SECTION 000001 – ADDENDUM NUMBER 1

DATE: DECEMBER 8, 2025

TO: ALL BIDDERS

FROM: WESTON & SAMPSON ENGINEERING, INC,
427 MAIN STREET, SUITE 400
WORCESTER, MA 01608

RE: DCU CENTER EVEVATOR RENOVATION
50 FOSTER STREET, WORCESTER, MA 01608

THIS ADDENDUM FORMS A PART OF THE CONTRACT AND MODIFIES THE ORIGINAL DOCUMENTS DATED NOVEMBER 2025.

PART 1 - GENERAL

1.1 This addendum must be returned with plans and specifications (if not already returned) to have your deposit returned.

1.2 This addendum modifies, amends, and supplements the Contract Documents for the above referenced project. This addendum is hereby made a part of the Contract Documents by reference and shall be as binding as though inserted in locations designated hereunder.

1.3 Each general bidder shall be responsible for notifying all his non-filed sub-bidders and suppliers of the content of this addendum. No claim for additional compensation will be considered because of lack of knowledge of changes or modifications contained in this addenda.

1.4 Questions or requests for clarification shall be in writing, addressed to Jeremy C. Flansburg SPECIAL PROJECT COORDINATOR, City Hall-Purchasing Division, OF PURCHASING**,** 455 Main St room 201, Worcester, MA 01608 or email flansburgj@worcesterma.gov. Please include your name, phone number, and e-mail.

1.5 Part 2 of this addendum indicates revisions to the Project Manual.

1.6 Part 3 of this addendum indicates revisions to the Drawings.

1.7 Part 4 of this addendum indicates clarification to Contractors Questions.

PART 2 - SPECIFICATION

Replace the following specification sections in their entirety with the versions attached to this addendum.

2.1 SECTION 14 24 13 - Hydraulic Passenger Elevator

PART 3 - DRAWINGS – NONE

PART 4 - CONTRACTOR QUESTIONS

4.1 **Question:** On drawing H601 the detail for HP-1 sequence of operations states for the unit to be interfaced with the BMS system. The existing BMS system is an Alerton system, is it the intent to have the unit tied into the Alerton system for alarming?
Response: Yes, HP-1 is to be tied to the existing Alerton system for alarming.

END OF ADDENDUM NUMBER 1

SECTION 14 24 13

HYDRAULIC PASSENGER ELEVATORS

PART 1 – GENERAL

1.1 The BIDDING REQUIREMENTS, CONTRACT FORMS, and CONTRACT CONDITIONS as listed in the Table of Contents, and Division 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS and Division 1 - GENERAL REQUIREMENTS, shall be included in and made a part of this Section. Sub-bidders must be DCAM Certified in the listed trade and shall include a Current DCAM sub-bidder Certification of Eligibility and signed DCAM Sub-bidders Updated Statement with the bid.

1.2 TIME, MANNER AND REQUIREMENTS FOR TRADE CONTRACTOR BIDS

A. Trade Contractor Bids for work under this Section 14 24 13 – Hydraulic Passenger Elevator Trade Contractor Requirements shall be for the complete work and shall be filed ELECTRONICALLY in manner and at time stipulated in the "Invitation to Bid" and "Instruction to Bidders".

B. Each Trade Contract bid submitted for work under this Section shall be on forms furnished by the Owner's Project Manager as required by Section 44F of Chapter 149 of the General Laws, as amended.

C. Trade Contract Bids filed with the Owner shall be accompanied by a BID BOND or CASH or CERTIFIED CHECK or a TREASURER'S or CASHIER'S CHECK issued by a responsible bank or trust company payable to the City of Worcester in the amount of five (5) percent of the bid. A Trade Contract Bid accompanied by any other form of bid deposit than those specified will be rejected.

1.3 PUBLICLY BID TRADE CONTRACTOR

A. Work of this Section requires Filed Sub-bids and is governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law - Chapter 149, Sections 44A to 44J inclusive, as amended, and applicable Sections of the MGL Public Contract Law - Chapter 30.

B. The work of this section pertains to a Publicly Bid Trade Contract governed by the provisions of the Massachusetts General Laws (MGL), Public Bidding Law – Chapter 149A-Section 8, Chapter 149-Section 44F, and applicable Section of the MGL, Public Contract Law – Chapter 30, as amended and includes the following requirements:

1. Bids will only be accepted from Trade Contractors pre-qualified by the Awarding Authority
2. Trade Contractors on this CM-at-Risk project are required by law to provide Payment and Performance Bonds for the full value of their Trade Contracts, and Trade Contractors must include the full cost of the required Payment and Performance Bonds in the Bid Price they submit in response to the Request for Bids (RFB).
3. Specification requirements for Trade Contract "ELEVATORS" include all of the following listed Specification Sections: in their entirety:

    a. Section 14 24 13 – Hydraulic Passenger Elevators

C. Additional Contract requirements for this Trade Contract "ELEVATORS" includes all of the following listed Contract Documents and Exhibits prepared by the Construction Manager:

1. Division 00 - Procurement And Contracting Requirements.

D. Drawings: The work to be completed by the Trade Contractor for the work of this Section 14 24 13 – HYDRAULIC PASSENGER ELEVATOR, is shown on the following listed Drawings, not just those pertaining particularly to this Trade Contract, unless specifically called out otherwise, regardless of where among the Drawings it appears:

1. The Work of this Trade Contract is shown on the following Drawings:

    a. Architectural: AD101, A101

1.4 SUMMARY AND DEFINITIONS

A. Intent

1. This section includes:

    a. Modernization of one (1) Hydraulic Passenger/Service Elevator

2. The following outlines the scope of work covered in this Section:

    a. Comprehensive modernization of one (1) hydraulic elevator including but not limited to new pump and tank unit, oil cooler, controller, fixtures, door equipment, door operator, hall door panels, car door panels, hydraulic cylinder replacement option, and cab enclosure and finishes.

3. Related equipment shall be designed, constructed, installed and adjusted to produce the highest results with respect to smooth, quiet, convenient and efficient operation, durability, economy of maintenance, and the highest standard of safety.
4. It is not the intent of these specifications to detail the construction and design of all parts of the equipment, but it is expected that the type, materials, design, quality of work and construction of each part shall be adequate for the service required, durable, properly coordinated with all other

parts, and in accordance with the best commercial standards applicable and of the highest commercial efficiency possible.

5. Electric and magnetic circuits and related parts shall be of proper size, design and material to avoid heating and arcing, and all other objectionable effects which may reduce the efficiency of operation, economy of maintenance and/or net-useful life of the apparatus.
6. Minimum requirements for design, materials, etc., are for certain parts of the equipment. Equivalent requirements approved by the Consultant shall apply to such parts as are of special design, construction or material and to which the specified requirements are not directly applicable. These minimum requirements as a whole shall be considered as establishing proportionate general minimum standards for all parts of the equipment.
7. The Consultant may permit variations from the requirement of these specifications to permit use of the Contractor's standard equipment, provided such standard equipment is in every way adequate for the intended use and meets the full intent of these specifications. All such variations proposed by the manufacturer shall be called to the attention of the Consultant and shall only be made if approved in writing prior to the award of the contract.
8. General requirements for design, materials and construction are intended primarily to apply to the heavy-duty and important parts of the equipment specifically mentioned and to other parts of similar duty and importance. Less important and light-duty parts may be of the standard design, materials and construction provided that, in the opinion of the Consultant, such standards are in accordance with the best commercial practice and are fully adequate for the purpose of use. All such variations shall be made only on the Consultant's written approval.
9. All equipment and component parts installed, supplied or provided under this contract shall be manufactured and distributed by a third-party, non-installer company servicing the vertical transportation industry.

    a. Apparatus shall conform to the design and construction standards referenced herein, and shall be rated the best commercial grade suitable for this application.
    b. Equipment and component systems shall not employ any experimental devices or proprietary designs that could hamper and/or otherwise prohibit subsequent maintenance repairs or adjustments by all qualified contractors.
    c. Manufacturers of the apparatus shall provide technical support and parts replacements for their equipment and component systems for a minimum of twenty (20) years, and issue such guarantee of support to the purchaser with written certification naming the final Owner of their product(s) to ensure the apparatus or systems remain maintainable regardless of who may be selected for future service.

10. All equipment provided shall be factory and field tested with a history of design reliability and net-useful life established.

    a. Contractor must be able to demonstrate the apparatus to be installed has been used successfully in a substantially similar manner under comparable conditions.
    b. If the apparatus proposed differs substantially in construction, material composition, design, size, capacity, duty or other such rating from the equipment previously used for the same purpose by the manufacturer, the Consultant may reject the apparatus or require the vendor test and demonstrate the adequacy and suitability for this particular situation. Any necessary tests shall be performed at the sole expense of the Contractor with no prior guarantee of

acceptance after the testing procedure.

11. The Contractor shall not use as part of the permanent equipment any experimental devices, proprietary design, components, construction of materials which have not been fully tried out in at least substantially similar or under comparable service, except as may be especially approved by the Consultant. If any important equipment or devices to be used on this installation differ substantially in construction, materials, design, size, capacity or duty from corresponding items previously used for the same purpose by the manufacturer, they shall pass such tests as the Consultant may require to fully show their adequacy and suitability. These tests shall be in addition to tests herein specified and shall be made at the expense of the Contractor.
12. Certain design limitations, tests, etc., are herein specified as a partial check of the adequacy of design, construction and materials used. These requirements do not cover all features necessary to ensure satisfactory and approved operation, etc., of the equipment.
13. It is understood, the entire system shall be designed, fabricated, modified and/or upgraded in full compliance with applicable local laws and code standards. The absence of a particular item or requirement shall not relieve the Contractor of the full and sole responsibility for such equipment, features and/or procedures.
14. With the exception of only those items specifically identified as being performed by others, the Specifications are intended to include all engineering, material, labor, testing, and inspections needed to achieve work specified by the Contract Documents. Inasmuch as it is understood that any incidental work necessary to complete the project is also covered by the Specifications, bidders are cautioned to familiarize themselves with the existing job site conditions. Additional charges for material or labor shall not be permitted subsequent to execution of the Contract.

15. Bidders must report discrepancies or ambiguities occurring in the Specifications to the Consultant for resolution prior to the bidding deadline, otherwise the Specifications shall be deemed acceptable in their existing form.
16. Fixtures, Operating Devices and Signage Survey

    a. Upon award of the Contract, Contractor shall perform a survey of the existing elevator operating fixtures and devices, including signage, and present a report to the owner/design team. The report shall include photographs of the following existing items:

        1) Hall call push buttons.
        2) “You are Here” signage if integral with the hall call fixture cover plate.
        3) Floor identification / Braille signage in entrance jambs.
        4) Lobby directional lanterns at all floors.
        5) Applicable wall surfaces.

    b. The Contractor shall submit, as part of the report, pictures or catalog cuts of the new devices intended to be installed under the modernization project at the various locations including any additional signage either new or replacing existing.

B. Termination of Existing Agreement(s)

1. By submitting a bid, the existing maintenance provider agrees that any service contract(s) in effect shall be terminated by the Owner should the project be awarded to another vendor upon thirty (30)-

day written notice to the Contractor by the Owner.

a. The contract(s) shall be terminated with no penalty to the Owner or Contractor.
b. Owner will be responsible for money owed the Contractor for services provided and work performed up until the date of cancellation.

C. Abbreviations and Symbols

1. The following abbreviations, Associations, Institutions, and Societies may appear in the Project Manual or Contract Documents:

ADA	Americans with Disabilities Act
AHJ	Authority Having Jurisdiction
AIA	American Institute of Architects
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWS	American Welding Society
CMR	Code of Massachusetts Regulations
IBC	International Building Code
IEEE	Institute of Electrical and Electronics Engineers
NEC	National Electrical Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Agency
OPSI	Office of Public Safety and Inspections
OSHA	Occupational Safety and Health Act

D. Codes and Ordinances / Regulatory Agencies

1. Work specified by the Contract Documents shall be performed in compliance with applicable Federal, State, and municipal codes and ordinances in effect at the time of Contract execution. Regulations of the Authority Having Jurisdiction shall be fulfilled by the Contractor and Subcontractors. The entire installation, when completed, shall conform with all applicable regulations set forth in the latest editions of:

a. Local and/or State laws applicable for logistical area of project work.
b. Building Code applicable to the AHJ.
c. Elevator Code applicable to the AHJ.
d. Safety Code for Elevators and Escalators, ASME A17.1 and all supplements as modified and adopted by the AHJ.
e. Safety Code for Elevators and Escalators, A17.1S supplement to A17.1 as modified and adopted by the AHJ for Machine Room Less installations (MRL).
f. Guide for Inspection of Elevators, Escalators, and Moving Walks, ASME A17.2.
g. Safety Code for Existing Elevators and Escalators, ASME A17.3 as modified and adopted by the AHJ.
h. Guide for emergency evacuation of passengers from elevators, ASME A17.4.

i. National Electrical Code (ANSI/NFPA 70).
j. American with Disabilities Act - Accessibility Guidelines for Building and Facilities and/or A117.1 Accessibility as may be applicable to the AHJ.
k. ASME A17.5/CSA-B44.1 - Elevator and escalator electrical equipment.
l. ECC (Energy Conservation Code) as may be applicable to the AHJ.
m. MA 524 CMR and A17.1 Applicable Elevator Code.
n. MA 780 CMR and IBC Applicable Building Code.
o. MA 521 CMR/MAAB Applicable Code.

2. The Contractor shall advise the Owner's Representative of pending code changes that could be applicable to this project and provide quotations for compliance with related costs.

E. Reference Standards

1. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
2. ANSI/AWS D1.1 - Structural Welding Code, Steel.
3. ANSI/NFPA 80 - Fire Doors and Windows.
4. ANSI/UL 10B - Fire Tests of Door Assemblies.
5. ASTM D1785 - PVC Pipe
6. ASTM D2466 – PVC Pipe Fitting
7. ASTM D2564 – Cement for PVC Pipe and Fittings
8. ANSI/IEEE - 519-Latest Edition
9. ANSI/IEEE - Guide for Surge Withstand Capability (SWC) Tests
10. ANSI Z97.1 – Laminated/Safety Tempered Glass

F. Definitions

1. Defective Work: Operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

2. Provide: Where used in this document, provide shall mean to install new device, apparatus, system, equipment or feature as specified in this document.
3. Definitions in ASME A17.1 as amended or modified by the AHJ apply to work of this Section.

1.5 PERMITS AND SUBMITTALS

A. Permits

1. Prior to commencing work specified by the Contract Documents, the Contractor shall, at its own expense, obtain all permits or variances as may be required by the AHJ and provide satisfactory evidence of having obtained said permits and variances to both the Owner's Representative and Consultant.
2. File necessary drawings for approval of all Authorities Having Jurisdiction.
3. The Elevator Contractor shall undertake the necessary review and search procedure to identify open

applications and/or outstanding violations for this property; and close-out such applications and/or expunge such violations relative to the project scope as required for final acceptance by the AHJ.

a. Outstanding applications and violations must be indicated on the request for permit filing for this procedure to ensure such applications and/or violations are dismissed accordingly.
b. All relative costs shall be included in the base bid proposal with the understanding that corrective actions are covered under the specified scope of work.
c. Any decommissioning, alteration, or associated labor to perform this work shall be provided by the Contractor.

B. Submittals

1. Prior to beginning the work, the Contractor shall submit and have approved copies of layout drawings, shop drawings and standard cuts. These items shall include:

a. Project Schedule – Gant Chart with Unit Specific Milestones
b. Main Car Operating Panel – Detailed Drawings
c. Cab Enclosure/Interior - Finish Samples, Detailed Drawings
d. Hall Fixtures – Detailed Drawings
e. Car Fixtures/Lanterns/Indicators- Detailed Drawings
f. Controller Manufacturer, Model and Features – Cut Sheet
g. Pump and Tank Manufacture/ Model and Features – Cut Sheet
h. Cylinder Assembly - Cut Sheet
i. Door Equipment Manufacture – Cut Sheet
j. Door Operator Manufacturer - Model and Cut Sheet
k. Detector Edge Manufacturer - Model and Cut Sheet
l. Scavenger Pump – Model and Cut Sheet
m. Oil Cooler Manufacturer- Cut Sheet
n. Door Panel – Cut Sheets and Finishes

2. The Consultant and the Owner's Representative shall pass on the submittals with reasonable promptness and the Contractor shall be responsible to ensure that there will be no delay in their work or that of any other trade involved.
3. Approved filing and submittal requirements must be completed before equipment and related materials are ordered.
4. Copies of Department of Buildings' permits and/or governing authority's documents will be posted at the job site with copies issued to the Owner's Agent, Owner's Representative and Consultant.
5. Samples of wood, metal, plastic, paint or other architectural finish material applicable to this project shall be submitted for approval by the Owner's designee.
6. It shall be understood that approval of the drawings and cuts by Owner's designee, Architect and/or Consultant shall be for general arrangement only and does not include measurements which are the Contractor's responsibility or approval of variations from the contract documents required by the AHJ.
7. The Contractor shall prepare a record log and maintain all submittals, shop drawings, catalog cuts and samples.

