REQUEST FOR PROPOSALS

Lightwell – Elevator Modernization
1100 Main St.

PORT KC

*This RFP is open **only** to contractors prequalified by Port KC at the time of RFP issuance*

DATE OF ISSUANCE: May 20, 2019

REQUEST FOR PROPOSALS ("RFP")

Lightwell – Elevator Modernization
1100 Main St.
PORT KC

INTRODUCTION

The Port Authority of Kansas City, Missouri ("Port KC"), a political subdivision authorized under Chapter 68, RMSo, and chartered by the City of Kansas City, Missouri, is seeking written proposals on behalf of JE Dunn Construction Company ("General Contractor") for certain scopes of work in connection with the renovation of the Lightwell building located at 11th and Main in Kansas City, Missouri. This opportunity is open to any contractor prequalified by Port KC (see Subcontractor Eligibility section below).

History

Port KC is a political subdivision authorized under Chapter 68, RMSo, and chartered by the City of Kansas City, Missouri. Port KC is governed by a Board of Commissioners appointed by the Mayor of Kansas City.

Port KC is granted broad governmental and business enterprise powers for the purpose of promoting economic development and job creation. The most important of these powers are:

- To acquire, own, construct, redevelop, lease, maintain, and conduct land reclamation, residential, commercial and mixed-use development, industrial parks, facilities, terminals, terminal facilities and any other type of port facility;
- To promote and expand inland and river port commercial throughput of cargo and freight;
- To identify and pursue redevelopment opportunities at blighted and historic preservation sites;
- To redevelop the Downtown Kansas City Riverfront to promote and develop new opportunities for residence, commerce and leisure; and
- To promote the full integration of multi-modal transportation assets to increase commercial opportunities locally, nationally and internationally.

Port KC's statutory powers of issuing bonds, land reclamation and the ability to enter into contracts to implement its development projects make it a unique and influential agency. Port KC has the flexibility to engage in a wide variety of strategic economic development projects that are vital to the economic progress of Kansas City.

Mission

Port KC's mission is to grow the economy of Kansas City's port district through transportation, global commerce and development.

Vision

The premier port providing efficient, effective, and innovative transportation and development solutions to compete nationally and globally.

PROJECT INFORMATION

The project is a renovation of the former City Center Square building located at 11th and Main in Kansas City, Missouri, and is identified as Lightwell ("Project"). JE Dunn Construction has been selected as the General Contractor for the Project. Any subcontracts awarded pursuant to this RFP will be between the General Contractor and the selected proposer(s).

BID DOCUMENTS

Bid documents are available for download at the link below. If you have trouble downloading the files, please contact Jackson Smith at Jackson.Smith@jedunn.com or 816-292-8598.

Here's a OneDrive link to Lightwell Bid Documents.

SCOPE(S) OF WORK

A description of the scope(s) of work is attached.

All proposers submitting a proposal are required to quote on all of the work outlined in the Scope of Work statement. Proposers taking issue with the Scope of Work or wishing to add to or delete from the Scope of Work may do so only by quoting the defined Scope of Work, then submitting an add, alternate or delete statement clearly stating exactly what they propose to add or delete and how that add, alternate or delete will change the base price. Any proposal that does not comply with this format or include the defined Scope of Work may be rejected at the General Contractor's discretion.

ADDITIONAL WORK/PHASING

The nature of the Project may occasionally necessitate the provision of additional services related to the Scope of Work. The General Contractor reserves the right to negotiate amendments to any subcontract awarded pursuant to this RFP and to utilize the selected proposer(s) to provide such additional services without any additional public procurement. Furthermore, and without limiting the foregoing, in the event that the Project is being constructed in a phased approach (such that the general Scopes of Work being solicited herein will need to be performed in additional quantities at future dates during the initial construction of the Project), the proposer(s) selected pursuant to this RFP may be utilized by the General Contractor without any additional public procurement.

PROPOSER ELIGIBILITY

Only proposers currently listed on Port KC's Prequalified Contractors List are eligible to submit a proposal on this package. If you have questions as to whether your company is a prequalified contractor, please send an inquiry to info@portkc.com or phone 816-559-3750.

PRE-PROPOSAL MEETING

A pre-proposal meeting will be held on **Wednesday May 22nd, at 9:00 am Central Time** at the Project site, located at 1100 Main St, Kansas City, Missouri, 64106. Interested proposers will be permitted to ask the owner and architect initial questions. Attendance will be taken and contact information distributed and posted to Port KC's website.

PROPOSAL DUE DATE

Submission of one (1) sealed proposal will be accepted by Port KC. Submissions are to be presented to:

Port KC
Attn: Lightwell – Glazing and Roofing
110 Berkley Plaza
Kansas City, Missouri 64120

Submissions are due not later than **2:00pm Central Standard Time on June 10th, 2019**. No fax proposals will be accepted. There will be a public proposal opening at Port KC immediately following the submission deadline.

BASIS OF SELECTION

This section is not intended to be the full and final list of qualifications nor is it intended to show the hierarchy of said qualifications.

The successful proposer(s) will ultimately be chosen based on criteria including, but not limited to, the following information:

- Financial Stability (audit of financials, bonding capacity, etc.)
- Experience
- Resumes/References of key team members
- Ability to show related experience
- Feedback given by references
- Competitiveness of pricing
- Ability to staff and maintain construction schedule
- Ability to achieve competitive pricing from trades

FORM OF SUBCONTRACT(S)

Any subcontract will be structured as a lump sum agreement utilizing General Contractor's contract template.

PROJECT MILESTONES

- 05-20-19: Issue the RFP
- 05-22-19: Pre-Proposal Meeting
- 06-03-19: Bid questions due to Port KC by 2:00 pm Central Standard Time
- 06-10-19: RFP Responses due to Port KC by 2:00 pm Central Standard Time for public opening immediately following the submission deadline
- 06-14-19: General Contractor will complete evaluation of RFP responses
- 06-19-19: General Contractor will formally award Notices to Proceed and Letters of Intent or full Subcontracts

PROJECT TIMELINE

The services sought are anticipated to start as soon as possible after a subcontract is executed with the selected proposer(s). Proposers shall provide estimates in weeks of their estimated required timeframe to complete the Scope of Work described herein.

QUESTIONS

Any general questions must be submitted to info@portkc.com before **June 3rd, 2019 at 2:00 pm Central Standard Time**. Proposers shall not contact Port KC staff before proposals are due. Unless otherwise specified, any and all inquiries must be directed to info@portkc.com. Failure to follow this procedure may result in a proposer's disqualification. A response will be generated promptly, with a goal of within one (1) business day of receipt of email. All questions and answers will be posted anonymously on the Port KC website.

CONFIDENTIALITY

In submitting a proposal the proposer acknowledges and agrees that all information supplied in connection with the proposal may be shared with agents, team members and consultants, and employees of the General Contractor and Port KC and its affiliates.

NONBINDING

This RFP is not a contract, an offer, or a request for an offer. Proposers responding to this RFP receive no rights as a result of the response whatsoever. The General Contractor may accept alternate proposals, accept or reject any proposal in whole or in part, or reject all proposals with or without notice or reasons. The General Contractor reserves the right to award any and all business detailed in this RFP as it deems appropriate to meet its needs. Upon reviewing the proposals, the General Contractor also reserves the right not to award any of the business, if it so elects. Proposers responding to this RFP shall not be compensated for any time or materials used or involved in preparing their response to this RFP. Furthermore, neither Port KC nor the General Contractor shall have financial responsibility, of any kind, for any costs or losses incurred by a proposer or potential proposer as a result of or in connection with this RFP.

REQUEST FOR PROPOSAL

FOR

THIRTEEN (13) GEARLESS TRACTION ELEVATORS

AT

LIGHTWELL

1100 MAIN STREET

KANSAS CITY, MO

DATE: May 20, 2019

VDA NO.56595/MEB

Elevator Contractor _____

REQUEST FOR PROPOSAL

The Property Owners and their designated representatives are inviting a limited number of contractors to bid on restoration, upgrading and maintenance of thirteen (13) gearless traction elevators.

A. All vendors must perform their own examinations of existing systems and prevailing building conditions prior to submitting a proposal, as further defined herein.

1. Access to the building will be coordinated by Port KC. Individual vendors must schedule their own visits.

B. Individual bidders who wish to submit a Request for Information (RFI) during the bid process must address the technical inquiry to:

info@portkc.com

1. RFI's must refer to the document, article and paragraph reference in question by the order of the specification or other document applicable.

2. The Consultant will respond to all RFI's in the same order of inquiry submittals and issue the original vendor questions with the responses to all contractors invited to bid via email.

C. Quotations shall be submitted on the form provided herein; however, should an individual wish to provide proposal clarifications or other information pertaining to the project bid(s), the vendor must first utilize the "Alternative Contractor's Value Engineering" option and supplement the reference using his own corporate letterhead stationery.

D. Contractors are advised that the entire Bid Form and supplemental riders or exhibits must be completed in full.

1. Alternative price quotations and the Owners form of full comprehensive maintenance must be bid in order for the base price quotation(s) to be given full consideration.

E. Particular attention must be given to the following project contingencies:

1. Maintenance coverages specified include a total of thirteen (13) elevators for **"INTERIM," "GUARANTEE," and "AFTER RESTORATION"** services on the basis of a single vendor providing both the capital improvement and service personnel.

2. Required record keeping, insurance coverages, guarantee requirements, and use of third-party manufacturers' equipment are mandated for acceptance of the base bid proposals.

F. The Owner reserves the right to reject any and all bids in full or in part without explanation or penalty.

1. Acceptance and/or subsequent reviews of contractor proposals shall not be construed as a commitment on the part of the Owners to purchase any goods or services expressed or implied unless an agreement is formally prepared and accepted as such by the Owner's designee.

G. The project will be awarded based on experience, price, schedule, references and an Owner's interview.

1. Contractors who wish to clarify their bid, take exception to a particular requirement or modify the requirements specified in any "way", "shape" or "form" shall reference the particular specification section, clause and sentence in numerical order of presentation and subsequently provide the statement of change, omission, substitution or clarification on an itemized basis in conjunction with the bid submission. Exhibits provided must be fully executed for basic comparison analysis by the Consultant and Owner's agent.

H. Sealed bids on the attached form shall be submitted to Port KC subject to Port KC bidding requirements, including one (1) copy of the Owner's Form of Full Coverage Maintenance Agreement.

I. Contractors are required to acknowledge receipt of any addenda issued by inserting the addenda number in the space provided.

FORM OF PROPOSAL

A. The Contractor, _____, confirms the specification has been carefully examined and a survey of the prevailing conditions has been performed at Lightwell, 1100 Main Street, Kansas City, MO.

1. The undersigned proposes to furnish all labor, material and fees required for the project execution at Lightwell, 1100 Main Street, Kansas City, MO in accordance with specifications, for the contract prices specified below.

☐ No exceptions or clarifications taken.

☐ See attachment for exceptions/clarifications.

2. Under no circumstances shall the Contractor submit his own proposal without bidding the project specifications. A Contractor's Value Engineering Alternate is provided for optional equipment proposals and/or implementation methods other than the design specification requirements.

B. The bid includes Addenda number _____.

C. The base lump sum bid for all thirteen (13) elevators is:

$_____.

Unit pricing for each group is:

High-Rise (Six [6] elevators)	$
Low-Rise (Six [6] elevators)	$
Service (One [1] elevator)	$

D. Proposed Guaranteed Scheduling for Project Implementation:

1. Lead time after contract award and selection item confirmations before start of work: _____ (weeks)

2. _____ out-of-service time: per elevator Low Rise Group _____ (weeks)

3. _____ out-of-service time: per elevator High Rise Group _____ (weeks)

4. _____ out-of-service time: per elevator Service Elevator _____ (weeks)

5. Total out-of-service time: _____ (weeks), from start of first elevator to completion of the last elevator.

E. Interim monthly maintenance price (included in base bid) prior to start of work and during modernization work implementation:

$_____ (_____ Elevators).

F. Guarantee monthly maintenance price (included in base bid) after completion and final acceptance of units for the first _____ month period:

$_____ (_____ Elevators).

G. Long-term monthly maintenance price (owners option) for _____ years after guarantee period:

$_____ (_____ Elevators).

H. Monthly deduct for units out of service for modernization:

$_____ (Per Elevator).

I. Costs for Performance, Labor and Material Payment Bond specified in Division 01:

$_____.

J. Alternate Price Quotations

Note: The following price quotes are submitted as plus or minus (+ or -) the base price proposals indicated. Duplicated procedures, materials and/or equipment must be adjusted to specify the variance in cost only.

Alternate No. 1 – Deduct to provide OEM controls meeting the specification in lieu of third party controls:

$_____ (_____).

Alternate No. 2 - Add to Furnish and install new counterweight safeties and overspeed governors on all thirteen (13) elevators:

$_____ (_____).

Alternate No. 3 – Add to furnish and install a Lift-net monitoring system, as specified.

$_____ (_____).

Alternate No. 4 – Deduct to decommission one of the high-rise elevators in lieu of modernizing, per the specification.

$_____ (_____).

Contractor's Value Engineering Options:

a. _____

_____

$_____.

b. _____

_____

$_____.

c. _____

_____

$_____.

d. _____

_____

$_____.

e. _____

_____

$_____.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with any other elements of labor employed or that may be employed in the building.

DATE: _____

_____
(Name of Elevator Contractor)

BY: _____
(Title)

_____
(Business Address)

_____
(City and State)

_____
(Telephone Number)

_____
(E-mail Address)

NOTE: Submit to Port KC with one (1) signed copy of the Owner's Form of Full Coverage Maintenance Agreement, and Exhibit "A"

EXHIBIT “A”

SCHEDULE OF INITIAL BASE HOURLY RATES FOR CONTRACTOR’S PERSONNEL

VDA No. 56595	Straight Time Rate Hourly Selling Price	Time and Half Premium Rate Hourly Selling Price	Double Time Premium Rate Hourly Selling Price
Maintenance Mechanic			
Modernization Mechanic			
Helper			
Adjuster			
Foreman			

DIVISION 14

SECTIONS 14 21 23 / 14 21 43

TECHNICAL SPECIFICATIONS FOR

THIRTEEN (13) GEARLESS TRACTION ELEVATORS

AT

LIGHTWELL

1100 MAIN STREET

KANSAS CITY, MO

DATE: May 20, 2019

VDA NO. 56595/MEB

DIVISION 14 – CONVEYING SYSTEMS

14 00 00 Conveying Equipment

14 21 00 – Traction Elevators
14 21 23 – Electric Traction Passenger Elevators
14 21 43 – Electric Traction Service Elevators

PART 1 - GENERAL

1.1 SUMMARY AND DEFINITIONS

A. Related Documents

1. 14 01 20 - Elevator Maintenance - Full Coverage Contract / Specifications
2. Request for Proposal

1.2 Description

A. Work of this Section includes labor, materials, tools, equipment, appliances and services required to manufacture, deliver and modernize the units complete as shown on the drawings, as specified herein, and/or as required by job conditions.

B. The work and/or requirements specified in all sections is described in singular with the understanding that identical work shall be performed on all units or associated systems unless otherwise specified herein.

C. The work shall include, but is not limited to comprehensive modernization of the following:

1. Six (6) 3,000 lbs. capacity /gearless traction passenger elevators operating at 500 fpm.
2. Six (6) 3,500 lbs. capacity /gearless traction passenger elevators operating at 700 fpm.
3. One (1) 4,000 lbs. capacity /gearless traction service elevator operating at 500 fpm.

D. Intent

1. This section includes:

a. Electric traction passenger
b. Electric traction service

2. The following outlines the scope of work covered in this Section: Full modernization with third party nonproprietary controls, SCR Drives refurbished hoist machines, door operators, fixtures, roller guides, cab interiors as specified in this document.
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.

E. 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 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.

F. Abbreviations and Symbols

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

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
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
OSHA	Occupational Safety and Health Act

G. 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.

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.

H. 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. ANSI/IEEE - 519-Latest Edition
6. ANSI/IEEE - Guide for Surge Withstand Capability (SWC) Tests
7. ANSI Z97.1 – Laminated/Safety Tempered Glass

I. 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.

1.3 PERMITS AND SUBMITTALS

A. Permits

1. Comply with the requirements of Division 01.
2. 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.
3. File necessary drawings for approval of all Authorities Having Jurisdiction.
4. 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.

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. A plan view of the hoistway and machine room
    b. Elevation of the pit
    c. All accessories.

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:

    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 to 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 each 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.

I. Wiring Diagrams, Operating Manuals and Maintenance Data

1. Comply with the requirements of Division 01.
2. Deliver to the Owner, four (4) identical volumes of printed information organized into neatly bound manuals prior to seeking final acceptance of the project.
3. The manuals shall also be submitted in electronic format on non-volatile media, incorporating raw 'CAD' and/or Acrobat 'PDF' file formats.
4. 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.

5. 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.

6. Furnish four (4) bound instructions and recommendations for maintenance, with special reference to lubrication and lubricants.
7. 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 an eight-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. Remote Monitoring/Controls.

K. 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.

1.4 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 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.

F. Qualifications

1. The work shall be performed by a company specialized in the business of manufacturing, installing and servicing conveying systems of the type and character required by these specifications with a minimum of ten (10) years of experience.
2. Prior written acceptance is required for manufacturers other than those listed, before quoting this project. Requests for acceptance will not be considered unless they are submitted before bid date and are accompanied by the following information:

a. List of five (5) similar installations having exact equipment being proposed for this project arranged to show name of project, system description and date of completed installation. The list shall include the names, position and resumes of the construction team and field supervisor of the installations.
b. Complete literature, performance and technical data describing the proposed equipment. Include the names, position and resumes of the proposed construction team and field supervisor.
c. List of ten (10) service accounts by building name, building manager or owner, including phone numbers.
d. Location of closest service office from which conveying system will be maintained.
e. Location of closest parts inventory for this installation.
f. List of the names, positions and resumes of the construction teams and field supervisor for the installation.

1.5 DELIVERY / STORAGE / HANDLING / COORDINATION

A. Delivery and Storage of Material and Tools

1. Comply with the requirements of Division 01.
2. 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.

3. 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.
4. 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 installation of sleeves, block outs, equipment with integral anchors, and other items that are embedded in concrete or masonry for the applicable equipment. Furnish templates, sleeves, equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.
2. Coordinate sequence of installation with other work to avoid delaying the Work.
3. Coordinate locations and dimensions of other work relating to the equipment scheduled for installation including pit ladders, sumps, and floor drains in pits; entrance subsills; machine beams; and electrical service, electrical outlets, lights, and switches in pits and machine rooms, secondary levels, overhead sheave rooms and hoistways as it relates to the specific equipment.

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.

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.

1.6 RELATED WORK

A. Work by Elevator Contractor Included in the Base 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 hoist rope guards at the car and counterweight drop side of the hoisting machine sheave to prevent accidental contact with the hoisting ropes. The guard shall extend from the point where the hoisting ropes penetrate the machine room floor slab to a point beyond where the ropes contact the traction and deflector sheaves. The guards shall be constructed so as to conceal pinch-points between ropes and sheave grooves.
    b. Provide the following signage, plates and tags:

        1) Provide each walk-in pit entrance door with a sign reading "Danger Elevator Pit" or the equivalent thereof. Letters shall be not less than 2" high.
        2) In addition to item (1) above, walk-in pits with pit door stop switches shall be provided with a sign that reads "WARNING – Opening the Pit Door Will Stop the Elevator".
        3) Provide access doors to each electrical control room, secondary or machinery space with signs that read "ELEVATOR MACHINE ROOM". Letters shall be not less than 2" high.
        4) 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.

