur or be required during the work. After Contract has been awarded, verbally or in writing, no extra charges will be allowed for any labor or material necessary to complete required work whether exactly described in these specifications.
- B. Any discrepancies or ambiguities found in Contract Documents or drawings shall be reported to the Consultant prior to Contractor's quotation submittal.

1.4 MEASUREMENTS AND DRAWINGS

- A. Drawings or measurements included with Contract Documents are for convenience of Contractor. Complete responsibility for detailed dimensions lies with Contractor. Contractor shall verify all dimensions with the actual on-site conditions. Where work of Contractor is to be coordinated with another trade, Contractor's shop drawings shall show actual dimensions and method of joining work of those trades.

1.5 CODES AND ORDINANCES

- A. All work covered by these Contract Documents is to be done in full accord with national code, state and local codes, ordinances, and elevator safety orders in effect at time elevator alteration permit issuance. All requirements of local Building Department and fire jurisdiction are to be fulfilled by Contractor and its Subcontractors. Also see Section 010400, Article 1.1.

1.6 CONTRACTOR'S INSURANCE

- A. Contractor shall take out and maintain during the life of this Contract Worker's Compensation Insurance with statutory limits set by the State of Illinois laws for protection of its employees.
- B. Contractor shall carry a comprehensive general liability policy including completed operations blanket contractual broad form property damage, and Purchaser's and Contractor's protective liability in a casualty or liability insurance company acceptable to Purchaser. Insurance policy shall fully protect Contractor, its Subcontractors, Purchaser, and Consultant from all loss and liability. Refer to Illinois Sports Facilities Authority Terms and Conditions provided.

- C. Prior to commencing work, Contractor shall secure required insurance, at its sole cost, and submit certificate of confirmation naming indemnified parties as additional insured. Said policies, including an endorsement which states that such insurance will not be cancelled or materially changed unless Purchaser is given thirty days notice, in writing, of the intention of said insurer to cancel or change any such policy. In the event Property is owned by a joint venture or other multi-party entity, all joint venture partners, or parties with an equity interest in the ownership shall be named as additional insureds. Contractor's insurance shall be primary to any applicable loss. With Purchaser's prior approval, an Owners & Contractors Protective Liability (OCPL) Policy may be substituted for commercial general liability coverage. Please refer to the attached appendix that states the project specific insurance requirements.
- D. Contractor shall file with Purchaser a certificate of insurance from its insurance company, stating that such insurance is being carried and that Purchaser will be notified at least ten days prior to any cancellation of said insurance.

1.7 PURCHASER INSURANCE

- A. Purchaser's insurance policy covers work and equipment in place in building and approved and accepted by Consultant and Purchaser. All material and equipment stored on site and not actually installed is not included in Purchaser's policy and such material and equipment shall be covered under Contractor's Property Damage Insurance.

1.8 TAXES, OLD AGE PENSIONS AND UNEMPLOYMENT INSURANCE

- A. Contractor's quotations for required work, materials and equipment shall include all local, state, and federal occupational and sales taxes, luxury taxes, excise taxes, federal and state old age pensions, unemployment insurance contributions, and any other similar taxes and contributions in effect at time of award of Contract.

1.9 LABOR LAWS

- A. Contractor and its Subcontractors performing work under this Contract shall comply with applicable provisions of all federal, state, and local labor laws.

1.10 PATENTS

- A. Contractor shall save and hold harmless Purchaser and its officers, agents, servants, employees, and Consultant from liability of any nature or kind on account of any patented or unpatented invention, process, article, or appliance manufactured or used in performance of Contract, including its use by Purchaser including all cost and expenses for defending any suits unless otherwise specifically stipulated in Contract Documents.
- B. Licenses which may be required for completion of required work are to be obtained and paid for by the Contractor.

1.11 ASSIGNMENTS

- A. Neither party to this Contract shall assign Contract or sublet it as a whole without written consent of other party, nor shall Contractor assign any payment due him or to become due to him hereunder without previous written consent of Purchaser.

1.12 ADVERTISING

- A. Advertising privileges will be retained by Purchaser. It is the duty of Contractor to keep premises free from posters, signs, decorations, etc., unless specifically approved by Purchaser.

1.13 PROTECTION OF WORK AND PROPERTY

- A. Contractor shall continuously maintain adequate protection of all its work from damage and shall protect Purchaser property from injury or loss arising out of this Contract. Contractor shall make good any such damages, injury, or loss, except such as may be directly caused by agents, subcontractors, or employees of the Purchaser. Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA regulations. Design of barricades in public areas shall be approved by Purchaser prior to fabrication and installation.
- B. If Contract includes work which would be disruptive during normal business operations, or would be dangerous to building occupants, said work shall be performed during hours as building management dictates. Examples of such work include, without limitation, saw cutting of concrete, jack hammering, welding, metal cutting, pouring concrete, erecting steel, or hoisting equipment over occupied portions of the building, or performing tests requiring all elevators in a group. Contractor shall perform such work during off-hours and shall include all costs in its quotation.
- C. Contractor shall install a suitable protective covering on all finished floors whether marble, wood, carpet or other, in areas where work is being performed. No material handling equipment shall be permitted on or over finished floors unless said floors have been protected in a manner approved by building management.
- D. Portable fire extinguishers shall be provided throughout Contractor's area of work and shall be placed so as to be accessible at all times. Extinguishers shall be multi-purpose dry chemical type, provided on a basis of one 2A-20BC rated unit for each 3,000 square feet of floor area. Extinguishers will remain property of Contractor.
- E. Contractor shall at all times maintain work areas, so all portions are accessible to fire department personnel and apparatus. Fire hydrants and fire department connections to building sprinkler systems must be kept free from obstruction at all times.
- F. Contractor shall strictly supervise any welding, metal cutting or other operations employing open flame work. All welding and cutting equipment shall be safely arranged and all combustibles in vicinity of any work being performed shall either be removed or protected by a noncombustible cover. Welding or cutting shall be attended by an assistant or fire watchman who is equipped with at least one 2A-20BC rated multi-purpose dry chemical fire extinguisher. Fire watchman will maintain strict surveillance during entire welding or cutting operation and extinguish flying sparks or burning slag. After welding or cutting operation fire watchman shall thoroughly search entire area for remnants of smoldering materials before he is released from his duty. Any welding or other operation employing open flame in any portion of building shall be scheduled with and receive approval of Purchaser. Hot work permits shall be scheduled and approved with Purchaser.
- G. Contractor shall keep noise level below 80 dBA level during normal building hours. When it is necessary to produce noise above this level, Contractor shall advise building management of such needs and times will be scheduled as directed. The Contractor shall anticipate and schedule excessive noise generating procedures and include allowance for same in its quotation and schedule. Anything above 80 dBA shall be conducted outside of normal building operation hours.

1.14 ACCIDENT REPORTS

- A. In the event of accidents of any kind, Contractor shall furnish Purchaser with copies of all accident reports. Reports shall be sent without delay and at same time that they are forwarded to any other parties.

1.15 STORAGE OF MATERIALS

- A. Contractor shall confine storage of materials on job site to limits approved by Purchaser and shall not unnecessarily encumber premises or overload any portion of building with materials to a greater extent than structure design load.

1.16 REMOVAL OF EQUIPMENT AND RUBBISH

- A. Contractor shall remove and properly dispose of all rubbish as fast as it accumulates including all existing parts and components not retained, keeping building and premises clean during progress of work and leave premises at completion in a condition acceptable to the Purchaser. Store parts and components identified by Consultant as useful for maintenance of units not being modernized as directed by Purchaser. All other parts and components not retained shall become property of Contractor. Dumpster shall be located in the loading dock area.

1.17 MATERIALS AND WORKMANSHIP

- A. All materials and equipment furnished shall be new and best quality. Installation shall be accurate, workmanlike, and subject to approval of Purchaser and Consultant. All materials and equipment provided shall conform to regulations of enforcement bodies having jurisdiction. Contractor shall furnish material samples for approval.

1.18 SUPERVISION

- A. Contractor shall assign a competent Project Manager, superintendent, and on-site foreman for project satisfactory to Purchaser and Consultant. Such persons shall represent Contractor and all instructions given to them shall be binding as if given to Contractor.