C. Measurements and Drawings

1. Drawings or measurements included with the bidding material shall be for the convenience of the bidders only and full responsibility for detailed dimensions lies with the Contractor.
2. In the execution of the work on the job, the Contractor shall verify all dimensions with the actual conditions.
3. Where the work of the Elevator Contractor is to join other trades, the shop drawings shall show the actual dimensions and the method of joining the work of the various trades.

D. Substitutions

1. Requests for substitutions will be considered under the following time limitations and situations and in compliance with Division 01:

   a. Not less than ten (10) calendar days before bids are due.
   b. Work or equipment specified becomes unavailable through unforeseen events such as strikes, loss of manufacturer's plant through fire, flood or bankruptcy.

2. Requested substitutions will be reviewed and adjudged. Failure of the Consultant to raise objection shall not constitute a waiver of any of the requirements of the Contract Documents.
3. Request for substitutions shall include complete data with drawings and samples as required, including the following:

   a. Quality Comparison - Proposed substitution versus the specified product.
   b. Changes required in other work because of the substitution.
   c. Effect on the construction schedule.
   d. Cost Data - Resulting from the proposed substitution versus the specified product. The Contractor shall certify that the cost data presented is complete and includes all related costs under this Contract.

4. When proposing a substitution, the Contractor represents that:

   a. They have investigated the proposed substitution and have determined that it is equal to or better than the product specified.
   b. They will guarantee the substitution in the same manner as the product specified.
   c. They will coordinate and make other changes as required in the work as a result of the substitution.
   d. They waive all claims for additional costs as a result of the substitution, with the exception of those identified above under "cost data".

5. The Consultant will be sole judge of the acceptability of the proposed substitution.
6. The Consultant will have authority to approve or reject substitutions or to change the specified standards of quality. However, neither this authority to act under this provision nor any decision made in good faith, either to exercise or not to exercise this authority, shall give rise to any duty or responsibility of the Consultant to the Contractor, any Subcontractor, any Sub-Subcontractor, any of their agents or employees or any other persons performing the work or offering the perform the work.

E. Changes in Scope and Extra Work

1. The Owner may at any time make changes in the specifications, plans and drawings, omit work, and require additional work to be performed by the Contractor.

    a. Each such addition or deletion to the Contract shall require the Owner and the Contractor to negotiate a mutually acceptable adjustment in the contract price, and, for the Contractor to issue a change order describing the nature of the change and the amount of price adjustment.
    b. The Contractor shall make no additions, changes, alterations or omissions or perform extra work except on written authorization of the Owner.
    c. Each change order shall be executed by the Contractor, Owner, and the Consultant.

F. Keys

1. Upon the initial acceptance of work specified by the Contract Documents on this unit, the Contractor shall deliver to the Owner, six (6) keys for each general key-operated device that is provided under these specifications in accordance with ASME A17.1, Part 8 standards as may be adopted and modified by the AHJ.
2. All other keying of access or operation of equipment shall be provided in accordance with ASME A17.1 Part 8 as may be adopted and modified by the AHJ.

G. Diagnostic Tools

1. Prior to seeking final acceptance of the project, the Contractor shall deliver to the Owner any specialized tools required to perform diagnostic evaluations, adjustments, and/or programming changes on any microprocessor-based control equipment installed by the Contractor. All such tools shall become the property of the Owner.

    a. Owner's diagnostic tools shall be configured to perform all levels of diagnostics, systems adjustment and software program changes which are available to the Contractor.
    b. Owner's diagnostic tools that require periodic re-calibration and/or re-initiation shall be performed by the Contractor at no additional cost to the Owner for a period equal to the term of the maintenance agreement from the date of final acceptance of the project.
    c. The Contractor shall provide a temporary replacement, at no additional cost to the Owner, during those intervals in which the Owner might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation or repair.

2. Contractor shall deliver to the Owner, printed instructions, access codes, passwords or other proprietary information necessary to interface with the microprocessor-control equipment.

H. Service Support Requirements / Spare Parts

1. Software / Firmware Updates

    a. During the life of the equipment and subject to the term of the maintenance agreement, where revisions to firmware and/or software are issued by the control manufacturer or manufacturer

of solid state and microprocessor-based subsystems subsequent to the beneficial use of the equipment, updates shall be provided so that the installation and spare circuit boards are current with respect to software and firmware versions.

2. Spare Parts

a. Provide spare parts required for maintenance of the elevator equipment installed under this contract.

1) The spare parts shall be placed in a new storage cabinet, located in the machine room, and become the property of the Owner.
2) Spare parts shall include regular parts for maintenance including spare door hanger rollers, interlock contacts, door closer components, car and hall buttons, guide shoe inserts, rollers for guides, relays, fuses and similar components.

I. Wiring Diagrams, Operating Manuals and Maintenance Data

1. Deliver to the Owner four (4) identical volumes of printed information organized into neatly bound manuals prior to seeking final acceptance of the project.
2. The manuals shall also be submitted in electronic format on non-volatile media, incorporating raw 'CAD' and/or Acrobat 'PDF' file formats.
3. Manuals, as well as electronic copies, shall contain the following:

a. Step-by-step adjusting, programming and troubleshooting procedures that pertain to the solid-state microprocessor-control and motor drive equipment.
b. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.
c. A composite listing of the individual settings chosen for variable software parameters stored in the software programs of both the motion and dispatch controllers.
d. Method of control and operation.

4. Provide four (4) sets of "AS INSTALLED" straight-line wiring diagrams in both hard and electronic format in accordance with the following requirements:

a. Displaying name and symbol of each relay, switch or other electrical component utilized including identification of each wiring terminal.
b. Electrical circuits depicted shall include all those which are hard wired in both the machine room and hoistway.
c. Supplemental wiring changes performed in the field shall be incorporated into the diagrams in order to accurately replicate the completed installation.

5. Furnish four (4) bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
6. Manuals or photographs showing controller repair parts with part numbers listed.

J. Training

1. Prior to seeking final acceptance of the project, the Contractor shall conduct a one (1) hour training program on-site with building personnel selected by the Owner.
2. The focus of the session shall include:

    a. Instructions on proper safety procedures and who to contact for the purpose of assisting passengers that may become entrapped inside an elevator car.
    b. Explain each control feature and its correct sequence of operation.

3. Control features covered shall include but not be limited to:

    a. Independent Service Operation.
    b. Emergency Fire Recall Operation - Phase I.
    c. Emergency In-car Operation - Phase II.
    d. Emergency Power Operation.
    e. Emergency Communications Equipment.
    f. Security Operating Features.

K. Patents

1. Patent licenses which may be required to perform work specified by the Contract Documents shall be obtained by the Contractor at its own expense.
2. The Contractor agrees to defend and save harmless the Owner, Consultant and agents, servants, and employees thereof from any liability resulting from the manufacture or use of any patented invention, process or article of appliance in performing work specified in the Contract Documents.

L. Advertising

1. Advertising privileges shall be retained by the Owner.
2. It shall be the responsibility of the Contractor to keep the job site free of posters, signs, and/or decorations.
3. Contractor's logo shall not appear on faceplates or entrance sills without the approval of the Owner.

1.6 QUALITY ASSURANCE

A. Materials and Quality of Work

1. All materials are to be new and of the best quality of the kind specified.
2. Installation of such materials shall be accomplished in a neat manner and be of the highest quality.

    a. Should the Contractor receive written notification from the Owner stating the presence of inferior, improper, or unsound materials or quality of installation, the Contractor shall, within twenty-four (24) hours, remove such work or materials and make good all other work or materials damaged.

    b. Should the Owner permit said work or materials to remain, the Owner shall be allowed the difference in value or shall, at its election, have the right to have said work or materials repaired or replaced as well as the damage caused thereby, at the expense of the

Contractor, at any time within one (1) year after the completion of the work; and neither payment made to the Contractor, nor any other acts of the Owner shall be construed as evidence of acceptance and waiver.

B. Mechanical Design Requirements (General)

1. The following typical requirements shall apply to all parts of the work where applicable and are supplementary to other requirements noted under the respective headings.

a. All bearings, pivots, guides, guide shoes, gearing, door hanger sheaves, door hanger tracks and similar elements subject to friction or rolling wear in the entire elevator installation shall be accurately and smoothly finished and shall be arranged and equipped for adequate and convenient lubrication. Means shall be provided for flushing and draining the larger bearings and gear case. All oiling holes shall have dustproof, self-cleaning caps.

b. Bearings of governor and governor sheaves and important supporting bearings of other parts in motion when the elevator is traveling shall, unless otherwise specified or approved, be of ball or roller bearing type.

c. Bearings for brake levers and similar uses where the amount of movement under load is light and the wear negligible may be unlined.

d. All plain bearings shall be liberally sized in accordance with the best commercial elevator usages which have proved entirely satisfactory on heavy-duty installations.

e. Bearings of motors shall be arranged and equipped for adequate automatic lubrication. Ring or chain oilers, spring-fed grease cups and equivalent devices properly used in accordance with the best commercial elevator practice will be acceptable. Approved means shall be provided for visibly checking the amount of lubricant contained and for flushing and draining. Means shall also be provided for preventing leakage of lubricant when the reservoirs or grease cups are filled to proper levels.

f. Ball and roller bearings shall be of liberal size and of a type and make which have been extensively and successfully used on other similar, heavy-duty elevator installations. They shall be fully enclosed. Loading, lubrication, support and all other conditions of use shall be in accordance with the recommendations of the bearing manufacturer based on previous extensive and satisfactory elevator usage.

g. All armature spiders and similar items intended to rotate with their shafts shall be keyed and/or firm press or shrunk fit on the shafts. Set screw fastening will be permitted only for minor items not subject to hoisting loads and where means for field adjustment is required.

h. All bolts used to connect moving parts, bolts carrying hoisting stresses and all other bolts, except guide rail bolts, subject to vibration or shock shall be fitted with adequate means to prevent loosening of the nuts and bolts. Bolts transmitting important shearing stresses between machine parts shall have tight body fit in drilling holes.

i. All machine work, assembling and installing shall be done by skilled and experienced mechanics using first-class, modern equipment and tools. All work shall be thoroughly high grade in every respect. All parts will be manufactured to high precision standards so that wearing parts will be readily interchangeable with stock repair parts with a minimum of field fitting.

j. All bearing and sliding surfaces of shafts, pins, bearings, bushings, guides, etc., shall be smoothly and accurately finished. They shall be assembled and installed in accurate

alignment and with working clearance most suitable for the load, speed, lubrication and other conditions of use.

k. Structural steel used for supporting and securing equipment and for the construction of car slings, etc., shall conform to the A.S.T.M. specification for Structural Steel for Buildings. Design stresses shall not exceed those specified in the local Building Code.

l. Castings of motor frames, sheaves, gear casings, etc., shall be of the best quality metallurgically controlled, hard, close grained gray machinery cast iron, free from blow holes, sand holes, or shrinkage cracks, ground to remove overruns, sanded and machined so as to leave a finish suitable for its particular application. Surfaces of sheaves and brake drums shall be entirely free from defects and shall show a hardness of not less than 220 Brinell.

C. Electrical Design Requirements (General)

1. The following typical requirements shall apply to all parts of the work and are supplementary to other requirements noted under the respective headings.

a. The design and construction of the motors shall conform to the requirements of these specifications and to the ASME Standards for Rotating Electrical Machinery with revisions issued to the first day when the work of this Contract was advertised.

1) Motors shall operate successfully under all loads and speeds and during acceleration and deceleration.
2) Motors shall be designed for quiet operation without excessive heat.
3) Insulation on motor coils and windings and on all insulated switch, relay, brake and other coils shall conform to the requirements of minimum Class “F” insulation, as defined in ANSI Standards for Rotating Electrical Machinery. All motors shall be impregnated twice.
4) Switches, relays, etc., on controller, starter and signal panels and similar items on other parts of the equipment shall be the latest improved type for the condition of use. They shall function properly in full accordance with the requirements of the machines controlled and with the specified operating requirements of the elevator. Any of these parts showing wear or other injurious effects during the guarantee period to the extent that abnormal maintenance is required or indicated shall be replaced with proper and adequate parts by the Contractor.
5) Contacts in elevator motor circuits which are intended to be opened by governors or other safety devices shall be copper to carbon or other approved non-fusing type.
6) Where required, controllers and other component parts of the installation shall be labeled in accordance with the latest codes and standards as adopted and/or otherwise modified by the AHJ.
7) Electrical equipment, motors, controllers, etc., installed under this contract shall have necessary CSA/US or UL/US listing as may be required by the AHJ. Equipment shall be labeled or tagged accordingly.

D. Materials, Painting and Finishes

1. Two (2) coats of rust inhibiting machinery enamel shall be applied to exposed ferrous metal surfaces in the pit that do not have a galvanized, anodized, baked enamel, or special architectural finishes.
2. Two (2) coats of rust inhibiting enamel paint to the machinery located within the machine room and secondary level (where applicable) as well as to the machine room floors.
3. Architectural metal surfaces of bronze or similar non-ferrous materials which are specified to be refinished, reclad and/or provided new, shall be sufficiently clear coated so as to resist tarnishing during normal usage for a period of not less than twelve (12) months after final acceptance by the Owner.
4. Identify all equipment including buffers, crosshead, safety plank, machine, controller, drive, governor, disconnect switch, etc., by 4" high numerals which shall contrast with the background to which it is applied. The identification shall be either decalcomania or stencil type.
5. Paint or provide decal-type floor designation not less than six (6) inches high on hoistway doors (hoistway side), fascias and/or walls as required by Code at intervals not exceeding 7'-0". The color of paint used shall contrast with the color of the surface to which it is applied.

E. Accessibility Requirements

1. Locate the alarm button and emergency stop switch at 35”, and floor and control buttons not more than 48” above the finished floor. The alarm button shall illuminate when pressed for visual acknowledgement to user.
2. Provide raised markings in the panel to the left of the car call and other control buttons. Letters and numbers shall be a minimum of 5/8” and raised .03” and shall be in contrasting color to the call buttons and cover plate.
3. The centerline of the new hall push button shall be 42” above the finished floor.
4. The hall arrival lanterns, or cab direction lantern provided shall sound once for the “up” direction and twice for the “down” direction. Design and locate fixtures per Federal standards.
5. Provide floor designations at each entrance on both sides of jamb at a height of 60” above the floor.

    a. Use cast metal plates and polished numbers secured with tamper-proof hardware.
    b. Designations shall be 2” high, raised .03” on a contrasting color background as selected by the Owner.

6. Provide an audible signal within the elevator to tell passenger that the car is stopping or passing a floor served by the elevator.
7. Where elevators operate at a speed greater than 200 fpm, provide a verbal annunciator to announce the floor at which the elevator is stopping where required by the AHJ.
8. Provide signal control timing for passenger entry/exit transitions per Federal and/or Local standards.
9. Ensure sill-to-sill running clearances do not exceed 1-1/4” at all landings served.
10. Provide visual call acknowledgment signal for car emergency intercommunication device.

1.7 DELIVERY / STORAGE / HANDLING / COORDINATION

A. Delivery and Storage of Material and Tools

1. Delivery, Storage and Handling:

    a. 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.
    b. Store materials under cover in a dry and clean location, off the ground.
    c. Remove delivered materials which are damaged or otherwise not suitable for installation from the job site and replace with acceptable materials.

2. The Owner shall bear no responsibility for the materials, equipment or tools of the Contractor and shall not be liable for any loss thereof or damage thereto.
3. The Contractor shall confine storage of materials on the job site to the limits and locations designated by the Owner and shall not unnecessarily encumber the premises or overload any portion with materials to a greater extent than the structural design load of the Facility.

B. Work with Other Trades / Coordination

1. Coordinate sequence of installation with other work to avoid delaying the Work.
2. Coordinate locations and dimensions of other work relating to the equipment scheduled for installation including pit ladders, sumps in pits; electrical service, electrical outlets, lights, and switches in pits and machine rooms, overhead and hoistways as it relates to the specific equipment.
3. Elevator contractor shall work in harmony with other trades required to successfully complete the work specified for this project.

C. Removal of Rubbish and Existing Equipment

1. On a scheduled basis, the Contractor shall remove all rubbish generated in performing work specified in the Contract Documents from the job site.
2. Any component of the existing elevator plant that is not reused under the scope of work specified in the Contract Documents shall become property of the Contractor and, as such, shall be removed from the premises at the Contractor’s sole expense.
3. The Contractor agrees to dispose of the aforementioned equipment and rubbish in accordance with any and all applicable Federal, State, and municipal environmental regulations, and further accepts all liability that may result from handling and/or disposing of said material.
4. Removal and disposal of hydraulic waste oil from this project shall be the responsibility of this contractor in accordance with all laws and regulations. Owner shall be registered as the generator of said waste and shall receive copies of all signed manifests.