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. Subsequent to the contract execution, the Contractor shall perform the following procedures and engineering tasks relative to balance loading of system and cab work included under base specification requirements and alternative/optional upgrades:

1) Perform balance load testing to determine existing conditions and requirements applicable to new/modified equipment.
2) Provide data for Purchaser and/or their agents to evaluate any limitations that may be placed on design/finish options due to prevailing conditions or total suspended loading.

e. Subsequent to the contract execution, the Contractor shall perform a Violation search and review of all open Applications in conjunction with the filing procedure. Subsequently, any and all outstanding Violations and/or open Applications shall be indicated on the Request for Permit; and such outstanding Violations shall be expunged and open Applications closed out as part of this filing procedure.

1) If requirements and/or work necessary to satisfy outstanding Violation or Applications are <u>not</u> included in the contracted scope of work, the Elevator Contractor shall prepare an itemized listing with relative extra costs to cure the condition(s) and expunge and/or close out the Violation or Application for the Owners' and Consultants' review/approval prior to executing such work procedures.

B. Work by Others

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

a. Installation of new main line power feed with related disconnect switch and 4th wire ground designed and located per local law requirements.
b. Provide remote/auxiliary disconnects where new or existing disconnect switches are not in line-of-sight of the controller.
c. Installation of auxiliary power feed with related distribution panel(s) and disconnect(s) designed and located per local law requirements.

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. 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, 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.

e. Installation of new permanent lighting fixtures 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. Provide necessary receptacles as required by Elevator Contractor to supply power to auxiliary elevator equipment and/or remotely located monitors.

f. Provide machinery spaces of the secondary level directly below the machine room with permanent lighting fixtures having protective guards and a duplex GFI receptacle. Illumination shall be no less than 19 foot-candles at floor level. A light control switch shall be provided immediately adjacent to the secondary level entrance door/ladder in accordance with code.

g. Provide each elevator pit with a 110 volt GFI duplex receptacle and a permanent lighting fixture equipped with protective guard. Illumination shall be no less than 10 foot-candles at pit floor level. A light control switch shall be provided and so positioned as to be readily accessible from the pit entrance door or ladder.

h. Installation of hoistway and machine room smoke relief provisions in accordance with local laws.

i. Provide each machine room, secondary space and pit with a self-closing, self-locking access door. Locking means shall be spring-type arranged to permit the doors to be opened from the inside without a key.

j. Provide a smoke detector system meeting the requirements of A17.1 and/or the Local Governing Authority.

k. 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 primary, alternate and third-zone (fire-hat) 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.

l. Where sprinkler fire protective systems are provided inside any elevator hoistway, machine room or associated machinery space, provisions shall be made for the disconnecting of the main line power supply from the affected elevator prior to activation. This means of disconnect shall be manually reset in accordance with code.

m. Installation of emergency power control interface provisions to signal the elevator control apparatus of a transfer from normal (utility) power to the building emergency (generator) power supply. Also, provide additional control interface to give advanced notification to the elevator control apparatus that the power source will transfer from emergency (generator) power to normal (utility) power. Interfacing contacts shall be wired to an electrical junction box located inside each machine room for connection to the elevator control equipment by the Elevator Contractor. Coordinate the type of interface required for the specific elevator control apparatus with the Elevator Contractor.

    1) On the line side of each main line disconnect switch, provide some means to absorb power that may be regenerated by the elevator hoist motor during emergency power operation.

2) Normal Power/Emergency Power Control Signals consisting of two (2) dry contacts provided by others to function as follows:

a) One (1) dry contact normally open to make when Normal Power is available. (Logic state of dry contact is to be confirmed by the Manufacturer of the Elevator Control Equipment).
b) One (1) dry contact normally open to make when emergency power is available. (Logic state of dry contact is to be confirmed by the Manufacturer of the Elevator Control Equipment).

n. Installation of HVAC provisions inside the machine room so as to maintain ambient temperature and humidity levels that are within the range specified by the microprocessor-control equipment manufacturers.
o. Provide a class "ABC" fire extinguisher in electrical machinery and control spaces. Locate the extinguisher in close proximity to the access door.
p. Provide necessary telephone wiring with connection to local telephone service for remote elevator monitoring and/or two-way voice emergency communications systems.

1) Terminate the telephone wiring in junction boxes or standard phone jack terminals in the machine room.
2) Coordinate the quantity and termination method of individual phone connections with the Elevator Contractor.
3) Identify each phone line for connection by the Elevator Contractor to the appropriate elevator device(s).
4) Telephone wiring, where required by applicable codes, shall be installed in conduit.

q. Sumps in pits where provided, shall be covered. The cover shall be level with the pit floor so as not to produce a tripping hazard.
r. Where the pit extends more than 3 feet below the sill of the pit access door, provide a permanent fixed metal ladder.

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 12" wide. Where prevailing conditions prevent a 12" 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.

s. Provide Ethernet connection terminals in elevator machine rooms and location of elevator monitoring system.

1.7 WARRANTY / MAINTENANCE SERVICES

A. Contract Close-Out, Guarantee and Warranties

1. Comply with the requirements of Division 01.
2. Guarantee and Warranties:

a. Warrant the equipment installed under these specifications against defects in material and quality of installation and correct any defects not due to ordinary wear and tear or improper use of car which may develop within one year from the date each unit is completed and placed in permanent operation and accepted by the Owner.
b. This warrantee shall be written and issued at the completion of each unit prior to final payment.

B. Maintenance Coverage

1. The following maintenance coverage apply:

a. Interim Maintenance

1) Provide full protective maintenance services and equipment coverage for from award of the contract prior to the commencement of work, and during the work implementation procedure, until final acceptance of the finished project.
2) Interim full comprehensive maintenance services shall be provided in accordance with Section 14 01 20, Owner's Form of Agreement issued with the modernization documents for subsequent services.
3) Costs related to interim maintenance shall be indicated on the bid form provided with a deduction for unit(s) out of service for upgrading.

b. Guarantee 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) Guarantee maintenance and related services shall be provided in accordance with Section 14 01 20, Owner's Form of Agreement issued with the modernization documents for subsequent services.
3) Costs related to guarantee maintenance shall be included in the base bid quotation

c. Long-Term Maintenance

1) Long-term full comprehensive maintenance and related services shall be provided in accordance with Section 14 01 20, Owner's Form of Agreement issued with the modernization documents for subsequent services.
2) Costs related to long-term maintenance shall be indicated on the bid form in the space provided.

1.8 AUXILIARY SYSTEMS / TESTING PROCEDURES

A. Emergency Power Selector Panel Operation and Testing (EPO Sequencer)

1. Visual signals and operating devices noted in the following testing procedure are included in the "Emergency Power Selector Panel" section.

a. Automatic Mode: If an elevator is requested to return to the main floor, the selector panel lamp will pulse on and off. When this elevator has accepted the request to return, the lamp will illuminate continuously. When the elevator has returned to the main floor, the lamp will extinguish.

b. Manual Mode: If an elevator has been selected for service, the selector panel lamp will illuminate continuously. If it is desired to deselect this elevator, push the pushbutton or rotate the selector to deselect. The lamp will pulse on and off until the elevator has returned to the main floor. When the elevator has returned the lamp will extinguish.

2. Emergency Power Operation Automatic/Manual Modes

a. Automatic Mode:

1) If an elevator is requested to return to the main floor, the selector panel lamp will pulse on and off. When this elevator has accepted the request to return, the lamp will illuminate continuously. Means shall be provided adjacent to the selector switch(es) to indicate that the elevator is at the designated level with the doors in the normally open position.

2) The auto/manual keyed switch must be in the "AUTO" position when on Normal Power. When emergency power is initiated, the EPS (Emergency Power Sequencer) will attempt to sequentially return all elevators to the main floor. The number of elevators that can recall simultaneously is contingent on the amount of emergency power available. Coordinate power availability with Owner's Representative The order in which the elevators are returned can be predefined. If after a predetermined time (45 seconds) a selected elevator does not respond to the request to return, another elevator will be selected. When an elevator returns to the main floor, the elevator will open the doors to allow passengers to exit and then close its doors. If there are any elevators that are not at the main floor, the EPS will repeatedly attempt to return these elevators, while in Automatic Mode, a maximum of three (3) times.

b. Manual Mode:

1) The auto/manual keyed switch can be turned at any time to the "MANUAL" position. At the time the auto/manual keyed switch is turned to the "MANUAL" position, the elevator that was selected while in the Automatic Mode, will automatically return to the lobby floor, open the doors to allow passengers to exit the elevator, and be removed from service. The newly selected elevator will then begin operation and respond normally to hall and car calls.

3. Emergency Power Sequence Elevator Controller Interlocking Operation

a. Automatic Mode EPS (Emergency Power Sequencer):

1) With the loss of Normal Power, the stop signal input will be active to inhibit movement of all the elevators.
2) When the signal from the emergency generator signals that the power is stable, the EPS will attempt to return all elevators to the main floor. Selection of an elevator is based upon a stop signal output being active to the controller input for all of the elevators that have not been selected to return. The run signal will then be activated to request the selected elevator to return.
3) If the request to return is accepted, the elevator will activate a run signal output to the EPS. If after a predetermined time the request to return is not accepted, the request will be withdrawn, and another elevator will be selected for return operation.
4) When the selected elevator has returned to the main floor, the doors will open to allow passengers to exit and then close its doors. The run signal output will be deactivated, and the stop signal output will be activated.
5) If while returning an elevator to the main floor or during a manual selection operating mode, the Normal Power becomes available, an input signal (Normal Power Returning) will be activated to force the elevator to slow down and stop at the nearest floor.
6) After a predetermined time, the primary elevator controls will be designed to restart elevators one at a time under Normal Power.

b. Manual Mode EPS (Emergency Power Sequencer)

1) For an elevator to run in normal service while on emergency power, the run signal input will be released with the selector or push button positioned accordingly.
2) To inhibit an elevator from running while on emergency power, the stop signal input will be activated with the selector or push button positioned accordingly.
3) If an elevator is running and Normal Power becomes available, a control signal input (Normal Power Returning) will be activated to force the elevator to slow down and stop at the nearest floor automatically and open the doors.
4) After Normal Power is restored, all elevators will be restarted on a sequential basis one (1) at a time.

c. Other E.P.O. Functions and Supplemental Descriptions

1) Prior to commencing emergency generator testing, a contingent of personnel familiar with elevator, emergency generator and any other power systems tied into the emergency generator must have communications established between the respective parties, preferably through the use of walkie-talkies or other battery-supported communication devices.
2) Testing of Transfer from Normal to Emergency Power

a) Pre-transfer Switch (Test Mode) - At the emergency generator area a test signal to the elevator equipment must be provided before start of

emergency generator testing. This signal must be brought to the elevator dispatch controllers via a "dry contact". (Dry contact logic to be determined by the Manufacturer of the Elevator Control Equipment.) This signal will immediately cause all elevators connected to the system to perform a normal slow down sequence and stop at the nearest available floor. All cars will stop and park with doors open.

b) Emergency generator will now be "on line" and when the generator ATS (Automatic Transfer Switch) is energized, connecting the elevator load to the emergency generator, the test signal should be turned "off". Moving the test switch to "off" will signal the elevator computer to commence automatic recall upon sensing emergency power transfer has occurred. (Depending on the requirements of the Elevator Equipment, a second set of contacts may be required to indicate that the emergency generator is on-line and to begin the automatic sequential return program.)

c) Immediate automatic selection of an elevator via built-in software, will return the selected elevator to the main lobby, open the doors and remove the elevator from service. The next elevator in the sequence will be automatically selected to be brought down.

d) After all cars that are able to be brought down and secured (with doors open), one car (the "duty" car) will be chosen by on-board controller software to run on emergency power operation.

e) If the selected "duty" car, automatically chosen by the controller software, is not desired, an alternate car can be selected by turning the Emergency Power Panel "Auto/Manual" keyed switch to the "Manual" position and move the "Emergency Panel Selection" switch to the position corresponding to the desired car. (The "Manual" key switch must remain in the "Manual" position for the chosen car to remain in service).

f) When another car is chosen with an elevator in motion, the car which was running at the time will return to the lobby, open doors and be removed from service. The chosen car will then go into service.

g) The emergency panel will be simplified so as to have an "Automatic Position" and "Manual Position". These positions will be keyed the same as the firemen's service keys in the designated lobbies.

3) Testing of Transferring Emergency Generator to Normal Power

a) Prior to transferring to normal power, a "Pre-Transfer" signal shall be provided by the "ATS". Should an automatic "Pre-Transfer" signal not be provided, the assigned person at the "Emergency Generator Area" should operate the pre-transfer test switch "on".

b) The elevator which was running on the emergency generator will stop automatically at the nearest landing and park with the doors open.

c) The emergency generator can now be disconnected, and normal power connected upon notification from building personnel that the elevator has parked and is not in motion.

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.

A. Alternate 1

1. Provide OEM controls meeting the nonproprietary requirements in lieu of third party specified.

B. Alternate 2:

1. Furnish and install new counterweight safeties including governors, governor ropes and tail sheaves. Along with engineering data to support the installation using existing guide rails.

C. Alternate 3:

1. Furnish and install Lift-net monitoring system as specified.

D. Alternate 4 - Deduct to decommission one elevator in the High-Rise group in lieu of modernizing.

1. Bidders are to submit a deduct to decommission one of the high-rise cars meeting the local AHJ's requirements including the following minimums: 1. Lowering the car and counterweights to the pit, discarding the hoist and compensation ropes,
2. Removing the controller, motor generator and other related components in the machine room.
3. Bolting all but the lower one (1) or two (2) hoistway entrances closed.

1.10 ALLOWANCES / VALUE ENGINEERING

A. Allowances

1. Carry the following allowances for Elevators:

a. Cab: $25,000.00 per cab

2. The above allowances are exclusive of any handling charge, applicable sales and/or use taxes. Wiring, installation and coordination of allowance items shall be included in the base contract.

B. Alternates

1. Value Engineering Alternate

a. It is understood that the base specification reflects minimum standards. The above Value Engineering Alternate allows individual contractors to suggest special performance criteria which may be of interest to the Owner and may reflect a degree of quality above the requirements of the base specification.
b. Voluntary alternate prices may be acceptable as a deviation from, not a substitution for, the basis of bid work of this bid package.
c. In order to submit a voluntary alternate, the following must be provided at the time of the bid.

1) A complete bid reflecting the requirements of the base specification.
2) All alternates must be accompanied with pertinent data, technical documentation and reference/installation for review.
3) Along with the pricing for voluntary alternates submit the maintenance prices for each.

PART 2 - PRODUCTS

2.1 ELEVATORS

A. Elevators - 1 – 6 (High-Rise)

1.	Quantity	Six (6)
2.	Type	Gearless Traction/Passenger
3.	Capacity (lbs)	3500
4.	Speed (fpm)	700
5.	Travel in Feet	Existing
6.	Number of Landings	16 @ 2, 3, 4, 17 - 29
7.	Number of Openings	16 @ 2, 3, 4, 17 - 29
8.	Front Opening	All
9.	Rear Opening	None
10.	Operation	Group automatic
11.	Control	Variable voltage variable frequency
12.	Fireman’s Control	Phase I and II
13.	Number of Push Button Risers	Two (2)
14.	Platform Size	Retain and Refurbish
15.	Guide Rails	Steel tees, provide rail backing as required
16.	Buffers	Oil - Retain and refurbish
17.	Cab	$25,000 allowance
18.	Entrance Size	42’ wide x 84 high
19.	Door Operation	Single-speed center opening
20.	Machine Type	Gearless traction/ Retain and refurbish
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required – Base Bid Alternate No. 2

23.	Power Supply	480 – 3 – 60 / Field Verify
24.	Hoist Ropes	Conditional Reuse
25.	Compensation Ropes	Conditional Reuse

B. Elevator - 7 – 12 (Low-Rise)

1.	Quantity	Six (6)
2.	Type	Gearless Traction
3.	Capacity (lbs)	3000
4.	Speed (fpm)	500
5.	Travel in Feet	Existing
6.	Number of Landings	14 @ 2,4 - 16
7.	Number of Openings	14 @ 2,4 - 16
8.	Front Opening	All
9.	Rear Opening	None
10.	Operation	Group automatic
11.	Control	SCR
12.	Fireman's Control	Phase I and II
13.	Number of Push Button Risers	Two (2)
14.	Platform Size	Retain and refurbish
15.	Guide Rails	Steel tees-Reuse
16.	Buffers	Oil, Retain and refurbish
17.	Cab	$25,000 allowance
18.	Entrance Size	42" x 84"
19.	Door Operation	Single-speed center opening
20.	Machine Type	Gearless traction, Retain and refurbish
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required – Base Bid Alternate No. 2
23.	Power Supply	480 – 3 – 60, Field verify
24.	Hoist Ropes	Conditional Reuse
25.	Compensation Ropes	Conditional Reuse

C. Elevator - 13 (Service)

1.	Quantity	One (1)
2.	Type	Gearless Traction Service
3.	Capacity (lbs)	4000
4.	Speed (fpm)	500
5.	Travel in Feet	Retain/ Field Verify
6.	Number of Landings	30 @ 1 - 30
7.	Number of Openings	31 @ 1 - 30
8.	Front Opening	30 @ 1 - 30
9.	Rear Opening	1 @ 1
10.	Operation	Simplex selective collective
11.	Control	SCR
12.	Fireman's Control	Phase I and II
13.	Number of Push Button Risers	One (1)
14.	Platform Size	Retain and refurbish
15.	Guide Rails	Steel tees - Reuse

16.	Buffers	Oil, Retain and refurbish
17.	Cab	25,000
18.	Entrance Size	48" X 96"
19.	Door Operation	Two-speed side opening
20.	Machine Type	Gearless traction, Retain and refurbish
21.	Machine Location	Overhead
22.	Counterweight Safety	Not Required – Base Bid Alternate No. 2
23.	Power Supply	480 – 3 – 60 / Field Verify
24.	Hoist Ropes	Conditional Reuse
25.	Compensation Ropes	Conditional Reuse

2.2 MANUFACTURERS

A. Pre-Approved Equipment Manufacturers

1. The following manufacturers' 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.
3. Certain Original Equipment Manufacturers equipment is acceptable unless otherwise specified.

    a. Controller - GAL (GALaxy), Motion Control Engineering, Elevator Controls Corporation, Elevator Systems, Inc.,
    b. Tracks, Hangers, Interlocks and Door Operators – Otis, G.A.L., ECI.
    c. Fixtures - G.A.L., Adams, EPCO, Monitor, E-Motive USA, C.E. Electronics, Innovation, PTL,
    d. Door Protective Device - Janus, Adams, G.A.L., T.L. Jones, Tri-Tronics.
    e. Cabs and Entrances/Entrance Door Panels - Accurate Elevator Door Corp, CEC Elevator Cab, EDI/ECI, Elite Elevator Cab, National Cab & Door, Tyler, Velis, Gunderlin, Premier, Prestige, Regency, Columbia Elevator Products, United Cabs.
    f. SCR Power Drives - MagneTek DSD 412, MagneTek 'Quattro', MCE System 12, KEB.
    g. Electrical Traveling Cables - Draka, James Monroe
    h. Guide Shoes/Rollers – ELSCO, G.A.L.
    i. Wire Ropes - Paulsen, Bethlehem, Wayland, Draka.
    j. Intercommunications/Telephones - Webb Electronics, K-Tec, Ring, Wurtec, Janus, approved equal.