1.19 ROUTINE BUSINESS

- A. After award of Contract, all business relating to required work shall be transacted through Consultant, unless otherwise directed.

1.20 CHANGES AND EXTRA WORK

- A. Purchaser may at any time make changes to Contract Documents, plans and drawings, omit work, or require additional work by Contractor. For such additional work performed hereunder, Purchaser shall pay Contractor on the basis of a mutually agreed lump sum. See Article 1.25 for method of computing lump sum cost of additional work. Contractor shall make no additions, changes, alterations, or omissions, or perform extra work, without receipt of written authorization of Purchaser.

1.21 PAYMENTS

- A. Unless otherwise agreed, Contractor shall submit monthly applications for payment together with necessary data, information, waivers, and affidavits to Consultant. Consultant shall review data for accuracy and forward such applications to Purchaser for payment. Information shall be submitted with payment request and work progress forms.
- B. Applications for payments are to cover 90% of the value of labor performed and material installed and delivered during the preceding month or materials delivered to Contractor's storage facility.

- C. Balance (retention) shall be paid by Purchaser upon final acceptance of entire work by Consultant and Purchaser and after performance guarantees have been satisfactorily demonstrated. See Section 017000.

1.22 PAYMENT WITHHELD

- A. Purchaser and/or Consultant may withhold approval of payment on any Contractor request to such extent as may be necessary to protect Purchaser from loss on account of:
 - 1. Believed negligence on part of Contractor to execute the work properly or fail to perform any provision of Contract. Purchaser, after 15 days' written notice to Contractor, may without prejudice to any other remedy he may have, make good such deficiencies, and may deduct its cost from the overall Contract sum.
 - 2. Claims filed or reasonable evidence indicating probable filing of claims by other Contractors or Subcontractors.
 - 3. Failure of Contractor to make proper payments to its material suppliers or Subcontractors for material and labor.
 - 4. A reasonable doubt that required work can be completed by Contractor for balance then unpaid or in Contract time frame.
 - 5. Contractor's damage to building or another Contractor.
- B. When the above grounds are removed, payment shall be made in full, less retention.

1.23 LIENS AND AFFIDAVITS

- A. Neither final payment nor any part of billing retention shall become due until Contractor shall deliver to Purchaser a complete release of all liens arising out of this Contract or receipts marked paid in full in lieu thereof. In addition, Contractor shall furnish an affidavit to Purchaser that, so far as he has knowledge or information, releases, or receipts include all labor and materials for which a lien could be filed. If any lien remains unsatisfied after all payments are made by Purchaser, Contractor shall refund to Purchaser all monies the latter may be compelled to pay in discharging such a lien, including all costs and reasonable attorney's fees.

1.24 CLAIMS FOR EXTRA COST

- A. Contractor claims for extra cost due to additions or changes to required work shall be submitted to Consultant in writing within a reasonable time after such additions or changes identified or are requested and in any event before proceeding with required work. No such claim shall be valid unless so made. Maximum charge for additions/changes to work shall be Contractor cost +10% for overhead and profit. Contractor's cost shall be verifiable from actual supplier invoices, purchase orders, time tickets, etc.

1.25 DELAYS AND EXTENSION OF TIME

- A. If Contractor progress is delayed due to acts of Purchaser or Consultant, acts of other Contractors, fire, floods, strikes or other casualties beyond the control or without fault or negligence of Contractor, time for completion of the work shall be extended for a period determined by Consultant to be equivalent to time of such delay. Contractor must notify Consultant, in writing, of such delay within 48 hours after delay commences, or no extension of time will be granted. Extension of time without written request within said period on one or more occasions shall not be deemed a waiver of provisions of this article.
- B. Should the project be completed past the final approved scheduled turnover date by Purchaser, a penalty will be assessed of \$1,000/day.

1.26 PERMITS

- A. Contractor shall obtain and pay for or cause its Subcontractor to obtain and pay for all permits required to complete required work. In addition, Contractor shall arrange, schedule, and pay for or cause its Subcontractors to arrange, schedule and pay for all required final inspections by state, local or independent certified inspecting authorities necessary for issuance of all required Purchaser utilization permits in regard to completed work.

PART 2 - SPECIAL CONDITIONS

2.1 PROGRESS OF WORK

- A. Upon award, verbally or in writing, Contractor shall reconfirm in writing, starting and completion schedule including equipment delivery dates based upon the information submitted on its quotation form, Section 003100.
- B. Contractor shall submit in writing monthly reports with payment request, including current equipment delivery dates and anticipated completion dates for individual units and groups of units.

END OF SECTION



SECTION 010100 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Modernization of One (1) elevator, including new machine, operational controls, dispatching, door equipment, signal fixtures, car interior finishes.
- B. Provide all labor, engineering, tools, transportation, services, supervision, materials, and equipment necessary for and incidental to satisfactory completion of required work as indicated in Contract Documents.
- C. Provide all required staging, hoisting and movement of new equipment, reused equipment, or removal of existing equipment.
- D. Applicable conditions of Purchaser's General, Special, and Supplemental Conditions.
- E. Prime contracts are defined below, and each is recognized to be a major part of required work to be performed concurrently in close coordination with work of other Contractors.
 - 1. This Contract: Elevator Modernization Include associated work specified in Section 019000.
- F. Scope of Contract includes, but is not limited to, the following:
 - 1. Coordination, scheduling, and management of work of component suppliers and subcontractors.
 - 2. Furnish and install equipment as specified, utilizing existing and/or modified hoistways and machine rooms or hoistways and machine rooms.
 - 3. Specific item of required work which cannot be determined to be included in another contract is thereby determined to be included in prime contract.
 - 4. Coordinate installation of LAN cabling in hoistway and machine room. Include all costs in quotation including required time to assist with LAN cable installation. No additional fees will be accepted for coordination and assisting with cable installation by the electrical contractor.

1.2 PRIME CONTRACTOR'S DUTIES

- A. Prime Contractor's duties include the following:
 - 1. Provide and pay for labor, materials and equipment, tools, construction equipment and machinery, and other facilities and services necessary for proper execution and completion of required work.
 - 2. Pay for legally required sales, consumer, and state remodel taxes.
 - 3. Secure and pay for required permits, fees, and licenses necessary for proper execution and completion of required work, as applicable at time of quotation due date.
 - 4. Give required notices.
 - 5. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities applicable to performance of required work.
 - 6. Promptly submit written notice to Consultant of observed variance of Contract Documents from legal requirements.
 - 7. Enforce strict discipline and good order among employees. Do not employ persons unskilled in assigned task.
 - 8. Purchaser will obtain and pay for General Building Permit.

1.3 WORK SEQUENCE

- A. Construct work in stages. Description and proposed sequence dates are as listed on Quotation Form Section 003100.

1.4 WORKING HOURS

- A. Unless otherwise stated below or elsewhere in the Contract Documents, Contractor shall have access to the building for work activities during the following regular building operating hours:
 - 1. Building is available 24 hours a day 7 days a week
 - 2. No contractor shall have access to equipment during Events held at the field.
- B. Contractor shall perform all work that has the potential to result in any of the following conditions outside of regular building operating hours at no additional cost to the Purchaser:
 - 1. More than one elevator out of service in a group of elevators (not including a second car out of service for more than sixty minutes for regular preventive maintenance during non-peak traffic periods).
 - 2. Interruptions or changes in normal group automatic operation.
 - 3. Activation of Firefighter's Emergency Operation Phase I.
 - 4. Activation of Standby Power Operation.
 - 5. Noise levels in excess of 80 dBA measured in any occupied or public space.
 - 6. Transport of large equipment through public or tenant spaces.

1.5 CONTRACTOR USE OF PREMISES

- A. Confine operations at site to areas permitted by law, ordinances, permits, Contract Documents, and Purchaser's specific instructions.
- B. Do not unreasonably encumber site with materials or equipment. Staging area will be located as directed by Purchaser.
- C. Do not load structure with weight that will endanger structure. Coordinate with Purchaser.
- D. Assume full responsibility for protection and safekeeping of tools and products stored on or off premises.
- E. Move stored products which interfere with operations of building or the operations of other trades.
- F. Obtain and pay for use of additional storage or work areas needed for operations.

