



Elevator Consulting, Inc.

23211 South Pointe Drive
Laguna Hills, CA 92653
949-348-9711

3765 East Sunset Road, B-5
Las Vegas, NV 89120
702-319-9711

15811 32nd Avenue NE
Lake Forest Park, WA 98155
206-954-1821

VERTICAL TRANSPORTATION MODERNIZATION SPECIFICATIONS

**City of Beverly Hills
Fire Department HQ
445 N. Rexford
Beverly Hill, CA**

August 23. 2015

TABLE OF CONTENTS

PART 1 - GENERAL:	1
1.01 General Conditions	1
1.02 Related Documents:	1
1.03 DEFINITIONS:	1
1.04 DESCRIPTION:	2
1.05 QUALITY ASSURANCE:.....	4
1.06 SUBMITTALS:	6
1.07 CONTRACT AND PROGRESS PAYMENTS:.....	7
1.08 PRODUCT DELIVERY, STORAGE AND HANDLING:	7
1.09 SCHEDULING AND SEQUENCING:	8
1.10 WARRANTY:	8
1.11 ALTERNATES:	8
PART 2 - PRODUCTS:	9
2.01 DESCRIPTION OF SYSTEMS:.....	9
2.02 MATERIALS:	10
2.03 FINISHES:	11
2.04 AUTOMATIC OPERATION:	12
2.05 SPECIAL OPERATIONS:.....	12
2.06 DOOR OPERATION:.....	13
2.07 SIGNALS AND OPERATING FIXTURES:	14
2.08 WIRING:.....	17
2.09 CAR ENCLOSURES:	18
2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:	19
2.11 HYDRAULIC ELEVATOR EQUIPMENT:	21
2.12 HYDRAULIC HOISTWAY EQUIPMENT:	22
2.13 MACHINE ROOM EQUIPMENT:	23
PART 3 - EXECUTION:	24
3.01 INSTALLATION:	24
3.02 NOISE CONTROL:	25
3.03 FIELD QUALITY CONTROL:.....	25
3.04 INSTRUCTIONS:.....	26
3.05 PROJECT RECORD DOCUMENTS:	26
3.06 MAINTENANCE:.....	27

SECTION 14 22 10
MODERNIZATION OF ELEVATORS

PART 1 - GENERAL:

1.01 General Conditions

- A. Bidders Note: All clarifications, exceptions and qualifications to this document must be submitted at bid time. The format shall be this document marked up to reflect bidder's proposed product for this project. Additional pages in letter form with regard to work by others or instructions to the contractor are acceptable, but all other clarifications to this document will be submitted with the bid as a mark-up of this document. The marked-up document when submitted will be reviewed and negotiated, and will become a part of the Contract.
- B. Bidding documents:
 - 1. Bidders shall examine existing conditions. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to Owner's Representative's attention at least seven (7) days prior to the bid date. If no discrepancies are presented, changes required to accommodate bidder's equipment become the responsibility and cost to Contractor.
 - 2. Bidders are responsible to identify all required building related work at time of bidding and included with their bid documents.
- C. The specifications are written to be included as an attachment to the modernization contract.
- D. The Elevator Contractor shall be responsible for all building modifications to provide a code compliant elevator modernization. All sub-contractors will be contracted directly with the elevator contractor. Elevator contractor shall obtain bids from sub-contractors that are approved by the Owner and/or Owners Representative.

1.02 Related Documents:

- A. The following documents for the contract and complete scope of work related to the modernization and maintenance of the project.
 - 1. Owner's Contract
 - 2. Owner's Insurance Requirements – Exhibit A
 - 3. Bid Form and Bidders Instructions – Exhibit B
 - 4. Owner's Consultants Vertical Transportation Maintenance Agreement – Exhibit C

1.03 DEFINITIONS:

- A. Main Lobby: Ground Level unless otherwise indicated.
- B. Fire Recall Level: As directed by local fire authority. As existing.
- C. Alternate Fire Recall Level: As directed by local fire authority. As existing.
- D. All retained existing equipment shall be of equal condition and life span as of new equipment.
- E. Serviceability: It is recognized that each manufacturers' system contains components that are proprietary to the development of their systems. The Owner may wish to have the elevator system maintained by another technically qualified service provider and by submitting a bid for

this project, the manufacturer shall guarantee that for a minimum of 20 years they will provide the following:

1. Diagnostic, adjusting and monitoring tools for all components including documents, manuals, and wiring diagrams. Devices shall not self-destruct, require charging or exchange. Remote monitoring devices are excluded from this requirement, however if such devices are removed all wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.
2. Manufacturer shall guarantee to support the equipment for this project with regard to notification to Owner of system corrective updates, provide and install such updates at no cost to Owner.
3. Provide contact information for their separate parts warehouse so that the Owner or designated service provider can order parts on a 24 hour basis and delivered within 48 hours. Parts may be provided from inventory when adequate stock exists. In some cases, parts will have to be special ordered from the factory or other vendor. Proprietary parts will be made available on an exchange basis.
4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at close out of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service provider.
5. Provide contact information for technical support so that the Owner or designated service provider can obtain technical support on a 24 hour basis to provide assistance in trouble shooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.
6. In the event that a company other than the Original Equipment Manufacturer (OEM) maintains the elevators, and if the equipment was unable to be repaired by the non-OEM maintenance company, a factory-trained OEM technician would be required to assist (as it would if Contractor's own technician were in the same situation). If such an event was to occur, OEM Contractor would make its factory-trained technician available for assistance upon request of the Owner within three (3) business days, based on the original contractual hourly rates subject to established annual escalations. This shall survive any termination of the maintenance agreement.
7. The above will survive any termination of the maintenance agreement.
8. Contractor shall be defined as "Elevator Contractor".
9. Subcontractor shall be defined as any contractor contracted by either "Owner or Elevator Contractor".

1.04 DESCRIPTION:

- A. Examination of site:
 1. Contractor shall visit the building, examine the existing elevators and contract documents, determine condition of all retained components, space conditions, power supply, standby/emergency power supply, and mainline disconnect.
 2. Make all surveys necessary to meet the requirements of this specification and compatibility to products provided.
- B. Field measurements:
 1. Field verify dimensions before proceeding with the work.
 2. Coordinate related work by other trades.

3. Contractor shall assume responsibility and provide full maintenance of the elevator equipment upon award of this contract and shall continue to do such throughout the modernization.

C. Related work included by others in this section:

1. Contractor shall visit the building, examine the existing conditions, power supply, standby/emergency power supply, emergency battery lowering, mainline disconnect, and include all work needed to ensure a fully code compliant modernization. Contractor or his sub-contractors shall perform this work, which may include but is not limited to the following:
 - a. General:
 - 1) Legal access consisting of self-closing and self-locking access doors, ladders, gratings and steps to machine rooms, controller areas, pits and hoistways.
 - 2) Providing supports to carry structural reaction, impact and uplift loads imposed by elevator equipment.
 - 3) Support full width of hoistway at edge of slab for attachment of sill support angles to be provided and installed by Contractor.
 - 4) Grouting behind entrance frames where concrete walls occur.
 - 5) Patching of floors, walls and surfaces constituting final finishes.
 - 6) Block-outs, pockets and chases in walls and floors for entrances, signals, fixtures, cables and conduit.
 - 7) Construction and modifications not limited to the hoistways, machine rooms and controller areas, all areas properly framed, enclosed and adequately ventilated.
 - b. Electrical work:
 - 1) Power feeders: Modification to existing, or installation and connection of three phase power, through fused mainline switches or circuit breakers and extended to terminals of controllers. Provide continuous ground where needed.
 - 2) Light circuits: Single-phase circuit through disconnects and extended to controller for car lights and fan.
 - 3) Communication circuit: Telephone circuit terminated at junction box of each controller.
 - 4) Illumination: Lights with guards, illuminating light switches and convenience outlets in pits, machine rooms, controller areas and overhead sheave spaces.
 - 5) Conduit: Installation of electrical conduit and pull boxes with pull wire between hoistways and remote locations of each indicator and control panel.
 - 6) GFCI Outlets: Provide in machine room and pits.
 - 7) Standby power: Automatic transfer of standby/emergency power and lighting supply through normal feeders with means of absorbing regenerative power. Two (2) No. 14 wires from "Form C" contacts on transfer switch to designated controller to elevator machine rooms to signal transfer of power.
 - 8) Provide hoistway, overhead, and pit lighting as required by local code authorities.