4. Alternate 1: Original Equipment Manufacturers may substitute 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-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. Elevator Safety Requirements for Seismic Zone [2/3/4]

1. Guarding of equipment, machine supports, guide rail systems, the design of counterweight car frame and platform, safeties and signaling devices shall meet the requirements of ASME A17.1 as may be modified by the AHJ.
2. Guide rails, guide rail supports, and their fastenings shall meet requirements for the seismic zone.

B. Cross Cancellation - Low Rise and High-Rise Groups

1. A temporary dispatch signal control interface shall be provided during the interim modernization period between the existing dispatching control panel and the new microprocessor supervisory control system.
2. The overlay interface shall allow either system to cross cancel corridor calls registered in both systems and maintain an acceptable level of group dispatching operations.
3. The existing equipment that is retained on a temporary basis shall undergo a complete maintenance restoration to ensure improved reliability and performance during the primary work implementation period.

C. Motion Control

1. Smooth stepless acceleration and deceleration of the elevator car shall be provided in either direction of travel during both single and multiple floor runs.
2. Use digital logic to calculate optimum acceleration and deceleration patterns during each run.

3. Acceleration, deceleration, jerk, maximum velocity, leveling accuracy and elapsed flight time, for a typical elevator one floor run, shall not exceed values as further specified.

D. Simplex Selective Collective Operation (Service #13)

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.

E. Automatic Group Operation / Conventional Dispatch (HR, 1 – 6 / LR 7 - 12)

1. Provide a microprocessor-based group supervisory control system for the operation of the elevators.
2. Elevators shall be arranged to operate with or without attendants as an automatic group.

    a. The group shall remain capable of sustaining balanced service and continuing operation with one or more cars removed from the system.
    b. Elevators shall operate from pushbutton panels located inside each car and from a riser of corridor pushbutton fixtures located on each landing served.

3. Elevators shall automatically travel to landings for which a call demand exists.

a. Stops in response to calls that are registered at 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. Call acknowledgment lights provided in both the car and hall push button fixtures shall become extinguished as the car responding to a particular call begins its slowdown approach to the corresponding landing.
5. In the event no demand for elevator service exists, the first car to satisfy its assigned calls shall be dispatched to park at the main landing.

   a. In the event additional cars should also complete their call assignments, those cars shall be individually dispatched to previously designated parking floors.
   b. Parking assignments shall be accomplished without door operation.
   c. Should the elevator parked at the main landing receive a call assignment, another free car in the group shall immediately assume that parking assignment.
   d. The number of elevators assigned to park at any particular landing shall be programmable.

6. The group supervisory controller shall, through a dispatching algorithm along with artificial intelligence parameters, continuously scan the system in order to determine the load each car is transporting and to monitor the number of corridor calls registered, the duration of each call, and the intended direction of travel, the number of loaded lifts, etc.

   a. Based upon that data, the supervisory system shall automatically devise a strategy for call assignment with preference given to calls registered in the following order:

      1) lobby demand
      2) long waiting times - down
      3) long waiting times - up
      4) up calls

   b. Long wait calls shall be considered those which have remained unanswered for at least forty (40) seconds. The long wait call threshold time shall be programmable.

7. If a car with no car calls arrives at a landing where both up and down hall calls are registered, it will answer the call in the direction of travel.

   a. If no car call is registered, the car shall be assigned to respond to the call registered for opposite direction.
   b. The doors shall close and immediately re-open when responding to this call.
   c. Hall lantern operation shall always correspond to direction of service.

8. In the event that any car is delayed for more than a predetermined time interval after it received a start signal, the system shall automatically permit the remaining cars in the group to respond to signals and be dispatched in the specified manner.
9. In the event the group dispatching or supervisory system should malfunction so that elevators are not assigned to calls within a predetermined interval and in accordance with the conditions of the operating strategy in effect, the system shall automatically assume a back-up mode of operation whereby the elevators shall be arranged to provide continuous

service to each landing in a predetermined pattern without regard to actual corridor demand.

a. Failure of the automatic dispatching system will be indicated by an illuminated signal in the Lobby Elevator Control Panel or Elevator Information and Management System where applicable.

10. In the event of failure of the landing call button circuit, provide a means to enable the elevators to service each floor without registration of a call within the elevators.

a. When emergency operation is in effect, provide an illuminated signal in the Lobby Elevator Control Panel or Elevator Information and Management System where applicable.

11. When a car arrives at its last stop and reverses direction of travel, all previously registered car calls shall be automatically cancelled.
12. When a car has responded to the highest or lowest call, and hall calls are registered for the opposite direction, the car shall reverse direction automatically and respond to those registered calls.
13. When an empty car reverses direction at a landing with no hall calls, doors shall not open and the hall lantern shall not operate.
14. Main Lobby Operation:

a. Only the "Next" designated car shall have its hall lantern illuminated and its doors open.
b. When a "down" traveling car which is not designated "Next" arrives at the main lobby with a lobby car call registered, it will open its door to discharge the passengers, close the doors, and shall not illuminate its lantern.
c. When a "down" traveling car with no car calls arrives at the main lobby and is not designated "Next", it shall park without opening its doors.

15. Coincident Calls:

a. The dispatching system shall be designed with a 20 second parameter whereby an elevator with a car call will receive priority to answer a corresponding corridor call if it can do so within 20 seconds.
b. If the elevator cannot answer the call within the prescribed time, the first available car shall be assigned.
c. A continuous reassessment of calls shall be made.

F. 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 access 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.

G. Inspection Service Operation

1. Provide a key operated switch in the main car operating panel that, when turned to the 'ON' position, shall cause the elevator to be removed from service and placed in Inspection Service Operation.
2. Limited operation of the car shall be provided through pressing the Attendant Service up and down push buttons (if provided) or the highest or lowest car call push buttons (if up and down buttons are not provided) in the main car operating panel only.
3. 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.
4. 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.
5. 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.

6. 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.
7. The in-car Inspection Service switch shall be rendered ineffective when the top of car inspection control is activated.
8. 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.

H. 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.

I. Load Weighing Operation

1. A positive means shall be provided to continuously monitor the amount of load being transported by the elevator car.
2. The system shall be used to;

    a. Preload static motor drives
    b. Activate control features that include:

        1) anti-nuisance operation
        2) load dispatch operation
        3) load dependent non-stop operation where applicable.

3. The anti-nuisance feature shall operate at loads not exceeding 200 lbs., whereas load dispatch and load non-stop shall be set to function at 65% of the rated loading capacity for the initial set up and adjustment procedure.

J. Anti-Nuisance Operation

1. In the event car loading is not commensurate with the number of car calls registered, all car calls shall be canceled.

    a. The system shall monitor the door protection device to determine if passenger transfer has occurred.
    b. If after the third stop a passenger transfer has not occurred, the system shall cancel all remaining registered car calls and respond to assigned hall call demand.
    c. The number of calls registered with no passenger transfer that will trigger anti-nuisance shall be adjustable and initially set to 3 calls.

K. Firefighters' Emergency Operation

1. Phase I Emergency Recall Operation shall be provided for each car in accordance with ASME A17.1 code as modified under the applicable local or State law.
2. Each 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 in order 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 where required by the codes and standards applicable to the AHJ.
5. A "Standardized Fire Recall Key" shall be used in accordance with the applicable Chapter of the Public Law. This key shall be a Yale #3502.

    a. Multiple elevators within a group or building that are not affected by the scope of work specified herein, shall be upgraded to the "Standardized Fire Recall Key".
    b. The "Standardized Fire Recall Key" shall apply to both Phase I and Phase II Operation.

6. Phase II Emergency Recall In-Car Operation shall be provided for each car in accordance with ASME A17.1 code as modified under local or State law.
7. 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 as may be required by local law.

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

L. Emergency Power Operation / Duplicate Existing - New Sequential Control

1. Existing provisions shall be duplicated and upgraded for automatic sequential operation.
2. Provisions shall be included in the new elevator control system whereby, immediately after transferring to the building emergency power system, all affected elevators shall automatically return the fire recall designated landing in progressive numerical sequence at normal operating speed.

    a. Car and corridor calls shall become inoperative and all previously registered calls shall be canceled.
    b. As each car arrives at the designated landing, it shall park out of service with its door in the open position.

3. An illuminated signal marked “ELEVATOR EMERGENCY POWER” shall be provided in the elevator lobby at the designated landing to indicate that the normal power supply has failed and the emergency power is in effect.
4. In the event an elevator fails to respond to a recall command within forty-five (45) seconds under Emergency Power Operation, that car shall be bypassed and the next car in the sequence shall be recalled.
5. Upon completion of the recall process, one or more elevators shall be automatically selected to run on the emergency power source (duty car(s)).
6. Interlock all elevators to allow to operate the maximum number of elevators at a time.
7. An emergency power control panel shall be provided where indicated by the Owner containing an indicator light per elevator that becomes illuminated whenever a transfer to emergency power takes place.

    a. Provide a key-operated override switch and a manual selector switch with a position indicator for each elevator.
    b. Activating the key-operated override switch while on emergency power shall cancel the automatic recall sequence and allow positioning of the manual selector switch to select a car for operation.
    c. Means shall be provided on or adjacent to the control panel to indicate that the elevator is at the designated level with the doors in the open position.

M. Floor Lockout Feature / Keyless - Card Reader Control / Wiring Provisions

1. Wiring: Provide six (6) pairs of 20-gauge two (2) flexible conductor low voltage cables with an overall braided shield in the traveling cable of all elevators for card reader interface.

    a. The cables shall extend from the security interface terminal cabinet in the elevator machine room to behind the elevator return panel above the space allotted for the card reader.
    b. Terminate the cable to dual screw barrier terminal strips on each end.

2. Card Reader Space: Allocate card reader space in each main car station as directed by the Architect. Provide a flush Lexan lens and mounting provisions for the card reader unit which is provided by others.
3. Interface: For floor programmable card access control in all elevators, provide a pair of terminals for all floors such that application of a momentary dry (no voltage present) contact closure across those terminals by the security system shall enable the selection of the corresponding floor from the floor selector button in the elevator cab.

    a. Locate the terminals inside an interface terminal cabinet in the elevator machine room.
    b. Provide all relays required to interface the elevator control system to the momentary dry contact closures provided for under another section of these specifications.
    c. If applicable, the card reader shall be operable and compatible with the issued card keys used building wide.
    d. Coordinate system requirements with the manufacturer of the issued card key system.

4. Card Reader "Secure/Bypass" Switch: Provide separate card reader control bypass key switches for each elevator.

a. The bypass key switches shall be located in the Director's Control Panel.
b. The bypass key switches shall be a maintained contact type key switch with the key removable in the secure or bypass position.

1) When the key switch is in the secure position, the card reader control mode shall be initiated.
2) When in the bypass position, the card reader control mode shall be bypassed and the elevator shall return to normal operation, permitting free access to any floor.

5. The card reader operation shall bypass floor cut-out switches.
6. Firefighters' Service Operation shall override Floor Lockout Feature.

N. Car to Lobby Operation

1. Provide a key-operated Car-to-Lobby feature.

a. Provide a 3-position key-operated switch for each elevator in the lobby control panel or at a location as directed by the Architect/Owner to activate the Car-to-Lobby operating feature.

2. When engaged, this feature shall:

a. Cause the affected elevator to return non-stop to the lobby after it has discharged all registered car calls.
b. Open the door upon arriving at the lobby for approximately ten (10) seconds, after which the elevator shall park out of service with the door closed.
c. Maintain door open button function during the interval in which the car is out of service.

3. Returning the key-operated switch in the lobby panel to the "on" position shall restore the car to normal operation.
4. Override the Priority Service feature with Firefighters' Service in accordance with code and local law.

O. 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 1.0 feet per second in accordance with governing code.
b. Door operation shall be arranged to commence as the car enters its final leveling approach to a landing. In no case shall the door opening cycle conclude before the car comes to a complete stop at floor level.

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 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 physical contact (mechanical safety-edge) or the 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. Each 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, Attendant Service and Phase II - Emergency In-car Operation as well as during normal automatic operations.

9. 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.

10. 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.
11. 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

A. Controller / Dispatcher (New)

1. The elevators shall have generic microprocessor based controller/dispatchers.
2. Digital logic shall calculate optimum acceleration, deceleration and velocity patterns for the car to follow during each run.
3. Closed-loop distance and velocity feedback shall monitor the actual performance of the elevator car with the desired speed profile.
4. System operating software shall be stored in non-volatile memory.
5. Elevator control relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overload relays, power supplies, electronic circuit boards, microprocessors, static motor drive units, wiring terminal blocks and related components shall be totally enclosed inside a free-standing metal cabinet with hinged access doors.

    a. Provide natural or mechanical ventilation for the controller cabinets.
    b. Equip the vent openings and exhaust fans with filters.

6. Mount equipment to moisture-resistant, noncombustible panels supported from the steel frame.
7. Provide "noise filter" between hoistway wiring and controller/dispatchers to eliminate interference.
8. Optically isolate communication cables between components.
9. Wiring: Wiring on the units, whether factory or field wiring, shall be done in neat order, and all connections shall be made to studs and/or terminals by means of grommets, solderless lugs or similar connections. All wiring shall be copper.
10. Terminal Blocks: Provide terminal blocks with identifying studs on units for connection of board wiring and external wiring.
11. Marking: Identifying symbols or letters shall be permanently marked on or adjacent to each device on the unit, and the marking shall be identical with marking used on the wiring diagrams. In addition to the identifying marks, the ampere rating shall be marked adjacent to all fuse holders.
12. A 17” flat-panel LCD monitor shall be provided inside the elevator machine room for diagnostic purposes. The monitor shall be permanently mounted in a cabinet, on a shelf immediately adjacent or attached to or in a control cabinet of at least one car of a group. By means of graphic depiction, information available on the screen shall include:

    a. An overview of car and corridor calls currently existing within the system.
    b. Elevator operating status.
    c. Elevator position, direction of travel and velocity.
    d. The open/close status of elevator door.
    e. The current operational status of each CPU input and output.
    f. A sequential history of faults detected within the control system over the previous thirty (30) days.

13. 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.

14. Microprocessor Documentation

a. Provide and/or obtain complete information on systems' design, component parts, installation and/or modification procedures, adjusting procedures and associated computer conceptual logic circuitry and field connection.
b. Provide microprocessor upgrading and/or modifications to programs that have been assigned to enhance the operation of the equipment for a period of 10 years after project approval.

B. Machine Beams (Existing)

1. Provide additional support beams, angles, plates, bearing plates, blocking steel members, etc., to support new machine, governors, dead end hitches, deflector and overhead sheaves from existing machine beams where applicable.
2. Contractor shall verify adequacy of all existing supports scheduled to be reused and report any potential issues to the Owner.

C. Gearless Hoisting Machine / Sheaves / Brake (Reuse - DC)

1. The existing gearless traction hoist machine shall be reconditioned and reused.

a. Brush rigging, motor armature windings, field coils and interpoles shall be cleaned with compressed air or through use of inert, high pressure, non-flammable, moisture free gas (i.e. NitroClean^{tm} process) to remove accumulated carbon dust.
b. Resistance readings (Megohmmeter) between armature windings / field coils / interpoles, brush rigging, brake coil and ground shall be recorded on an individual basis. Bar-to-bar readings of the commutator shall also be performed. Any

component measuring less than 5 megohms to ground at 250 volts DC shall undergo further examination to determine the cause for the low reading.

1) The Contractor shall perform any repairs necessary to restore minimum acceptable resistance levels.

c. Missing, damaged or loose armature banding shall be replaced.
d. Solder connections between a commutator segment and motor armature winding shall be renewed where necessary.
e. Mica insulation between commutator segments shall be undercut and the commutator resurfaced to provide a smooth concentric brush contact surface.
f. Brush rigging shall be dismantled for cleaning and to examine the condition of insulators. Replace damaged or defective rigging as required.
g. New brushes of proper size and composition shall be installed, seated, quartered and reset to an electrical neutral position.
h. Perform voltage drop test of all field poles including interpoles where provided.
i. Field coils with split or unraveling outer wrapping shall be removed from the hoist machine and rewrapped with an approved insulating material.

1) Spray new insulation on all windings.

j. The distance between each hoist motor armature winding and each lower field pole shall be measured to determine bearing wear.

1) Where contact between the armature banding and field pole is deemed imminent, bearings on both ends of the hoist machine shall be replaced.

2. Hoist motor bearing reservoirs shall be drained of existing lubricant and flushed to remove any sediment.

1) Where applicable, open-link type chain shall be provided within each bearing for the purpose of distributing lubrication.
2) Each bearing shall be refilled with the proper amount of fresh lubricant as recommended by the O.E.M.

b. Motor bearings producing excessive heat, noise, vibration or any other unfavorable characteristics during operation, shall be replaced.

1) Oil retention seals that display evidence of leakage shall be renewed.

3. The existing drive sheave shall undergo Brinell testing to determine its prospects for re-grooving.

a. A new sheave shall be provided should Brinell hardness readings of less than 215 be obtained.

4. Upon completion of the cleaning and repairs to the electrical portion of the machine, retesting shall be performed with all readings recorded to verify the machine is electrically sound for long-term reliability.

5. Upon completing of all machine work, the Contractor shall commission third party vibration testing as approved by the Consultant, with results made available to the Owner.
6. Provide hoist cable guards at the car and counterweight-drop side of the machine sheave. Guards shall cover cables from the point of slab penetration to the point where the hoist cables contact the sheave preventing access to cables at pinch points.
7. The existing secondary/deflector sheave assembly shall be refurbished and reused.

    a. The sheave assembly shall be washed clean of accumulated oil and grease and examined for any indication of bearing failure or leakage.
    b. Bearings which are worn or found to emit unusual noises, excessive heat or other unfavorable characteristics shall be renewed or rebabbitted per OEM standards.
    c. Replace oil seals.
    d. Bearing oil reservoirs shall be drained of existing lubricants and flushed to remove any sediment.
    e. Chains utilized within each bearing to carry lubrication shall be of an open link type.
    f. Glass sight gauges shall be replaced with stand pipes.
    g. Each bearing shall be filled with the proper amount of fresh lubricant as recommended by OEM.
    h. Overhead fastenings between the secondary/deflector sheave assembly and machine beams shall be inspected to verify the structural integrity of the attachment.
    i. Secondary/deflector sheave alignment with the hoist machine and the counterweight guide rails shall be checked and reset as necessary.
    j. The secondary sheave shall be provided with means to guard the hoist ropes so they do not jump out of their respective grooves during a slack rope condition.

8. Reuse existing brake and overhaul for new.

    a. Replace linings and resurface scored drum pulley.
    b. Renew worn plunger sleeves, clean core surfaces, replace spacers and reset air gap.
    c. Reinsulate, rewind and replace leads of the brake coil as required.
    d. Inspect all pivot pins and related housing bores for wear.