D. Protection of Work and Property

1. The Contractor shall continuously maintain adequate protection of all their work from damage and shall protect the Owner’s property from injury or loss arising out of this contract.
2. The Contractor shall make good any such damages, injury or loss, except such as may be directly caused by agents or employees of the Owner.
3. The Contractor shall provide all barricades required to protect open hoistways or shafts per OSHA

regulations. Such protection shall include any necessary guards or other barricades for employee protections during and after the modernization procedure.

1.8 RELATED WORK

A. Work by Other Trades (Specified In Other Trade Sections)

1. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance to be performed by other trades and to be coordinated with the elevator trade contractor.

a. All trades shall include costs and fees for required permits and inspections for their respective work.
b. All trades shall coordinate work with other trades and work in harmony.

2. Section 26.00.00 Electrical

a. Installation of new main line power disconnect switch in the machine room. Disconnect shall be designed and located within 18" of strike side of machine room door accordance with 524 CMR 35:00: 2.26.4.1.

1) Provide isolated auxiliary dry contact switch in new three phase disconnect. Isolated switch shall allow the three-phase disconnect switch to be placed in the 'off' position without the elevator sensing a 'loss' of power' signal; thereby, not activating emergency battery lowering.
2) Installation of new electrical conduit and power feeders between the load side of new main line disconnect switch and new elevator control equipment.

b. Supply and install new dedicated circuits for all additional circuits required for Machine Room lights, outlets, pit Lights, pit outlets, and utilization equipment as required by 2020 NFPA 70 Article 620.23, 620.24, & 620.25
c. Provide auxiliary power feeds with required distribution load center (circuit breaker panel) for cab lighting or other specialty devices existing or to be provided new.

1) Voltage shall be 110 VAC with one 15 Amp circuit breaker or fuse for lighting of each individual elevator car enclosure.
2) Circuit breakers and/or fused disconnects shall be lockable in the "OFF" position in accordance with applicable code.

d. Installation of new LED permanent lighting fixtures (minimum of 2) with protective guards and 110-volt duplex GFI receptacles inside the machine room. Illumination shall be no less than 30 foot-candles at floor level. A light control switch shall be provided immediately adjacent to the machine room entrance door. This lighting shall be provided by a separate branch circuit in accordance with 2020 NFPA 70 Article 620.23
e. Provide elevator pit with a 110 volt GFI duplex receptacle and a permanent LED lighting fixture equipped with protective guard. Illumination shall be no less than 10 foot-candles

at pit floor level. A light control switch must be provided and so positioned as to be readily accessible from the pit entrance door or ladder.

f. Provide necessary telephone wiring with connection to local telephone service for remote elevator monitoring and/or two-way voice emergency communications systems. (Phone service utility provided by owner)

g. Provide a 20 Ampere GFCI general use receptacle located outside of the elevator machine room within 25' of the new HVAC equipment in accordance with NFPA 70 Article 210.63 (A) and lighting fixture. This receptacle shall be supplied by a separate branch circuit in accordance with 2020 NFPA 70 Article 620.25 (A).

h. Provide a 208/240 Volt, 20 Ampere separate branch circuit to provide power to the new HVAC equipment. The overcurrent protection device shall be located within the elevator machine room in accordance with 2020 NFPA 70 Article 620.25 (A).

i. If required, provide new LED lighting at each landing of the elevator to assure lobby areas meet the minimum requirement for lighting level as mandated by the code.

j. Provide any core drilling, cutting or patching required for work specified under each section.

3. Section 26.00.00 - Fire Alarm and Detection System

a. Confirm the smoke detector system meets the requirements of A17.1 and/or the Local Governing Authority.

b. If required, installation of fire emergency control interface provisions for automatic recall of the elevator(s) through operation of the fire detection system. Provisions shall be made for alternate designated fire recall landing with connection contingent on Codes recognized by the local governing authority. The interfacing contacts shall be wired to an electrical junction box located inside each elevator machine room for connection to the elevator control systems by the Elevator Contractor. Each wire shall be clearly labeled with its control function. Coordinate the type of interface required for the specific elevator control apparatus with the Elevator Contractor.

c. Where existing modules in the machine room meet the requirements, they shall be reused.

d. If required, Contractor shall provide and install new Fire Alarm Recall Control Cabinet.

e. If required, Contractor shall provide and install new Notifier Relay module for the activation of the "Primary Signal" when the appropriate elevator lobby smoke or heat detectors are initiated.

f. If required, Contractor shall provide and install new Notifier Relay module for the activation of the "Alternate Signal" when the appropriate elevator lobby smoke or heat detectors are initiated.

g. If required, Contractor shall provide and install new Notifier Relay module for the activation of the "Flashing Hat" within the elevator cab when the machine room smoke or heat detector is activated.

h. If required, Contractor shall provide and install new Notifier Relay module for the activation of the motorized damper at the top of the hoistway when general alarm condition in the building is initiated.

i. Contractor shall pay for and coordinate with Owners Contractor of Record for Fire Alarm to execute all required programming, one (1) pre-test, one (1) State test and modifications to the fire alarm system for code compliant fire recall operation.

j. Contractor shall also provide a team member to be on-site during one (1) pre-test, one (1)

State test to assist with any adjustments or corrections of recall operation and/or damper operation to satisfy State Elevator Inspector.

k. Upon completion of the final elevator, Contractor shall pay for and coordinate with Owners Contractor of Record for Fire Alarm to execute all required programming to remove old obsolete fire alarm devices, and demolish and remove all old obsolete devices, wiring, and conduits.

l. Contractor shall pay for all associated Fire Alarm Permits.

m. Include installation of all Conduits, wire-ways, boxes, and wiring related to the fire alarm recall system.

n. Provide any core drilling, cutting or patching required for work specified under each section.

4. Section 23.00.00 - HVAC/Mechanical

a. Installation of new HVAC provisions inside the machine room to maintain ambient temperature and humidity levels that are within the range of 50°F to 90°F and humidity in the range specified by the elevator equipment manufacturer to ensure safe and normal operation of the elevator.

1) Installation of HVAC (heat pump) condenser, which shall be placed outside of the building within 25’ of the Elevator Machine room and will be mounted to the masonry wall with a hanging wall-bracket.
2) Provide exterior wall mounted electrical service disconnect with watertight conduit to the exterior unit.
3) Provide inline electrical service switch in the machine room adjacent to the wall mounted split unit. Label the disconnect detailing where it is fed from.
4) Where applicable install the line set from the fan coil unit to the condensing unit using a line set cover kit in and seal all penetrations with proper fire caulking.
5) Install the condensation drain line in a manner that will prevent freezing or clogging and be securely mounted. Use solid PVC pipe.
6) If required, provide commercial grade condensation pump securely attached to the wall and use rigid tubing or pipe securely fastened to the wall based on industry standards for commercial HVAC installation.
7) Coordinate location of equipment with owner and elevator contractor to avoid code conflicts and to assure are installed per owners preferred locations and methods.
8) Provide any core drilling, cutting or patching required for work specified under each section.

b. Installation of any required hoistway and machine room smoke relief provisions in accordance with local laws.

1) Provide one (1) new side wall fire damper located in place of the existing open louver at the top of the hoistway prevent the accumulation of smoke and hot gases in accordance with ASME A17.1-2013 - 2.1.4 and conform with the International Energy Conservation Code into existing ventilation opening.
2) Damper shall be powered closed and to open upon general fire alarm signal, loss of power or thermostat high temperature.

3) Supply and install all wiring, disconnects, and switches for damper system.
4) If required, provide and coordinate installation new louver in place of existing design to prevent water infiltration, in matching color to the existing and properly sealed.

5. Section: General Construction/Architectural

a. Provide the machine room with a new self-closing, self-locking rated access door. Locking means shall be spring-type arranged to permit the door to be opened from the inside without a key. Include weather seals on machine room door.
b. Provide necessary patching, fire caulking, blocking, and repairing of masonry and/or dry wall in order to maintain fire rating.
c. Provide a class "ABC" fire extinguisher in electrical machinery and control spaces. Locate the extinguisher in close proximity to the access door.
d. Provide and install hoistway louver (vent) in place of existing if required for compatibility with new motorized damper assembly.
e. Remove or enclose any piping, ducts or wiring that is non-elevator related in the machine room.

B. Work by Elevator Contractor Included in the Filed Sub-Bid

1. The following requirements shall be applicable based on prevailing conditions at the site of work and/or mandated modifications for code compliance.

a. Provide the following signage, plates and tags:

1) Provide access doors to each elevator machine room space with signs that read "ELEVATOR MACHINE ROOM - NO STORAGE ALLOWED" and on separate lines: "DANGER - ACCESS ONLY ALLOWED WHEN ACCOMPANIED BY A MASSACHUSETTS-LICENSED ELEVATOR MECHANIC." The letter size shall be a minimum of ¾ inch high and shall be of a contrasting color with that of the background
2) Provide all required manufacturer data plates and installation-specific tags and signs of the types and styles containing information as required by applicable Codes and Standards as adopted and/or modified by the AHJ.

b. Where the pit extends more than 3 feet below the sill of the pit access door, provide a permanent fixed metal ladder where existing does not meet current code requirements.

1) Ladder shall extend no less than 48" above the sill of the access door. Handgrips shall extend from the ladder to a point no less than 48" above the sill of the access door where the ladder does not comply.
2) The rungs shall be a minimum of 16" wide. Where prevailing conditions prevent a 16" wide rung, the rung may be reduced to no less than 9".
3) The rungs shall be spaced 12" on center.
4) A clear distance of no less than 4 ½" from the centerline of the rungs and handgrips to the nearest permanent object in back of the ladder shall be provided.

a) Where prevailing conditions prohibit the installation of the required ladder as specified above, the Elevator Contractor shall coordinate requirements necessary for compliance with the Authority Having Jurisdiction.

c. Provide a standard railing conforming to Code on the outside perimeter of the car top on all sides where the perpendicular distance between the edges of the car top and the adjacent hoistway enclosure exceeds 300 mm (12 in.) horizontal clearance or as otherwise required by the Authority Having Jurisdiction.

d. It is the responsibility of the Elevator Contractor to work with the General Contractor for coordination of services to provide access and standby to all related work contractors in machine room, hoistway and pit.

1) Include up to eighty (80) separate standby man hours to allow access to elevator areas for related work trades in the base bid. Coordination of standby requirements shall be provided by the Elevator Contractor.

2) These hours are exclusively for restricted access areas, which require separate coordination, and where no work by the elevator contractor can be conducted at the same time. Separate time tickets to be provided detailing the standby work.

3) It is understood that there shall be times when elevator work and related contractor work can be conducted while the elevator contractor is working in the same area. These hours are not included in these allocated hours and are included in the base bid.

e. Contractor to assist in site coordination of related work equipment in the machine room, pit, and hoistway which includes; but not limited to: air conditioning system, disconnects, etc., location of GFCI/Pit Switches, etc. to coordinate placement is in accordance with Code.

f. The top surface of any setback or projection in the hoistway that measures 2” or more in width shall be beveled at an angle of not less than 75 degrees from horizontal. Each bevel plate shall be constructed from prime painted 14 gauge cold-rolled steel and installed so as to conform with ASME A17.1 elevator safety code as modified by, and/or in addition to codes and standards accepted by the AHJ.

g. The Contractor shall provide all necessary labor and costs to perform a pre-test of the fire alarm system prior to the acceptance test of the AHJ in their base bid.

~~1.9 ALTERNATES~~

~~The following alternatives are elective upgrades which constitute changes to the base scope of work specified. Pricing for each alternate upgrade is requested from the bidder with costs indicated in the appropriate space in the Request for Proposal (RFP). Contractor shall take into consideration, as part of the alternative pricing, alternate work that is required either in lieu of, or in addition to, work specified in the base scope and shall not duplicate costs.~~

~~1. Alternate No. 1 – Accelerated Schedule~~

~~a. Bidders are required to submit a separate price quotation to perform all work described in the Specification on a shift work basis whereby six (6) consecutive ten (10) hour shifts of field installation labor shall be employed Monday through Saturday for the entire length of the project.~~

~~b. The bidder shall submit a revised project completion schedule based upon the use of shift work for this elevator.~~

1.9 ACCELERATED SCHEDULE

Elevator contractor work is to be performed under an accelerated schedule within the 2nd Week of June to the 2nd Week of August (a maximum of Eight (8) Weeks window). Cost for accelerated schedule is to be included as the basis of the contract. To facilitate and allow for the requested elevator modernization scope accelerated schedule, normal working hours will be Monday through Saturday from 7:00 AM to 5:00 PM, except Legal Holidays as stipulated under Specification Section 01 01 00 Summary of Work. All elevator modernization work by elevator contractor should be completed by the 2nd Week of August to allow the General contractor to achieve Substantial Completion by 5 PM, August 31, 2026. (ADD No. 1)

1.10 WARRANTY / MAINTENANCE SERVICES

A. Contract Close-Out, Guarantee and Warranties

1. The Contractor agrees to certify that work performed in accordance with the Contract Documents shall remain free of defects in materials and quality of work for a period of one (1) year after final acceptance of the completed project.
2. The sole duty of the Contractor under this warranty is to correct any non-conformance or defect and all damages caused by such defect without any additional cost to the Owner and within fifteen (15) days of notification.
3. The express warranty contained herein is in lieu of all other warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.

4. In the event the Contractor fails to fulfill its obligations defined herein, the Owner shall have the express right to perform the Contractor's obligations and to charge the Contractor the cost of such performance or deduct an equal amount from any monies due the Contractor.

B. Maintenance Coverage

1. The following maintenance coverage apply:

a. Guarantee/Warranty Maintenance

1) Provide full comprehensive preventative maintenance services for a period of twelve (12) months after the final completion and acceptance of the project.
2) Warranty maintenance and related services shall be provided in accordance with the section Full Protective Maintenance Service as further specified.

3) Costs related to warranty maintenance shall be included in the base bid quotation.

C. Maintenance

1. Warranty Maintenance: Provide full protective maintenance on the specified equipment for a period of twelve (12) months from the date of final acceptance of the entire project as specified under the Full Protective Maintenance Service in "2" below.

   a. The price for this service shall be included in the base price or as otherwise specified in the contract documents.

2. Full Protective Maintenance Service: Note: All maintenance shall comply with Part 8 of the ASME A17.1 Code and modified or amended by the Authority Having Jurisdiction.

   a. Maintenance work shall be performed by trained personnel directly employed and supervised by the service contractor.
   b. Perform scheduled maintenance work and repairs during the regular working hours of regular working days of the trade. All work shall be coordinated with the Building Manager.

3. Provide emergency callback service and repair twenty-four (24) hours a day, seven (7) days a week, including holidays, between regular examinations at no extra cost to the Owner. The response time during normal working hours shall not exceed one (1) hour. Perform emergency repairs within four (4) hours to restore the equipment to operating order. The following conditions will require emergency callback services for elevators:

   a. Passenger entrapment.
   b. Failure or malfunction of control system.
   c. Shutdown of elevator.

4. Any callbacks responded to outside of regular working hours which are the direct cause of equipment malfunction, installation error, need for adjustments, etc.. during the twelve (12) month warranty period, the owner shall be not charged any additional cost for said callbacks.
5. Maintenance shall include monthly examination, adjustment, lubrication, repair or replacement of electrical and mechanical parts of all equipment and apparatus.
6. The maintenance services shall also cover re-lamping of machine room and pit lighting fixtures, signal and operating fixtures, communication system, cab ventilation system, monitoring and control panels. The disconnect means, fuses, car enclosures, car doors and hoistway entrances are excluded. Repair equipment whenever required and use only genuine standard parts produced and manufactured for equipment concerned.

   a. Include a minimum of one (1) hour of monthly labor for the specified scheduled preventive maintenance service tasks not including repair or testing.
   b. The performance of mandated inspections and tests of the equipment, as required by the AHJ, shall be included in this agreement.

1) Where testing is required to be performed after normal business hours, Contractor shall invoice the after-hours work at the premium portion of the hourly billing rate only.

c. Provide firefighter and emergency power tests and inspections as may be required.
d. During every scheduled maintenance visit, make sure the machine room, car top and pit areas are clean.
e. Adjust controls and maintain the equipment to meet the performance requirements as hereinafter specified.
f. If overtime covered repairs and maintenance services are requested and pre-approved by the Owner, the Contractor shall pay for the regular labor portion, and the Owner will cover the premium portion of the labor only.
g. Keep permanent record of inspections, maintenance services including lubrication procedures, emergency call-back services, repairs and replacements.
h. Maintain a complete set of updated wiring diagrams and schematic control diagrams in the machine room and provide the Owner with an additional record set.
i. Monitor rope tension and schedule shortening throughout the first 12 months of operation.