- 9) Provide NEMA 4 approved electrical devices and conduits for all electrical installed below the lowest sill level.
- c. Fire Life Safety:
 - 1) Sensing devices: Installation and or removal modification to smoke detectors, heat detectors, shunt trip, sprinklers, or products of combustion sensors in elevator lobbies, machine rooms, hoistways and alternate fire recall floor with circuits terminated at junction box in machine rooms for emergency fire service operation.
 - 2) Life safety circuits: Circuits terminated at junction box at each controller for life safety speakers and fireman's phone jack to each car in the car canopy or as directed by the Owner and/or local code authority. Note phone jacks are not permitted in corridor call button boxes.
 - 3) Provide fire proofing as required by lode code authority.
2. Barricades: Full height self-closing self-locking barricades for protection of open hoistways during construction.
3. Temporary screens: Contractor shall provide code compliant hoistway screening between elevators before construction starts and remove at completion of project.
4. Painting: Field painting of prime-finish items constituting final finishes.
5. Card readers: Including wire from machine room j-box to car top j-box, interfacing with elevator controls and installation in elevator car, connection in machine room and testing of system.
6. Closed circuit T.V: Including wire from machine room j-box to elevator car top j-box, connection in machine room and testing. Car top and machine j-box and labeled. Contractor shall coordinate with sub-contractors to complete all required work at no additional cost to the Owner.
7. Contractor shall coordinate and perform all pretesting of all building systems prior to inspection at no additional cost to the Owner.

1.05 QUALITY ASSURANCE:

- A. Qualifications of Contractors:
 1. General: The entire elevator installation shall be installed and maintained by the acceptable Contractors listed or as qualified by addendum. No portion of the work shall be subcontracted unless qualified and accepted by addendum.
 2. Installer's qualifications: Installer must be a licensed, certified conveyance mechanic in the state where installation is located.
 3. Personnel list: Contractor shall, at time of bid, submit to Owner's Representative for review and approval a complete organization chart that depicts Contractor's "Project Team" exclusively assigned and dedicated to the modernization and maintenance for this project. The chart shall include, but not be limited to, administrative personnel, managers, supervisors, mechanics, apprentices, and all others who shall provide the requirements, services, and obligations of this contract. Personnel quantities, resumes, certification, titles, labor affiliations, exact roles and responsibilities and reporting structures under this contract shall be included.
 4. Maintenance qualifications: Contractor must be a licensed elevator contractor in the state where installation is located.
 5. Serviceman qualifications: All Contractor's mechanics that shall be assigned to this project, shall have been in the elevator business or trade for a minimum of ten (10) years with continuous and immediate past experience in the preventative maintenance,

repair, modernization, inspection and testing of elevator equipment of similar characteristics to those included in this project.