        1) Rebore worn castings and provide oversized pin shafts where required.
        2) Provide new cotter pins and associated hardware with lubrication devices for each pivot point.

    e. Replace worn tension springs and hardware where necessary.
    f. Adjust brake assembly for proper lift and set action in accordance with O.E.M. specifications.

        1) Brakes shall be adjusted to safely hold 125% of rated full load capacity in accordance with applicable code.

D. SCR - DC Static Motor Drive (New)

1. Provide a microprocessor controlled solid-state motor drive system designed for use with the traction hoisting machine and power supply.

a. Provide a full wave, four quadrant, solid-state hoist motor drive unit as an integral part of the microprocessor based elevator control system to produce and regulate DC current to the hoist motor armature and fields.
b. Provide the following additional equipment necessary for a complete installation:

1) Isolation transformer on the incoming 3-phase AC power supply.
2) Noise reduction chokes / ripple filters on the DC motor loop.
3) A contactor to disconnect the hoist motor armature from the SCR drive unit whenever the elevator is stopped in accordance with code.

2. All components of the SCR drive system shall be located inside the elevator controller cabinet or in a separate ventilated cabinet with hinged door.
3. Distortion (notching) introduced into the 3-phase power supply by the SCR drive unit shall not exceed the recommended limits established under ANSI/IEEE Standard 519-1981 (1).
4. Combined noise output from all components of the elevator drive system, including the hoist motor, SCR drive unit, choke and filter, as measured anywhere within the machine room during operation shall not exceed 70 dBa.
5. The drive shall operate at ± 10% of normal feeder voltage and ± 3% of normal feeder frequency without component damage or interruption of elevator service.
6. Operating and Environmental Conditions:

a. Rated for continuous duty.
b. Humidity - 90% rated humidity non-condensing.
c. Cooling - forced air when required.
d. Digital display for:

1) Running - motor RPM, output current, voltage (selectable).
2) Setting - Parameters values for setup and review.
3) Trip - separate message for each trip, last 30 trips to be retained in memory.

7. Protective Features:

a. Motor overspeed.
b. Adjustable current limit.
c. Digital display for fault conditions.
d. Selectable automatic restart at momentary power loss.
e. Manual restart.
f. Over/Under Voltage.
g. Line to line and line to ground faults.
h. Over-temperature.

E. Overspeed Governor (CWT Governor New – Alternate No. 2)

1. Provide a speed governor, located overhead, to operate the car safety.

a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.

1) Springs used to develop the tension are not acceptable.

b. Provide rope grip jaws, designed to clamp the governor rope to actuate the car safety upon a predetermined overspeed downward.

1) The centrifugal type governor shall trip and set rope jaws within 60 degrees of governor sheave rotation after reaching rated tripping speed.

c. Design the governor rope tripping device so that no appreciable damage to or deformation of the governor rope shall result from the stopping action of the device in operating the car safety.

d. Provide an electrical governor overspeed protective device which shall remove power from the driving machine motor and brake before or at the application of the safety.

1) The setting for the overspeed switch shall be as prescribed in the ASME A17.1 Safety Code.
2) Locate and enclose the switch to ensure that excess lubrication will not enter the switch enclosure.
3) Overspeed switch shall operate in both direction of travel on systems employing a static power drive unit.

e. Seal and tag the governor with the running speed, tripping speed and date last tested.

f. Design the governor to prevent false tripping due to conditions caused by rope

F. Overspeed Governor (Reuse)

1. The existing centrifugal overspeed governor shall be refurbished, modified and reused. Governor rope gripping jaws shall be adjusted so that no appreciable rope damage or deformation occurs from the stopping action applied during activation.

a. The governor shall be provided with a manually reset electrical safety switch, conforming to ASME A17.1 Safety Code as adopted and/or otherwise amended by the AHJ.

1) When in the tripped position, this switch shall cause all power to be removed from the hoist motor and machine brake.
2) For static power drive applications, this switch shall be designed to operate in both directions of travel.

2. Following the refurbishing and modification work, the overspeed governor shall be tested in accordance with applicable sections of the ASME A17.1 Safety Code as adopted and/or otherwise amended by the AHJ.
3. Seal and tag the governor with the running speed, tripping speed and date last tested.
4. At Contractor's option, a new governor may be substituted and/or provided under the terms of the base Contract.

G. Equipment Isolation (Refurbish)

1. Provide sound reducing vibration isolation elements at all support points of elevator controller, solid-state motor drives, isolation transformers, reactance units, hoisting motors and machines.

2. The elements for controllers, solid-state motor drives and isolation transformers shall be similar to double deflection neoprene-in-shear mounts, as manufactured by Mason Industries, Type ND, with 0.35" static deflection under design load ratings.
3. Elements between the hoisting machine unitized base and machine support beams shall be similar to triple layer ribbed neoprene pads, separated by appropriate steel shims as manufactured by Mason Industries, Type W pads, at 50 durometer, loaded for 40 psi or approved equal.
4. All bolts through isolation elements, where necessary, are to incorporate resilient washers and bushings.
5. Isolation of existing hoisting machine and motor is contingent on the OEM design of the apparatus.

    a. Existing isolation pads shall be replaced with new.

H. Emergency Brake (New)

1. Ascending Car Overspeed Protection Device

    a. Provide a device designed to prevent an ascending elevator from striking the hoistway overhead structure.
    b. The device shall decelerate the car with any load up to the rated capacity by applying an emergency brake.

        1) The device shall detect an ascending car overspeed condition of not greater than 10% higher than the speed that the car governor is set to trip.
        2) The device, when activated, shall prevent operation of the car until the device is manually reset.
        3) The device shall meet the requirements of the ASME A17.1 Safety Code as may be modified by the AHJ.

2. Unintended Car Movement Protection Device

    a. Provide a device to prevent unintended car movement away from the landing when the car and hoistway doors are not closed and locked.

        1) The device shall prevent such movement in the event of failure of:

            a) The electric driving machine motor.
            b) The brake.
            c) The machine shaft or shaft coupling.
            d) Machine gearing.
            e) Control system.
            f) Any component upon which the speed of the car depends.
            g) Suspension ropes and the drive sheave of the traction machine are excluded.

        2) The device shall prevent operation of the car until the device is manually reset.
        3) The device shall meet the requirements of the ASME A17.1 Safety Code as may be modified by the AHJ.

3. Where the installation of the Emergency Brake involves the raising of existing hoisting machines or modifications to the machine room slab, the contractor shall provide necessary engineering data, structural review and drawings as part of the submittal process.

2.5 HOISTWAY EQUIPMENT

A. Guide Rails / Inserts / Brackets (Reuse)

1. Car and counterweight guide rails, fish plates, 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 and counterweight 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 in order to eliminate minor variations in adjoining machined surfaces.

B. Counterweight Assembly - Reuse Base Bid

1. The existing counterweight assembly shall be refurbished to as new condition and reused.
2. Individual counterweight frame members shall be inspected for any indication of damage and to determine if the overall assembly is twisted, racked, or otherwise distorted.

    a. All fastenings between counterweight frame members shall be individually examined, tightened and if necessary renewed.
    b. In case any of these conditions are found to exist, the Contractor shall immediately inform the Consultant about the exact nature of the problem and undertake whatever corrective action the Consultant may deem appropriate to remedy the situation.

3. The amount of filler weight placed within the counterweight frame shall be adjusted so the weight of the entire counterweight assembly is equal to that of the renovated elevator car, plus 40-42% of its rated loading capacity unless otherwise required by a manufacturer where new hoisting machinery is employed.

a. Filler weights shall be held securely in place at all times with tie rods passing through holes in both the weights and the counterweight frame with tie rods secured on each end with double lock nut and a cotter pin arrangement.

C. Counterweight Assembly / Frame (Alternate 2)

1. Counterweight shall consist of a steel frame welded or bolted together and necessary steel sub-weights.

a. Sub-weights shall be held within the frame by not less than 2 tie-rods passing through holes in all weights with rods equipped with locknuts, secured by washers and cotter pins at each end.
b. The counterweight shall be equal to the weight of the elevator car and approximately 40% of the contract (specified) capacity.
c. Provide the required pit counterweight guard where no compensation is used.
d. The bottom of the counterweight shall have a buffer striking plate and means to attach knock-off blocks to compensate for varying rope length.
e. Where a counterweight is located between elevators, provide a guard between the counterweight and the adjacent elevator extending the full height of the shaft as required by Code.

2. Provide a governor actuated mechanical safety under the counterweight for elevators having occupied space below their hoistways.

a. Safety, governor and operation shall be specified in other sections of these specifications.

D. Roller Guides (New)

1. Provide roller guide shoes with adjustable mounting base, rigidly bolted to the top and bottom of each side of the car and counterweight frame.

a. Roller guides shall consist of a set of sound reducing neoprene / polyurethane wheels in precision bearings held in contact with the three finished rail surfaces by adjustable stabilizing springs.
b. The bearings shall be sealed or provided with grease fittings for lubrication.
c. Equip roller guides with adjustable stops to control postwise float.
d. Fit the top car roller guides with galvanized, painted or powder coated steel guards.

2. Approved applications and manufacturers:

a. ELSCO Model A for car roller guides and ELSCO Model C for counterweight guides or approved equal.

3. Roller guides shall not be installed on counterweight frames where counterweight safeties are employed and prevailing conditions prohibit installation due to limitations in clearances or in cases where rollers will interfere with the operation of the safety plank.

E. Hoist Ropes (Conditional Reuse)

1. Existing wire hoisting ropes shall be examined and evaluated for replacement.
2. All ropes demonstrating significant wear, dry lubrication cores or any deterioration, reducing the projected life to less than five (5) years shall be renewed in conjunction with the modernization procedure.

    a. Necessary new pre-formed traction steel wire rope specifically constructed for elevator applications shall be provided for suspension of the elevator car and counterweight assembly.
    b. New ropes shall be identical in number and construction to those which are currently in use.

3. Fastenings shall be accomplished by use of individual tapered rope sockets with adjustable shackles.

    a. New hoist rope shackles shall be provided.
    b. General design requirements for rope shackles and the method of securing wire rope shall conform with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

4. Broken hoist rope shackle springs shall be replaced on an as needed basis.
5. Existing hitch plates shall be inspected for wear. Hitch plates with elongated holes or other conditions that may damage shackles shall be replaced with new.
6. Provide anti-spinout as required by applicable code at all shackles.

F. Governor Rope (Conditional Reuse)

1. Existing wire governor rope shall be examined and evaluated for replacement.

    a. All rope demonstrating significant wear, dry lubrication core or any deterioration, reducing the projected life to less than five (5) years, shall be renewed in conjunction with the modernization procedure.

2. Where replacement is required:

    a. Rope shall be traction steel or iron in accordance with OEM design requirements.
    b. Rope diameter and method of fastening shall be in accordance with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

G. Governor Rope (Alternate No. 2)

1. Pre-formed wire rope specifically constructed for elevator applications, shall be provided for governor ropes.

    a. Rope shall be traction steel or iron in accordance with OEM design requirements.
    b. Rope diameter and method of fastening shall be in accordance with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

H. Compensating Ropes (Conditional Reuse)

1. Existing wire compensation ropes shall be examined and evaluated for replacement.

    a. All ropes demonstrating significant wear, dry lubrication cores or any deterioration, reducing the projected life to less than five (5) years, shall be renewed in conjunction with the modernization procedure.

        1) Necessary new pre-formed traction steel wire ropes, specifically constructed for elevator applications, shall be provided for compensating ropes.
        2) Ropes shall be of sufficient diameter and number so as to offset the unbalanced weight of hoist ropes and traveling ropes.

2. Fastenings shall be accomplished by use of individual tapered rope sockets with adjustable shackles.

    a. Where O.E.M. method of fastening does not employ shackles, duplicate the original design method.
    b. Where shackles are required, general design requirements for rope shackles and the method of securing wire rope shall conform with ASME A17.1 Safety Code as adopted and/or otherwise modified by the AHJ.

3. Provide anti-spinout as required by applicable code at all shackles.

I. Electrical Conduit / Wiring / Traveling Cable

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 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. (New)

    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 30x the cable diameter is provided.
i. Pre-hang the cables for at least 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 and 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 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.

J. Normal and Final Terminal Stopping Devices

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 and counterweight 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 and Counterweight Buffer (Reuse)

1. Existing car and counterweight 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. Where hydraulic buffers are used:

1) Buffer plunger shall be honed free of all surface rust and blemishes and provided with a protective coating of machinist bluing.
2) The hydraulic fluid reservoir on each buffer shall be drained, flushed and refilled with fresh oil. The grade and amount of fluid added to each buffer shall conform to O.E.M. specification.

d. Provide a permanent buffer marking plate which indicates the manufacturer's name, identification number, rated impact speed and stroke.
e. Provide a permanent data plate in the vicinity of the counterweight buffer indicating the maximum designed counterweight runby in accordance with ASME A17.1 as may be modified by, and/or in addition to codes and standards accepted by the AHJ.
f. 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. Inspection Platforms and Ladders

1. Provide a steel buffer inspection platform and ladder for each car including all handrails, toe guards and accessories as required.
2. The design, fabrication and installation shall be by the Elevator Contractor and shall be in compliance with all applicable Codes.
3. Submit drawings showing details for the assembly for approval by the Owner and structural engineer.
4. Apply two (2) coats of rust inhibiting paint to exposed ferrous metal surfaces.

C. Compensating Sheave Assembly (Reuse)

1. The compensating sheave assembly shall be washed clean of accumulated grease and oil, then examined for any indication of bearing or bearing seal failure.
2. Bearings which are found to emit unusual noises, appreciable vibration, excessive heat, or other unfavorable characteristics during operation shall be replaced.
3. Defective grease retention seals shall be replaced as part of this scope of work.

4. Compensating sheave guide rails, 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.

    a. Where necessary, the Contractor shall undertake whatever repairs and/or replacements are necessary to remedy the situation.

5. Surface rust shall be removed from all reused components of the compensating sheave assembly prior to repainting.
6. The compensating sheave assembly shall be provided with manually reset electrical safety switches to trip prior to the sheave reaching the normal limit of its travel in either vertical direction.

    a. When in the tripped position, the electrical safety switch shall remove power from the hoist motor and machine brake.
    b. An existing electrical safety switch that meets the requirement set forth herein may be refurbished to as new condition and reused.

7. Where applicable, the existing compensating sheave tie-down shall be dismantled and inspected for any indication of damage or other unfavorable conditions that might interfere with their proper operation.

    a. Where necessary, the Contractor shall undertake repairs and/or replacements to remedy the situation.

8. Tie-down shall be lubricated as necessary and set to O.E.M. specifications upon completion of repairs.

D. Governor Rope Tension Assembly Counterweight (Alternate 2)

1. Provide a governor rope tension assembly.

    a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.

        1) Springs used to develop the tension are not acceptable.

    b. The sheave shall be of proper diameter and set directly plumb with the governor rope drop to prevent the rope from pulling off of the sheave at an angle.
    c. Lubrication fittings shall be provided on the assembly.
    d. The assembly shall have necessary rope guards to prevent accidental contact of the rope/sheave by service personnel and to prevent the governor rope from jumping off of the sheave.

E. Governor Rope Tension Assembly (Reuse)

1. Provide a governor rope tension assembly.

    a. Maintain the proper tension in the governor rope with a weighted tension sheave located in the pit.

1) Springs used to develop the tension are not acceptable.

b. The sheave shall be of proper diameter and set directly plumb with the governor rope drop to prevent the rope from pulling off of the sheave at an angle.
c. Lubrication fittings shall be provided on the assembly.
d. The assembly shall have necessary rope guards to prevent accidental contact of the rope/sheave by service personnel and to prevent the governor rope from jumping off of the sheave.

F. Pit Stop Switch (New)

1. Where a walk-in pit exists, each elevator shall be provided with a push/pull or toggle switch that is conspicuously numbered and designated "EMERGENCY STOP".

a. The location of this stop switch shall be approximately 47" above the pit floor at the nearest point of pit entry from the access door.
b. This switch shall be arranged so as to prevent the application of power to the hoist motor and machine brake when placed in the "OFF" position.

2. Provide an electric contact safety switch for the pit access door if any equipment attached to the car extends within the space of the hoistway pit when the car is level at the bottom terminal landing.

a. Opening the pit access door shall cause the electric contact switch to stop the elevator by interrupting electric power to the driving machine and brake.
b. Provide a sign on the pit door "**WARNING – OPENING OF PIT DOOR WILL STOP ELEVATOR**" using lettering a minimum of 2 inches high.

2.7 HOISTWAY ENTRANCES

A. Hoistway Entrances (Reuse)

1. Hoistway entrance sills, sill supports, entrance frames, headers and header 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. 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.

c. 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.

d. 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.

B. Slide Type Hoistway Entrance Door Panels (Reuse)

1. Hoistway entrance door panels shall be reused and refurbished.

a. Provide each door panel with two removable laminated plastic composition guides, arranged to run in existing sill grooves with a minimum clearance.

1) The guide mounting shall permit their replacement without removing the door from the hangers.
2) A steel wear indicator shall be enclosed in each guide.

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

1) Astragal shall be relatively inconspicuous when the doors are closed.
2) Provide rubber bumpers at the top and bottom of each section of door to stop them at their limit of travel in the opening direction.

2. 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.
3. 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.
b. Where applicable, plug the abandoned hoistway door access hole in each door panel, secured from the hoistway side of the door, finished to match existing or as otherwise directed by the Owner/Architect.

4. Where conditions warrant, or 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.

C. Tracks / Hangers / Closers / Interlocks (Reuse)

1. The existing hoistway door hangers, tracks and interlocks shall be reused and rehabilitated.
2. Roller/hanger assemblies, consisting of the roller and eccentric, shall be cleaned, degreased and adjusted for proper operation.
3. Up-thrust shall be minimized through adjustment of the eccentric roller.
4. Worn rollers and eccentrics shall be replaced where needed.
5. Thoroughly clean the track of all dirt and grease accumulations to provide a smooth surface.

a. Where track liners are employed, new liners shall be provided.

6. The interlock shall be dissembled and checked for contact wear.

    a. Worn contacts shall be replaced as required.
    b. The interlock wiring shall be replaced with new.
    c. The entire assembly shall be adjusted and checked for proper operation.

7. Closers at each entrance shall be cleaned and pivot pins lubricated. Worn and/or defective sill closers as well as noisy spirators shall be replaced as required to maintain self-closing of the hoistway doors should the elevator leave the floor for any reason with the car door open.
8. 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.

9. 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.

D. 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 8 inches or the maximum possible length that will fit between the primary members and a minimum

overall height of 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 12 inches x 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.
5. The elevator car shall undergo static balancing upon substantial completion of all work described in the project specifications and subsequent to any car interior refinishing or cab replacement work performed in conjunction with the project.
6. The 2:1 rope sheave shall be refurbished:

    a. The sheave shall be washed clean of accumulated grease and oil.
    b. Bearings which are found worn or to emit unusual noises, appreciable vibration, excessive heat, or other unfavorable characteristics shall be replaced.
    c. Defective grease retention seals shall be replaced as needed.
    d. Provide means to ensure that hoist ropes cannot jump out of their respective grooves in case of a slack rope condition.