7. Supply all necessary lubricants, cleaning materials and repair parts required to keep the system in good working order during maintenance periods.
8. Maintain an adequate stock of spare parts for maintenance or repair work and minor callback service repairs within the confines of the building in areas designated and assigned by the Owner. Maintain a catalog of spare parts available on site.
9. Additional parts of other equipment required for maintenance and repair of the systems may be stored at the Contractor's facilities with the understanding delivery of same for emergency procedures must be made within two (2) hours to the job site.
10. Other materials and equipment normally not stocked by the Trade Contractor locally must be available within twenty-four (24) hours for delivery to the job site from remote facilities and/or Supplier Contractors responsible to the Contractor for stocking the materials or equipment.
11. If the requirements for stockade of parts as defined herein are not met on any item, immediately notify the Owner in writing as to the circumstances and provide a confirmed delivery date for the required materials and equipment.
12. Should it become necessary to work on the equipment, proper safety barricades shall be erected to protect people from all hazards.
13. Should the Owner request that the maintenance Contractor perform any work on the equipment of this Contract, but not included in the terms of the Contract, then payment for such work shall be based on the rates included in the Contract for time and material.
14. Cancellation: The Owner has the right to cancel this coverage on 30 days' notice.
15. Prior to the completion of the warranty period, this contractor shall apply for and perform the annual state inspection during regular time hours.

a. The elevator shall be turned over to the owner with a valid state inspection certificate with at least 6 + months until the next state inspection is due.
b. This contractor shall include the permit costs for the regular time inspection within this

project.

c. The owner will be responsible for the fire alarm and generator technicians required to perform the state inspection.
d. If the inspection is requested to be performed after hours, the contractor shall provide a proposal indicating the additional permit costs (max of 10% markup) and premium only labor cost for the after-hours inspection.
e. If the state inspection fails due to this contractor's negligence or non-compliant condition that had previously passed, then the costs to perform the retest shall be by this contractor.
f. If the state inspection fails solely due to the fault of the owner's sub-contractors or the owner, then the cost of said re-inspection shall by others.

D. Maintenance Control Program (MCP)

1. For each elevator, prepare and provide a written Maintenance Control Program (MCP) that complies with ASME A17.1/CSA B44 Section 8.6, including written documentation that details the test procedures for each and every test that is required to be performed by ASME A17.1/CSA B44. Assemble all MCP documentation, and supporting technical attachments, in a single MCP package and provide in both electronic and hard copy. Assemble entire hard copy MCP in 3-ring binders. For each elevator provided, the MCP must include only documentation and instruction that apply to the elevator specified.
2. For each elevator, provide an additional, separate binder that includes all maintenance, repair, replacement, call back, and other records required by ASME A17.1/CSA B44. The records binder must be kept in the elevator mechanical room, maintained by elevator maintenance and service personnel, and be available at all times to authorized personnel.
3. Provide detailed information regarding emergency service procedures and elevator installation company personnel contact information. Provide a listing of all tools to be provided to the Contracting Officer as components of the elevator system.

PART 2 - PRODUCTS

2.1 GENERAL DESCRIPTION

A. DCU Center – Arena Service Elevator – State ID: 348-P-343

1.	Quantity	One (1)
2.	Type	Hydraulic Elevator - Passenger
3.	Capacity (lbs)	11,200 lbs.
4.	Speed (fpm)	75 fpm
5.	Travel in Feet	Retain (field verify)
6.	Number of Landings	Two (2) @ 1,2
7.	Number of Openings	Two (2) @ 1,2
8.	Front Openings	Two (2) @ 1,2
9.	Rear Openings	None
10.	Operation	Simplex Selective Collective Operation
11.	Controller	New – Microprocessor Controller

12.	Starter	New – Solid State
13.	Battery Lowering	New
14.	Firefighter's Service	New - Phase I & Phase II
15.	Machine Type	Hydraulic
16.	Machine Room Location	Retain
17.	Power Unit	New – Dry Unit (60 HP, field verify)
18.	Hydraulic Oil	New
19.	Hydraulic Jack / Cylinder	Retain & Refurbish - Add Alternate New
20.	Hydraulic Piping	New as Required
21.	Overspeed Rupture Valve	New
22.	Scavenger Pump	New – Oil Return in Pit
23.	Car Frame	Retain and Refurbish
24.	Car Platform	Retain and Refurbish
25.	Guide Rails	Retain
26.	Car Guides	New – Heavy Duty
27.	Spring Buffers	Retain & Refurbish - Add Alternate New
28.	Car Door Type	Two Speed Center Opening
29.	Car Door Size	96 (inches) wide x 94 (inches)
30.	Car Door Panel	New – Stainless Steel # 4 Satin
31.	Car Door Operator	New – Dual Heavy Duty
32.	Car Door Equipment	New – Header/Track/Hanger/Clutch
33.	Hoistway Door Type	Two Speed Center Opening
34.	Hoistway Door Size	96 (inches) wide x 94 (inches)
35.	Hoistway Door Panels	New – Stainless Steel # 4 Satin
36.	Hoistway Entrance Sills	Retain and Clean
37.	Hoistway Entrances	Retain & Reface in SS # 4 Finish
38.	Hoistway Door Tracks and Hangers	New
39.	Hoistway Door Interlocks and Closers	New
40.	Emergency Exits / Top	New - 3502 Key and Contact
41.	Power Supply	Retain (480v, 3 Phase) – Verify in Field
42.	Electrical Wiring / Traveling Cable	New
43.	Electrical Conduit/Trough	New as Required
44.	Floor Lockout Feature	Card Reader Control / Wiring Provisions
45.	Number of Push Button Risers	One (1)
46.	Car Operating Fixtures	New – Vandal Resistant
47.	Hall Operating Fixtures	New – Vandal Resistant
48.	Car Traveling Lanterns	New – Vandal Resistant
49.	Hoistway Access Key Switch	New - Top and Bottom
50.	Emergency Communication	New – Integrated w/COP
51.	Door Reopening Device	New – 3D
52.	Emergency Cab Lighting	New – Integrated w/COP & Cab Lighting
53.	Car Ventilation	New – Three Speed Fan
54.	Car Enclosure	New – As specified
55.	Cab Interior Finishes	New – As specified
56.	Car Flooring	New – As specified
57.	Car Sill	New – As specified

2.2 MANUFACTURERS

A. Pre-Approved Equipment Manufacturers

1. The following manufacturer's equipment and materials have been pre-approved for use on this project.
2. Other equipment not specifically mentioned shall be considered for approval on an individual basis.

a. Controller - MCE, Smartrise, GAL, ECI, Virginia Controls or Approved Equal.
b. Car Door Equipment – GAL or Approved Equal
c. Hall Door Equipment – GAL or Approved Equal
d. Hall Door Interlocks – GAL or Approved Equal
e. Car Door Operator – GAL MOVFE, MOVFR3or Approved Equal
f. Fixtures – Innovation, Monitor, MAD, PTL or Approved Equal.
g. Door Protective Device – Janus Panachrome 3D or Approved Equal
h. Cab Finishes – EID, Draper, Hamilton or Approved Equal
i. Hydraulic Systems/Components – ITI Hydraulik, Canton, MEI, Vantage, Custom, or Approved Equal
j. Guide Shoes – Elsco, Elpro, HW or approved equal.
k. Hydraulic Oil Coolers – MEI or Approved Equal

3. Original Equipment Manufacturers may propose to substitute with their own branded equipment subject to the following:

a. All requirements of the specifications are met regarding performance, appearance, serviceability and support.
b. A full stock of all regular and critical replacement parts required for this project are maintained at a facility within fifty (50) miles of the project site.

1) Any parts not stocked at the above referenced facility shall be identified with the location of the nearest source and shall be available for next-day delivery upon demand.

c. All parts and software shall be made available for purchase to a qualified elevator maintenance firm with one (1) business day delivery without direct Owner involvement.

1) Provide details of parts supply facility and a list of current parts pricing for all major components required for the installation.

d. All specialized tools, equipment, software, and passwords, required to maintain, repair, adjust the operation, and perform code mandated inspections are provided to the Owner as part of the base installation.

1) Updates to these items shall be available via the parts supply facility referenced above.

e. Technical support of the product(s) shall be available to the Owner's elevator service provider.

2.3 CONTROL FEATURES / OPERATION

A. Simplex Selective Collective Operation

1. Provide simplex selective collective operation from a riser of hall push button stations.
2. The registration of one or more car calls shall dispatch the car to the selected floors.

   a. The car shall also respond to registered hall calls in the same direction of travel.
   b. Car and hall calls shall be canceled when answered.

3. Stops in response to calls that are registered in either the car or hall push button stations shall occur in the natural order of progression in which the floors are encountered, depending on the direction of car travel, and irrespective of the order in which calls are registered.
4. When the car has responded to the highest or lowest call, and calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
5. When the car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
6. When the car arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.

   a. After a pre-determined delay, if no car call is registered, the car shall respond to calls registered for the opposite direction. Car doors shall close immediately, re-open and respond to the call for the opposite direction.
   b. Hall lantern operation shall always correspond to direction of service.

7. When an empty car reverses direction at a landing with no hall calls, the doors shall not open and the hall lantern shall not operate.
8. If the car has no car calls registered and arrives at a floor where both up and down hall calls have been registered, the car shall respond to the hall call corresponding to the last direction of car travel. If, after making its stop, a car call is not registered and no other hall calls exist ahead of the car corresponding to its original direction of travel, the doors shall close and immediately reopen in response to the hall call for the opposite direction.
9. The car shall maintain its original direction at each stop until the doors are fully closed to permit a passenger to register a car call before the car reverses its direction of travel.

B. Independent Service Operation

1. The car operating station shall be equipped with a key-operated switch labeled "IND SER".
2. Locate the switch in the locked service compartment.
3. When placed in the "on" position the following shall occur:

   a. Group elevator - the elevator shall bypass corridor calls and travel directly to any floor

chosen by registration of a car call. Hall calls shall remain registered for service by another elevator in the group.

b. Simplex elevator - existing hall call registrations shall extinguish and hall buttons shall remain inoperative as an indication to passengers that there is no elevator service.

4. During Independent Service Operation, the elevator doors shall remain open at any landing until the door close or a car call push button is pressed and maintained until the doors are fully closed.
5. If more than one (1) car call is registered, all registered car calls shall extinguish when the elevator stops in response to the first call.
6. Fire Emergency Recall shall automatically override Independent Service Operation and engage Phase I - Fire Emergency Recall Operation following a period of approximately forty-five (45) seconds.

C. Inspection Service Operation

1. Provide a key operated switch in the main car operating panel locked service panel that, when turned to the 'ON' position, shall cause the elevator to be removed from service and placed in Inspection Service Operation.
2. The car shall move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with both the hall and car door panels in the closed and locked position.
3. The Inspection Service switch shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
4. The top of the elevator car shall be equipped with a control for limited operation of the car during repairs, maintenance and inspection conducted in the hoistway. The transfer of control to the top of car operating device shall cause that device to be the sole means of control for the elevator.

   a. Visual and audible indication shall be provided on the top of the car when Firefighters' Emergency Operation is initiated.

5. Power door operating equipment shall be rendered inoperative while the car is being operated in the Inspection Service mode with the exception of power closing of the door. The control system shall maintain closing power on the door while the elevator is moving under Inspection Service Operation.
6. The in-car Inspection Service switch shall be rendered ineffective when the top of car inspection control is activated.
7. Machine Room Inspection Operation and Inspection Operation with open door circuits shall be provided in accordance with A17.1 Safety Code, as modified and adopted, where required or allowed by the AHJ.

D. Hoistway Access Operation

1. Provisions shall be made to allow access to the hoistway through the use of hoistway access switches.
2. Operating the access switch shall permit the car to move at a speed not to exceed 150 feet per minute (0.75 meters per second) as per code with the hall and car doors in the open position to

obtain access to the top of the car or climb-in pit.

3. The car shall automatically stop motion when the car top is level with the hoistway door sill for access to top of car.
4. The access key switch(es) shall be keyed differently than other typical keys used in the operation of the elevator. Keying shall be in accordance with Security Group Classifications as required by applicable code.
5. Access operation shall be disabled when top of car inspection operation is in effect.

E. Firefighters' Emergency Operation

1. Phase I Emergency Recall Operation shall be provided for the car in accordance with ASME A17.1 code as modified under the applicable local or State law.
2. The main or auxiliary car operating station shall be provided with an indicator light and warning buzzer, each of which shall become activated whenever Phase I Operation is engaged.

    a. The warning buzzer shall cease to function once the car has completed the recall sequence and is positioned at the designated recall landing.
    b. The indicator light shall remain illuminated as long as Phase I Operation is activated.

3. A three-position, key-operated switch shall be provided on the designated recall landing to manually activate Phase I Operation.

    a. When activated, Phase I Operation shall be arranged so that to reset normal service, all cars must first be returned to the designated recall landing, after which the Phase I key-switch must be turned to the "OFF" position.

4. A "Standardized Fire Recall Key" shall be used in accordance with the applicable Chapter of the Public Law. This key shall be Yale #3502.

    a. The "Standardized Fire Recall Key" shall apply to both Phase I and Phase II Operation.
    b. The key switch shall be marked with the off position vertical and in the center. The key shall be inserted with the cut side facing up.

5. Phase II Emergency Recall In-Car Operation shall be provided for the car in accordance with ASME A17.1 code as modified under local or State law.
6. Locate controls required for Phase II In-Car Operation in a locked access cabinet in the main car operating panel.

    a. The cover of the locked access panel shall be engraved as required by local or State law.
    b. The locked access panel shall contain:

        1) Phase II key switch.
        2) Fire indicator light.
        3) Call cancel push button.
        4) Door open push button.
        5) Door close push button.

6) Run/Stop switch.

7) Other devices may be required by local law.

c. Engrave the Firefighters' Service operating Instructions on the inside of the locked cabinet door.

F. Low Oil Protection and Protective Device

1. Provide low oil protection operation and appropriate device(s) that will discontinue operation of the hydraulic elevator pump when:

a. The elevator stalls due to a low oil condition.
b. Fails to reach the landing in the up direction.

2. Pressure Switch:

a. Where the top of the cylinder head is above the top of the tank, provide a pressure switch between the cylinder and the valve which shall be activated by the loss of pressure at the top of the cylinder, and control the operation of the elevator as required by Code.

3. Provide an additional protective device that shall automatically return the elevator to the bottom landing, open the door and shut down the system.
4. The protective device shall be an integral part of the control system.

G. Hydraulic Auto Lowering

1. Provide automatic battery powered lowering feature for the hydraulic elevator.

a. In the case of normal power outage, the elevator shall be automatically lowered to the Main Lobby level.
b. The door shall open automatically to discharge passengers.
c. The elevator shall remain parked with its door closed and door open button operative until normal power is restored.

2. The control panel shall be located in the machine room or be an integral part of the control system.

a. It shall include necessary batteries, solid-state controls, charger, monitor lights and a test button.

3. Provide necessary circuitry within the controller to determine the difference between an "intentional" loss of power and an "actual" loss of power in order to prevent operation of the auto lowering unit when the main line disconnect has been opened for elevator servicing.
4. Provide necessary terminals for connection to an auxiliary switch in main line disconnect provided by others.

H. Door Operation

1. Car and hoistway doors shall be arranged to operate in unison without excessive noise or slamming in either direction of travel.

    a. Door opening speeds of two (2) feet per second shall be provided in conjunction with closing speeds of one (1) foot per second in accordance with governing code.
    b. Door operation shall commence as the car stops level at the floor and the machine brake is applied. Pre-door opening shall not be permitted.

2. Where the hoistway door and the car door are mechanically coupled, the kinetic energy of the closing door system shall be based upon the sum of the hoistway and the car door weights, as well as all parts rigidly connected thereto, including the rotational inertia effects of the door operator and the connecting transmission to the door panels.
3. The force necessary to prevent closing of the car and hoistway door from rest shall not exceed thirty (30) lbf. This force shall be measured on the leading edge of the door with the door at any point between one-third and two-thirds of its travel.
4. Door open and door close time shall be measured between the moment car door operation in either direction begins and the instant at which that cycle is completed.
5. When responding to either a car or corridor call, the amount of time that the elevator door remains stationary in the open position shall be adjustable up to sixty (60) seconds.

    a. Door open dwell time for a corridor call shall be separate of that for a car call, and in both cases, dwell time shall be canceled whenever the car door protection device is momentarily interrupted by passenger transfers, followed by a reduced door open dwell time of approximately one (1) second (adjustable) after the door protection device is cleared of obstructions.