1.6 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. Unless otherwise stated in the Contract Documents, Contractor shall allow only one elevator to be out of service in each elevator group at any time during regular building operating hours.

- C. At all times Contractor shall provide clearly visible warning and directions signs, full height barricades with locking doors, temporary lighting, overhead protection, and hazard-free walking surfaces throughout public area. At all times give special attention to building entrances, exits, and proper safe exiting through work areas as required by law.
 - 1. Barricade design must be approved by client prior to start of modernization work.
 - 2. Standard folding maintenance barricades are not acceptable.

- D. 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.

END OF SECTION



SECTION 010300 – ALTERNATES AND ALLOWANCES

PART 1 - GENERAL

1.1 ALTERNATES

- A. Provide material and labor required for complete execution of accepted alternates.
- B. Alternates:
1. Provide 2 shifts- Provide 2, 8 hour shifts to reduce the installation time. Show cost and time savings to installation.
 2. Provide accelerated schedule with 6 days a week and 10 hours a day. Show cost and time savings to installation.
 3. Freight Elevator Enclosure: Car weight to be verified prior to removal of interior cab finishes/cab enclosure. Remove existing interior finishes and enclosure components, weigh, and document. Provide complete as specified herein. New cab weight including all new finishes to be verified following completion of modernization. Post modernization weight not to exceed code allowable limits. Provide the following features:
 - a. Enclosure Walls: Reinforced 10-gauge furniture steel formed panels no more than 20" wide with light-proof joints.
 - 1) Clad panels with stainless steel textured finish as specified herein.
 - 2) Reinforce and brace panels to provide rigid structure and securely fasten to car sling and platform.
 - 3) Provide recess in car side wall for recessed mounting of car operating panel.
 - b. Enclosure Canopy:
 - 1) Reinforced 12-gauge furniture steel formed panels no more than 20" wide with light-proof joints and Hinged emergency exit.
 - 2) Interior finish white reflective baked enamel.
 - 3) Lighting: 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.
 - 4) Bumper Rails: Two rows of 2" x 12" oak or maple bumpers mounted on both sides and rear of the car.
 - a) Locate bottom rail at floor level and top rail at 36" above the car floor.
 - b) Bolt rails through car walls with bolt and captive nuts on exterior of wall panel sections on 18" centers.
 - c) Finish both upper and lower top edges with a 45-degree chamfered edge to eliminate collection of trash.
 - d) Finish ends of upper and lower bumpers on side walls to 45° chamfer to eliminate carts and people from hitting blunt ends.
 4. Gearless Traction Hoist Machine:
 - a. Provide new gearless machine based on capacity, speed and duty designed to operate within specified machine room temperature range.
 - b. Provide motor, brake, and demountable drive sheave mounted in proper alignment on a common isolated bedplate.
 - 1) Motor:
 - a) AC induction or P.M.S.M. ACV³F gearless traction type motor
 - b) Machine or motor mounted direct drive, digital, closed-loop velocity encoder.
 - 2) Electromechanical Brake:
 - a) Spring applied and electrically released.
 - b) Drum or disc type.
 - c) Spring applied and electrically released with removable manual brake release.

- d) Brake shoes applied to the braking surface simultaneously and with equal pressure.
- e) Adjusted to minimize noise during lifting and setting of brake shoes.
- f) Prevent ascending car over-speed and unintended car movement via dual-redundant braking system.
- 3) Drive Sheave:
 - a) Demountable casting from the best grade of metal with a Brinell hardness of 215 to 230.
 - b) Machined with grooves, providing maximum traction with a minimum of cable and sheave wear.
 - c) Sealed bearings.
- c. Installation includes:
 - 1) Anti-friction bearings with easy access for lubrication.
 - 2) Sheave guards to prevent ropes from leaving sheave grooves.
 - 3) Sound isolation pads shall be installed to reduce vibration and noise transmission to the building structure.
 - 4) Permanent ladders and platforms with handrails and toe boards for code required machine and sheave access.

SECTION 010400 – PROJECT PROCEDURES

PART 1 - GENERAL

1.1 APPLICABLE CODES

- A. Compliance with Regulatory Agencies: Comply with most stringent applicable provisions of following Codes, laws, and/or Authorities, including revisions and changes in effect including those referenced in Section 142200.

1.2 STAGING AREA

- A. An equipment staging area will be available for use by Contractor. Contractor shall restrict usage to area designated and shall notify Purchaser/Property Management prior to storing of any large equipment which will impose heavy concentrated loading on floor area. Do not store such equipment until approval is received.

1.3 WORK PHASE

- A. See Section 003100, Quotation Form.

1.4 OCCUPANCY AND WORK BY OTHERS

- A. Contractor expressly affirms Purchaser's rights to let other contracts and employ other Contractors in connection with required work. Contractor will afford other Contractors and their workmen reasonable opportunity for introduction and storage of materials and equipment, for execution of their work, and will properly connect and coordinate 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.
- D. Contractor declares that it is responsible for review, stamped, and signed approval of all shop drawings for required work.
- E. 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.

END OF SECTION

SECTION 013000 – SUBMITTALS

PART 1 - GENERAL

1.1 ACTION SUBMITTALS

- A. Within 15 calendar days after award of contract and before beginning equipment fabrication submit field verified existing installation information for review.
1. 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.
 2. Power Confirmation Information: Field verified existing conditions at each elevator main disconnect:
 - a. Actual maximum available voltage and current.
 - b. Verify true earth ground value.
- B. Within thirty 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 ten days for response to initial submittal.
1. Indicate equipment lists, reactions, and design information on layouts, 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) Is or is not more than 5% less or more than that of the original installation.
 - b) Is no more than the existing installation and no less than 95% of the existing installation.
 - 4) Verify buffer capacity via data tags or known manufacturing data.
 - 5) Verify car and counterweight safety capacities via data tags.
 - b. Power Confirmation Information: Design for existing conditions.
 - 1) Motor horsepower and code letter designation.
 - 2) Motor drive starting current, full load running current, and demand factor.
 - 3) Engineered power consumption based on 90 starts per hour full load, non-dynamic braking.
 - 4) Written confirmation that existing electrical provisions are adequate for post modernization installation equipment requirements.
 - c. Written confirmation that total planned modernization reactions on building structure do not exceed originally designed reactions by more than 5% existing reactions due to increased post modernization weights of:
 - 1) Traction machine and motor.
 - 2) Blocking beams.
 - 3) Sheaves.
 - 4) Total car weight.
 - 5) Total counterweight.
 - 6) Suspension means.

- 7) Suspended compensation.
- 8) Travelling cables.
- 9) Car Capacity.
- d. Product Data, Including:
 - 1) Capacities, sizes, performances, operation, control, signal systems operations, safety features, finishes, and similar information.
 - 2) Product data for car enclosures and hoistway entrances.
 - 3) Product data for signal fixtures, lights, graphics, tactile marking plates, and details of mounting.
 - 4) Full details of ascending car protection means and installation.
 - 5) Two-way conversation devices.
 - 6) Post-modernization machine room heat emissions in BTU.
2. 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 panels.
 - 2) Car floor indicators.
 - 3) Hall stations.
 - 4) Destination/landing input stations.
 - 5) Position indicators.
 - 6) Hall lanterns.
 - 7) Access key switch.
 - 8) Remote panels.
 - 9) Firefighter's control panel.
 - 10) Emergency power selector switches.
 - c. Rope Brake Mounting and Installation Drawings:
 - 1) Details of all materials and installation design required.
 - 2) Showing reactions incorporated into design.
 - 3) Signed and stamped by a licensed engineer.
- C. Samples for Verification:
 1. For exposed car, hoistway door and frame, and signal equipment finishes.
 2. Samples of Sheet Materials: 3" (75 mm) square.
 3. Running Trim Members: 4" (100 mm) lengths.
 4. Include full component samples, if requested:
 - a. Signal fixtures.
 - b. Lighting.
 - c. Graphics.
 - d. Braille plates.
- D. Written Maintenance Control Program (MCP) specifically designed for the equipment included under this contract.
 1. Include any unique or product specific procedures or methods required to inspect or test the equipment.
 2. Identify weekly, bi-weekly, monthly, quarterly, and annual maintenance procedures, including statutory and other required equipment tests.
- E. 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.
- F. Acknowledge and/or respond to review comments within fourteen calendar days of return.