B. Car Platform (Reuse and Refurbish)

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

    a. Where necessary, the underside of platform shall be refurbished and treated with fire-rated material.
    b. Top of platform shall be refurbished with a marine grade plywood set to receive new finished floor covering as selected by Owner.
    c. Where necessary, provide a new safety access hole ring and cover assembly to match selected cab finishes.

d. At Contractor's option or when conditions warrant, provide a totally new platform in lieu of repairs, modifications and upgraded specified above.

C. Car Safety (Reuse)

1. The existing governor actuated car safety device shall be retained, overhauled and upgraded for current code compliance.
2. Readjust safety for proper operation in accordance with current ASME A17.1 design standards.
3. Check the existing safety operated switch (plank-switch) for proper adjustment and operation.

    a. Provide a new plank-switch where none currently exists.

4. A new safety shall be provided where the existing is not suitable for reuse due to overall condition or in conjunction with an increase in the elevator speed or full load capacity.

D. 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 each 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.

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

1. An inspection operating station shall be permanently mounted 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 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 push/pull 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.

F. Load Weighing Device (New)

1. Provide means to measure the load in the car within an accuracy of ±4% of the elevator capacity.
2. Provide one of the following types of devices:

a. A device consisting of four strain gauge load cells located at each corner of the car platform and supporting a free floating car platform and cab with summing circuits to calculate the actual load under varying conditions of eccentric loading.
b. A strain gauge device located on the crosshead, arranged to measure the deflection of the crosshead and thus determine the load in the car.
c. A device consisting of four strain gauge load cells, supporting the weight of the elevator machine with summing circuits to calculate the actual load under varying conditions of load.
d. A device to measure the tension in the elevator hoist ropes and thus determine the load in the car.

3. Arrange that the output signal from the load weighing device be connected as an input to the signal and motor control systems to pre-torque of the hoisting machine motors where applicable.
4. Provide audible and visual signals in connection with the load weighing device when used as an “overload” device.

G. Car Enclosure Work Light / Receptacle (New)

1. The top and bottom of each car shall be provided with a permanent 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.

H. 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 ASME A17.1 Group 1 Security requirements.

I. Master Door Power Operator System – VVVF/AC (New)

1. Provide a heavy-duty master door operator on top of the elevator car enclosure for power opening and closing of the cab and hoistway entrance door panels.
2. The operator may be of the pivot/lever or belted linear drive type.
3. Operator 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 2.0 feet per second and closing at approximately 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.

J. Car Door Hangers / Tracks / Gate Switch (New)

1. Provide sheave type two-point suspension hangers and track for each 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.

K. Car Door Panel(s) (New)

1. Provide standard 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 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.

L. 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.

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
2) Mirror Finish: No. 8 non-directional mirror polished

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 manufacturers 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 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.
c. 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.
d. 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 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. Car Interior Finishes

1. Car interior finishes shall be as selected by Owner and/or Architect.
2. Contractor shall provide samples of finishes as required for approval prior to fabrication.
3. Refer to specifications for other design requirements where provided.
4. Special attention shall be given to flooring materials and suitability for intended duty.

C. 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 plates at each elevator entrance, on both sides of the jamb at a height of 60 inches to center line of plate.

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 each 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 elevators 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. Architect 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.
2. The operating fixtures shall be selected from the manufacturer's premium line of fixtures.
3. Custom designed operating and signaling fixtures shall be as shown on the drawings or as approved by the Owner / Architect.
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 or Architect from the manufacturer's premium line of push buttons.
    b. The button shall have a collar/ 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. Passenger Elevators:

        1) Typical Floors: 1/8" thick stainless-steel faceplate with No. 4 finish.

    b. Service:

        1) All Floors - 1/8" thick stainless steel with No. 4 finish and tamperproof screws

7. Mount passenger elevator fixtures with tamperproof fasteners and service elevator fixtures with tamperproof screws. The screw 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 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.

B. Main Car Operating Panel

1. Provide a main car operating push button panel on the inside front return panel of the car
2. Car operating panel shall be incorporated in the swing-front return of the elevator cab.

    a. Coordination with car front manufacturer shall be the responsibility of the Elevator Contractor.

3. The push buttons shall become individually illuminated as they are pressed and shall extinguish as the calls are answered.
4. 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" buttons.
    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 telephone with call acknowledging feature and A.D.A. 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.

5. Locked Firemens' Service cabinet, keyed in accordance with local Code, containing required devices and signals in accordance with ASME A17.1 Standards.

    a. Automatic opening of the locked cabinet door may be provided with signals initiated by the fire detection and alarm system where approved by the Authority Having Jurisdiction.

6. 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. Port for hand-held service tool where applicable.
    h. Dimmer for cab interior lighting.

7. Car operating panel shall incorporate:

    a. An integral digital L.E.D. floor position indicator
    b. 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.

8. Where posting of an advisory is permitted by the Governing Authority in lieu of the inspection certificate, engrave the following advisory on the hinged cover of the service cabinet, or where otherwise directed by the Owner.

    a. Elevator Certificate is On File in Building Management Office**.**

C. Auxiliary Car Operating Panel (Cars 1 – 12 only)

1. Provide an auxiliary car operating panel that contains the following:

    a. Car call registration buttons.
    b. Door open and close buttons.
    c. Illuminated alarm button.

2. Operating devices shall be of the same design, material and finish as the main operating panel.
3. Design this station so as to duplicate the layout of the main operating panel.
4. Provide a digital position indicator ID engraving to match the main car operating panel.

D. 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, 10-segment LED type position indicator with direction arrows, integral with the car operating panel.
    b. Provide Lexan cover lens with hidden support frame behind fixture plate to protect the indicator readout.
    c. Provide audible floor passing signal per ADA standards where not provided by the elevator signal control.
    d. Flush mount fixture with cover to match selected car front or car operating panel finish as directed by the Owner.

E. Voice Annunciator (New)

1. Provide a voice annunciator in each elevator.
2. The device features shall comply with the requirements of ADAAG and A117.1 where applicable.
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. A recording feature for customized messages
    c. Playback option
    d. Built-in voice amplifier
    e. Master volume control
    f. Audible indication for selected floor, floor status or position, direction of travel, floor stop and nudging and all emergency functions.

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

F. In-Car Video Display (Refurbish and reinstall)

1. Provisions shall be made for the installation of a video display panel of a type and size as selected by the Owner.

    a. Display shall be surface mounted.
    b. Contractor shall coordinate and assist in the installation of the panel within the car enclosure and/or car front return with the manufacturer of the display and Owner as part of the base scope of work.
    c. Costs associated with necessary wiring to support the display, such as power and data, shall be included in the base price.

G. Corridor Push Button Stations / Reuse Back Boxes (New)

1. Push button signal fixtures shall be provided on each landing.
2. Each signal fixture shall consist of:

    a. Up and down illuminating push buttons measuring 3/4" at their smallest dimension as selected by the Owner.
    b. A recessed mounting box, electrical conduit and wiring.

3. 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.
4. Include firefighter key switch in the main lobby level station or other designated recall landing.
5. Where existing fixtures are located greater than 48" above the floor:

    a. The existing back boxes shall be retained and used to attach the oversized fixture faceplate to locate the new buttons with a centerline of 42" above the finished floor.

        1) The Contractor has the option of providing a single oversized back box in lieu of retaining existing for faceplate attachment.

    b. Standardize the new centerline distance on all floors.

6. All cutting, patching, grouting and/or plastering of masonry walls resulting from the removal or installation of corridor fixtures shall be performed by the Contractor so as to maintain the fire rating of the hoistway.

    a. Finished painting or decorating of wall surfaces shall be by Others.

7. All faceplates shall be engraved with fire logo and "In Case of Fire Use Stairs" to help fill the void created by the use of oversized covers.

H. Floor Position Indicator (Service #13 only) (New)

1. Remove existing floor position indicator at the dock and 30th landing and provide new digital LED type unit.
2. New plate shall completely cover the present cutout and provide 2" numerals located on center.
3. Provide integral direction arrows that will indicate the direction in which the elevator is traveling.

I. Hall Direction Lanterns (New Cars 1 – 12)

1. Provide a visual and audible signal at each entrance to indicate the direction of travel and, where applicable, which car shall stop in response to the hall call.

    a. Design the lantern with up and down indication at intermediate landings and a single indication at terminal landings.
    b. Lanterns shall sound once for the up direction and twice for the down direction.

        1) Provide an electronic chime with adjustable sound volume.

    c. Provide adjustable signal time (3 to 10 seconds, with 1 second increments) to notify passengers which car shall answer the hall call and preset per ADAAG distance standards.

2. Locate the lantern in the same location as the existing lanterns.

J. 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 a separate fixture with a flush cover plate at a height between 48" and 72" above the finished floor. Cover plate shall be of a design and style as approved by the Owner, the Owner's representative or Architect.
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.

K. Lobby Control Panel (New)

1. Provide a Lobby Control Panel for elevators as directed by the Architect.
2. Provide stainless steel faceplate with tamperproof screws.

3. The panel shall include:

    a. 2” high LCD car position and travel direction indicators.
    b. Master intercom station / telephone.
    c. Three (3) position (on/car to lobby/off) switches.
    d. Emergency power controls and indicators as per code requirements.
    e. “Car at the designated floor with its doors open” indicator.
    f. System trouble indications.
    g. Car call floor lockout switches.
    h. Floor lockout switches as herein further specified.

L. Lift-Net Elevator Management Information System (New) (Alternate 3)

1. The data collection, data storage and real-time monitoring portion of the system shall be based on Microsoft Windows, and able to run on Windows 7 or later operating systems.
2. The system shall:

    a. Be network-based and be capable of interfacing with all makes and types of elevator control systems.
    b. Collect data via either serial data link or hardwired interface connections.
    c. Be capable of operating on any TCP/IP based network system including but not limited to Ethernet, Token Ring, Arc-net and Lift-Net.
    d. Allow the addition of unlimited monitoring terminals on the network.

3. Systems shall be located:

    a. At the main Lobby desk.
    b. On the 30th floor in the building maintenance office.
    c. In each machine room for monitoring and troubleshooting of the elevator equipment.

4. Monitoring terminals shall operate "peer to peer" without a single server, and the failure of a single network device shall not affect the operation of the rest of the system.
5. The system shall provide multiple banks, including multiple buildings, on a single monitoring terminal screen.
6. All monitored banks shall be visible from any monitoring terminal on the network.
7. Entry into the network shall be multi-level password protected.

    a. The system shall be capable of real time display of all monitored status points on all monitored equipment.
    b. Fault and event notification screens and audible alarms shall be immediately displayed on selected monitoring stations.
    c. Different fault and event tables shall be defined on a per-bank basis.
    d. The system shall collect and store all status, fault and event information for later reporting and analysis.
    e. The system shall provide statistical analysis of hall call response times, traffic patterns, fault conditions, service logs and security usage in graphical and tabular format.
    f. The system shall maintain a record of every status point change occurring on the monitored equipment and provide the ability to replay these events in a simulation at a later time in real time, slow speed, single step, reverse, or fast forward.

1) This information shall be retained for a period of at least twenty-six weeks, and a mechanism shall be provided whereby this information may be archived.

g. The system shall store traffic, fault and statistical data for a period of at least three (3) years.

1) The system shall log error type, car number, floor position and major system status points whenever a fault or logged event occurs.

h. The system shall provide interactive control of certain features provided in the elevator control system which may be revised as the requirements of the building change.

i. Interactive controls shall include but are not limited to:

1) Security floor lockouts
2) Entering car and hall calls
3) Firefighter's return service
4) Lobby recall
5) VIP service
6) Suspicious person / security return
7) Up/Down peak
8) Hospital Code Blue service (per local codes). Local codes may affect the availability or operation of these features.

j. In the case of a power failure the system shall be capable of connecting to an emergency power back-up unit without the loss of any stored data.

8. The system will automatically re-boot the program and continue to operate after a power loss or other system malfunction.

9. The Elevator Monitoring Equipment shall have the following minimum characteristics:

a. Monitoring Station Hardware

1) Central processing unit - IBM compatible microcomputer - desk top or mini-tower (multiple machine rooms or lobby displays)
2) Type - Pentium or most current high-performance processor
3) Speed - most currant high-performance
4) Internal hard drive - adequate storage for three years data for entire system
5) Modem - most current high-performance
6) Display - color, capable of simultaneous display of all monitored units
7) Printer - current HP Color Desk Jet Series
8) Keyboard - MS Windows compatible
9) Mouse - MS Windows compatible
10) Power requirements - 90 - 230 Volts AC 50 - 60Hz

b. Machine Room Hardware

1) Controller interface panels with high quality printed circuit boards
2) Input voltage range - 5 - 250V AC/DC

3) Compatible with all types and makes of controllers
4) Operating temperature range - 45 - 112 degrees Fahrenheit
5) Humidity range - 10% - 85% non-condensing
6) Modular design - capable of future expansion
7) Power requirements - 90 - 230 VAC 50 - 60Hz @ 3A

10. The system shall display and record the following information for each monitored unit: (The following is intended as a guideline - connections to each status point mentioned on every control system may be impractical. Serial data links may include many more points.)

a. Group operational mode
b. Multiple groups or buildings on the same screen
c. In/out of service
d. In/out of group service
e. Emergency power
f. Supervisory failure
g. Location and direction of hall calls
h. Individual car status - expandable menus
i. Direction of travel
j. Independent service
k. Inspection service
l. Fire service
m. Position of elevator
n. Door status (open, opening, closing, closed)
o. Door dwell time
p. Load by-pass
q. Emergency power
r. Power on/off
s. Door detector
t. Safety circuit
u. Door zone
v. Stop switch
w. Alarm button
x. Registered Car Calls

11. Keyboard, Mouse and Time Clock Control capabilities

a. Floor lockouts (car or hall)
b. Lobby recall
c. VIP service
d. Firefighter's service
e. Hospital Code Blue
f. Up/Down Peak
g. User defined parameters (minimum eight (8) inputs)

12. Faults monitored with visual and audible alarm, triggered by combinations of any of the above status points

a. Safety circuit
b. Alarm bell

c. Door reversal devise
d. Earthquake
e. At least six user selectable faults or events

13. Contractor shall be responsible for all wiring, conduit and network devices that may be necessary for a complete working installation.

M. Emergency Power Control Panel

1. Provide the lobby console or other designated location with a control panel for emergency power operation as further specified.

a. An emergency power control panel provided at the designated location.
b. The panel shall contain:

1) An indicator light that illuminates when a transfer to emergency power takes place.
2) Indication that the elevators have arrived at the designated landing and have parked with the doors maintained in the open position.
3) Key-operated override switch(es) and a manual selector switch(es) identified with positions for each elevator.

2. The control panel shall be engraved so as to identify the function of each control feature and device provided.
3. The Elevator Contractor shall provide all necessary electrical conduit and wiring between the elevator machine room(s), and the Emergency Power Control Panel.

2.11 CAR ENCLOSURES

A. Elevator Car Enclosure(s) and the Five Percent (5%) Rule:

1. In accordance with A17.1, Section 8.7, as adopted and/or modified by the AHJ, entitled "Alterations", where a new or remodeled elevator car enclosure is included in the base scope of work, the Contractor shall, within thirty (30) days after execution of the contract, weigh the elevator, or one elevator of each group of elevators included in the base scope of work, to determine the present deadweight of the platform/sling/cab assembly.
2. The Contractor shall, when necessary, weigh the interior materials of a single cab to better estimate the total existing weight of existing materials being removed as part of the alteration.
3. The Contractor shall make every effort to provide accurate weight measurements while taking into consideration all weights that may present themselves at the time the measurement is taken such as compensation, compensating sheave, hoist ropes and traveling cables that may affect the measurement of the assembly itself.
4. The Contractor shall evaluate the actual counterbalance percentage for each sample elevator to identify prevailing conditions.
5. Measurements of actual cab weight shall be compared to the original deadweight of the car as stamped on the crosshead data tag.

6. Where no data tag exists, the Contractor shall make every effort to determine the original weight of the platform/sling/cab through calculations based on the current weight of the counterweight assembly and the verified percent of full load counterbalance.
7. The amount of weight that may be added to the car, so as to remain within the limits of the "5% Rule", shall be calculated based on the following:

    a. (Original Deadweight + Capacity) X (0.05) = Maximum Additional Weight Allowed

8. The Contractor shall document and notify the Owner and Consultant of the results of the measurements taken and what weight, if any, can be added or needs to be removed from the cab in order to maintain compliance with the 5% Rule.
9. The Contractor shall work diligently with the Owner and/or Owner's Representative and/or Architect as well as the manufacturer of the car enclosure to minimize additional weights of the new or remodeled car enclosure so as to maintain compliance with the 5% Rule.
10. Contractor shall be responsible for proper adjustment of the counterbalance of the system, including the static balance of the platform/sling/car enclosure, upon completion of the car interior work.
11. Costs associated with this work shall be included in the base modernization price.
12. Provide a new data tag on the crosshead of the elevator indicating the new deadweight, the current percent counterbalance and the date of the alteration.

B. Elevator Cab Remodel Allowance ($25,000 per elevator)

1. It is understood that if the selected manufacturer of the cab is not the same as the Elevator Supplier, all cab material will be constructed in a manner to accommodate the elevator manufacturer's associated equipment, such as operator, hangers, interlocks, etc., as purchased by the Owner or Owner's Agent.
2. The net allowance for the elevator cabs are to be exclusive of:

    a. Handling charges.
    b. Applicable sales and/or use taxes.
    c. Car door hangers, interlocks, exit contact locks.
    d. Platform, flooring, car door sill.
    e. Car installation, operating equipment, and such items are to be included by the Elevator Supplier in the base contract.

3. The net allowance covering the elevator cars of a design and material as selected shall include:

    a. Ventilation and lighting.
    b. Doors.
    c. Base wainscoting.
    d. Handrails.
    e. Entrance columns.
    f. Transoms as required.
    g. Necessary cutouts.
    h. All necessary cutouts and cab associated appurtenances that may be designed or required.

4. The Owner or Owner's authorized representative reserves the right to deduct the net allowances from the Elevator Contract and to purchase the elevator cabs separately.
5. The Owner retains the right to assign this purchase to the Elevator Supplier for coordination and receive the necessary credits or make the installation by an authorized representative of the Architect and/or Owner.
6. Contractor shall include all costs associated with coordination of cab related work in the base modernization bid including static and dynamic balance of the system.

2.12 EMERGENCY LIGHTING / COMMUNICATIONS / SIGNALING

A. Battery Back-Up Emergency Lighting Fixture and Alarm

1. Provide a self-powered emergency light unit.

    a. Arrange two (2) of the cab light fixtures to operate as the emergency light system.
    b. Where cab lighting is utilized for emergency lighting, Contractor shall coordinate the battery back-up equipment so that it is compatible with the type of cab lighting specified by the Owner or Architect.

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 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. Common Alarm Bell

1. Provide a common alarm bell located in the elevator pit.

    a. The bell shall be configured to operate when the alarm or stop switch of any elevator is activated, during both normal and battery back-up power conditions.
    b. Existing common alarm bells may be rehabilitated and reused providing they meet the intent of this section and applicable codes.

C. Emergency Voice Communication / Telephone

1. A hands-free emergency voice communication system shall be furnished in each 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. Each 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, each hands-free device shall have built in line consolidation which will allow up to 6 elevators to be called individually from outside the building over a single telephone line and up to 80 elevators if an On-Site Rescue Station is provided.