6. The operation of the door protective device by interruption of one or more infrared light beams (dual or multi-beam non-contact) during the close cycle shall cause the immediate reversing of the doors to the full open position.
7. The door closing cycle shall be arranged so that, in the event the door protective devices become continually obstructed after the normal door open dwell time has expired and following a time interval of approximately thirty (30) seconds (adjustable), a warning tone shall sound and the door closing cycle shall commence at reduced speed and torque per applicable Code requirements.
8. The car operating station shall be provided with a “door open” and “door close” push button.

    a. Pressure on the “door open” button shall cause doors in the full open position to remain so, and doors engaged in the close cycle to reverse direction and assume the full open position so long as pressure remains applied to the button.
    b. The “door open” buttons shall also control the open cycle during Phase II - Emergency In-car Operation.
    c. The “door close” push button shall function on Independent Service and Phase II - Emergency In-car Operation as well as during normal automatic operations.

9. The car operating station shall be provided with a “door hold” push button.

a. Pressure on the "door hold" button shall cause doors in the full open position to remain in the open position and doors operating in the close cycle to reverse direction and travel to the full open position for an extended (adjustable) period of time to allow for loading and unloading.
b. The "door hold" feature shall be overridden when the elevator is on Fire Emergency Phase I and Phase II.
c. The "door hold" feature shall be canceled when the "door close" button is pressed.

10. Repeated attempts by the power door operator to open or close the door at any landing shall be monitored by the control system.

a. In the event the door fails to cycle properly after a preset (adjustable) number of attempts, the car shall either travel to the next stop or remove itself from service, depending upon whether the malfunction is in the open or close cycle.

11. Each hoistway door shall be provided with an automatic self-closing mechanism arranged so that the door shall close and lock if the car should leave the landing while the hoistway door is unlocked.
12. Car doors shall be arranged to prevent their being manually opened from inside the car unless the elevator is positioned within a floor landing zone.

2.4 MACHINE ROOM EQUIPMENT

A. Control Equipment (New)

1. Provide a microprocessor-based elevator control system.
2. Provide solid state "soft" starter.
3. System operating software shall be stored in non-volatile memory.

a. Elevator control relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, circuit boards, static motor drive units, wiring terminal blocks and related components shall be totally enclosed inside a free-standing metal cabinet with hinged access doors.
b. The motor starter may be located in its own cabinet where the physical size of the component prohibits installation within the elevator signal controller cabinet.
c. All electrical wiring inside the control equipment cabinet shall be performed in a neat manner with field wiring terminated at stud blocks provided inside the control cabinet.
d. Each wiring terminal shall be clearly identified according to the nomenclature used on the "as built" wiring diagrams. No more than two (2) field wires may be connected to any single terminal stud.
e. Spare wires shall be tagged according to their point of termination, bundled, and placed at the bottom of the control equipment cabinet.
f. Each electrical component within the cabinet shall be permanently identified with symbols identical to those used on the "as-built" wiring diagrams.
g. A data plate that indicates the edition of the Code in effect at the time of installation and/or alteration shall be provided in accordance with applicable code and requirements of ASME

A17.1 Code. The data plate shall be in plain view and securely attached on the mainline disconnect or on the controller.

h. Control equipment shall comply with requirements of all applicable Sections of the ASME A17.1 Code as approved and adopted by the AHJ.

i. The manufacturer's standard on-board "LCD" display shall be incorporated on the main processor board and/or otherwise incorporated in the controller cabinet. The "LCD" shall be capable of providing alpha-numeric characters to view the operational status of the elevator and/or group functions depending on the application. The display shall provide the user with necessary information for troubleshooting and reprogramming of the basic system parameters.

1) Where the "LCD" is not an integral part of the controller and troubleshooting/reprogramming requires the use of a separate tool, the tool shall be maintained in the machine room and accessible to service personnel. This tool, along with all technical documentation for the correct use of the tool, shall remain the property of the Owner.

2) Password protection of critical programming features is required to prevent accidental changes to life-safety and other non-typical control settings.

3) Where a separate dispatch or group control panel is provided, a separate "LCD" display shall be provided to view group functions.

4. In the event diagnostics and monitoring is accomplished via Field Service Tools, provide the required Field Service Tools with related control system appurtenances for diagnostic evaluations, system monitoring and field adjustments.

a. Provide instructions for proper use of such diagnostic tools and/or equipment with all coding and other operational requirements.

b. Maintain and calibrate the diagnostic tools and update the associated instructions and other related documents under the service agreement.

1) Should the agreement be cancelled for any reason by either party, maintenance and updating of diagnostic tools shall be provided to the Owner at the Contractor's cost without the need to purchase or lease additional diagnostic devices, special tools or instructions from the original equipment provider.

2) The Owner may request field and technical instructions be provided by the original installation contractor or manufacturer for proper servicing by other qualified elevator company personnel.

3) The established cost-plus profit, as previously specified, shall be applicable for the life of the system.

a) If the equipment for fault diagnosis is not completely self-contained within the controllers but requires a separate detachable device, that device shall be furnished to the Owner as part of this installation.

b) Such device shall be in possession of and become property of the Owner.

B. Hydraulic Power Unit / Motor (New) – Dry Unit

1. Provide a self-contained power unit which includes:

    a. Structural steel outer base.
    b. Tank support.
    c. Oil tight drip pan.
    d. Floating inner base to prevent metallic contact for mounting the motor pump assembly.
    e. Sound isolation panels to enclose the unit and reduce airborne noise.

2. Provide a reinforced overhead oil reservoir with a tight fitting tank over the oil control unit which includes:

    a. An oil fill strainer with air filter.
    b. An oil level gauge assembly.
    c. A self-cleaning strainer in the suction line.

3. The pump shall be for oil hydraulic elevator service with positive displacement screw type design for steady discharge with minimum vibration.
4. The drive shall be by multiple V-Belts and sheaves.

    a. The use of submersible pumps having more than a 40 HP motor is unacceptable.

5. Pump drive motor control shall utilize solid state motor starter circuitry to provide reduced current starting and maximum protection of the motor.
6. The oil control unit shall be of the manufacturer's own design but shall include relief, safety check, start and slow down valves.

    a. Use lowering and leveling valves for drop away speed, lowering speed, leveling speed and stopping speed to ensure smooth down starts and stops.
    b. Provide a valve for manual lowering of the elevator car in event of power failure and for use in servicing and adjusting the elevator mechanism.
    c. Design the tank shut-off valve for isolating oil in the power unit tank to ensure servicing and adjusting the elevator mechanism without removing oil from the tank.
    d. All valves shall be accessible for adjustment without removing the assembly from the oil line.

7. Manufacture the unit to operate under 600 psi working pressure.
8. Provide a thermostatically controlled heater in the oil tank to maintain proper operating oil temperature.

C. Sound Reducing Protection (As Applicable)

1. When operating in accordance with plans and specifications, the elevator equipment shall not generate noise levels in excess of NC-40 in occupied tenant spaces and shall be free of pure tones.

    a. For the purpose of this specification, a pure tone shall be defined as a sound level in any one-third octave band which is greater than 5 dB above both adjacent one-third octave bands, in

the range 45 to 11,200 Hz.

b. Provide sound reducing vibration isolation elements at all support points of elevator controllers and pump units.

1) The elements shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries.
2) All bolts through isolation elements, where necessary, are to incorporate resilient washers and bushings.

c. Locate the power unit at least one inch (1") from any walls.
d. Use flexible conduit with ground wire for pump unit connections.
e. Install an oil-hydraulic muffler in the oil line near the power unit.

1) The mufflers contain pulsation absorbing material inserted in a blow-out proof housing.
2) Rubber hose without blow-out proof features will not be acceptable.

D. Hydraulic Piping (New)

1. Provide all necessary pipes and fittings to connect the power unit to the jack.

a. Use minimum Schedule 80 steel pipe.
b. Provide a shut off valve in the machine room for maintenance service.

2. Adequately support the full run of pipe with isolation type support.

E. Hydraulic Oil Cooler (New)

1. Provide a thermostatically controlled industrial standard oil-air heat exchanger, sized and designed to maintain a maximum oil temperature of 100 degrees F.
2. The oil cooler shall contain the following components mounted on a unit-frame:

a. A heat exchanger.
b. A motor driving a screw pump to circulate the oil through the heat exchanger.

1) The screw pump motor may operate from a power source matching the main power unit pump motor thereby eliminating the need of a separate power feeder if desired.

c. A low-noise cooling fan designed to obtain the maximum cooling capacity of the unit.

3. Provide a separate disconnect for the oil cooler pump and fan to facilitate servicing.
4. The maximum noise level of the oil cooler assembly shall not exceed 50 dB.

2.5 HOISTWAY EQUIPMENT

A. Guide Rails / Brackets (Reuse)

1. Car guide rails, fishplates, rail brackets, backing support and related attachments shall be inspected to determine if unfavorable conditions exist that diminish the structural integrity of any component.

    a. In the event substandard conditions are disclosed by means of this inspection, the Contractor shall immediately inform the Consultant as to the exact nature of said problems and then undertake whatever repairs and/or replacements the Consultant may deem appropriate to remedy the situation.

2. Each stack of guide rails shall be individually examined to determine if excessive compression has occurred from building settlement.

    a. In the event such conditions are found to exist, each affected stack shall be cut off enough to relieve pressure.
    b. Jacking bolts shall be provided underneath each stack of both car guide rails.

3. Each stack of guide rails shall be realigned so that total deviation from plumb in any direction does not exceed 1/8” over the entire length of the hoistway and that DBG measurements never vary more than .030”.
4. As required, car guide rails joints shall be individually filled, filed and sanded to eliminate minor variations in adjoining machined surfaces.
5. Bottom of rail stack shall be sanded and painted to protect against corrosion.

B. Car Guides (New)

1. Provide heavy duty sliding type guide shoes with approved replaceable liners with positive feed lubricators.
2. Properly size the shoes according to speed, capacity and dimensions of the elevator.
3. Provide necessary guide mounting plates where mounting holes between the guide assembly and elevator frame do not align properly.

C. Electrical Conduit / Wiring / Traveling Cable (New)

1. Electrical wiring shall be provided.

    a. All wiring shall be stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
    b. Electrical wiring provided for hoistway interlock shall be of a flame-retardant type, capable of withstanding temperatures of at least 392 degrees Fahrenheit. Conductors shall be Type SF or equivalent.
    c. Each run of electrical conduit or duct shall contain no less than ten percent (10%) spare wires and, in any case, no fewer than two (2) spare wires.
    d. Crimp-on type wire terminals shall be used where possible.

2. Traveling cable shall be provided.

a. Each traveling cable shall be provided with a flame- and water-resistant polyvinyl chloride jacket.
b. Electrical wiring shall consist of stranded copper conductors, manufactured in compliance with ANSI/ASTM B174-71 and UL 62 requirements, and polyvinyl chloride insulation complying with ETT requirements of UL 62 and Article 400 of the National Electric Code.
c. Each traveling cable shall contain no less than 10% spare wires.
d. Traveling cable exceeding 100’ in length shall be provided with a steel wire rope support strand from which the cable shall be suspended.
e. Traveling cable must be contained within an approved electrical conduit to within 6’ of the final suspension point in the hoistway.
f. Each traveling cable shall be arranged to provide no fewer than six (6) individually shielded pairs of 20-gauge wire and arranged to contain no less than one (1) coaxial cable for CCTV remote monitoring.
g. Traveling cable conductors that terminate at a hoistway center box shall be connected to stud blocks provided for that purpose.

1) Each wiring terminal shall be clearly identified by its nomenclature as shown on the “as built” wiring diagrams and solderless, crimp-on type wire terminals shall be used where possible.

h. The attachment of a traveling cable to the underside of the elevator car shall be performed so that a minimum loop diameter of thirty times (30x) the cable diameter is provided.
i. Pre-hang the cables for at least twenty-four (24) hours with ends suitably weighted to eliminate twisting during operation.

3. Rigidly supported EMT conduit, flexible metal conduit and galvanized steel trough shall be utilized throughout the hoistway.

a. Both EMT and flexible conduit shall be connected on either end by use of compression fittings or secured in place with metal clamps sized in accordance with the diameter of conduit utilized.

1) Wire or plastic wire ty-raps shall not constitute an acceptable means of fastening.

b. The use of flexible metal conduit shall be limited to runs not greater than three feet (3’) in length.
c. All abandoned or unused electrical conduit shall be removed from the hoistway.
d. Existing conduit and wiring duct may be reused if suitable for the application.

1) Reuse of existing conduit/duct shall be at the discretion of the Consultant.

D. Normal and Final Terminal Stopping Devices (New)

1. Provide normal terminal stopping devices to stop the car automatically from any speed obtained under normal operation within the top and bottom overtravel, independent of the operating devices,

final terminal stopping device and the buffers.

2. Provide final terminal stopping devices to stop the car automatically from the speed specified within the top clearance and bottom overtravel.
3. The terminal stopping devices shall have rollers with rubber or other approved composition tread to provide silent operation when actuated by the cam fixed to the top of the car.

    a. Terminal stopping devices that are not mechanically operated (i.e.: magnetic proximity) shall be provided by the manufacturer of the control equipment, intended for use as a terminal limit, and designed for reliable operation in the hoistway environment.

4. Final terminal limits shall be pinned so as to prevent movement after final adjustment where required by the AHJ.

2.6 PIT EQUIPMENT

A. Car Buffer (Reuse)

1. Existing car buffers shall be reused.

    a. Pit channels, related supports and fastenings shall be inspected for damage and to determine if the structural integrity of any component is diminished by the effects of rust or other unfavorable conditions.

        1) In the event defects are found, the Contractor shall immediately inform the Consultant and undertake whatever repair and/or replacement the Consultant may deem appropriate.

    b. Surface rust shall be removed from all reused components.
    c. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.
    d. The buffer shall undergo testing in accordance with ASME A17.1 Code as modified by, and/or in addition to codes and standards accepted by the AHJ.

B. Car Buffers (New) – Add Alternate No. 1

1. Provide buffer with necessary blocking and horizontal steel braces under the car.
2. Provide spring type buffers.
3. The buffer shall be tested and approved by a qualified testing laboratory.
4. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.
5. Support buffers from the pit floor level with all required blocking and bracing steel members.

C. Jack Unit (Reuse)

1. The existing jack shall be reused.
2. The jack shall undergo the following work:

a. Check plunger for smooth surface and eliminate burrs where necessary.
b. Verify plunger sections are securely attached with minimum seam.
c. Check stop-ring for proper fit.
d. Renew internal babbitt-lined, guide bearing, packing or seals where necessary.
e. Clean drip ring around cylinder top to provide adequate drainage.
f. Check mounting hardware and welds where applicable.
g. Check secure attachment of head.
h. Remove rust and apply rust inhibiting paint.

3. Perform static load test of the jack unit to determine if there are any failures of the cylinder wall.

D. Hydraulic Cylinder/Piston Assembly (New) – Add Alternate No. 1

1. Existing hydraulic cylinder, piston and pit channels shall be removed.
2. The jack hole shall be fitted with a schedule 40 waterproof PVC casing.
3. The jack assembly shall be of sufficient size to lift the gross load at the rated speed to the height specified and shall be factory tested to ensure adequate strength and freedom from leakage.

   a. No brittle material, such as grey cast iron, shall be used in the jack construction.

4. The base components of this assembly shall be a cylinder, cylinder head and plunger.
5. Include new spring buffers in the pit as part of this scope of work.
6. Installation shall be plumb and at the exact center of the car guide rail DBG.
7. Channel iron pit structure shall be provided as a means of support and attachment.
8. The hydraulic cylinder shall be constructed from heavy steel pipe meeting ASTM-A53, grade B standards with a forged seamless end cap, threaded inlet fitting and brackets for pit channel attachment.

   a. Outside walls of the cylinder shall receive no less than three (3) applications of an approved corrosion inhibiting compound.

9. The cylinder head and flange shall be machined from carbon steel and designed to provide a collision point for the plunger stop ring.

   a. The head shall be equipped with two (2) packing rings separated by a single lantern ring, an oil wiper ring, a bronze guide ring, and an air bleed port.
   b. The flange shall be arc welded to the upper end of the cylinder to provide a means of attachment and mating surface for the head.
   c. Immediately prior to seeking final acceptance of the completed project as specified herein, the Contractor shall renew both packing rings in the cylinder head.

10. The plunger shall be constructed from precision ground steel pipe meeting ASTM-A53, grade B standards.

    a. In cases where multiple plunger sections are necessary, threaded coupling with neoprene O-ring seals shall be provided.

b. The upper end of the plunger shall be fitted with an inset steel plate that is fillet welded to the inner walls of the plunger and then drilled and tapped for platen plate attachment.
c. A heavy steel stop ring shall be arc welded outside the plunger near the bottom end.