1. Promptly incorporate required changes due to inaccurate data or incomplete definition so that delivery and installation schedules are not affected.
2. Identify and cloud drawing revisions including Contractor elective revisions on each re-submittal.

G. Contractor's revision response time is not justification for equipment delivery or installation delay.

1.2 FINAL CONTRACT DOCUMENTS

A. See Section 017000, Project Closeout.

END OF SECTION



SECTION 016000 – MATERIAL AND HANDLING

PART 1 - GENERAL

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

1.2 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. General:
 - 1. The protection of all equipment and exposed finishes shall be the responsibility of the Contractor during delivery, handling, and installation until completion of project.
 - 2. The Elevator Contractor shall replace damaged materials with new at no additional cost for material and labor to Purchaser.
- B. Delivery and Storage:
 - 1. Manufacturers' original packing must adequately protect materials during delivery.
 - 2. Deliver materials to the site ready for use in the accepted manufacturer's original and unopened containers and packaging, bearing labels as to type of material, brand name, and manufacturer's name. Delivered materials shall be identical to accepted samples.
 - 3. Store materials in original protective packaging 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. It is the responsibility of the Contractor to properly store and protect all materials in space provided or designated by the Purchaser against damage, stains, scratches, corrosion, weather, construction debris, and environmental conditions.

1.3 INSTALLATION REQUIREMENTS

- A. Install all equipment in accordance with Manufacturer's instructions, referenced codes, specifications, and approved submittals.
- B. Install machine room equipment with clearances in accordance with referenced codes and specification.
- C. Install all equipment so it may be easily removed for maintenance and repair.
- D. Install all equipment for ease of maintenance.
- E. Install all equipment to afford maximum accessibility, safety, and continuity of operation.
- F. Remove oil, grease, scale, and other foreign matter from the following equipment and apply one coat of field-applied machinery enamel:
 - 1. All exposed equipment and metal work installed as part of this work which does not have architectural finish.
 - 2. Machine room equipment.
 - 3. Pit equipment.
 - 4. Neatly touch up damaged factory-painted surfaces with original paint color.
 - 5. Protect machine-finish surfaces against corrosion.

1.4 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.

1.5 COLORS OF FACTORY-FINISHED EQUIPMENT

- A. All colors will be selected from the Manufacturer's standard range unless custom colors are specified herein.
- B. Submit samples of all standard colors available and/or specified custom colors for review and approval. See Section 013000, Submittals.
- C. Submit samples of all specified architectural metals specified for review and approval. See Section 013000, Submittals.

1.6 MATERIALS 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. Stainless Steel: Type 316 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 longest dimension.
 - 2. No. 8 Mirror: Reflective polish finish with no visible graining.
 - 3. Textured: 5WL as manufactured by Rigidized Metals or Windsor pattern as manufactured by Rimex Metals or approved equal with .050" mean pattern depth with bright directional polish (satin finish).
 - 4. Burnished: Non-directional, random abrasion pattern.
- C. 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.

- D. Aluminum: Extrusions per ASTM B221; sheet and plate per ASTM B209.
- E. Plastic Laminate: ASTM E84 Class A and NEMA LD3.1, Fire-Rated Grade (GP-50), Type 7, 0.050" ±.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.
- F. 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 "I" rating with a flame-spread rating of 25 or less, registered with Local Authorities for elevator finish materials.
- G. 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.
- H. 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.
- I. 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.
- J. 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.
- K. Entrance Field Paint: Clean all surfaces to remove dirt and grease. Sand and finish surfaces as necessary to remove pits and scratches and prepare surface for painting. Apply filler to ensure smooth surface; sand and apply one coat of electrostatic enamel in the selected solid color.
- L. Refinishing of natural metals: Remove existing protective finish. Buff as necessary to remove scratches. Regrain or finish as specified and protect as indicated for particular metal type.
- M. Entrance Support Equipment within Hoistway: Include strut angles, headers, sill support angles, fascia, hanger covers, etc. Clean, remove, and check for corrosive activity. Replace components which exhibit severe deterioration. Tighten all fastenings. Repaint exposed surfaces with two coats of rust preventive primer.

END OF SECTION

SECTION 017000 – FINAL CONTRACT COMPLIANCE REVIEW

PART 1 - GENERAL

1.1 FINAL CLEANING

- A. See Section 008000, Supplemental Conditions, for contractual requirements governing site cleaning. As a minimum:
 - 1. 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.
 - 2. Care shall be to not to mark, soil, or otherwise deface existing or new surfaces. Clean and restore such surfaces to their original condition.
 - 3. 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.
 - 4. Paint machine room walls and floors.

1.2 CONSULTANT'S FINAL OBSERVATION AND REVIEW REQUIREMENTS

- 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.
 - 1. Run-in time must include door open and close cycles, without interfering with usual business activity.
- 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 remote monitoring devices.
- l. 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 Purchaser and Consultant. Tests will be conducted under both no load and full load condition.
 - b. Temperature rise in motor windings limited to 50° Celsius above ambient. A full-capacity one-hour running test, stopping at each floor for ten seconds in up and down directions, may be required.
- F. Performance Guarantee: Should Consultant's review identify defects, poor workmanship, variance, or noncompliance with requirements of specified codes and/or ordinances, or variance or noncompliance with the requirements of Contract Documents, Contractor shall complete corrective work in an expedient manner to satisfaction of Purchaser and Consultant at no cost as follows:
 - 1. Replace equipment which does not meet code or Contract Document requirements.
 - 2. Perform work and furnish labor, materials, and equipment necessary to meet specified operation and performance.
 - 3. Perform retesting required by governing code authority, Purchaser, and Consultant.
- G. A follow-up final contract compliance review shall be performed by Consultant after notification by Contractor that all deficiencies have been corrected. Provide Consultant with copies of the initial deficiency report marked to indicate items which Contractor considers complete.

1.3 PURCHASER'S INFORMATION

- 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 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. 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 Purchaser 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: Furnish properly executed contract for continuing preventive maintenance. Utilize contract form herein provided, Lerch Bates Maintenance Specification, Section 143250.
- D. Acceptance of such records by Purchaser/Consultant shall not be a waiver of any Contractor deviation from Contract Documents or shop drawings or in any way relieve Contractor from his responsibility to perform work in accordance with Contract Documents.

END OF SECTION



SECTION 018000 – MAINTENANCE

PART 1 - GENERAL

1.1 INTERIM MAINTENANCE

- A. Furnish preventive maintenance service on elevators described herein for a period from mobilization, verbal or written, until each unit is removed from building service for modernization. In addition, furnish interim preventive maintenance on completed units until the modernization of each group of elevators is complete and one-year warranty maintenance, defined in Item 1.2 below, is commenced. Cost of interim maintenance shall not be included as part of modernization quotation. Indicate costs on a per-unit basis for interim maintenance as requested on quotation form, Section 003100. Costs for interim maintenance shall be paid by Purchaser separately and monthly based upon the number of units in service. Perform interim maintenance based upon terms and conditions of Owner's existing maintenance agreement.
- B. Use competent personnel, acceptable to Purchaser, employed and supervised by the Contractor.

1.2 WARRANTY MAINTENANCE

- A. Provide preventive maintenance and 24-hour emergency callback service for one year commencing on date of final acceptance of all modernized elevators by Purchaser. Warranty maintenance should expire for 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. Purchaser 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.
- D. Warranty maintenance to be performed per the terms of Owner's existing maintenance agreement.

1.3 CONTRACT PREVENTIVE MAINTENANCE

- A. Quote monthly cost for three-year Preventive Maintenance Agreement with two, one year extensions possible, commencing upon completion of the warranty period specified in Item 1.2, A. above. Submit quote based upon terms and conditions of Owner's existing maintenance agreement.
- B. Base quotation on present labor and material cost. Price adjustment will be made at Agreement commencement date and thereafter as provided in Agreement.
- C. Use competent personnel, acceptable to the Purchaser, employed and supervised by Contractor.