7. The emergency elevator communication system shall require a maximum of one 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 elevators 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 30 seconds, the call will be automatically forwarded to a 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 electrical work shall conform to Division 16 requirements.
12. Existing phone systems removed shall be returned to the Owners for installation by others in other areas.

D. Firefighters' Two-Way Telephone Communications System

1. Provide a complete two-way telephone communications system for point-to-point communications between authorized personnel.
2. Provide firefighter telephone box or telephone jack in the car operating panel in accordance with the requirements of the local authorities. The box shall be fitted with a flush mounted door having hairline joints.
3. Connection devices (jacks) and all associated wiring shall be provided by the elevator Contractor as part of the base bid.
4. The handsets shall be self-powered and not require an external power source for operation.

    a. The firefighter phone shall be furnished under Division 16.

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 elevators, 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. insure and adjust guide rails plumb and parallel with a tolerance of 1/8" (plus or minus 1/16")
8. Set entrance plumb in hoistway and in alignment with guide rails prior to erection of the front walls.
9. Arrange door tracks and sheaves so that no metal-to-metal contact exists.
10. Reinforce hoistway fascias to allow not more than 1/2" of deflection.
11. Install elevator cab enclosure on platform plumb and align cab entrance with hoistway entrances.
12. Sound isolate cab enclosure from car structure. Allow no direct rigid connections between enclosure and car structure and between platform and car structure.
13. Isolate cab fan from canopy to minimize vibration and noise.
14. 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.
15. Prehang traveling cables for at least 24 hours with ends suitably weighted to eliminate twisting after installation.
16. After installation, touch up in the field, surfaces of shop primed elements which have become scratched or damaged.
17. Lubricate operating parts of system as recommended by the manufacturer.

B. Project Phasing

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

a. Include three (3) days 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 AJH and the Consultant prior to turn-over for beneficial use by the Owner and removal of the next elevator for modernization.

C. Removal of Elevators

1. If extenuating circumstances (i.e. separating controller interconnections, inspection, testing, etc.), require that multiple cars of a single elevator group be removed from service simultaneously, the work shall be performed outside of the normal business hours at a time mutually agreed to by the Owner and Contractor.
2. A minimum of five (5) days advance written notice shall be given to the Owner and Elevator Consultant by the Contractor detailing the reasons for the simultaneous removal of the elevators from service along with the estimated out-of-service time.
3. The request shall be subject to review by the Elevator Consultant and approved by the Owner prior to the commencement of the work.
4. Costs for this work in addition to associated expenses shall be included as part of the base bid pricing.

D. Transfer of Hall Button Risers

1. Transfer of the hall button riser(s) to the new signal control systems shall be performed on a not-to-interfere basis and shall not interrupt building operations or inconvenience building occupants.
2. Costs for this work in addition to associated expenses shall be included as part of the base bid pricing.

3.3 FIELD QUALITY CONTROL

A. Inspection and Testing

1. Upon completion of each work phase or individual 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 an individual unit or group of units 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

1. 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.
2. As required, the Contractor shall provide temporary wire mesh screening in the hoistway and of any elevator undergoing work specified in the Contract Documents. This screening shall be installed in such a manner as to completely segregate the hoistway from that of adjacent elevators. Screening shall be constructed from .041" diameter wire in a pattern that rejects passage of a 1" diameter ball.

3.5 DEMONSTRATION

A. Performance and Operating Requirements

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

   a. Speed: within ±3% in both directions of travel under any loading condition.
   b. Speed within 5% of rated speed in the up direction under any loading condition.

c. Leveling: within ±1/4" as measured between the car entrance threshold and the landing sill on any given floor under any loading condition.
d. 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.

Group Passenger Elevators	9.1 – 10.2 seconds
Service Elevator 13	13.8 – 15.9 seconds

e. Door Operating Times:

Door Type	Opening	Closing
Single-speed center opening	1.5 – 2.0 sec.	2.5 – 3.0 sec.
Two-speed side opening	2.8 – 3.4 sec.	5.5 – 6.5 sec.

f. Door dwell time for hall calls: 4.0 sec with Advance lantern signals
g. Door dwell time for hall calls: 5.0 sec without Advance lantern signals
h. Door dwell time for car calls: 3.0 seconds
i. Reduced non-interference dwell time: 1.0 second

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

a. Where pit permits, extend bottom roller guides by not less than one half the distance from the centerline of the upper roller guides to the platform.
b. 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.

c. Vertical accelerations shall not exceed 14 milli-g and horizontal accelerations shall not exceed 25 milli-g.

1) The accelerometer used for this testing shall be capable of measuring and recording acceleration to nearest 0.01 m/s^2 (1 milli-g) in the range of 0-2 m/s^2 over a frequency range from 0-80 Hz with ISO 8041 filter weights applied. Accelerometer should provide contact with the floor similar to foot pressure, 60 kPA (8.7psi).

d. The amplitude of acceleration and deceleration shall not exceed 3.5 - 4 $ft./sec^2$ for gearless traction elevators.
e. The maximum jerk rate shall be 1.5 to 2.0 times the acceleration and deceleration.
f. The maximum velocity which the elevator achieves in either direction of travel while operating under load conditions that vary between empty car and full rated load shall be within ± 3% of the rated speed.

B. Acceptance Testing

1. Comply with the requirements of Division 01.

2. 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 any single unit of vertical transportation equipment.
3. 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.
4. 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. Sustained high-speed velocity of the elevator in either direction of travel.
    c. Brake-to-brake running time and floor-to-floor time between adjacent floors.
    d. Floor leveling accuracy.
    e. Door opening/closing and dwell times.
    f. Ride quality inside the elevator car.
    g. Communication system.
    h. Load settings at which anti-nuisance, load dispatch, and load non-stop features are activated.

5. Upon completion of work specified in the Contract Documents on the last car in any group of elevators, 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.
6. The Contractor shall provide test instruments and qualified field labor as required to successfully demonstrate:

    a. The back-up operating mode for group dispatch failure
    b. Simulated and actual emergency power operation
    c. Firefighter and independent service operations
    d. Restricted access security features and card reader controls
    e. Zoning operations and floor parking assignments
    f. Up/down peak operation

7. Upon completion of the modernization of each individual elevator, emergency power testing shall be conducted by the Building Management after normal business hours and/or weekends.
8. After hour tests of systems such as emergency generators, fire service, and security systems shall be conducted at no extra cost to the Owner.

END OF SPECIFICATION

SECTION 14 01 20

OWNERS FORM OF VERTICAL TRANSPORTATION MAINTENANCE CONTRACT AND SPECIFICATIONS FULL COVERAGE

FOR

THIRTEEN (13) GEARLESS TRACTION ELEVATORS

AT

LIGHTWELL

1100 MAIN STREET

KANSAS CITY, MO

DATE: May 20, 2019

Elevator Contractor:

DIVISION 14 – CONVEYING EQUIPMENT

14 00 00 Conveying Equipment

14 01 00 Maintenance of Conveying Equipment

14 01 20 – Maintenance of Elevators – Full Coverage Contract and Specifications (hereinafter called the Contractor) shall furnish services to Somera Road - 1100 Main Street, LLC, 130 W 42nd Street, 10th Floor, New York, NY 10036 (hereinafter called the Purchaser) on the following vertical transportation systems and related equipment located at Lightwell, 1100 Main Street, Kansas City, MO.

- Thirteen (13) gearless passenger elevators

1.1 CONTRACT INTENT

A. The purpose of this agreement is to state and define the terms and conditions under which the Contractor shall provide full comprehensive maintenance and repair services for vertical transportation systems identified, and the terms and conditions under which the Purchaser shall compensate the Contractor for such services rendered.

B. It is the intent of this Contract to ensure all requirements, procedures, tests, inspections, service practices, component repairs, equipment renewals, system adjustments, filing procedures and recording documentation as referenced, mandated or otherwise implied herein are all inclusive, and to guarantee the Purchaser the absence of a particular item of work, service or procedure shall not alleviate the Contractor of the sole responsibility to provide such labor, expertise, materials, equipment, services or other procedures applicable to the agreement and practical requirements unless same is specifically excluded, prorated or deleted herein.

C. Minimum standards and requirements for services to be rendered shall be performed in accordance with the specifications and relative time periods. Where there is no specific requirement for a preventive maintenance procedure, the original equipment manufacturer (O.E.M.) standard shall be employed unless there is no relative documentation available. The absence of both a contract requirement herein and the O.E.M. design standard shall cause the contractor to engage the services of a qualified engineer to formulate the relative standards and incorporate same as an addendum to this agreement with the Professionals' Seal and Stamp.

1.2 DEFINITIONS OF TERMS

A. The term “Purchaser” or “Owner,” as used herein, refers to the person, organization, corporation or other entity representing building ownership and the relative responsibilities under this contract.

B. The term Purchaser’s or Owner’s “Agent,” “Designee,” “Representative” or references of similar import, as used herein, refers to any outside agent hired or retained by the Owner(s) for the purpose of providing management services that has been deemed a legal representative of the Owner(s) or any person designated by the Owner(s) as the legal representative of the Owner(s) for the purpose of coordinating and purchasing this contract.

C. The term “Authority,” “Governing Authority (GA)”, “Authority Having Jurisdiction (AHJ),” or references of similar import, as used herein, shall mean the local government agency responsible for enforcement of vertical transportation safety codes and local laws or their designated representative, private inspection agency, consultant or other licensed designee.

D. The term “Contractor,” “Elevator Contractor” or “Vendor” as used herein, refers to any persons, partners, firm, corporation or officer(s) of such companies having an agreement with the "Purchaser / Owner" to furnish qualified labor and materials for the execution of the services and maintenance work described herein.

E. The term “Subcontractor,” as used herein, refers to any persons, partners, firm or corporation having materials and/or labor for the execution of the work herein described.

F. The term “Consultant,” as used herein, refers to VDA® (Van Deusen & Associates, Inc.).

G. The term “Agreement,” “Contract” or “Contract Documents,” as used herein, consists of this specific document, pages 1 to 27; and any alternates, addenda, or substitutions as may be referenced under exhibits or riders approved by the parties for the final execution of the Agreement.

Exhibit “A” – Schedule for Initial Base Hourly Rates for Contractor’s Personnel
Exhibit “B” – Contractor’s Schedule of Unit Prices
Exhibit “C” – Owner’s Insurance Requirements
Exhibit “D” – Guarantees, Supplemental Requirements and Execution

1.3 ABBREVIATIONS AND SYMBOLS

A. Abbreviations for associations, institutions, societies, reference documents and/or governing agencies, which may appear in the Contract Document, shall mean the following:

AIA	American Institute of Architects
ANSI	American National Standards Institute
ASME	American Society of Mechanical Engineers
BOCA	Building Officials and Code Administrators International, Inc. (Basic National Building Code)
A.H.J.	Authority Having Jurisdiction
G.A.	Governing Agency
NEC	National Electrical Code
OSHA	Occupational Safety and Health Administration

1.4 AGREEMENT COVERAGE

A. The entire vertical transportation systems shall be maintained as hereinafter described, in accordance with the following detailed terms. Trained employees of the Contractor will use all reasonable care to keep the systems in proper adjustment and in safe operating condition, in accordance with all applicable codes, ordinances and regulations. The requirements are specified in the singular with the understanding that all provisions shall be applicable to all units indicated unless otherwise specified.

B. The specifications are written in the singular with the understanding identical work, materials and equipment shall be provided for all vertical transportation units identified unless otherwise specified.

C. With the exception of only those items specifically identified as being performed by others, the contract specifications are intended to include all engineering, material, labor, testing, and inspections needed to achieve work specified by the contract. Inasmuch as it is understood that any incidental work necessary to execute the agreement is also covered by the contract specifications, the contractor is cautioned to familiarize himself with the existing equipment and job site conditions. Additional charges for material or labor shall not be permitted subsequent to execution of the Contractual Agreement for work, services or procedures covered herein.

D. Maintenance coverage shall include, but is not limited to, preventive services, call-back services, inspection and testing services, repair and/or direct replacement component renewal procedures.

1.5 HOURS OF WORK

A. All scheduled work shall be performed during regular working hours of the regular working day of the elevator trade, 8:00 A.M. to 4:30 P.M., Monday through Friday, except union designated holidays.

B. Scheduled repairs and/or other major adjustment procedures necessitating removal of an elevator for an extended period of time must be scheduled through the Purchaser or Owner Designee.

1. The Purchasers' Representative retains the right to have such work completed during overtime hours with the understanding the Contractor shall pay for the regular labor portion and the Owner's / Purchasers' extraordinary obligation is extra premium labor costs only.
2. Call-back services shall be made available twenty-four (24) hours per day, seven (7) days per week including weekends and holidays as further specified herein.

1.6 SOLE RESPONSIBILITY

A. The maintenance work shall be performed only by Qualified Technicians and Mechanics directly employed and supervised by the Contractor, who are experienced and skilled in maintaining vertical transportation units similar to those to be maintained under this Contract and shall not be assigned or transferred to any agent or subcontractor without the express consent of the Owner's Designee or Purchaser.

B. It is mutually agreed that the Contractor shall not be under any obligation hereunder to make any repairs or replacements except those incidental to the normal operation of the machinery, and that the Contractor is not required under this Contract to make repairs or replacements necessitated by reason of malicious damage, fire, including non-elevator component electrical fire, which are the result of causes beyond Contractor's control. All repairs, if necessitated by this paragraph, will be performed at a fee not to exceed the standard rate in effect at the time service is performed.

1. It is mutually agreed that the Contractor shall make any and all repairs or replacements damaged by Contractor's improper repair, negligent or willful acts or omissions.

1.7 COMPENSATION

A. Payment for services rendered shall be made on a monthly basis, within thirty (30) days of the end of each billing period. In addition, Purchaser shall pay any tax imposed upon the contractor by existing or future law, as due in conjunction with the services rendered or purchase of materials used to provide the services.

1. Payment for Call-back services shall be included in the fixed monthly lump sum price for services rendered twenty-four (24) hours per day, seven (7) days per week, without extra charge to the Purchaser / Owner.

1.8 SUBSEQUENT EQUIPMENT MODERNIZATIONS/ALTERATIONS/UPGRADINGS

A. Full comprehensive service and repair coverage shall be included under the terms of this agreement when equipment and/or component systems represented herein are modified or upgraded.

B. Such changes in equipment necessitating continuing full maintenance coverage may be initiated by the Owner under a separate voluntary extra cost upgrading agreement with or without this Contractor's permission or direct authorization and involvement before the work is performed.

C. All non-elective changes or modifications necessitated due to obsolescence, parts unavailability or the Contractor's inability to maintain these systems in accordance with the contract specifications shall be fully covered under this agreement regardless of application, method or cost assignment for the life of the contract.

D. Modernized or otherwise upgraded systems and parts thereof shall automatically be included under the terms of this full comprehensive agreement whether such components are specifically identified or not without extra cost to the Owner.

1.9 NOTICE BY AUTHORITY OR COMPANY TO REPAIR OR REPLACE

A. The Contractor shall comply with all written recommendations of the governing authority or independent inspectors, consultants and insurance carriers employed by the Owner. However, Contractor is not required under this Contract to install new attachments or parts other and different from those now constituting the equipment, as recommended or directed by insurance companies, Government Authorities, or otherwise.

1.10 RECORD KEEPING

A. A complete permanent record of inspections, maintenance, lubrication and call-back service shall be kept in the machine room or other designated location at the site of work. These records are to be available to Owner's Designee at all times. The records shall indicate the reason the mechanic was in the building, arrival and departure time, the work performed, etc., and these records will be property of the Owner. Record keeping requirements shall include Contractor assigned maintenance personnel and scheduled preventive maintenance procedures, inspections, tests and third party assisted examinations.

1.11 RECORD DRAWINGS

A. Contractor shall provide and maintain two (2) complete sets of updated electrical wiring diagrams and control schematic drawings on file with the building and they are to become the property of the Owner for each group and/or individual system.

1.12 REPORTS BY CONTRACTOR

A. The Contractor shall, at any time during the term of this Contract, upon written request of the Owner, render a report of inspections, repairs or replacements made by the Contractor at the premises herein, itemized as to parts installed or services performed and supply samples of lubricants, compounds, or other materials employed.

1. Contractor shall prepare and issue all required forms and/or reports relative to examinations, tests and inspections as specified herein.

1.13 PRICE ADJUSTMENT

A. Labor Contracts and Overtime:

1. It is further understood and agreed that the Contractor shall furnish to the Owner in duplicate, a copy of his current labor contract and any subsequent labor contracts effective during the term of this Contract pertaining to his elevator maintenance personnel, and the Contractor further agrees to furnish any additional information concerning overtime charges to the Owner at any time upon request.

B. The Contractor shall be entitled to a review of his labor and material costs for the purpose of adjusting the maintenance fee thirty (30) days prior to the annual renewal date of this agreement each year.

C. Upon submission of proof, satisfactory to the Owner, that the Contractor's actual labor and/or material costs for performance of service have changed, the monthly price for service coverage shall be adjusted in an amount equal to the established variance based on the following formula:

1. Eighty percent (80%) of the current fee shall be used to represent the labor portion of the contract.
2. Twenty percent (20%) of the current fee shall be used to represent the material portion of the contract.

D. The current labor portion of the contract shall be increased or decreased by the percentage of increase or decrease of the current straight-time hourly rate for a mechanic, compared with same rate used for the previous year’s labor portion of the agreement.

1. The initial base labor cost amount is $ This represents the cost of the maintenance Mechanic’s hourly wage with associated cost fringe benefits. (No additional overhead or profit.)

E. The current materials portion of the contract shall be adjusted based on the established monthly difference in the "Producer Commodity Prices for Wholesale Metals and Metal Products Index" as published by the United States Department of Labor, Bureau of Labor Statistics during the month within such adjustment occurs for comparison.

1. Using as the base month, the material factor is

F. Annual adjustments shall be effective the first day of the new contract and shall remain unchanged for the next twelve (12) months.

G. Notwithstanding anything to the contrary, the maximum annual increase shall not be more than three percent (3%) of the total contracted payment for the preceding contract year.

1.14 INSURANCE COVERAGE

See Exhibit "C" – OWNER'S INSURANCE REQUIREMENTS

1.15 CANCELLATION

A. The Purchaser/Owner shall have the right to cancel this Contract upon at least thirty (30) days prior written notice to the Contractor of its election to do so without penalty for the following:

1. Elective upgrading of apparatus awarded to another vendor.
2. Substandard services and/or poor maintenance practices as confirmed by the Consultant or other qualified professional.
3. Failure to comply with governing authority directives and/or citations.
4. Cost analysis completed prior to expiration date.

B. In addition to the rights provided in paragraph "A" hereunder, the Purchaser/Owner shall have the right to cancel this Contract immediately, upon the occurrence of any of the following contingencies: Bankruptcy of the Owner or Contractor, mortgage foreclosure, condemnation, destruction, or transfer or conveyance of Title to the premises in which the subject equipment is located or the premises in which the subject equipment is located is rendered unusable in the opinion of the Purchaser/Owner.