- a. Manufacturer's qualifications: The design, engineering and manufacture of major elevator components such as machines, motors, motor drive units, controllers, door operators, safeties, governors, selectors, etc. shall be from manufactures that have been in the business for the last ten (10) years. Equipment proposed must have a history of successful operation under similar conditions for the last five (5) years.
 - b. Directly employ sufficient competent personnel within twenty-five (25) of project to handle construction and maintenance duties.
 - c. Maintain local stock of parts adequate for replacement on permanent or emergency basis.
 - d. Be able to respond to trouble calls within one (1) hour during normal business hours and two (2) hours after normal business hours.
 - e. Be able to respond to entrapments within thirty (30) minutes during normal business hours and thirty (30) minutes one (1) hour after normal business hours.
6. Approved company uniforms shall be worn at all times. Names shall be visible at all times.
7. Approved company identification shall be visible at all times.
- B. Sub-contractors:
1. Contractor shall be solely responsible for any and all of the work done by his sub-contractor or other employees and all orders or instructions from the Owner's Representative shall be through him to them. It shall be Contractor's duty to see that all of his sub-contractors commence their work properly at the proper time, and carry it on with due diligence so that they do not delay or injure either work or materials; and that all damage caused by them or their workmen is properly made good by them or by himself at his cost. Contractor shall submit names of his sub-contractors for approval by the Owner's Representative.
 2. The use of sub-contractors is to be limited to work outside the scope of elevator construction work; for example, patching, painting, coring of walls, marble work and refinishing.
- C. Elevator cabs and entrances:
1. Manufactured or rehabilitated by one of the following or accepted equal:
 - a. Elevator manufacturer
 - b. Citylift
 - c. Travertine
 - d. Winter & Bain
 - e. Sterling Corporation
- D. Quality of work and workmanship:
1. When completed, the installation shall be modern in all respects.
 2. All components specified as new shall be provided as new. All components specified to be retained may be provided as new at Contractor's option subject to approval of Owner's Representative. All retained components are to be examined, cleaned, adjusted, repaired and/or replaced with new parts. Contractor must be willing to accept all retained equipment on full maintenance without prorating.
 3. All work performed shall be conducted in a workmanship type manner.

- E. Requirements of regulatory agencies:
1. Codes: In accordance with the latest applicable edition requirements of the following and as specified:
 - a. A.D.A.: Americans with Disabilities Act
 - b. ASME: American Society of Mechanical Engineers - A17.1; Safety Code for Elevators and Escalators
 - c. CBC: Title 24; California Building Codes
 - d. CCR: Title 8; California Code of Regulations
 - e. IEEE
 - f. NEC: National Electric Code / NFPA 70.
 - g. NFPA-72
 - h. All local codes and Amendments and Administration, which govern
- F. Permits, Inspections, and Taxes:
1. Arrange and pay for inspections by governing authorities.
 2. Obtain and post operating permits per applicable code.
 3. Arrange and pay for all applicable taxes.
- G. Safety Policies and Practices:
1. Installation and maintenance contractors are required to follow their company's safety practices and policies
 2. Installation and maintenance contractors are required to follow all practices and policies of the building management.
 3. Installation and maintenance contractors are required to follow governing authorities' safety practices and policies.

1.06 SUBMITTALS:

- A. Shop drawings:
1. Submit three copies of the following prior to ordering any materials:
 - a. Layouts: Plan of machinery and hoistway spaces showing new equipment and existing equipment; include impact and static loads imposed on building structure and clearances around equipment.
 - b. Details: Submit details of cab shell and interiors, fixtures, and entrances.
 - c. Data: Indicate on layouts or separate data sheets; machine spaces heat release, power requirements, conduit runs outside of hoistways and machine rooms, car and counterweight roller guides, control systems, motor drive units and door operators.
- B. Samples:
1. Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

1.07 CONTRACT AND PROGRESS PAYMENTS:**A. Contract:**

1. Contractor to agree and execute Owner's contract with all related documents for this project. Contract will be based on approval of the Owner and/or Owner's representative.

B. Payment Schedule:

1. Progress payments will be based on a mutually agreed upon schedule of values payment schedule. Initial deposit shall not exceed 20% upon award or letter of intent/contract.
2. Note: All payments are less 10% retention.

C. Retention:

1. Retention will be paid at completion of Consultant's punch-list. Owner and Owner's Representative reserves the right to reduce Contractor's retention amount to pay/compensate for any additional inspection or compliance reviews required due to Contractors failure to comply.

D. Contract Change Orders:

1. Contractor shall submit all change orders to both Owner and Owner's Representative for review and approval. Change Orders shall not be approved without both signatures.

E. Performance and Payment Bond: base bid or alternate, based per project.

1. Quote cost to provide a corporate surety performance and payment bond in the amount of 100% of the modernization contract including one (1) year warranty maintenance for which the Contractor will pay the premium.
2. This bond will guarantee faithful performance of the contract and shall also guarantee payment of wages for services engaged and of bills contracted for materials, supplies and equipment used in the execution of this contract.
3. Please provide Bond cost as a line item on the proposal.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING:**A. Delivery and storage:**

1. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. Storage space on site will be available, if onsite storage is provide and a storage container and or fencing is required to properly secure and store all equipment, it shall be provided at no cost to the Owner.