END OF SECTION

SECTION 019000 – RELATED WORK

PART 1 - GENERAL

1.1 RELATED WORK BY CONTRACTOR PROVIDED BY OTHER TRADES

- A. Architectural and Structural, Hoistway and Hallway:
 - 1. Clear, plumb, substantially flush hoistway with variations not to exceed 1" at any point.
 - 2. Wall blockouts and fire rated closure for control and signal fixture boxes which penetrate walls.
 - 3. Cutting and patching walls and floors.
 - 4. Decorating of walls and floors.
 - 5. Structural slab, concrete wall pockets, and/or structural steel beams for support of hoist machine, rope sheaves, and dead-end hitch beams. Support deflection shall not exceed 1/1666 of span under static load.
 - 6. Waterproof pit.
 - 7. Protect open hoistways and entrances during construction per OSHA Regulations.
 - 8. Protect car enclosure, hoistway entrance assemblies, and special metal finishes from damage.
 - 9. Hoistway venting.
 - 10. Seal fireproofing to prevent flaking.
 - 11. Professionally scrape and paint cast iron landing sills with commercial grade black epoxy paint. Apply with primer according to manufacturer's directions.

- B. Architectural and Structural, Machine Room:
 - 1. Enclosure with access. Provide ships ladder or stair with guard railing. Include similar access to overhead machinery space.
 - 2. Self-closing and locking rated access door. Include Signage: "ELEVATOR MACHINE ROOM" and "AUTHORIZED PERSONNEL ONLY."
 - 3. Paint walls and ceiling for improved light reflectivity.
 - 4. Class "ABC" fire extinguisher in each elevator machine room.
 - 5. Seal fireproofing to prevent flaking.

- C. Plumbing and Fire Protection:
 - 1. Fire sprinklers in machine room. Manual shut-off means shall be located outside bounds of machine room.
 - 2. Fire sprinklers in hoistway overhead.
 - 3. Fire sprinklers in pit.
 - 4. Pit Sump or Drain: Indirect waste drain or sump with flush grate and pump. Sump pump/drain capacity minimum 3,000 gallons per hour per elevator.

- D. Mechanical:
 - 1. Machine Room or Control Space: Ventilation and heating. Maintain temperature range of 55°-90° F. Maintain maximum 80% relative humidity, non-condensing.

- E. Electrical Service, Conductors, and Devices:
 - 1. Machine Room or Control Space Lighting: Guarded LED fixtures to provide minimum 19 footcandles average illumination. Provide toggle switch adjacent to strike side of machine room door. Occupancy sensor is not allowed.
 - 2. Machine Room or Control Space Night Light: Provide always-on 3-5-watt LED luminaire inside entrance to machine room.
 - 3. Pit Lighting: Guarded LED fixtures to provide minimum 10 footcandles average illumination.
 - 4. GFCI convenience outlets in pit.
 - 5. Non-GFCI convenience outlet in pit for sump pump.

6. GFCI convenience outlets in machine room or control space.
7. GFCI convenience outlets in machine space.
8. Heavy-duty three-phase mainline copper power feeder to terminals of each elevator controller in the machine room with protected lockable “open” disconnecting means.
9. Three-phase power feeder to each freight elevator power door controller in machine room with protected lockable “open” disconnecting means.
10. Single-phase copper power feeder to each elevator with individual protected lockable “open” disconnecting means located in machine room for utilization equipment:
 - a. Car lighting and blower.
 - b. Pit sump pump.
 - c. CCTV camera.
 - d. In-car video display.
 - e. Card reader system.
 - f. On-car wi-fi router.
 - g. Machine room monitoring system.
 - h. Machine room rope brake air compressor.
 - i. Firefighters’ control status panel.
11. Emergency telephone line to each individual elevator control panel in elevator machine room.
12. Automatic Fire Recall System:
 - a. Fire alarm initiating devices in each elevator lobby, for each group of elevators or single elevator.
 - b. Fire alarm initiating devices in each elevator machine room.
 - c. Fire alarm initiating devices at top of hoistway if sprinklered.
 - d. Three Relay Activation Modules for each group of elevators or single elevator. Locate modules within three feet of controller designated by the Elevator Contractor to minimize un-supervised wiring. Program Modules as follows:
 - 1) PRIMARY: Activate when any hallway device, except primary floor, activates.
 - 2) ALTERNATE: Activate when hallway device at primary floor activates.
 - 3) FIRE HAT: Activate when machine room device activates.
 - e. Device in machine room and at top of hoistway (if provided) to provide signal for general alarm.
 - f. Provide technician from fire alarm contractor for pre-test of system during normal working hours.
 - g. Provide technician from fire alarm contractor for acceptance test of system with AHJ during normal or overtime working hours.
 - h. Remove fire alarm devices from pit where not required.
 - i. Remove fire alarm devices from hoistway overhead where not required.
13. Temporary power and illumination to install, test, and adjust elevator equipment.
14. Category 6 ethernet connection and junction box in each elevator machine room space to dedicated area.
15. Firefighters’ announcement speaker in car with connection to individual elevator control panels in elevator machine room and elevator control panel in firefighters’ control room.
16. Conduit from the closest hoistway of each elevator group or single elevator to the firefighters’ control room and/or main control console. Coordinate size, number, and location of conduits with Elevator Contractor.
17. Means to automatically disconnect power to affected elevator drive unit and controller prior to activation of machine room fire sprinkler system and/or hoistway fire sprinkler system. Provide heat detectors, shunt trip breaker and all necessary equipment.
18. When sprinklers are provided in the hoistway all electrical equipment, located less than 4'-0" above the pit floor shall be identified for use in wet locations. Exception: Seismic protection devices.
19. Wiring from building CCTV system to elevator controllers and all CCTV equipment.

20. CCTV Cameras, elevator contractor to coordinate and assist with installation of cameras in elevators.
 21. Wiring from building security system to elevator controllers and all security system equipment.
 22. Card or Proximity Readers, elevator contractor to coordinate and assist with installation of readers in car operating panels or hall stations.
 23. Power for Mechanical Equipment: Provide power for HVAC and/or ventilation equipment where applicable.
 24. Conduit from fire alarm panel to each fire alarm device location at each floor, hoistway, pit and machine room including three relay activation modules in machine room. Provide junction box at each location.
 25. Review power confirmation data, provided by the Elevator Contractor, on behalf of the Owner. Verify electrical supply to the controllers meets the stated requirements. Where applicable, review standby power generator capability to meet stated requirements and absorb regenerated power.
- F. Elevator Contractor Related Work:
1. Pit access stationary ladder for each elevator. Retractable ladder if provided shall include an electrical contact conforming to ASME A17.1, Rule 2.2.2.4.2.7.

END OF SECTION

SECTION 142200 - ELECTRIC TRACTION ELEVATOR MODERNIZATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes modernization of traction elevators as follows:
 - 1. One (1) geared freight elevator, Car 11.
- B. Products Installed but Not Furnished Under This Section:
 - 1. Building announcement speakers.
 - 2. Emergency Voice/Alarm Communication System Provisions.
 - 3. CCTV camera provisions.
 - 4. Elevator security devices, control unit, mounting brackets, wiring materials, logic circuits, security system interface terminals, boxes, and relays.
 - 5. Car interior finishes.
 - 6. Car flooring.
 - 7. Monitoring system interface.
 - 8. Custom rail brackets
 - 9. Internet connectivity.

1.2 DEFINITIONS

- A. See Section 008000 Supplemental Conditions. Technical terms used are defined in the latest edition of the Safety Code for Elevators and Escalators, ASME A17.1. or in this section.

1.3 WORK INCLUDED

- A. See Section 010100, Summary of Work.
- B. All engineering, equipment, labor, and permits required to satisfactorily complete elevator modernization required by Contract Documents.
- C. Applicable conditions of Purchaser's General, Special, and Supplemental Conditions.
- D. Preventive maintenance as described in Section 018000.
- 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. See Section 008000, Supplemental Conditions.
- 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.

1.4 ALTERNATES

- A. See Section 010300, Alternates and Allowances.