11. Contractor shall be responsible for the costs necessary to remove sand, water and spoils within the existing casing upon removal of the existing hydraulic cylinder.

a. Include the cost of the hole cleanout and disposal as part of the base bid. It is understood that the owner may be required to sign the manifest as the generator of the waste.
b. Upon installation of new PVC liner, back fill sand into space between drill casing and PVC liner to trap it if necessary. Rod and water hose sand into space, while adding more sand until secure.
c. Leave a roughened rebate in the top surface of the concrete fill where it meets liner for the insertion of non-shrink grout.
d. Fill the water-stopping rebate with equipment grout, make level with surrounding slab and tight against casing.

12. In the event any unforeseen below-ground conditions arise, Contractor shall save and hold harmless against delay and allow for the additional time to solicit bids for subcontractors for performance of the work required. The Contractor shall supply all standby labor required for performance of site inspections for access and performance of the remedial work per the labor rates provided in this solicitation.
13. Unforeseen below-ground conditions include but are not limited to: Any physical obstruction, hindrance or cave in discovered found below ground that requires excavation, using any additional special hoisting or excavating equipment, when an existing well casing would have to be removed or when such installation would require modifications to the building, or any structure, hoistway, or entrance for access for specialty equipment mentioned above, or removal/reinstallation of rail(s) for the same ingress/egress of specialty equipment Scavenger.

E. Jack Hole Re-Drilling (Not Included in Scope of Project)

1. In the event of unforeseen conditions that require re-drilling of the jack hole and removal of resultant debris should the existing jack hole collapse as a result of the removal of the hydraulic cylinder PVC casing and the associated hole cleanout, the contractor shall submit request for additional costs through an official change order request with appropriate backup documentation per the contract agreement and specifications for owner review and approval.
2. The change order shall include extra costs necessary to overcome underground rocks, solid debris or water and complete satisfactory drilling of the jack hole.
3. Should the existing well hole and or casing diameter be inadequate for installation of new cylinder and PVC liner, contractor can propose to drill a larger well hole of sufficient diameter to accommodate the new equipment if required and submit all backup with a change order request for review and approval.
4. As part of this change order, include removal of spoils, dirt and debris, back filling and mounting.

a. Should any annular space exist between the outside of casing and shaft hole, back fill space with sand to wedge casing in place. Then rod and water hose sand into space, while adding

more sand, until refusal.

5. Pricing for drilling should be based on the actual price received from the drilling subcontractor plus a maximum of five (5%) percent markup or as otherwise detailed in the contract agreement with the owner.
6. Where licensed elevator mechanics are required to standby while driller performs his scope work, the elevator contractor shall include this cost as a separate line item on this additional pricing request at hourly rates acceptable to the owner.

F. Scavenger Pump (New)

1. Provide a positive displacement, rotary type pump for the hydraulic elevator.

   a. The pump shall have a 1/3 HP motor capable of pumping 100 ft. vertically.
   b. The pump shall be self-priming and self-lubricating.
   c. The pump shall be equipped with a 100-mesh screen strainer.
   d. The pump housing shall be constructed of brass with stainless steel internal parts and shall have a 3.5-gallon reservoir.

2. Mount oil return pump off the pit floor and connect it to the jack unit and the oil tank with tubing.

G. Overspeed (Rupture) Valve (New)

1. Where required by Code, an overspeed valve shall be provided and installed so that it will cause the flow of oil from the hydraulic jack through the pressure piping to cease when such flow exceeds a preset value relative to car speed in accordance with applicable codes.

H. Pit Stop Switch (New)

1. Where pit depth does not exceed 67”, the elevator pit shall be provided with a push/pull or toggle switch that is conspicuously designated “EMERGENCY STOP” and located so as to be readily accessible from the hoistway entrance on the lowest landing served at a height of approximately 18” above the floor.

   a. This switch shall be arranged to prevent the application of power to the hoist motor and machine brake when placed in the “OFF” position.

2.7 HOISTWAY ENTRANCES

A. Hoistway Entrances (Reuse)

1. Hoistway entrance sills, sill supports, entrance frames and supports shall be reused and refurbished.

   a. Hoistway entrances that have become distorted or bent shall be straightened, plumbed, reset to the proper width dimension and reinforced, as necessary.
   b. Hoistway Entrances shall be refaced/wrapped in stainless steel #4 finish material.

c. Provide 14-gauge steel fascia plates that extend at least the full width of the door and be secured at hanger support and sill with oval head machine screws.

1) Reinforce fascia to allow not more than ½" of deflection.
2) Provide fascia plates where the clearance between the edge of the loading side of the platform and the inside face of the hoistway enclosure exceeds the code allowed clearance.

d. Provide 14-gauge steel toe guards that extend 12" below any sill not protected by fascia.

1) The toe guards shall extend the full width of the door and shall return to the hoistway wall at a 15-degree angle and be firmly fastened.

e. Remove oil, dirt and impurities on new and existing apparatus and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.
f. Apply rust inhibiting primer to door frames, headers and struts showing signs of corrosion.

B. Entrance Frame Refacing/Wraps (New)

1. The entrance frames on floors 1 and 2 shall be wrapped in stainless steel satin no. 4 finish to match new hall doors. Include end caps and silver caulking at seams.

C. Entrance Door Panels (New)

1. Provide a new elevator hoistway entrance door reusing existing entrance frame.
2. Each new door shall be as follows:

a. Hollow metal construction.
b. 1-1/2-hour fire-rated test approved with required label.
c. Manufactured of cold rolled furniture steel.
d. Flush design both sides.
e. Rigidly reinforced.
f. Sound deadened.

3. Where conditions warrant, and where otherwise required by code, equip all hoistway landing doors with one-piece full height non-vision wings of material and finish to match hall side of door panels.
4. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in existing sill grooves with a minimum clearance.

a. The guide mounting shall permit their replacement without removing the door from the hangers.
b. A steel fire stop shall be enclosed in each guide.

5. Provide a special key so that an authorized person can open any landing door when the car is elsewhere.

a. The key hole shall be not less than 3/8” in diameter and shall be fitted with a stainless steel or bronze ferrule to match related equipment.

6. Finish all door panels to match elevator entrances in stainless steel satin no. 4 finish.

D. Tracks / Hangers / Closers / Related Equipment (New)

1. Formed or extruded steel landing door hanger tracks shall be provided.
2. Each landing door panel shall be suspended from a pair of door hanger assemblies that are compatible with the hanger tracks.

a. Hanger assemblies shall be directly mounted to the door panel using 3/8” diameter or better hardware.
b. Solid steel blocks shall be used where job-site conditions dictate the use of spacers between hanger assemblies and the landing door panel.
c. Hanger assemblies shall be adjusted or shimmed so that door panels are suspended in a plumb manner with no more than 3/8” vertical clearance to the cab entrance threshold.
d. Upthrust rollers shall be adjusted for minimal operating clearance against the bottom edge of the hanger track.
e. Means shall be provided to prevent hangers from jumping the track.
f. Blocks shall be provided to prevent rollers from overrunning the end of the track.

3. In multi-speed door arrangements, provisions shall be made to interlock the individual panels so all panels close should the normal door panel relating means fail.
4. Where stack effect is present, the use of spirators by Smartork or approved equal to assist with door closing shall be acceptable. The contractor shall coordinate their design and selection with the building’s wind engineer to ensure that the door system is fully adjustable for the full range of expected wind pressures.
5. Where applicable, each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing manufacturers’ standard type access key at all landings served.

a. Drill each hoistway door to accommodate manufacturers standard lock release key and install escutcheon.

1) Escutcheon shall be brushed stainless steel to match door panels where required.
2) Aluminum shall be provided at all other typical floors.

6. Where multi-speed side slide door panels exist, provide a secondary interlocking device that will prevent separation of the panels should the sill closer or relating cable(s) fail.

E. Interlocks / Unlocking Devices (New)

1. Each set of landing doors shall be provided with a complete electromechanical interlock assembly.

a. Each interlock assembly shall consist of:

1) A switch housing with contacts.
2) Lock keeper.
3) Clutch engagement/release subassembly.
4) Associated linkages.

b. Arrange the lock so that individual leading door panels (side slide) are locked when in the closed position.

2. Non-typical mounting arrangements for interlocks and/or related mechanisms must receive prior approval from the Consultant.
3. Each hoistway door interlock assembly shall be provided with an emergency release mechanism utilizing a drop-leaf type access key at all landings served.

a. Each hoistway door shall accommodate manufacturers standard lock release key with escutcheon.

1) The key hole shall be fitted with a metal ferrule that matches the door finish.

F. Hoistway Door Bottom Guides / Safety Retainers (New)

1. The bottom of each side sliding type hoistway door panel shall be equipped with a minimum of two (2) guiding members.

a. Metal mounting angles shall be secured to the integral panel frame structure; and when conditions warrant, additional external metal support plates or angles shall be installed to ensure the integrity of the panel frame is not compromised.
b. Guides shall be manufactured of low friction non-metal material with sufficient strength to withstand forces placed on door panels per ASME A17.1 Standards.
c. Each guide assembly shall incorporate a steel wear indicator and be so designed to permit sliding member replacements without removal of door panel(s) from top hanger devices.
d. Panels shall be hung with a maximum vertical clearance of 3/8 inch between top of sill and bottom of panel and the guide shall engage the sill groove by not less than 1/4 inch.

2. The bottom of each side sliding type hoistway door panel shall be equipped with a guiding member safety retainer to prevent displacement in the event of primary guide means failure.

a. A metal reinforcement (12 gauge stainless or galvanized steel) shall be installed between the two (2) primary guiding members (a.k.a. “Z” bracket).
b. The reinforcement shall be designed with a minimum length of eight (8) inches or the maximum possible length that will fit between the primary members and a minimum overall height of two and one-half (2.5) inches secured on the internal face of the door panel. (Hoistway side)
c. The retainer shall be set with the supplemental safety angle 3/8 inch into the corresponding sill groove; and be capable of preventing displacement of the panel no more than 3/4 inch

with an applied force of 1125 lbf at right angles over an area twelve (12) inches x twelve (12) inches at the approximate center of the door panel.

2.8 CAR EQUIPMENT / FRAME

A. Car Frame (Reuse)

1. The existing car frame assembly shall be refurbished to as new condition and reused.
2. Individual car frame members, platform isolation framework, door operator support structure, related bracing and hardware shall be inspected for any indication of damage or distortion.

    a. Where damage is detected, the Contractor shall immediately inform the Consultant and then undertake corrective action deemed appropriate by the Consultant to remedy the condition.

3. Provide new elastomer isolation pads for all existing platforms where pads are presently installed.
4. The car frame, door operator support and related bracing shall be modified or reconfigured as necessary in order to accommodate new cab enclosure and/or master door operating equipment specified herein.

B. Car Platform (Reuse)

1. The existing platform shall be modified to accommodate the new apparatus specified herein.

    a. Where necessary, the underside of the platform shall be refurbished and treated with fire-rated material.
    b. At Contractor's option or when conditions warrant, provide a totally new platform in lieu of repairs, modifications and upgrades specified above.
    c. Provide two new layers of ¾" marine grade plywood subfloor and prepare for new finished flooring.

C. Automatic Leveling / Releveling / Positioning Device (New)

1. Equip the elevator with a floor leveling device which shall automatically bring the car to a stop within 1/4" of any floor for which a stop has been initiated regardless of load or direction of travel.
2. This device shall also provide for releveling which shall be arranged to automatically return the elevator to the floor in the event the elevator should move below or above floor level in excess of 1/4".
3. This device shall be operative at all floors served and whether the hoistway or car door is open or closed provided there is no interruption of power to the elevator.
4. A positioning device shall be part of the controller microprocessor systems.

    a. Position determination in the hoistway may be through fixed tape in the hoistway or by sensors fitted on the driving machine to encode and store car movement.
    b. Design the mechanical features and electrical circuits to permit accurate control and rapid acceleration and retardation without discomfort.

5. Where there are consecutive floors/stops that are short stops, the system shall be capable of distinguishing between the two landing zones without error.
6. All equipment and logic required for leveling system to properly function with short stops shall be included.

D. Top-of-Car Inspection Operating Station (New)

1. An inspection operating station shall be provided on top of the elevator car.
2. This station shall be installed so that the controls are plainly visible and readily accessible from the hoistway entrance without stepping on the car.
3. When the station is operational, all operating devices in the car shall be inoperative.
4. Provide the following control devices and features:

    a. A push/pull or toggle switch designated "EMERGENCY STOP" shall be arranged so as to prevent the application of power to the hoist motor or machine brake when in the "off" position.
    b. A toggle switch designated "INSPECTION" and "NORMAL" to activate the top of car Inspection Service Operation.
    c. Push button designated "Up", "Down" and "Enable" to operate the elevator on Inspection Service (the "Enable" button shall be arranged to operate in conjunction with either the "Up" or "Down" button).
    d. An indicator light and warning buzzer that are subject to activation under Phase I - Fire Emergency Recall Operation.

E. Car Enclosure Work Light / Receptacle (New)

1. The top and bottom of the car shall be provided with a permanent LED lighting fixture and 110-volt GFI receptacle.
2. Light control switches shall be located for easy accessibility from the hoistway entrance.
3. Where sufficient overhead clearance exists, the car top lighting fixture shall be extended no less than 24" above the crosshead member of the car frame.
4. Light bulbs shall be guarded so as to prevent breakage or accidental contact.

F. Emergency Exits / Top (New)

1. Ensure they operate as per code and have proper electrical contacts and mechanical locks on the exterior of the cab enclosure.
2. The top of car emergency exit shall be so arranged that it can be opened from within the car by means of a keyed spring-return cylinder-type lock having not less than a five-pin or five-disk combination and opened from the top of the car without the use of a key.
3. No other key to the building shall unlock the emergency exit lock except access switch keys which may be keyed alike.

    a. Keys shall be assigned in accordance with MA 524 CMR (Yale # 3502)

4. The top emergency exit shall be provided with an electric contact so located as to be inaccessible from the inside of the car.

G. Master Door Power Operator System – VVVF/AC (New) - Dual Design

1. Provide dual heavy-duty master door operators on top of the elevator car enclosure for power opening and closing of the cab and hoistway entrance door panels.
2. The operators may be of the pivot/lever or belted linear drive type
3. Operators shall utilize an alternating current motor, controlled by a variable voltage, variable frequency (VVVF) drive and a closed-loop control with programmable operating parameters.
    a. System may incorporate an encoder feedback to monitor positions with a separate speed sensing device or an encoderless closed-loop VVVF-AC control to monitor motor parameters and vary power applied to compensate for load changes.
4. The type of system shall be designated as a high-speed operator, designed for door panel opening at an average speed of two (2.0) feet per second and closing at approximately one (1.0) foot per second.
    a. Reduce the closing speed as required to limit kinetic energy of closing doors to within values permitted by ASME A17.1 as may be adopted and/or modified by the AHJ.
5. The door shall operate smoothly without a slam or abrupt motion in both the opening and closing cycle directions.
    a. Provide controls to automatically compensate for load changes such as:
        1) Wind conditions (stack effect).
        2) Use of different weight door panels on multiple landings.
        3) Other unique prevailing conditions that could cause variations in operational speeds.
    b. Provide nudging to limit speed and torque in conjunction with door close signaling/closing and timing devices as permitted by ASME A17.1 as may be adopted and/or modified by the AHJ. Nudging shall be initiated by the signal control system and not from the door protective device.
6. In case of interruption or failure of electric power from any cause, the door operating mechanism shall be so designed that it shall permit emergency manual operation of both the car and corridor doors only when the elevator is located in the floor landing unlocking zone.
    a. The hoistway door shall continue to be self-locking and self-closing during emergency operation.
    b. The door operator and/or car door panel shall be equipped with safety switches and electrical controls to prevent operation of the elevator with the door in the open position as per ASME A17.1 Code Standards.
    c. Provide zone-lock devices as required by ASME A17.1 as may be adopted and/or otherwise modified by the AHJ.
7. Construct all door operating levers of heavy steel or reinforced extruded aluminum members.

8. Belts shall be designed for long life and operate noise free.
9. All components shall be designed for stress and forces imposed on the related parts, linkages and fixed components during normal and emergency operation functions.

    a. All pivot points, pulleys and motors shall have either ball or roller-type bearings, oilite bronze bushings or other non-metallic bushings of ample size.

10. Provide operating data / data tag permanently attached to the operator as required by applicable code and standards.

H. Car Door Hangers / Track / Gate Switch (New)

1. Provide sheave type two-point suspension hangers and track for the car door.

    a. Sheaves shall be hardened steel, not less than 3-1/4 inches in diameter with sealed grease packed precision ball bearings.
    b. The upthrust shall be taken by a roller mounted on the hanger and arranged to ride on the underside of the track.

2. The track shall be of formed cold rolled steel or cold drawn steel and shall be rounded on the track surface to receive the hanger sheaves.

    a. The track shall be removable and shall not be integral with the header.