C. Cancellation of this agreement prior to the expiration date shall entitle the contractor to payment for services rendered up to and including the date of cancellation; and, the Purchaser shall not be responsible for any expenses or subsequent costs that may be incurred by the contractor as a result of an early cancellation or standard contract agreement expiration.

1.16 NOTICES

A. All notices to be given under the contract shall be in writing and addressed to the party to be notified, postage prepaid, by registered or certified mail, return receipt requested, or by delivering the same in person to such party. All notices shall be deemed to have been given as of the date of delivery indicated on the return receipt or date of failure to deliver by reason of changed address of which no notice was given or refusal to accept delivery, or when personally delivered. Any

party or person to whom notices are to be sent or given pursuant to the Contract may, by notice to all such other parties or persons mentioned herein, change its address for the giving of notices, provided, however, that a notice of change of address shall be deemed effective only when received by the addressee. Notices to be given hereunder shall be sent or delivered to:

Contractor:

Attn:

Purchaser Designee/Owners' Representative:

Somera Road - 1100 Main Street, LLC
130 W 42nd Street, 10th Floor
New York, NY 10036
Attn: Basel Bataineh

1.17 PAYMENT/TERMS

A. This service will be furnished from COMPLETION OF WARRANTY for the period of three (3) years. All replacement parts, repairs, adjustments and associated services, as specified herein, shall be supplied, installed, performed and conducted at the Contractor's sole cost and expense unless otherwise specified herein.

1. Automatic Renewal:

a. The Purchaser/Owner shall have the right to renew this agreement on a year-to-year basis upon expiration of the initial Contract period. All terms, conditions and provisions shall remain intact.

2. The Purchaser/Owner agrees to pay the Contractor on a monthly basis, the fee of Dollars ($)during the term of this agreement, subject to price adjustments as specified herein.

a. Monthly invoices shall indicate the base monthly portions of the contract amount due under the agreement for maintenance services.
b. Any state or local tax charges, which may be applicable, are not included in the monthly fee indicated and shall be itemized on the monthly billing invoice statement accordingly.
c. Extraordinary work and/or other work, as approved by the Purchaser/Owner, shall be invoiced separately upon completion and acceptance of the work or other services performed.

1.18 NON-PAYMENT

A. The Purchaser/Owner may have the Contractor's work and systems' performance operations checked monthly to ensure the Contractor is performing in accordance with this Contract. If the

work requirements are not maintained, the Purchaser/Owner will retain the monthly payment to the Contractor until the Consultant verifies that the work and/or operating performance is back to standard. If three (3) consecutive months of substandard maintenance is noted, the Owner has the right to immediately cancel the Contract without notice to the Contractor.

B. The Consultant, Purchaser and/or Owner's Designee may withhold approval for payment on any request to such extent as may be necessary to protect the Owner from loss on account of:

1. Negligence on the part of the Contractor to execute the work properly or failure to perform any provisions of the contract. The Owner, after three (3) days written notice to the Contractor, may, without prejudice to any other remedy, make good such deficiencies and may deduct the cost of the contract.
2. Claims filed or reasonable evidence indicating probable filing of claims due to the Contractor's failure to perform.
3. Failure of Contractor to make payments properly to subcontractors for material and labor used to fulfill contractual requirements.
4. Damage to the building as a result of work performed or another subcontractor's failure to perform.

1.19 ERRORS AND OMISSIONS

A. Contractor shall notify the Purchaser and Consultant in writing regarding any necessary services, coverage or items which may have been omitted from the maintenance contract specifications and any irregularities, discrepancies or duplications that could affect the full comprehensive intent of the agreement.

1. Any duplication of work or coverage is specified as a means of demonstrating the contract requirements, but such duplication if any, is not intended to expand coverage or increase requirements for such work or services and such duplication shall not increase costs or provide justification for extra or additional charge to the Purchaser.

1.20 LABOR LAWS

A. The Contractor performing work under this contract shall comply with applicable provisions of all federal, state and local labor laws.

1.21 ASSIGNMENTS

A. Neither party to the contract shall assign the contract or sublet it as a whole without the written consent of the other, nor shall the Elevator Contractor assign any payment due him or to become due to him hereunder without the previous written consent of the Owner.

1.22 FORCE MAJEURE

A. Neither party shall be liable by reason of any failure or delay in the performance of its obligations due to strikes, riots, fires, explosions, acts of God, war, governmental action or any other cause

which is beyond the reasonable control of such parties. The performance of such party shall be excused for such reasonable time as may be required to resume performance following cessation of such cause.

1.23 CONTRACTOR'S LICENSE

A. If required by law, Contractor certifies that it is licensed in the state, municipality and/or local jurisdiction where the property is located to perform the elevator maintenance services pursuant to this Agreement, and that the license will be maintained current and valid for the Initial Term and any renewal term of this Agreement.

1.24 WAIVER

A. A waiver by either party of any term or condition of this Agreement in any instance shall not be deemed or construed as a waiver of such term or condition for the future, or of any subsequent breach thereof. All remedies and rights of the parties contained in this Agreement shall be cumulative.

1.25 ATTORNEYS' FEES

A. In the event litigation be commenced by either party hereto against the other in connection with the enforcement of any provision of this Agreement, the losing party shall pay all court costs and shall pay to the prevailing party all expenses incurred by the prevailing party in litigation, including attorneys' fees in a reasonable amount to be determined by the court. The amount so allowed as attorneys' fees shall be taxed to the losing party as costs of the suit, unless prohibited by law.

1.26 LIMITATION OF LIABILITY

A. It is expressly understood and agreed by the Parties that Purchaser, its parent, subsidiaries and/or affiliates shall not be liable or responsible in any way for any loss of or damage or injury to any equipment as referred to in this Agreement or other personal property belonging to Contractor or any personnel of Contractor while in any area of the building; nor shall Purchaser, its parent, subsidiaries and/or affiliates be liable for any injury suffered by any personnel of Contractor while on or in the Owner's property. Personnel of Contractor shall make all necessary arrangements for the safety and security of such equipment and other personal property at all times.

1.27 AGREEMENT DESIGN

A. It is agreed that this Agreement and any attachment and/or exhibits are contractual in nature and voluntarily entered into by both Parties as their free act and deed, acting in their individual judgment without reliance upon any statement or representation of the other party. This Agreement, any attachments and exhibits constitute the entire understanding, oral or written, between the Parties, and supersedes any and all prior discussions and/or agreement between the Parties. The parties agree that any alteration to any exhibits, attachments or addenda noted therein

or herein, and attached hereto shall be null and void, unless made in writing by mutual agreement or Customer and Contractor. The Parties agree to execute whatever additional documents are deemed reasonably necessary to effectuate this transaction.

B. Both parties have participated in the preparation of this Agreement, and have been afforded the opportunity to have this Agreement reviewed by legal counsel and/or other consultants of their choice. It is agreed that the normal rule of construction against the drafter shall not apply to the provisions of this Agreement.

1.28 SEVERABILITY AND REFORMATION

A. This Agreement is binding upon the Parties, their respective successors, assigns and legal representatives. If a Court, having competent jurisdiction, determines that one or more of the provisions is invalid or unenforceable, the Court will have the right to modify same to the minimum extent necessary to make it valid and enforceable, with the rest of this Agreement remaining unaffected by such conclusion or reformation.

1.29 SURVIVABILITY

A. The parties agree that it would cause an undetermined amount of damages to the other party if either fails to comply with any terms and conditions governing the handling of each other's confidential and proprietary information, or the representations, warranties and indemnifications agreed to under this Agreement and/or hereunder, all of which shall survive any early termination or expiration of this Agreement, and shall remain in full force and effect for the later of a period of one (1) year from the date of termination or expiration of this Agreement, or the date the Information is returned to whoever disclosed such information, after the date of termination or expiration of this Agreement.

PART 2 - PRODUCTS AND SERVICES

2.1 SCHEDULED PREVENTIVE MAINTENANCE LABOR

A. Contractor shall provide scheduled systematic examinations, adjustments, cleaning and lubrication of all machinery, machinery spaces, hoistways and pits. The Contractor shall include a minimum hours per month, per elevator, as quoted in Exhibit B that is to be dedicated to routine preventive maintenance.

2.2 CLEANING

A. The Contractor shall during the course of all examinations remove and discard immediately all accumulated dirt and debris from the car top(s) and pit area(s). Prior to each annual anniversary date of this Agreement, Contractor shall thoroughly clean down the entire hoistway of all accumulated dirt, grease, dust and debris each year.

2.3 PAINTING

A. The Contractor shall keep the exterior of the machinery and any other parts of the equipment subject to rust properly painted, identified and presentable at all times. Motor windings and controller coils shall be periodically treated with proper insulating compound. The machine room floor and all storage areas shall be painted annually with a good quality deck enamel.

2.4 INSPECTIONS / TESTS

A. The Contractor shall conduct Safety, Efficiency and Maintained Conditions surveys, inspections and tests as follows:

1. Semi-Annual quality control evaluations by a qualified supervisor to ensure and confirm the services and procedures as specified herein are properly executed relative to maintenance and performance standards for the systems serviced.
2. Mandated inspections and testing in accordance with the latest ASME A17.1 standards applicable per local law.
3. Filing of all procedures and preparation of reports within the required time periods for the examination(s) rendered shall be performed by the third-party witnessing agency.
4. Payment of all relative fees per the AHJ shall be by the Owner.

    a. The Owner will engage the services of a third-party qualified and certified agency for the sole purpose of witnessing mandated inspections and tests performed by the Contractor per the requirements of the local AHJ. The Contractor shall conform to the third-party agency schedule and provide qualified labor at no additional charge to Owner.

5. As required, the Contractor shall correct noted deficiencies in addition to preparation and filing of appropriate Affirmation of Correction(s) within the stipulated timeframe as required by the AHJ. Applicable fees associated with this filing shall be covered under the terms of the agreement.
6. Where required work necessary to resolve aforementioned deficiencies is not covered under the terms of this agreement, Contractor shall submit proposals in a timely fashion in an effort to meet applicable correction deadlines.

    a. Proposals shall indicate the material and labor costs in addition to anticipated time of completion from approval of proposal(s) by Owner.

7. If applicable, independent testing of Fire Emergency Operating Systems and/or Emergency Power System tests in accordance with local law requirements and ASME standards.
8. The Owner retains the right to have these tests performed on a not-to-interfere basis at any hour of the day and any day of the week; and the cost for overtime work shall be limited to the premium labor portion for work performed on an overtime basis.
9. Contractor shall maintain ASME code-required safety tests, fireman's service tests, telephone/intercom tests and emergency power tests on site.
10. Contractor shall maintain monthly oil consumption records on site in accordance with ASME A17.1 Safety Code (hydraulic elevators only).

B. The Contractor shall conduct testing procedures in accordance with the applicable ASME A17.1 standards at intervals specified and/or local code requirements in place at commencement of contract, complete and execute all governing authority filing procedures including payment of all associated fees or other charges where mandated by local authorities, and forward confirmation of all authority required filings to the Manager within ten (10) working days of the date the test procedure was completed. Any fines incurred for failure to complete required testing or for filing irregularities will be paid by the Contractor.

C. The Owner may engage the services of a third-party qualified and certified agency for the sole purpose of mandated inspections of the equipment per local code authority requirements. The Contractor shall conform to the third-party agency schedule and provide qualified labor to assist in these inspections (including assistance in gaining access to hoistways, pits and machine rooms) at no additional charge to Owner.

2.5 CALL-BACK SERVICE (24 HOURS, 7 DAYS PER WEEK)

A. Provide call-back service which consists of promptly dispatching qualified employees in response to requests from the Owner or designated representative, by telephone or otherwise, for adjustment or minor repairs on any day of the week, at any hour, day or night. If repairs cannot be made immediately, the mechanic shall notify the Owner's Representative as to the reason why and provide supplemental information regarding the restoration of services.

1. Call-back service in response to passenger entrapments shall be provided within one-half (½) hour during regular working hours and within one (1) hour during overtime periods.
2. Call-back services for out-of-service units that have been secured by the Owner's Representative shall be provided within one (1) hour during regular working hours and within two (2) hours between 6:00 a.m. and 8:00 a.m. and 4:30 p.m. and 6:30 p.m. Monday through Friday, except holidays.
3. Call-back services for out-of-service units that have been secured by the Owner's Representative shall be provided within three (3) hours at all other times not specified above in "1" or "2."
4. Call-back services for non-essential system malfunctions that do not constitute an operational or other safety condition shall be provided during normal working hours of regular working days within four (4) hours of the request for service.

2.6 REPAIRS, RENEWALS, AND REPLACEMENTS

A. Repairs, renewals, and replacements shall be made by the Contractor as soon as scheduled or other examinations reveal the necessity of the same, or when the Customer so advises the Contractor under the terms of this Agreement. It is understood and agreed that repairs, renewals, and replacements shall be made in accordance with high standards of preventive maintenance practice and that the repair and renewals of parts made shall be equal in design, workmanship, quality, finish fit, adjustment, operation and appearance to the original installation and that replacements shall be new and genuine parts equal to those parts supplied by the manufacturer of the original equipment or its successor, and shall apply to the repair, renewal, or replacement of all mechanical, electronic, and electrical parts, including but not limited to the following:

1. Automatic door systems, power operated door systems and manual door/gate systems complete.

    a. Power operator and engagement linkages.
    b. Car door top track and hanger roller assemblies.
    c. Car door track liners, eccentrics, stops, bumpers and related operating mechanisms for multiple speed or multiple panel doors.
    d. Car gates, bottom guides, retainers, fire stops, gibs, entrance sills and threshold plates, gate handles and protection guards.
    e. Electrical safety switches and activation mechanisms, door protective and/or retracting devices, and power door operators.
    f. Electromechanical safety interlock assemblies, related operating mechanisms, clutch or other master system engaging devices, linkages, zoned locking devices, and self-closing devices.

2. Car frame, platform and car safety devices complete.

    a. Crosshead, stiles, hitch plates, tie rods, supports and related structures.
    b. Car guides, shoes, stands, spindles, gibs, rollers and tensioning devices.
    c. Sub-platform, under car platform fireproofing, car sills with support cradles, load weighing devices, top/side exit access operating/safety hardware and electrical switches.
    d. Car fans, blowers and cab ventilation systems.

3. Hoisting machinery, and rotating power drives with mounting supports and beams, raised platforms and weighted foundations and structures complete.

    a. Geared traction and winding drum units, gearless traction and related systems complete.
    b. Worms, gears, shafts, couplings, drive sheaves, deflector sheaves, 2:1 sheaves, bearings, support/mounting apparatus, brake assembly, rotating elements and all associated castings, guards, retainers and hardware.
    c. Integral and free standing brake units, drums, discs, pulleys, shoes, linings, pads, pins, sleeves, plungers, coils, caps, adjustment devices and hardware complete.
    d. AC and DC motors, motor generators, rotating regulators and exciters; armatures, field coils, pole pieces, inter-poles, commutators, brush riggings, brush holders, carbon brushes, stator windings, fan or other ventilation mechanisms, bearings, bushings, shafts, caps, packings, seals, junction boxes, leads, connectors and related wiring.

4. Controls, selectors, power drives, encoding devices with related wiring, conduit and circuitry complete.

    a. Relays, contactors, switches, capacitors, resistors, fuses, circuit breakers, overloads, power supplies, regulators, tach generators, arc shields, shunts, holders and hardware.
    b. Circuit boards, transmitters, encoders, transformers, rectifiers, transistors, solid state switching devices, insulators, timing devices, suppressors, and computer apparatus.

c. Filters, fans, blowers, wiring, studs, terminal blocks, plug connectors, EMS/CRTs/Control Interface Systems and related software upgrades or other diagnostic devices, keyboards and printers.
d. Cabinets, isolation transformers, chokes, diagnostic tools, status indicators, solid state and hard wire circuitry.

5. Car and counterweight safety systems.

a. Overspeed governors and electromechanical safety devices, wire ropes and tensioning devices with related hitch and connection apparatus complete.
b. Car and counterweight safety devices, drums, rods, linkages, clamps and hardware.

6. Hoistway and pit equipment.

a. Guide rails, fishplates, brackets, inserts and related hardware to include jack bolts or other special mechanisms for mounting and alignment.
b. Wire ropes, chains and cables used for suspension, compensation, safety and selector encoding with related hitch and connection hardware complete.
c. Corridor entrance top track and hanger rollers, toe guards, fascias, dust covers, sills, stops, bumpers, eccentrics, retainers, and bottom guides.
d. Overhead machine room, secondary and 2:1 wire rope sheaves, shafts, bearings, bushing, seals, mounting supports, lubrication devices, guards and hardware complete.
e. Electrical wiring and conduit, electrical traveling cables, electrical limits, slow-downs, activating cams, switches, vanes, inductors, tapes, readers, leveling and encoding systems complete with all related hardware and wiring.
f. Compensation sheaves, shafts, frames, guides, switches, rollers, cams, guards, “S” hooks, guidance systems and all related hardware.
g. Counterweight assemblies, guides, rollers, stands, strike plates, safeties and hitch devices.
h. Car and counterweight buffers, stands, strikes, blocking, platforms, extension devices, mounting hardware and appurtenances.
i. Pit safety switches, cable tensioning devices, access ladders, light switches, lighting assemblies, bulbs and guards.

7. Operating and signal fixtures with electrical wiring.

a. Car operating panels, push buttons, stop switches, audible signals, keyed or other control switches, visual signals, jewels and indicators with electrical wiring.
b. Car position indicators, riding lanterns, signal annunciators, visual and audible signals complete.
c. Corridor push button stations, hall lanterns, hall position indicators, keyed switches, access controls, electrical wiring and traveling cables complete.
d. Emergency lighting systems, emergency communication devices, and signal systems complete.
e. Corridor and lobby fixtures with remote controls and operational monitoring devices, starter panels, emergency power selectors, telltale panels, location indicators, security controls, monitors and card reader control interface.

8. The following items of equipment are excluded: Main line power switches and fuses, car enclosure, new car doors, hoistway enclosures, hoistway doors and door frames, card reader devices, buried hydraulic piping, cylinder and conventional below grade plunger assemblies.

2.7 PRORATIONS / EXCLUSIONS

A. Prorations or Exclusions shall not be allowed as part of this agreement.

2.8 OBSOLESCENCE

A. Component Obsolescence shall be defined as the inability to purchase and/or otherwise repair parts of the system no longer produced by the original equipment manufacturer or a third-party after-market supplier. Claims of component obsolescence shall not be allowed when replacement parts, components or assemblies of equivalent design and functionality are available in the market.

B. In the event of component obsolescence as defined in paragraph A above, the condition shall be reported to the Owner with the following information:

1. Alternative equipment or component parts renewal options for restoration of the system due to obsolescence.
2. Procurement and installation time for restoration of system service.
3. Any safety code requirements that will be triggered by the alternative equipment or component renewal (i.e., including filing, tests and approvals).
4. Certification by the manufacturer of the replacement parts that the parts meet or exceed the original equipment design intent including, but not limited to, durability, reliability, maintainability, longevity and safety.

C. Payment for obsolescence work shall be based on the extra cost to the contractor only.

1. Labor cost over and above the time necessary for standard equipment and component renewal or repair procedures.

    a. Contractual hourly rate schedule as provided under Exhibit “A” shall be used to compute the extraordinary labor charge if applicable.
    b. Actual material extra cost to the contractor minus the value of the standard component replacement cost plus a maximum of five percent (5%) mark-up on the cost variance only.
    c. At owner’s option, a lump sum extra cost price may be employed in lieu of time and material as indicated above.