1.5 RELATED WORK

- A. See Section 019000, Related Work.

1.6 ACTION AND INFORMATIONAL SUBMITTALS

- A. See Section 013000, Submittals.

1.7 CLOSEOUT SUBMITTALS

- A. See Section 017000, Final Compliance Review.

1.8 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: 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.
- C. Certificates: Obtain, pay for, and deliver to Purchaser 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.

1.9 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.

1.10 WARRANTY

- A. See Sections 017000 Final Compliance Review and 018000 Maintenance.

1.11 MAINTENANCE

- A. See Section 018000 Maintenance.

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 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.

1.13 COORDINATION

- A. See Section 010400, Summary of Work.

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 MANUFACTURERS AND PRODUCTS

- A. Subject to compliance with the requirements of the contract, provide products by one or more of the following Principal Manufacturers. Where specific product models are referenced and the standard components from KONE, Otis, Schindler, and TK Elevator are approved:
1. Controllers:
 - a. Fujitec America, Incorporated.
 - b. GAL Galaxy.
 - c. MCE.
 - d. Mitsubishi Electric Corporation.
 - e. Smart Rise.
 2. Motor Drives:
 - a. KEB.
 - b. Magnetek.
 - c. Yaskawa.
 - d. Wittur.
 3. Freight Vertical Bi-Parting Door:
 - a. Courion/EMS.
 - b. Pelle.
 4. Elevator Car Enclosures:
 - a. EDI/ECI.
 - b. Elite Cabs.
 - c. Globe Architectural & Metal.
 - d. National.
 - e. Regency Elevator Cabs.
 5. Car and Hall Signal Fixtures: vandal resistant.
 - a. EPCO.
 - b. Innovation.
 6. Two-Way Communication Device:
 - a. EMS.
 - b. Janus.
 - c. Rath Communications.
 - d. RingComm.
 7. Hoist Machines:
 - a. Hollister Whitney.
 - b. Imperial.
 - c. Torin.
 8. Rope Brakes:
 - a. Bode.
 - b. Draka.
 - c. Hollister Whitney.

2.3 FIELD CONDITIONS

- A. Outdoor Unit:
1. Provide freight elevator with all necessary equipment intended for outdoor use and resistant to damage from low temperatures, ice, and water, including, but not limited to the following:
 2. Sills:
 - a. Sills provided with means to prevent the accumulation of ice and water in the sills (heaters, drains, etc.).
 - b. Stainless steel landing sills.
 - c. Stainless steel car sill.
 3. Stainless steel fascia, dust covers, platform guards.
 4. Hoistway and Pit Equipment:
 - a. Hoistway and pit limit switches.

- b. Center/top of hoistway junction box.
 - c. Rigid and flexible conduits and tubing, including all connections and fittings.
 - d. Risers, pull boxes, junction boxes and troughs, including all connections and fittings.
 - e. Hoistway door interlocks.
 - f. Stop switches.
 - g. Compensating switches.
 - h. Buffer switches.
 - i. Taping of duct covers will not be accepted as watertight protection.
5. Top of Car Equipment:
- a. Operating and safety devices.
 - b. Rigid and flexible conduits and tubing, including all connections and fittings.
 - c. Pull boxes, junction boxes and troughs, including all connections and fittings.
 - d. Top of car run box.
 - e. Gate switch.
 - f. Door operator motor.
 - g. Door operator motor junction box.
 - h. Door operator control module.
 - i. Door detector and power supply.
 - j. Protective stainless steel cover (canopy) placed and secured above components to divert water away from top of car equipment.
 - k. Cab top ceiling and lower ceiling joints.
6. Cab Interior:
- a. Car button panel back box.
 - b. Car button panel face plate.
 - c. Rigid and flexible conduits and tubing, including all connections and fittings.
7. Under Car Equipment:
- a. Pull boxes, junction boxes, and troughs, including all connections and fittings.
 - b. Rigid and flexible conduits and tubing, including all connections and fittings.

2.4 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. Car Ride Quality:
 - 1. Ride Quality measured and analyzed according to the methods specified in ISO18738.
 - 2. Utilize EVA-625 Elevator Vibration Analysis System as manufactured by Physical Measurement Technologies (PMT) to record field measurements.
 - 3. Specified levels apply to horizontal and vertical acceleration measured from within car, from the point at which the car has moved $1/2$ meter from start position to $1/2$ meter from final position, as defined by ISO18738.
 - 4. Maximum Allowable Peak-to-Peak Vibration for the Horizontal and Vertical Axes: 25 mg
 - 5. Maximum Allowable A95 Peak-to-Peak Vibration for the Horizontal and Vertical Axes: 12.5 mg.
 - 6. Acceleration and Deceleration: Smooth, constant, and not less than 3.0 feet/second² with an initial ramp between 0.5 and 0.75 second.
 - 7. Sustained Jerk: Not more than 6 feet/second³.

- E. 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.

2.5 ELEVATOR ALTERATIONS

- A. Geared Freight Elevator:

ALTERATION SUMMARY		
CAR 11	EXISTING INSTALLATION	MODERNIZED INSTALLATION
Capacity:	10,000 lbs.	Retain existing 10,000 lbs.
Class of Loading:	Class C1	Retain existing
Contract Speed:	175 fpm	Retain existing 175 fpm
Roping Configuration:	2:1	Retain existing 2:1
Machine:	Geared	Retain existing Geared
Machine Location:	Overhead	Retain existing Overhead
Motor Type:	DC	AC
Operation Control:	Single automatic	Retain existing Single automatic
Floors Served:	Front: G, 1-5	Retain existing
Total Entrances:	6 all front	Retain existing
Entrance Type:	Bi-Parting Freight	Retain existing
Entrance Size:	7'-11 1/2" wide x 8'-0" high	Retain existing
Minimum Clear to Underside of Canopy:	9'0" Field Verify	Retain Existing

2.6 MATERIALS

- A. See Section 016000, Materials.

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. Power-Operated Freight Door and Gate:
1. Door operation at landing initiated by operation of elevator call button for that floor.
 2. Obstruction of door reopening device beams during gate closing immediately stops and re-opens car gate and freight door.
 3. Door reopening device detects objects:
 - a. Immediately adjacent to landing and car sides of door.
 - b. Within path of door.
 - c. Objects on the floor in the path of the door.
 - d. Straddling bi-parting door.
 4. Adjustable timer holds doors open up to 300 seconds.
 5. Door closing initiated upon:
 - a. expiration of a timer.
 - b. activation of door close button.
 - c. activation of a floor button within car.
 6. Synchronize door and gate operators as follows:
 - a. Door and gate accelerate and decelerate smoothly.
 - b. Car gate closes completely before the hoistway doors begin to close.
 - c. Car gate does not open until hoistway doors are completely open.
 7. Provide automatic closing of car doors after dwell time expires.
 - a. A loud audible signal and highly visible signal actuates not less than 5.0 seconds prior to initiation of door sequence.
 - b. Dwell time is easily adjustable between 20.0 and 300.0 second.
 - c. Pressing the Door Close button cancels dwell time.
 - d. Pressing the Door Open button restarts dwell time.
 - e. Dwell time set at 60.0 seconds.
 8. Open door and gate automatically when car arrives at a floor.
 9. Provide passenger sequence operation:
 - a. After an adjustable time between, 30 to 300 seconds, provide audible and visible warning signal and automatically close door and gate.
 - b. Provide dual reversing safety device for car gate.
- C. Manual Door Operation: Operator to open or close doors and car gate at floor when car is stopped in leveling zone.
1. Independent Service:
 - a. When feature is activated from within the car allow control of car only from buttons and controls inside the car.
 - b. Close doors by constant pressure on desired destination floor button or door close button.
 2. Load Weighing:
 - a. Provide cars with adjustable cable tension monitoring load weighing device.
 - b. Devices are to be self-calibrating for the time-dependent effects of compression in any resilient materials in the assemblies, transducers, etc.
 - c. Provide dispatching at main floor in advance of normal intervals when car fills to capacity.
 - d. 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.