3. Provide a gate switch that mounts directly to the car door track.

    a. The gate switch shall prevent movement of the elevator until such time as it signals the control equipment that the car door has physically closed.

I. Car Door Panels (New)

1. Provide no less than 1” thick, 14-gauge hollow metal flush construction panel(s), reinforced for power operation and insulated for sound deadening.
2. Paint the hoistway side of each panel black and face the cab side with 16-gauge sheet steel matching the existing returns or in selected material and finish as otherwise directed by Owner/Architect.
3. The panels shall have no binder angles and welds shall be continuous, ground smooth and invisible.
4. Drill and reinforce panels for installation of door operator hardware, door protective device, door gibs, etc.

    a. Provide each door panel with two (2) removable laminated plastic composition guides, arranged to run in the sill grooves with minimum clearance.
    b. The guide mounting shall permit their replacement without removing the door from the hangers.

5. Provide the meeting edge of center opening doors with necessary continuous rubber astragal bumper strips.

a. These strips shall be relatively inconspicuous when the doors are closed.

J. Door Reopening Device / “3D” (New)

1. Provide a combination infrared curtain and 3D door protection system.
2. The door shall be prevented from closing and will reopen when closing if any one of the curtain light rays is interrupted or should an object enter the 3D detection zone.
3. The door shall start to close when the protection system is free of any obstruction.
4. The infrared curtain and 3D zone protective system shall provide:

a. Protective curtain field not less than 71” above the sill.
b. 3D protective zone field not less than 61” above the sill.
c. Accurately positioned infrared lights to conform to the requirements of the applicable handicapped code.
d. Modular design to permit on board test operation and replacement of all circuit boards without removing the complete unit.
e. Self-contained, selectable 3D zone timeout feature to allow for closing at nudging speed with audible signal.
f. Automatic turning-off of the 3D zone in the event of three (3) consecutive 3D triggers.

1) Light curtain shall continue to operate after 3D system timeout.

g. Selectable control of the 3D zone operation on an “always-on” or “as doors close” basis.
h. Controls to shut down the elevator when the unit fails to operate properly.
i. Provide audible and visual notification of pending door closing.

2.9 FINISH / MATERIALS / SIGNAGE

A. Material, Finishes and Painting

1. General

a. Cold-rolled Sheet Steel Sections: ASTM A366, commercial steel, Type B
b. Rolled Steel Floor Plate: ASTM A786
c. Steel Supports and Reinforcement: ASTM A36
d. Aluminum-alloy Rolled Tread Plate: ASTM B632
e. Aluminum Plate: ASTM B209
f. Stainless Steel: ASTM A167 Type 302, 304 or 316
g. Stainless Steel Bars and Shapes: ASTM A276
h. Stainless Steel Tubes: ASTM A269
i. Aluminum Extrusions: ASTM B221
j. Nickel Silver Extrusions: ASTM B155
k. Bronze Sheet: ASTM B36(36M) alloy UNS No. C2800 (Muntz Metal)
l. Structural Tubing: ASTM A500
m. Bolts, Nuts and Washers: ASTM A325 and A490

n. Laminated / Safety Tempered Glass: ANSI Z97.1

2. Finishes

a. Stainless Steel

1) Satin Finish: No. 4 satin, long grain.

b. Sheet Steel:

1) Shop Prime: Factory-applied baked on coat of mineral filler and primer.
2) Finish Paint: Two (2) coats of low sheen baked enamel; color as selected by the Architect.
3) Steel Equipment: Two (2) coats of manufacturer's standard rust-inhibiting paint to exposed ferrous metal surfaces in both the hoistway and pit that do not have galvanized, anodized, baked enamel, or special architectural finishes.

3. Painting

a. Apply two (2) coats of paint to the machine room floor.
b. Apply two (2) coats of paint to pit floor.
c. Apply two (2) coats of paint to retained pit equipment.
d. Apply two (2) coats of paint to car frame and platform surfaces.
e. Apply two (2) coats of clear lacquer to bronze or similar non-ferrous materials to prevent tarnishing during a period of not less than twelve (12) months after initial acceptance by the Owner or Agent.
f. Identify all equipment including buffers, car apron, crosshead, safety plank, machine, controller, drive, governor, disconnect switch, etc., by 4" high numerals which shall contrast with the background to which it is applied. The identification shall be either decalcomania or stencil type.
g. Paint or provide decal-type floor designation not less than four (4) inches high on hoistway doors (hoistway side), fascia and/or walls as required by A17.1 as may be adopted and/or modified by the AHJ. The color of paint used shall contrast with the color of the surface to which it is applied.

B. Designation and Data Plates, Labeling and Signage.

1. Provide an elevator identification plate on or adjacent to each entrance frame where required by the AHJ.
2. Provide floor designation cast plates at the elevator entrance, on both sides of the jamb at a height of sixty (60) inches to the baseline of floor indication.

a. Floor number designations and Braille shall be 2" high, 0.03" raised and stud mounted.

3. Identify the designated medical emergency services elevator with 3" high international symbol at the elevator entrance on both sides of the jamb.
4. Provide raised designations and Braille markings to the left of the car call and control buttons of

the car operating panel(s).

a. Designations shall be a minimum of 5/8” high, 0.03” raised and stud mounted.

5. Provide the elevator with data and marking plates, labels, signages and refuge space markings complying with A17.1 Elevator Safety Code as may be adopted and/or otherwise modified by the AHJ.
6. Owner shall select the designation and data plates from manufacturer’s premium line of plates.

2.10 FIXTURES / SIGNAL EQUIPMENT

A. General - Design and Finish

1. The design and location of the hall and car operating and signaling fixtures shall comply with the ADAAG and local requirements of the AHJ.
2. The operating fixtures shall be selected from the manufacturer's premium line of fixtures.
3. All fixtures to be heavy-duty, tamper-proof, vandal resistant design.
4. The layout of the fixtures including all associated signage and engraving shall be as approved by the Owner / Architect.
5. Where no special design is shown on the drawings, the buttons shall be as follows:

   a. Stainless steel convex type as selected by the Owner from the manufacturer's premium line of push buttons.
   b. The button shall have a small round indicator on the button with LED call registered light.

6. Where no special design is shown on the drawings, the faceplates shall be as follows:

   a. All Floors: Stainless-steel faceplate with No. 4 finish and tamperproof screws

7. Mount passenger elevator fixtures with tamperproof fasteners and service elevator fixtures with tamperproof screws. The screw/fastener and key switch cylinder finishes shall match faceplate finish.
8. Where key-operated switch and or key operated cylinder locks are furnished in conjunction with any component of the installation, four (4) keys for each individual switch or lock shall be furnished, stamped or permanently tagged to indicate function.
9. All caution signs, pictographs, code mandated instructions and directives shall be engraved and filled with epoxy in code required colors.

B. Main Car Operating Panel (New)

1. Provide a main car operating push button panel on the inside front return panel of the car.
2. All buttons to be heavy-duty, tamper-proof, vandal resistant design.
3. The car operating panel shall be flush mounted with hinged applied type, one (1) piece faceplate with heavy-duty concealed hinges.

a. Mount all key switches that are required to operate and maintain the elevator exposed on the car station except those specified within a locked service cabinet.

4. The push buttons shall become individually illuminated as they are pressed and shall extinguish as the calls are answered.
5. The operating panel shall include:

a. A call button for each floor served, located not more than 48" above the cab floor.
b. "Door open" / "Door close"/ "Door Hold".
c. "Alarm" button, interfaced with emergency alarm. The alarm button shall illuminate when pressed.
d. "Emergency Stop" switch per local law located at 35" above the cab floor.
e. Self-dialing, hands-free emergency communication system actuation button with call acknowledging feature and ASME A17.1. design provisions.
f. Three (3) position firefighter key operated switch, call cancel button and illuminated visual/audible signal system with mandated signage engraved per ASME A 17.1 Standards as modified by the AHJ.

1) The "Standardized Fire Recall Key" shall be used in accordance with the applicable Chapter of the Public Law. This key shall be Yale #3502.
2) The key shall be removable in each position. The hold position in the center shall be vertical. The key shall be inserted with the cut side facing up.

6. Locked Firemen's Service cabinet, keyed in accordance with local Code, containing required devices and signals in accordance with ASME A17.1 Standards.
7. Provide a locked service cabinet flush mounted and containing the key switches required to operate and maintain the elevator, including, but not limited to:

a. Independent service switch.
b. Light switch.
c. Fan switch.
d. G. F. I. duplex receptacle.
e. Emergency light test button and indicator.
f. Inspection Service Operation key switch.
g. Dimmer for cab interior lighting.

8. Car operating panel shall incorporate:

a. An integral (no separate faceplate) digital L.E.D. floor position indicator.
b. Emergency light fixture (without a separate faceplate) and black-filled engraved unit I.D. number or other nomenclature, as approved by Owner.
c. A "No Smoking" advisory.
d. The rated passenger load capacity in pounds.

9. Post Inspection Certificate behind an opening in the car operating locked service cabinet door that

is fitted with a flush-mounted clear Plexiglas without a frame sized in accordance with MA 524 CMR.

C. Car Position Indicator (New)

1. The position of the car in the hoistway shall be indicated by the illumination of the position indicator numeral corresponding to the floor at which the car has stopped or is passing.

    a. Provide 2" high, ten (10) segment LED type position indicator with direction arrows, integral with the car operating panel.
    a. Provide Lexan cover lens with hidden support frame behind fixture plate to protect the indicator readout.

D. Voice Annunciator (New)

1. Provide a voice annunciator in the elevator.
2. The device features shall comply with the requirements of ADAAG and local accessibility requirements.
3. Coordinate size, shape and design with Designer and other trades.
4. The system shall include, but not limited to:

    a. Solid state digital speech annunciator.
    b. Playback option.
    c. Built-in voice amplifier.
    d. Master volume control.
    e. Audible indication for selected floor, floor status or position, direction of travel, floor stop, seismic operation, firefighter service and nudging.

5. Locate all associated equipment in a single, clearly labeled enclosure located either in the machine room and/or on car top.

E. Corridor Push Button Stations / Riser (New)

1. A riser of push button signal fixtures shall be provided on all floor.
2. All buttons to be heavy-duty, tamper-proof, vandal resistant design.
3. Each signal fixture shall consist of the following:

    a. Flush mounted with appropriate back boxes.
    b. Illuminating tamper-resistant push buttons measuring 3/4" at their smallest dimension as selected by the Owner.
    c. A recessed mounting box, electrical conduit and wiring as needed.
    d. Install fixtures for ADA/MAAB Compliance

4. Intermediate landings shall be provided with fixtures containing two (2) push buttons while terminal landings shall be provided with fixtures containing a single push button.
5. Integrated into the main lobby fixture, include firefighter key switch, fire recall jewel, line

communication jewel, reset key switch and required engraving.

6. Push button signal fixtures shall be installed within ADA reach range above the floor and shall be installed both plumb and flush to the finished wall.

    a. Standardize the final distance on all floors.

7. Fixture faceplates shall be installed on front wall in place of existing.

    a. Design cover plates to be large enough to cover all existing cutouts in order to eliminate the need for any patching.
    b. Include “In Case of Fire” engraving on all hall button faceplates.

F. Car Direction Lanterns (New)

1. Provide a car traveling lantern with visual and audible signal in the edge of each return post.
2. Utilize a vandal resistant type lens. Use tamperproof screws with surface mount faceplate.
3. Car lantern shall indicate the direction of travel when doors are 3/4 open.
4. The unit shall sound once for the “up” direction and twice for the “down” direction.

    a. Provide an electronic chime with adjustable sound volume.

5. All fixtures to be heavy-duty, tamper-proof, vandal resistant design.

G. Hoistway Access Switch (New)

1. Install a cylindrical type keyed switch at top terminal in order to permit the car to be moved at slow speed with the doors open to allow authorized persons to obtain access to the top of the car.
2. Where there is no separate pit access door, a similar switch shall be installed at the lowest landing in order to permit the car to be moved away from the landing with the doors open in order to gain access to the pit.
3. Locate the switch in the hall call push button station, or its current location (not to create a blank backbox) at the top and bottom terminal landings where required if allowed by the Authority Having Jurisdiction.
4. This switch is to be of the continuous pressure spring-return type and shall be operated by a cylinder type lock having not less than a five (5) pin or five (5) disc combination with the key removable only in the “OFF” position.

    a. The lock shall not be operable by any key which operates locks or devices used for other purposes in the building and shall be available to and used only by inspectors, maintenance men and repairmen in accordance with A17.1 applicable Security Group.

5. Existing provisions that meet the criteria may be updated with keyed switches to match new apparatus provided for uniformity of systems within the building.

2.11 CAR ENCLOSURE

A. Elevator Cab (New)

1. Please see drawing A101 and guidance per the following details.
2. Contractor to remove existing cab shell and cab finishes completely, and provide new enclosure, finished walls, and canopy as further specified.
3. Steel Shell:

    a. Minimum of 14-gauge furniture steel reinforced and designed to accept finished wall panels. Finish shell panels with one coat of rust inhibitive primer and two coats of enamel paint. Apply 1/8" thick, rubberized sound deadening material to the hoistway side of the shell.
    b. All panels shall have minimum radii. Apply sealant beads to panel joints before bolting together with lock washers.
    c. Reinforce rear wall to prevent damage from impact. Provide an angle bracket or similar means at the bottom of the rear wall where the wall meets the platform.

        1) The reinforcement shall span the entire width of the rear wall and be adequately secured to prevent displacement should the wall be struck by materials being loaded into the elevator.
        2) The method of attachment shall not interfere with interior wall finishes or car flooring.

4. Canopy:

    a. Canopy construction methods shall match the shell walls. Use minimum of 12-gauge furniture sheet steel and adequately support canopy to comply with the loading requirements of the Code.
    b. Provide necessary cutouts for the installation of fan and top emergency exit. Arrange exit panel to swing up using a heavy duty piano hinge.
    c. The exit panel shall have dual locks, necessary stops and a handle.
    d. When in the locked position, the panel shall be flush with the interior face of the canopy with hairline joints.
    e. Construction techniques for wall panels shall apply to ceiling construction. Locate top emergency exit inconspicuously. Construct and mount the exit panel to prevent light leakage around the perimeter of panel.
    f. Interior side of canopy to be painted with a coat of primer and one coat of industrial white enamel paint.
    g. Include integrated 4” toe board and handrail system on car top.

5. Front Returns and Entrance Columns

    a. Stationary reinforced return panels set up to accommodate new car station.
    b. Minimum No. 14 USSG stainless steel plane surface, No. 4 brushed finish.
    c. Include full height internal steel reinforcement in the corners of the return jambs to prevent damage from impact.

6. Transom

   a. Full width, reinforced transom.
   b. Finish to be No. 14 USSG, #4 brushed finish.
   c. Header: Reinforced header support angle.

7. Cab Lighting

   a. Fully recessed LED light fixtures installed within the flush canopy and to include protective guards on the car top to prevent damage and capable of holding the weight of a person stepping on them
   b. Equivalent to Man-D-Tec Areobeam Platinum LED lights in white finish with six (6) fixtures equally spaced in the ceiling as selected and confirmed by the Architect.
   c. Include Mad-D-Tec Emergency Backup ELS-LED-2C system to power two (2) of the fixtures.
   d. Further details shown on drawings.
   e. Final design approved by Owner.

8. Finished Wall Panels

   a. Lower Wall(s): 5WL® - Rigidized Metals, color, texture and finish as confirmed by the architect.
   b. Upper Wall(s): Flush Plastic Laminate:, color, texture and finish as selected by the architect, edged in aluminum frame with butted (hairline joint) seams designed for future application of vinyl wrap graphics by others.
   c. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

9. Wall Base

   a. Provide a 4” high stainless steel applied base with concealed vent slots.

10. Cab Handrails

   a. Handrails on rear and side walls.
   b. Finish: Satin stainless steel, #4.
   c. Flat bar profile.
   d. 3/8” x 4”
   e. Brushed aluminum stand-offs.
   f. Inconspicuous fastenings
   g. Fastenings shall not protrude from brackets or form rough edges.
   h. Height above finished cab floor to conform to code requirements per MAAB Attached to/through the lower panel.

11. Lower Bumper Rails

   a. Flat bar profile bumper rails

b. 3/8” x 4”
c. Brushed aluminum stand-offs.
d. Inconspicuous fastenings
e. Fastenings shall not protrude from brackets or form rough edges.
f. Height to best protect cab walls at minimum of 6” from finished floor to bottom of rail.
g. Attach to/through the lower panel.

12. Cab Enclosure Fan

a. Provide an exhaust type three (3)-speed blower type fan unit equal to Man-D-Tec MVS-OE with FG-W (White) cover grill, mounting accessories and necessary cab enclosure modifications.