B. Handling:

1. Owner's Representative has the first right of refusal to retain any elevator components that are to be removed and modernized with new equipment. All removed components shall remain property of the Owner's Representative, until the Owner's Representative notifies Contractor, in writing, of removed components that Owner's Representative would like to retain. All remaining elevator equipment not to be retained by the Owner's Representative or reused by Contractor shall be promptly removed from the building by Contractor at no cost to the Owner's Representative, and become the property of Contractor.

2. Contractor shall make every attempt to recycle removed elevator equipment. Contractor shall correct any damage to building surfaces and surrounding areas if damaged during removal of this equipment, at no cost to the Owner's Representative.

1.09 SCHEDULING AND SEQUENCING:

A. Schedule:

1. Submit construction schedule with bid indicating time required from award of contract to;
 - a. Submittals
 - b. Equipment fabrication and delivery to site
 - c. Installation and testing per elevator
 - d. Final acceptance of all elevators
2. Contractor shall be responsible for scheduling related work with other sub-contractors to avoid omissions and delays in job progress. Elevators shall not be removed from service, without prior approval, until all equipment has been manufactured and delivered to the project site for all elevators.

B. Sequence:

1. Work under this contract shall be done in the following sequence. Any change to this must be approved by the Owner's Representative. Complete all work for each sequence before proceeding with the next.
 - a. Sequence (1) One: Elevator No. 1
 - b. Sequence (2) Two: Elevator No. 2

C. Building operations:

1. The building will remain in operation during the execution of this contract. Cooperate with building management in scheduling work in such a way as not to cause interruption of or interference with the building operations.

D. Electrical shutdowns:

1. Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled outside normal hours and at least forty-eight (48) hours in advance and approved by Owner's Representative.

1.10 WARRANTY:

A. Guarantee and Warranty:

1. Provide special project warranty, signed by Contractor, Installer and Manufacturer, agreeing to replace/repair/restore defective materials and workmanship of all work performed which may develop within one (1) year from final date of completion and acceptance of the **entire installation**. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failures, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions.

1.11 ALTERNATES:

1. None

PART 2 - PRODUCTS:

2.01 DESCRIPTION OF SYSTEMS:

A. Elevator No. 1 Courtyard:

- | | |
|------------------------------|----------------------------|
| 1. Type: | Hydraulic Direct Plunger |
| 2. Capacity: | 3000 Pounds |
| 3. Speed: | 125 FPM |
| 4. Stops: | 2 |
| 5. Openings: | 2 Front |
| 6. Travel: | Existing |
| 7. Control: | Soft Start AC |
| 8. Operation: | New Microprocessor Simplex |
| 9. Machine Location: | Adjacent |
| 10. Special Operations: | |
| a. Independent Service | |
| b. Fire Emergency Service | |
| 11. Door Operation: | Provide New |
| 12. Door Protection: | Provide New |
| 13. Guide Rails: | Retain |
| 14. Guide Shoes: | Provide New Roller Guides |
| 15. Plunger Unit: | Retain |
| 16. Cylinder Unit: | Retain |
| 17. Buffers: | Retain |
| 18. Car Frame & Platforms: | Retain |
| 19. Power Unit: | Provide New |
| 20. Controllers: | Provide New |
| 21. Piping: | Retain |
| 22. Car Operating Panels: | Provide New |
| 23. Car Position Indicators: | Provide New |
| 24. Hall Position Indicator: | Provide New |
| 25. Service Cabinet: | Provide New |
| 26. Communications: | Provide New |
| 27. Hall Button Stations: | Provide New |
| 28. Car Lanterns: | Provide New |
| 29. Handicap Requirements: | Provide New, as required |
| 30. Wiring: | Provide New |