- e. Activate audible message and visual overload signaling device inside elevator cab activated when load weighing device senses carload has reached or exceeded a pre-determined percentage of capacity.
 - f. Elevator does not close doors or run when Overload signaling device is active.
- D. Single Automatic Operation, Car 11:
- 1. Operate car without attendant from pushbuttons in car and at each landing. When car is idle, automatically start car, and dispatch it to appropriate floor when call is registered by pressing car or hall pushbutton.
 - 2. Illuminate, "in use" lights in each hall pushbutton station when car is responding to registered car or hall call. Prevent registration of another call until trip is complete including time for passenger transfer and registration of car call if car is responding to a hall call. Extinguish "in use" light to indicate system is available to respond to next call.
- 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. 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.
 - 2. 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.
 - 3. Battery to be rechargeable with minimum five-year life expectancy.
 - 4. Provide constant pressure test button in service compartment of car operating panel.
 - 5. Provide lighting integral with portion of normal car lighting system.
- 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. NEW Geared Traction Hoist Machine:
- 1. Provide new geared machine based on specified capacity, speed, and duty.
 - 2. Provide motor, brake, gears, and demountable drive sheave mounted in proper alignment on a common bedplate.
 - a. 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.
 - b. 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.
 - c. Gears:
 - 1) Worm gear accurately machined from steel and provided with a single end double race ball bearing thrust.
 - 2) Gear housing with a gasketed port to inspect the gear.
 - d. 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.
 - e. 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. Drip pans to collect lubricant seepage.
 - c. Means to access and maintain
 - 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.
 - 1) Brake shoes applied to the braking surface simultaneously and with equal pressure.
 - 2) Adjusted to minimize noise during lifting and setting of brake shoes.
 - 3) Prevent ascending car over-speed and unintended car movement via dual-redundant braking system.
 - g. 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.
 4. Installation includes:
 - a. Anti-friction bearings with easy access for lubrication.
 - b. Sheave guards to prevent ropes from leaving sheave grooves.
 - c. Sound isolation pads shall be installed to reduce vibration and noise transmission to the building structure.
 - d. 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. direct current converter/inverter drive designed to operate with the power supply available at the main disconnect.
 2. 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.

3. 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.
 4. 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.
 5. Provide isolation transformers, filters, and chokes to completely isolate the system from the normal building power supply.
 6. Isolate unit to minimize noise and vibration transmission.
 7. Direct-current power for the operation of hoist machine brake, door operator, dispatch processor, signal fixtures, etc., supplied from separate static power supply.
- E. Encoder: Direct drive, solid-state, digital type. Update car position at each floor and automatically restore after power loss.
- F. 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 interface only.
- G. Auxiliary disconnect: Provide controller or machine mounted auxiliary, lockable "open," disconnect if mainline disconnect is not in sight of controller and/or machine.
- H. 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.
- I. 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.

- J. RETAIN 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.
- K. NEW 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.
- L. Emergency Brake:
 - 1. Provide Rope Brake to prevent ascending car over-speed and unintended car movement. Installation and operation to comply with Code requirements.
 - 2. Acceptable emergency brake devices:
 - a. Hollister-Whitney rope gripper.
 - b. Draka.
 - 3. Install in compliance with approved drawings. See Section 013000 Submittals.
 - 4. Mount the auxiliary brake 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. NEW Buffers, Car: Spring type with blocking and support channels. Provide switch on buffer to limit car speed if buffer is compressed. Provide sign in pit indicating designed counterweight runby.
- D. NEW Buffers, Counterweight: Spring type with blocking and support channels. Provide switch on buffer to limit car speed if buffer is compressed.
- E. NEW Deflector Sheaves, Secondary and Compensating: Machined grooves and sealed bearings. Provide mounting means to machine beams, machine bedplate, car and counterweight structural members, or building structure.
- F. RETAIN Counterweight Frame: Retain existing.
 - 1. Replace any damaged frame sections. Steel members and fastenings to match original manufacturers' engineered specifications.
 - 2. Refurbish or replace existing 2:1 sheaves, including:
 - a. New bearings.
 - b. Proper and equal sheave groove depth.
 - c. Structurally sound fastenings.
 - d. Rope retainers that prevent ropes from leaving sheave grooves during testing.
 - e. Smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
 - f. Remove rust from counterweights and frame. Paint flat black with anticorrosion paint.
 - 3. Counterweight Weight Sections:
 - a. Adjust or repair retention means to keep existing weight sections and any added weight sections in place during buffer impact or application of counterweight safety.
 - b. Add or replace weight sections as required to provide overbalance necessary to comply with traction machine manufacturers' requirements.

- G. Counterweight Guide Shoes:
 - 1. Solid guides with oilless inserts.
 - 2. Manufacturer, type, and size are subject to approval by Consultant.
- H. Counterweight Guard: Metal guard in pit.
- I. 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.
- J. Suspension Means: Replace. 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.
- K. NEW Governor Ropes: Governor rope of type specified by governor manufacturer.
- L. Terminal Stopping: Provide normal and final devices.
- M. 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, paging speaker, CCTV, card reader, intercom, and announcement speaker and/or background music in each car controller in machine room.
- N. Hoistway Entrance Equipment:
 - 1. Door Guide Tracks: NEW Continuous steel angles or formed steel tracks fastened to hoistway door jamb.
 - 2. Door Guide Shoes: NEW Machined iron shoes. Four shoes per door panel, with not less than 2½" lateral contact per shoe.
 - 3. Door Interlocks: Operable without retiring cam.
- O. NEW Power Freight Door Operators:
 - 1. Power door operator for each entrance.
 - 2. Provide means to open doors from inside of car in the event of power failure.
 - 3. Closing speed minimum of 0.8 fps; maximum of 1.0 fps.
- P. NEW Hoistway Freight Door Unlocking Device: Provide unlocking device with pull chain under hinged, lockable cover with stainless steel No. 4 finish at all floors.

- Q. 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.
 - d. Background of indication painted selected color in epoxy paint.
- C. Fascia, Platform Guards, and Hanger Covers:
 - 1. 14-gauge furniture steel with black enamel standard finish.
 - 2. Paint/Stencil floor number on fascia or hoistway wall all floors visible where car doors are initially opened.
- D. NEW Vertical Bi-Parting Freight Door Panels:
 - 1. 12 gauge formed steel plates welded into frame angles.
 - 2. Telescoping upper section or pass-type doors as required.
 - 3. Installation includes:
 - a. Safety astragals.
 - b. Vision panels.
 - c. Truckable sills.
 - d. Load transfer angles.
- E. Vertical Bi-Parting Door Cover Frames: Hollow metal, bolted, fabricated from not less than 14-gauge material to form a one-piece unit covering steel channel subframes.
- F. Finish of Frames and Doors: Provide final painting requirements to General Contractor where factory prime finish is specified. Color selection by Purchaser.
 - 1. Car 11: Black.

2.11 CAR EQUIPMENT

- A. RETAIN 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. RETAIN 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.
- 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.
 4. Black enamel standard finish.
 5. Provide guard extending below platform floor surface maximum distance allowable without contact with the pit floor or other obstruction when car is on fully compressed buffers.
- E. NEW Guide Shoes: Solid type with renewable oilless inserts to accommodate freight loading classification.
- F. Power Freight Gate Operator: Power gate operation. Provide means to open gate from inside of car in the event of power failure. Closing Speed: Minimum of 1.6 fps; maximum of 2.0 fps.
- G. Door and Gate Reopening Device:
1. Black, fully enclosed door reopening device with full screen infrared matrix or multiple beams extending vertically inside or along edge of each car gate guide track to a minimum height of 7'-0" above finished floor to a height of 10'-0" above finished floor {maximum 10'-0" available} full height of opening.
 2. Synchronized to stop and reverse car gate and hoistway door panels.
- H. Car Gate: Retain existing. Check and tighten all fastenings of gate, tracks, operator, gate contact, etc.
- I. NEW Car Operating Panel, Car 11:
1. One car operating panel with faceplate:
 - a. Consisting of a metal box containing vandal resistant operating fixtures, mounted behind the car stationary panel.
 - b. Faceplate shall be hinged and constructed of satin finish stainless steel.
 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 or flush floor pushbuttons which illuminate to indicate call registration.
 - b. Provide brushed stainless buttons with illuminated LED halo.
 - c. Include 5/8" high floor designation on face of pushbutton.
 - d. Locate operating controls no higher than 48" above the car floor; no lower than 35" for emergency push-to-call button and alarm button.
 - e. Identify buttons with cast stainless tactile symbols recessed flush rear mounted.
 - f. Arrange manually operated stop switch to sound group control panel distress signal when actuated.
 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.
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 Integral flush window for displaying the elevator operating permit on inside surface of door.
 - d. 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.
 - 9) Attendant operation switch.
 - 10) Keyed stop switch.
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 car operating panel.
 - d. Car capacity in pounds on main car operating panel.
 - e. Loading classification and description on car operating panel.
 - f. Number of allowable passengers.
 - g. Behind locked cabinet door engrave key number next to key switch.
- J. 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.
- K. 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.
- L. Work Light and Duplex Plug Receptacle:
1. GFCI protected outlet at top and bottom of car.
 2. Include on/off switch and lamp guard.