1) Fan unit shall include self-lubricating motor with housing rubber mounted for sound vibration isolation.

b. Provide a key switch in the elevator cab enclosure for control of fan unit designed for 3 speeds.
c. Provide necessary wiring and approved conduit to properly connect fan unit with power source and control key switch.

13. Pad Hooks

a. Provide on sides and rear panels.
b. Aluminum.
c. Threaded.
d. Through-Bolt protective pad studs.

14. Protection Pads

a. Provide for front, sides and rear.
b. Pads shall be fitted, quilted, fire retardant canvas.
c. Adequately filled to provide proper protection.
d. Arrange stitching to prevent sagging.
e. Heavy duty eyelets properly spaced to suit pad hooks.
f. The protective lining shall clear the floor by not less than 4”.
g. Architect to select color of pads. If none is selected, utilize light gray color.

15. Floor and Car Sill

a. Sub-Flooring:

1) Remove existing diamond plate floor and wood sub-floor.
2) Substantial support members to be provided to prevent bowing.
3) Provide New Sub-Floor: Two Layers of ¾” think marine grade plywood.

b. Floor Covering:

1) Provide ¼" Aluminum Diamond Plate in Finish as Selected by the Architect (Dull or Polished)
2) Installation in accordance with manufacturer's product specifications.
3) Approved underlayment and adhesive material.
4) Limit seams and avoid any seams in the center of the entry path of the elevator. Coordinate layout of flooring with the Architect.
5) Utilize countersunk flat head stainless steel hardware for attachment to the sub-floor.
6) Design flooring to be removable and replaceable from within the finished cab without the need for disassembly or removal of cab walls.

c. Cab Sill

1) New car sill and related through-bolt hardware to be provided.
2) Length to accommodate door in fully open position.
3) Minimum thickness 7/16"
4) Grooves machine planed, minimum guide clearance.
5) Machine rabbetted to receive new toe guard.
6) Securely fastened to platform.
7) Shimmed to level.
8) Parallel to centerline of elevator guide rails.
9) Material will be Stainless Steel.

16. Cab Doors

a. Provide Standard 1" thick, 14-gauge hollow metal flush construction, reinforced for power operation and insulated for sound deadening. Paint hatch side of doors black and face cab side with 16-gauge sheet steel in selected material and finish.

1) The door panels shall have no binder angles. All welds shall be continuous, ground smooth and invisible.
2) Drill and reinforce doors for installation of door operator hardware, door protective device, door gibs, etc.
3) Two door guides per door.

a) Nonmetallic.
b) Adjustable.
c) Long wearing.
d) Minimum clearance in sill groove.
e) Quiet in operation.

4) Clad door on car side and leading edge with:

a) Minimum No.16 USSG
b) No. 4 brushed stainless steel as selected by the Architect.

5) All fastenings invisible on car side and leading edge.

B. Cab Fabrication and Installation

1. Maintain accurate relation of planes and angles with hairline fit of contacting panels and/or surfaces.
2. Any shadow gaps (reveals) between panels shall be consistent and uniform.
3. Unless otherwise specified or shown on the drawings, for work exposed to view use concealed fasteners.
4. Maximum exposed edge radius at corner bends shall be 1/16". There shall be no visible grain difference at the bends.
5. Form the work to the required shapes and sizes with smooth and even curves, lines and angles. Provide necessary brackets, spacers and blocking material for assembly of the cab.
6. Interior cab surfaces shall be flat and free of bow or oil canning. The maximum overall deviation between the low and high points of 24" x 24" panel section shall not exceed 1/32".
7. Make weights of connections and accessories adequate to safely sustain and withstand stresses to which they will be subjected.
8. All steel work except stainless steel shall be painted with an approved coat of primer and one (1) coat of baked enamel paint.
9. Cab Finish Warranty Enhancement

    a. Contractor shall be responsible for engineering and installing interior cab finishes in a manner that will withstand all code mandated inspections and test procedures. Failure of finishes during testing shall be repaired by the contractor without expense to the owner. Any objections or qualifications to material selection or design shall be identified during the engineering of the cab interior drawings for review by the owner.

2.12 EMERGENCY LIGHTING / COMMUNICATIONS / SIGNALING

A. Battery Back Up Emergency Lighting Fixture and Alarm (New)

1. Provide a self-powered emergency light unit.

    a. The light fixture shall contain a minimum of two (2) LED lamps. Flush mount the light fixture in the main car station. The fixture shall have a flush milk white lens.

2. Provide a car-mounted battery unit including solid-state charger and testing means enclosed in common metal container.

    a. The battery shall be rechargeable nickel cadmium with a ten (10) year minimum life expectancy. Mount the power pack on the top of the car.
    b. Provide a 6" diameter alarm bell mounted directly to the battery/charger unit and connected to sound when any alarm push button or stop switch in the car enclosure is operated.
    c. The bell shall be configured to operate from power supplied by the building emergency power generator. The bell shall produce a sound output of between 80-90 dBa (measured from a distance of 10') mounted on top of the elevator car.

1) Activation of this bell shall be controlled by the stop switch and alarm button in the car operating station.
2) The alarm button shall illuminate when pressed.

3. Where required by Code for the specific application, the unit shall provide mechanical ventilation for at least one (1) hour.
4. The operation shall be completely automatic upon failure of normal power supply.
5. Unit shall be connected to normal power supply for car lights and arranged to be energized at all times, so it automatically recharges battery after use.

B. Emergency Voice Communication / Telephone (New)

1. A hands-free emergency voice communication system shall be furnished in the car mounted as an integral part of the car operating panel.

   a. Necessary wires shall be included in the car traveling cable and shall consist of a minimum of one shielded pair of 20AWG conductors.
   b. 120V power shall be provided to power the hands-free device.

2. The telephone shall be equipped with an auto-dialer and illuminating indicator which shall illuminate when a call has been placed and begin to flash when the call has been answered.

   a. Engraving shall be provided next to the indicator which says, “When lit help is on the way".

3. In addition to the standard “Alarm” button, a separate activation button shall be provided on the car operating panel to initiate the emergency telephone and place a call.

   a. The telephone must not shut off if the activating button is pushed more than once.
   b. The telephone shall transmit a pre-recorded location message only when requested by the operator and be provided with an adjustable call time which can be extended on demand by the operator.
   c. Once two-way communication has been established, voice prompts shall be provided which instruct the operator on how to activate these functions as well as alerting the operator when a call is being attempted from another elevator in the building.

4. The system shall be compatible with ring-down equipment and PBX switchboards.
5. The system shall be capable of serving as the audio output for an external voice annunciation system.

   a. Conversation levels shall measure 60 dbA or higher and measure 10 dbA above ambient noise levels.
   b. The device shall be provided with a self-diagnostic capability in order to automatically alert building personnel should an operational problem be detected.

6. The phone shall be able to:

a. Receive incoming calls from any On-Site Rescue Station (when provided or required).
b. Receive incoming calls from other off-site locations via the public telephone system.
c. Acknowledge incoming calls and automatically establishing hands-free two-way communications.

1) If no On-Site Rescue Station is provided, the hands-free device shall have built in line consolidation which will allow up to six (6) elevators to be called individually from outside the building over a single telephone line and up to eighty (80) elevators if an On-Site Rescue Station is provided.

7. The emergency elevator communication system shall require a maximum of one (1) telephone line.

a. The system must provide line sharing capability to eliminate the need for a dedicated telephone line.
b. The line sharing function must ensure that the emergency telephones always receive dialing priority even if the line is in use and that the emergency telephones can be called into from an off-site location.

8. The system shall provide its own four-hour backup power supply in case of a loss of regular AC power.
9. The system must provide capability for building personnel to call into the elevator and determine the charge state of any backup batteries provided for the emergency telephones.
10. Pushing the activation button in any of the elevator car stations will cause any on-site Rescue Station (where provided or required) or security telephone to ring.

a. If the on-site call is not picked up within thirty (30) seconds, the call will be automatically forwarded to a twenty-four (24) hour off-site monitoring service.
b. The arrangements and costs of the off-site monitoring and telephone line shall be by others.

11. All connections from the junction box to the telephone system shall be done by the Elevator Contractor where existing provisions can be reused.
12. New telephone lines, where required, shall be provided and interfaced by others.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Inspection

1. Study the Contract Documents with regard to the work as specified and required so as to ensure its completeness.
2. Examine surface and conditions to which this work is to be attached or applied and notify the Owner in writing if conditions or surfaces are detrimental to the proper and expeditious installation of the work. Starting the work shall imply acceptance of the surfaces and conditions to perform the work

as specified.

3. Verify, by measurements at the job site, dimensions affecting the work. Bring field dimensions which are at variance with those on the accepted shop drawings to the attention of the Owner. Obtain the decision regarding corrective measures before the start of fabrication of items affected.
4. Cooperate in the coordination and scheduling of the work of this section with the work of other sections so as not to delay job progress.

3.2 INSTALLATION/ PROJECT PHASING

A. Installation

1. Modernize the elevator, using skilled personnel in strict accordance with the final accepted shop drawings and other submittals.
2. Comply with the code, manufacturer's instructions and recommendations.
3. Coordinate work with the work of other building functions for proper time and sequence to avoid delays and to ensure right-of-way of system. Use lines and levels to ensure dimensional coordination of the work.
4. Accurately and rigidly secure supporting elements within the shaftways to the encountered construction within the tolerance established.
5. Provide and install motor, switch, control, safety and maintenance and operating devices in strict accordance with the submitted wiring diagrams and applicable codes and regulations having jurisdiction.
6. Ensure sill-to-sill running clearances do not exceed 1-¼" at all landings served.
7. Arrange door tracks and sheaves so that no metal-to-metal contact exists.
8. Reinforce hoistway fascias to allow not more than 1/2" of deflection.
9. Isolate cab fan from canopy to minimize vibration and noise.
10. Remove oil, dirt and impurities and give a factory coat of rust inhibitive paint to all exposed surfaces of struts, hanger supports, covers, fascias, toe guards, dust covers and other ferrous metal.
11. Prehang traveling cables for at least twenty-four (24) hours with ends suitably weighted to eliminate twisting after installation.
12. Pack openings around oil line with fire resistant, sound isolating glass or mineral wool.
13. Provide isolation pad between platen head and car structure.
14. Sound isolate pump unit and controller from building structure.
15. After installation, touch up in the field, surfaces of shop primed elements which have become scratched or damaged.
16. Lubricate operating parts of system as recommended by the manufacturer.
17. Contractor shall provide a project schedule as part of the Bid based on the following:

    a. Include one (1) day of simulated operation, with or without door operation, while not allowing passenger use.
    b. Consultant punch list inspection report shall be performed after acceptance testing by the AHJ for the elevator.
    c. Contractor shall complete all punch list items issued by both the AHJ and the Consultant prior to turn-over for beneficial use by the Owner.

B. Project Phasing

1. Phase I - Final design development and contractors' preliminary work procedures to becompleted within four (4) weeks from date of contract award.

    a. Prevailing conditions review and layout.
    b. Selection meeting for aesthetic design and finishes with Owners' designee.
    c. Filing for required permits or other governing authorities work procedure requirements.

2. Phase II - Submittal approvals and confirmations shall be completed within six to eight (6-8) weeks from date of contract award.

    a. Selection confirmations.
    b. Manufacturer's shop drawings applicable, i.e., fixtures, cab, machine room layouts, doors, etc.
    c. Engineering data acknowledgment applicable, i.e., power, heat, structural loads.
    d. Delivery dates for major component suppliers, i.e., controls, machinery, fixtures, cabs, etc.
    e. Posting of permits or other governing agency authorizations to proceed.
    f. Proposed work implementation schedule based on the aforementioned procedures/confirmations.

3. Phase III - Mobilization of Final Design Approvals

    a. Revision confirmations. (Equipment, etc.)
    b. Preliminary work procedures.
    c. Schedule confirmations.

4. Phase IV – Implementation

    a. Modernize elevator per ~~Schedule approved during submittals~~ **1.9 Accelerated Schedule. (ADD No. 1)**

5. Contractor shall provide a project schedule as part of the Bid based on the following:

    a. Include one (1) day of simulated operation, with or without door operation, while not allowing passenger use.
    b. Consultant punch list inspection report shall be performed after acceptance testing by the AHJ for each individual elevator.
    c. Contractor shall complete all punch list items issued by both the AHJ and the Consultant prior to turnover for beneficial use by the Owner and removal of the next elevator for modernization.

3.3 FIELD QUALITY CONTROL

A. Inspection and Testing

1. Upon completion of the work on the elevator specified herein, the Contractor shall, at its own expense, arrange and assist with inspection and testing as may be required by the A.H.J. in order to secure a Certificate of Operation.

B. Substantial Completion

1. The work shall be deemed "Substantially Complete" for this unit when, in the opinion of the Consultant, the unit is complete, such that there are no material and substantial variations from the Contract Documents, and the unit is fit for its intended purpose.
2. Governing authority testing shall be completed and approved in conjunction with inspection for operation of the unit; a certificate of operation or other required documentation issued; and remaining items mandated for final acceptance completion are limited to minor punch list work not incorporating any life safety deficiencies.
3. The issuance of a substantial completion notification shall not relieve the Contractor from its obligations hereunder to complete the work.
4. Final completion cannot be achieved until all deliverables, including but not limited to training, spare parts, manuals, and other documentation requirements, have been completed.

C. Contractor's Superintendent

1. The Contractor shall assign a competent project superintendent during the work progress and any necessary assistant, all satisfactory to the Owner. The superintendent shall represent the Contractor and all instructions given to him shall be as binding as if given to the Contractor.

3.4 PROTECTION / CLEANING

A. Protection and Cleaning

1. Adequately protect surfaces against accumulation of paint, mortar, mastic and disfiguration or discoloration and damage during shipment and installation.
2. Upon completion, remove protection from finished surfaces and thoroughly clean and polish surfaces with due regard to the type of material. Work shall be free from discoloration, scratches, dents and other surface defects.
3. The finished installation shall be free of defects.
4. Before final completion and acceptance, repair and/or replace defective work, to the satisfaction of the Owner, at no additional cost.
5. Remove tools, equipment and surplus materials from the site.

B. Barricades and Hoistway Screening

The Contractor shall provide barricades where necessary in order to maintain adequate protection of areas in which work specified by the Contract Documents is being performed, including open hoistway entrances. Fabrication and erection as all barricades shall be in compliance with applicable OSHA regulations.

3.5 DEMONSTRATION

A. Performance and Operating Requirements

1. The Passenger Elevator shall be adjusted to meet the following performance requirements:

a. Speed within five percent (5%) of rated speed in the up direction under any loading condition.
b. Leveling: within ±1/4" as measured between the car entrance threshold and the landing sill on any given floor under any loading condition.
c. Typical Floor-to-Floor Time: (Recorded from the doors start to close on one floor until they are 3/4 open at the next floor) under various loading conditions.

Hydraulic Passenger Elevator	22.0 – 25.0 seconds.

d. Door Operating Times

Door Type	Opening	Closing
Two speed center opening	2.5 – 3.5 sec.	3.5 – 4.5 sec.

e. Door dwell time for hall calls: 4.0 to 8.0 seconds.
f. Door dwell time for car calls: 3.0 to 5.0 seconds.
g. Reduced non-interference dwell time: 1.0 to 2.0 seconds.

2. Maintain the following ride quality requirements for the passenger elevator:

a. Noise levels inside the car shall not exceed the following:

1) Car at rest with doors closed and fan off - 40 dba.
2) Car at rest with doors closed, fan running - 55 dba.
3) Car running at high speed, fan off - 50 dba.
4) Door in operation - 60 dba.

B. Acceptance Testing

1. The Contractor shall provide at least five (5) days prior written notice to the Owner and Consultant regarding the exact date on which work specified in the Contract Documents will reach completion on this unit of vertical transportation equipment.
2. In addition to conducting whatever testing procedures may be required by local inspecting authorities in order to gain approval of the completed work, and before seeking approval of said work by the Owner, the Contractor shall perform certain other tests in the presence of the Consultant.
3. The Contractor shall provide test instruments, test weights, and qualified field labor as required to safely operate the unit under load conditions that vary from empty to full rated load and, in so doing, to successfully demonstrate compliance with applicable performance standards set forth in the project specifications with regard to:

a. Operation of safety devices.
b. Floor leveling accuracy.
c. Door opening/closing and dwell times.
d. Ride quality inside the elevator car.

e. Communication system.

4. Upon completion of work specified in the Contract Documents on this elevator, and in conjunction with the aforementioned testing procedures, the Contractor shall carry out additional testing of group dispatch/supervisory control features in the presence of the Consultant.
5. The Contractor shall provide test instruments and qualified field labor as required to successfully demonstrate:

   a. Simulated and actual emergency power operation.
   b. Firefighter and independent service operations.
   c. Restricted access security features and card reader controls (if applicable).

END OF SECTION