2. Subsequent to the Owner’s authorization to proceed with an alternative obsolescence repair and approval of the relative extra cost, if any, the contractor shall immediately perform such work and restore operating services.

D. The Owner shall retain the right to competitively bid obsolescence repairs and replacements; and, such work as performed by another qualified contractor shall not diminish or otherwise alter the coverage provided under this agreement subject to the following:

1. The maintenance contractor has the right to inspect work performed by others; and, when conditions warrant, reject obsolescence procedures that increase their contractual liability. The maintenance contractor shall provide written notification of acceptance or rejection.

2. Should the contractor reject an obsolescence repair made by others, the Owner may have a qualified third party professional engineer evaluate the work and render a decision regarding the acceptability of the prevailing conditions or the Owner may terminate the maintenance contract and award the maintenance work to another Contractor at the Owner's sole discretion.

2.9 SCHEDULED SERVICE PROCEDURES

A. Maintenance requirements, in addition to scheduled and emergency repairs, renewals and testing, shall include but are not limited to:

1. Examination of wire ropes to maintain proper tensioning and legal bottom clearances on a monthly basis for shortening and adjusting ropes as required and performance of all reshackling procedures per ASME A17.1 standards and local laws in conjunction with maintenance of related slack cable devices, machine limits or other safety equipment.
2. Examination, repair and replacement of all electrical wiring, traveling cables, conduits, connections and related apparatus extending from the main line power supply switch in the machine or other power supplies in hoistways.
3. Maintenance of pit, hoistway and machine room lighting to include relamping, wiring and switch controls.
4. Mandated inspections and relative labor requirements for third party examinations and/or test procedures as approved by the purchaser.

PART 3 - EXECUTION AND SUPPLEMENTAL REQUIREMENTS

3.1 PERFORMANCE TIMES, LEVELING AND CONTRACT SPEED

A. The control system shall be maintained to provide smooth acceleration and retardation. Contractor must maintain elevators in accordance with the original equipment manufacturer (O.E.M.) design performance specifications (including floor-to-floor times, door timing, rated speed, group supervisory system, etc.). The door close pressure must never exceed 30 pounds. The following performance schedule shall be adhered to:

1. Contract Speed: The contract speed shall be provided for up direction travel with full-capacity load in the elevator car. The speed in either direction under any loading condition shall not vary more than 5% of the contract speed.
2. In accordance with the ASME A17.1 Code, the elevators shall be maintained and adjusted to safely lower, stop and hold the car with a load of 125% of the rated capacity.
3. Floor to Floor Operating Speed:

Group Passenger Elevators	9.1 – 10.2 Seconds
Service Elevator 13	13.8 – 15.9 Seconds

4. Leveling Accuracy: The elevator shall be adjusted to provide accurate leveling within 1/4" ± of the floor level without releveling regardless of load.
5. Door Operating Times:

DOOR TYPE	OPENING	CLOSE
42" single-speed center opening	1.5 – 2.0 sec.	2.4 – 2.8 sec.
48" two-speed side opening	2.8 – 3.4 sec.	5.5 – 6.5 sec.

Door dwell time for hall calls:	5.0 sec without Advance lantern signals
Door dwell time for car calls:	3.0 seconds
Reduced non-interference dwell time:	1.0 second

B. Maintain the following ride quality requirements for the passenger elevators:

1. Vertical accelerations shall not exceed 14 milli-g and horizontal accelerations shall not exceed 25 milli-g.

   a. The accelerometer used for this testing shall be capable of measuring and recording acceleration to nearest 0.01 m/s^2 (1 milli-g) in the range of 0-2 m/s^2 over a frequency range from 0-80 Hz with ISO 8041 filter weights applied. Accelerometer should provide contact with the floor similar to foot pressure, 60 kPA (8.7psi).

2. Amplitude of acceleration and deceleration shall not exceed 4.0 ft/sec^2.
3. A sustained jerk shall not be more than twice the acceleration.
4. The rate of change in the acceleration/deceleration rate shall not be greater than 8.0 ft/sec^3.

3.2 PARTS INVENTORY AND WIRING DIAGRAMS

A. The Contractor shall maintain an inventory of spare parts at the site of the work for scheduled preventive maintenance procedures and common emergency call-back service repairs. Such parts shall include but are not limited to contacts, coils, solid-state boards, relays, resistors, timing devices, computer devices, interlock safety switch and linkage parts, bottom guides, door closers, fuses, bulbs, car guides and an assortment of hardware.

B. The Contractor shall maintain and continually update wiring diagrams and control schematics to ensure "as built" documents remain on site and the property of the Purchaser per the maintenance agreement.

3.3 MATERIALS AND WORKMANSHIP

A. All materials and parts are to be new and of the best quality of the kind specified. Installation of such materials shall be accomplished in a neat workmanlike manner. In case the Contractor

should receive written notification from the Owner stating the presence of inferior, improper, or unsound materials or workmanship, the Contractor shall, within twenty-four (24) hours proceed to remove such work or materials and make good all other work or materials damaged thereby. If the Owner permits 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 during the Contract term; and neither payments made to the Contractor, nor any other acts of the Owner shall be construed as evidence of acceptance and waiver.

3.4 EQUAL OPPORTUNITY

A. The Contractor shall maintain policies of employment as follows:

1. The Contractor and all Subcontractors shall not discriminate against any employee or applicant for employment because of actual or perceived race, creed, color, religion, national origin, ancestry, alienage or citizenship status, age, disability or handicap, sex marital status, familial status, veteran status, sexual orientation, arrest record or any other characteristic protected by applicable federal, state and local laws. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment without regard to their actual or perceived race, creed, color, religion, national origin, ancestry, alienage or citizenship status, age, disability or handicap, sex marital status, familial status, veteran status, sexual orientation, arrest record or any other characteristic protected by applicable federal, state and local laws. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.
2. The Contractor and all Subcontractors shall, in all solicitations or advertisements for employees placed by them or on their behalf, state that all qualified applicants will receive consideration for employment without regard to actual or perceived race, creed, color, religion, national origin, ancestry, alienage or citizenship status, age, disability or handicap, sex marital status, familial status, veteran status, sexual orientation, arrest record or any other characteristic protected by applicable federal, state and local laws.

B. EEO EMPLOYMENT PRACTICES AND COMPLIANCE

1. The parties hereto agree to voluntarily comply with the basic tenants of the Equal Employment Opportunity Requirements of Executive Order 11246, as amended by Executive Order 11375, Title VII of the Civil Rights Restoration Act of 1964, as amended, applicable state Fair Employment Practices Acts, and any other federal or state laws pertaining to equal employment opportunity, and that they will not discriminate against any employee or applicant for employment on the basis of actual or perceived race, creed, color, religion, national origin, ancestry, alienage or citizenship status, age, disability or handicap, sex marital status, familial status, veteran status, sexual orientation, arrest record or any other characteristic protected by applicable federal, state and local laws in matters pertaining to recruitment, hiring, training, upgrading, transfer, compensation or termination. In addition, Contractor agrees to indemnify and hold harmless Owner, its parent, affiliates, employees, agents, representatives, and any of its or their officers,

directors, employees, agents, successors, or assigns, harmless from all loss, cost or expense, including reasonable attorneys' fees for any violation by Contractor, its employees, agents, representatives, or assigns of the rules and regulations set forth and enforced by the Immigration and Naturalization Services pursuant to the Immigration and Nationality Act, as well as the Illegal Immigration Reform and Immigrant Responsibility Act which obligation to indemnify shall survive the expiration or termination of this Agreement.

2. Contractor agrees to maintain comprehensive records of all services performed under this Agreement. These records will be available for inspection by Purchaser at anytime during regular business hours and upon 48 hours written notice.

3.5 PROTECTION OF WORK AND PROPERTY

A. The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's property from injury or loss arising out of this contract. 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. 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 maintenance procedure.

3.6 REPRESENTATION

A. Contractor represents that it will (i) perform elevator maintenance services under this Agreement in accordance with acceptable industry professional and ethical standards, (ii) not proceed with performance of various aspects of the Services, unless pre-authorized ("Pre-approved Services") by the Purchaser's or Purchaser's Designee at the property, (iii) conduct any handling of Purchaser's Confidential Information in accordance with acceptable industry professional and ethical standards, (iv) not represent to any third party that it has authority to sign, endorse or represent a contractual relationship with or in Purchaser's name, or enter into any agreement on behalf of Purchaser in connection herewith (unless expressly pre-authorized in writing by Purchaser), (v) safeguard the physical security of Purchaser's Confidential Information if it has access to or possession of such information, (vi) ensure that only "Authorized Representatives" of this Agreement, will have access to any of Purchaser's Confidential Information while rendering the Services, and that it will not be copied, or disseminated to anyone other than the Authorized Representative, and (vii) ensure that all of its employees, representatives, agents or assigns will not solicit any of Purchaser's employees for any purpose. The Parties agree that any alteration to any of the Addenda or Exhibits hereto shall be null and void, unless made in writing by mutual consent of the Parties. The obligations of Contractor set forth herein shall remain in full force and effect for the later of a period of one (1) year from the date of termination or expiration of this Agreement, or the date the Confidential Information is returned to whomever disclosed such information, after the date of termination or expiration of this Agreement.

In witness whereof, the parties hereto have executed this Agreement on the day and year written below.

CONTRACTOR

BY

TITLE

OWNER_____

BY_____

TITLE_____

DATE: This day of 20

WITNESS

Exhibit “A” attached and made a part of this Agreement.
Exhibit “B” attached and made a part of this Agreement.
Exhibit “C” Owner’s Insurance Requirements attached and made a part of this Agreement.
Exhibit “D” Guarantees, Supplemental Requirements and Execution

EXHIBIT "A"

SCHEDULE OF INITIAL BASE HOURLY RATES FOR CONTRACTOR'S PERSONNEL

56595	Straight Time Rate Hourly Selling Price	Time and .7 Rate Hourly Selling Price	Double Time Rate Hourly Selling Price
Mechanic			
Apprentice			
Adjuster/Foreman			

EXHIBIT "B"

CONTRACTOR'S SCHEDULE OF UNIT PRICES

TYPE OF UNIT	BUILDING ELEVATOR (DESIGNATION)	(1) MONTHLY MAINTENANCE CHARGE EACH	(2) NUMBER OF UNITS	TOTAL MONTHLY PRICE (1) x (2)	TOTAL ANNUAL PRICE (1) x (2) x 12 MONTHS	MAINTENANCE HOURS PER MONTH	CALLBACKS PER ELEVATOR PER YEAR
Gearless Passenger	HR (1 – 6)		6				
Gearless Passenger	LR (7 – 12)		6				
Gearless Service	Service (13)		1				
Total Monthly Price for thirteen (13) Units							
Total First Year Annual Price for thirteen (13) Units							
GUARANTEED Milestones							

EXHIBIT "C"

OWNER'S INSURANCE REQUIREMENTS

No job will commence without proper evidence of insurance prior to work, move or delivery provided to Owner.

EXHIBIT "D"

PART 4 - GUARANTEES / SUPPLEMENTAL REQUIREMENTS / EXECUTION

4.1 CONTRACTUAL REQUIREMENT GUARANTEE

A. The Owner may have the Contractor's work and system performance checked by the Owner's Agent or a Consultant to ensure the Contractor is performing in accordance with this Contract. If the Owner's Agent or a Consultant determines that the contractual requirements are not being maintained, the Owner's Agent may retain the monthly payment to the Contractor until the Owner's Agent or a Consultant verifies that the work performance is back to standard. The Contractor shall pay re-inspection costs incurred by the Owner's Agent for a Consultant by deduction from the monthly maintenance fees. If two (2) consecutive inspections by the Owner's Agent or a Consultant (two [2] consecutive inspections within one [1] year but more than sixty [60] days apart) indicate that the contractual requirements are not being maintained, the Owner's Agent has the right to immediately cancel the Contract or to pursue any other available remedy.

4.2 MINIMUM HOUR GUARANTEE

A. The Contractor's failure to provide the specified Minimum Hours for routine preventative maintenance on a quarterly basis shall result in the Contractor paying liquidated damages by issuing a refund to the Owner for the unexpended hours at the "Straight Time Rate Hourly Selling Price" or overtime rate, if appropriate, for Maintenance Mechanics listed in the Schedule of Initial Base Hourly Rates. The amount of the liquidated damages shall be deducted from the monthly maintenance fee in the month(s) following the semi-annual anniversary date of the Contract or refunded by check at the option of the Owner. The amount shall be determined as part of the annual review of required reports.

B. If the Contractor fails to provide the required Monthly Minimum Hours for routine preventive maintenance for three (3) consecutive quarters, the Owner has the right to immediately cancel the Contract or to pursue any other available remedy.

4.3 CALLBACK GUARANTEES

A. Callback Rate

1. Callbacks shall be monitored and reported quarterly on an annualized basis. For measurement purposes callbacks shall be grouped and averaged on an annualized basis by common control group. Callbacks for items not covered by the Contract (i.e., vandalism, water or fire damage callbacks that have been billed to the customer and paid by mutual agreement) will not be included in the calculation.
2. Once a year in the month following the anniversary date of the Contract the Contractor and the Owner's Agent will review the callback data submitted with the annual Inspection and Evaluation report. If the average annualized callback rate for the building exceeds the rate(s) provided in this contract by more than twenty-five (25%),

the maintenance fee for each unit in that grouping will be reduced, as liquidated damages, during the next twelve (12) months (until the next annual calculation) by ten percent (10%). The reduction will be cumulative by group and year, that is, if a reduction is warranted for multiple years, the monthly fee for each ensuing year will be reduced from the previous year's amount by an additional ten percent (10%) per year. If reductions in maintenance pricing due to excessive callbacks occur for two (2) consecutive years, the Owner's Agent has the right to immediately cancel the Contract or to pursue any other available remedy.

B. Entrapment Callback Response Time Guarantee

1. Contractor's failure to comply with the callback entrapment response times contained in Section 2 will result in the Contractor paying liquidated damages for the applicable callback(s) time, including travel time, at the billing rates listed in the Schedule, price adjusted as appropriate.

4.4 RELIABILITY GUARANTEES

A. The Contractor shall endeavor to correct any system or individual malfunction that requires the removal of a unit from normal operating service within forty-eight (48) hours of the failure. (Forty-eight hours in this paragraph means within two full Regular working Days of the elevator trade.)

1. If the unit is not returned to service within the specified time allotment, the Contractor shall adjust the subsequent monthly fee, as liquidated damages, for the unit based on an amount equal to twenty percent (20%) of the total monthly fee for each twenty-four (24) hour period the unit is out-of-service from the original date of system malfunction.
2. If any system or individual malfunction results in multiple units, in the same bank of elevators, being removed from normal operation for twenty-four (24) hours or more, the above referenced damages will start at the end of the first twenty-four-hour (24) period and be accessed at an amount equal to twenty percent (20%) of the total monthly fee, for each unit, for each twenty-four-hour period multiple units are out of service from the original date of system malfunction.
3. Contractor shall not be assessed damages for pre-approved and scheduled maintenance repairs, tests or other conditions necessitating unscheduled major work procedures, resulting from a cause excluded by any other provision of this Contract, or repairs to items not covered under this Contract.
4. The Owner has the right to immediately cancel this Contract or to pursue any other available remedy if the Contractor fails to meet the provisions of this Section three (3) times during any three-year period. Failure to meet the provisions of this Section are understood to have occurred if the Contractor was obligated to reduce the monthly maintenance fee regardless if that reduction actually occurred.

B. Only one (1) elevator is allowed to be out of service for routine maintenance at any time in any bank of units. If an elevator is out service for routine maintenance and another elevator or escalator malfunctions, the elevator that is out for routine service shall be restored to normal operation, as long as the other unit remains out of service, at no additional cost to the Owner.

4.5 DATA GUARANTEE

A. The Contractor warrants that all data supplied as part of this document will remain valid for the duration of this Contract. If any changes occur relative to the information provided the Owner has the right to immediately cancel the Contract or to pursue any other available remedy.

4.6 REPORTING GUARANTEE

A. Contractor failure to provide quarterly written reports within the time frame specified in Section 2 will result in an automatic reduction of the Contract price of 10% for a three (3) month period as liquidated damages. Liquidated damages will be cumulative quarter to quarter. If the quarterly reporting requirements are missed for two consecutive periods, the Owner has the option to immediately cancel the Contract or to pursue any other available remedy.

B. Failure to provide Efficiency and Maintenance Survey Inspection Reports within the time frame specified in Section 2 will result in an automatic reduction of the Contract price of 10% for a one (1) year period as liquidated damages. Liquidated damages will be cumulative year to year. If the yearly reporting requirements are missed for two consecutive periods, the Owner has the option to immediately cancel the Contract or to pursue any other available remedy.

C. Failure to provide and maintain a Code Compliant Maintenance Control and Recordkeeping system as specified in Section 2 will result in an automatic reduction of the Contract price of 10% for a one (1) year period as liquidated damages. Liquidated damages will be cumulative year to year. If the yearly recordkeeping requirements are missed for two (2) consecutive periods, the Owner has the option to immediately cancel the Contract or to pursue any other available remedy.

4.7 TESTING GUARANTEE

A. Traction Elevators: Failure to complete the code required annual no-load and/or five year full load safety test(s) within thirty (30) calendar days of the appropriate anniversary date or code compliance date will result in an automatic reduction of the monthly contract price for that elevator of 50% for each thirty day period the test(s) are overdue as liquidated damages if requested by Owner. If the test(s) become overdue, the thirty day grace period is eliminated and any liquidated damages will be applied from the due day. (Example: test(s) are forty-five [45] days overdue; liquidated damages will be 50% of two [2] months billing.

4.8 RESTRICTED DOOR OPENING GUARANTEE

A. If an elevator is furnished with a restricted door opening device and said device is inoperable in a manner or pattern that indicates its ability to function as intended was other than by random failure the monthly contract price for that elevator will be reduced by 50% for each full and/or partial thirty-day period the device is inoperative after contractor has been notified as liquidated damages if requested by Owner. (Examples: 1) the device is inoperative [as defined above] for forty-five [45] days; liquidated damages will be 50% of two [2] months

billing; 2) the device is inoperative [as defined above] for one [1] day; liquidated damages will be 50% of one [1] months billing). Final determination for why a restricted door opening device is inoperable will be made by the Owner.

4.9 AUDITS / LIQUIDATED DAMAGES

A. The Owner's Consultant will audit each unit on an annual basis and assign a numerical score as a result of that audit. 95% of all units must be scored at a 70 or higher or a 10% reduction in the monthly billing rate will be assessed as liquidated damages for all units that audit below a 70. Failure to correct any code related deficiencies identified in these audit reports within thirty (30) days will result in a 50% reduction in the monthly billing rate as liquidated damages until the identified items are completed. Minimum liquidated damage assessment period under this provision is 2 months billing. Sample is attached as Exhibit 3.

Audit Bonus: At each anniversary date of the contract the audit scores for all inspection groups will be reviewed. A bonus will be awarded to the contractor as follows:

Audit Score of 70 or above on 100% of units: A bonus payment equal to one percent (1%) of the annual contract billing.