3. Provide additional GFCI protected outlet on car top for installation of car CCTV and digital video display Wi-Fi Router.

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.
 - b. Provide dialer with automatic rollover capability with minimum two numbers:
 - 1) Actuate two-way communication via "Help" button.
 - 2) Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - 3) Button shall match car operating panel pushbutton design.
 - 4) Provide "Help" button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
2. Emergency Personnel Communication:
 - a. Communication system shall be provided allowing emergency personnel to establish communications with each elevator individually.
 - b. Emergency Personnel Communication shall override any existing connection outside of building.
 - c. Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - d. Provide operating instructions.
 - e. On the same car operating panel as the phone push button, provide capability to communicate with and obtain responses from passengers.
 - f. Provide display video capability for entrapment assessment.
3. 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.
 - a. Provide shielded twisted pair wiring to communicate to machine room.
 - b. Device shall be open-sourced and capable of being monitored by any entity as selected by the owner. All software, hardware, and training cost associated with the device shall be included within this project. Associated monthly monitoring costs will not be accepted.
4. Intercom System:
 - a. General:
 - 1) Provide intercommunication system complete with talkback speaker, required auxiliary equipment and wiring.
 - 2) Include a preamplifier and associated equipment required to receive input from building.
 - 3) A battery backup system shall be provided for the two-way conversation system.
 - 4) The battery backup system shall be capable of providing power for a minimum of four hours.
 - 5) If it is determined that there will not be a 24-hour manned station on the premises, then the system provided shall be capable of dialing out of the facility to a 24-hour manned answering service or must be of the automatic dialing system and not an intercommunication system.
 - 6) In locations that call for Master Stations, a phone with a dedicated line shall be provided (by others).
 - b. Master Stations:
 - 1) Fire Control Station: Arrange to communicate with any other station, any group of stations or all stations simultaneously; include following devices:
 - a) Combination speaker-microphone.
 - b) Selector buttons for each station in system.
 - c) A button for simultaneous conversation with all stations in system.

- d) Talk-listen button; press to talk, release to listen.
- e) IN USE light to indicate when any master station is in use.
- f) Reset Button; to disconnect call, extinguish in use light, and reset selection buttons to free system for next call.
- g) Volume control.
- 2) Machine Rooms/Control Rooms:
 - a) Arrange to communicate with other master stations and all elevator cars.
 - b) In addition to devices specified for Fire Control Station, provide a loud audible signal to announce calls to this unit.
- c. Remote Stations:
 - 1) Provide combination speaker microphone in each elevator car as specified:
 - 2) Arrange to communicate with all master stations.

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. See Section 008000, Supplemental Conditions.
- B. Car Enclosure and Interior Finishes, Freight Elevator:
 - 1. Retain existing car enclosure and interior finishes.
 - 2. Swing Return Panels:
 - a. Thoroughly examine for warps, buckles, and bows.
 - b. Straighten, repair, and/or secure.
 - 3. Modify as required for application of new signal and pushbutton fixtures.
 - 4. 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.
- 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:
 - 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.
 - 3. Provide a filler plate to match card slot size and car return panel finish, including direction of graining, where card slot or proximity reader cutout is not initially utilized.
 - 4. Elevator control systems shall facilitate system tracking of persons accessing secure floors via printout by passenger I.D. number, floor accessed, and time of entry.

2.14 HALL CONTROL INPUT STATIONS

- A. Pushbuttons:
 - 1. Surface mounted riser adjacent to hoistway entrances.
 - 2. Single call button and "in use" light which illuminates when hall call is registered. Pushbutton design shall match car operating panel pushbuttons.
 - 3. Vandal-resistant pushbutton and LED light assemblies.
 - 4. Approved engraved message and pictorial representation prohibiting use of elevator during fire or other emergency as part of faceplate.
 - 5. Provide any cutting and patching required.
 - 6. Provide waterproof fixtures
- B. NEW Freight Door Control Stations: Provide vandal resistant "door open," "door close," and "stop" buttons for control of power operated vertical bi-parting doors at each landing call button

fixture. Provide buttons integral with hall control station. Pushbutton design to match car operating panel pushbuttons. Provide any cutting and patching required.

2.15 SIGNALS

A. Car Direction Lantern:

1. Provide flush-mounted car lantern in all car entrance columns.
2. Illuminate up or down LED lights and sound tone once for up and twice for down direction.
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 advanced hall lantern notification to comply with ADA hall call notification time.
6. Car direction lenses shall be arrow-shaped with faceplates.
7. Lenses shall be minimum 2½" in their smallest dimension.
8. Provide vandal resistant lantern and light assemblies consisting of series of dots or lines for maximum visibility.

B. 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.

C. Floor Passing Tone: Provide an audible tone of no less than 20 decibels and frequency of no higher than 1500 Hz, to sound as the car passes or stops at a floor served.

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 stainless steel 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 as directed by Purchaser or Consultant.

B. Firefighters' Control Panel:

1. Locate in building fire control room or as directed by Contractor.
2. Fixture faceplate, satin finish stainless steel, including the following features:
 - a. Car position and direction indicator, digital-readout, or LCD flat screen color monitor.
 - b. Identify each position indicator with car number and group identification.
 - c. Indicator showing operating status of car.
 - d. Manual car emergency power selection switches and power status indicators.

- 1) Group selection switch for Emergency Power operation switching between groups.
 - 2) Separate group level selection keyswitches for Emergency Power operation switching between cars in the same group:
 - a) Switches shall be labeled "ELEVATOR EMERGENCY POWER" with positions marked "AUTO" and appropriate car numbers controlled by each respective switch.
 - b) Key shall be keyed the same as the key utilized for firefighters' Phase I and II keyswitch. Key shall be removable in "AUTO" position only.
 - c) "EMERGENCY POWER" indicator lights, one per car
 - e. Two-position firefighters' emergency return switches and indicators with engraved instructions filled red.
 3. Where applicable, identify all indicators and manual switches with appropriate engraving.
 4. Provide wiring and conduit to control panel. Coordinate size and location of conduit with Contractor.
 5. Provide all wiring and conduit (materials and labor) to interconnect elevator controls between machine rooms or controller rooms. Coordinate wiring routing path and logistics with Purchaser.
 6. Provide intergroup communications wiring or cable specifications and other requirements to Purchaser for installation by others for wiring outside of the machine rooms or control rooms.
- C. Firefighters' Key Box: Flush-mounted box with lockable hinged cover. Engrave instructions for use on cover per Local Fire Authority requirements.

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 Consultant 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. See Section 016000, Materials and Handling.
- B. 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.
- C. 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.

- D. Paint machine room and pit floors.

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 and counterweight 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. See Section 017000, Final Compliance Review.
- 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. See Section 013000, 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. See Section 010400, Project Procedures.
- B. Keep work areas orderly and free from debris during progress of project. Remove packaging materials daily.
- C. Remove all loose materials and filings resulting from work.
- D. Clean machine room equipment and floor.
- E. Clean hoistways, car, car enclosure, entrances, operating and signal fixtures.

3.5 PURCHASER'S INFORMATION

- A. Provide all documentation required in Section 017000, Final Compliance Review.

END OF SECTION