- | | | |
|-----|---------------------------|---|
| 31. | Car Enclosure: | Retain and Refurbish |
| 32. | Hoistway Entrances: | Retain and clad |
| 33. | Miscellaneous Items: | |
| | a. | Key Operated Hoistway Access |
| | b. | Ruptured Pipe Valve |
| | c. | Battery Lowering |
| | d. | Total lockout timer |
| | e. | Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work |
| B. | Elevator No. 2 Station: | |
| 1. | Type: | Hydraulic Direct Plunger |
| 2. | Capacity: | 3000 Pounds |
| 3. | Speed: | 120 FPM |
| 4. | Stops: | 3 |
| 5. | Openings: | 2 Front 2 Rear |
| 6. | Travel: | Existing |
| 7. | Control: | Soft Start AC |
| 8. | Operation: | New Microprocessor Simplex |
| 9. | Machine Location: | Adjacent |
| 10. | Special Operations: | |
| | a. | Independent Service |
| | b. | Fire Emergency Service |
| | c. | Standby Emergency Power |
| 11. | Door Operation: | Provide New |
| 12. | Door Protection: | Provide New |
| 13. | Guide Rails: | Retain |
| 14. | Guide Shoes: | Provide New Roller Guides |
| 15. | Plunger Unit: | Retain |
| 16. | Cylinder Unit: | Retain |
| 17. | Buffers: | Retain |
| 18. | Car Frame & Platforms: | Retain |
| 19. | Power Unit: | Provide New |
| 20. | Controllers: | Provide New |
| 21. | Piping: | Retain |
| 22. | Car Operating Panels: | Provide New |
| 23. | Car Position Indicators: | Provide New |
| 24. | Hall Position Indicators: | Provide New |

- | | |
|--|--------------------------|
| 25. Service Cabinet: | Provide New |
| 26. Communications: | Provide New |
| 27. Hall Button Stations: | Provide New |
| 28. Car Lanterns: | Provide New |
| 29. Handicap Requirements: | Provide New, as required |
| 30. Wiring: | Provide New |
| 31. Car Enclosure: | Retain and Refurbish |
| 32. Hoistway Entrances: | Retain and clad |
| 33. Miscellaneous Items: | |
| a. Key Operated Hoistway Access | |
| b. Ruptured Pipe Valve | |
| c. Card Reader/key pad | |
| d. Clean hoistways, machine rooms and equipment; paint machine room floor, pit floor, car top, and all existing metal work | |

2.02 MATERIALS:

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound deadener: Fire retardant; spray, roller or adhesive applied; 3/16" thick.
- E. Stainless steel: ASTM A167; type 302 or 304.
- F.

2.03 FINISHES:

- A. Exposed-to-view surfaces:
 - 1. Provide as follows unless otherwise specified.
 - a. Aluminum: Clear anodized finish.
 - b. Sheet steel:
 - 1) Shop prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway items visible to public shall be painted one additional coat of black paint.
 - 2) Finish paint: Three coats baked enamel; sand each coat smooth; color as selected.
 - c. Stainless steel:
 - 1) Plain: Satin, directional polish, No. 4 directional polish. All interior Stainless to be covered with the 3M Anti-Graffiti coating
 - d. Touch-up:
 - 1) Prime surfaces: Use same paint as factory for field touch-up.

- 2) Finish painted surfaces: Refinish whole panel with shop prime and finish paint as specified above.

B. Non-exposed-to-view surfaces:

1. Degrease or remove any rust and shop paint manufacturer's standard corrosion inhibiting primer.

2.04 AUTOMATIC OPERATION:

A. General operation of individual elevators:

1. Provide a non-proprietary diagnostic microprocessor-controlled dispatching system, based on real time calculations, designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns.
2. Serial link communications: Provide a distributed processing network consisting of localized processors located in machine rooms, car stations, hall stations and top of car to allow system to make fast decisions based on data shared by the processor involved in the different operations of the elevators. For group dispatch operations, all elevators in the group shall be capable of acting as a group common dispatcher as the need arises.
3. Fault diagnostic system: Provide Owner's Representative with all hardware such as on-board LED diagnostics, hand held device or laptop computer, as standard with manufacturer, and supporting software documentation. Diagnostic system shall be capable of determining faults most difficult to find, as well as be capable of performing all code required testing.
4. The system shall be flexible, irrespective of the number of elevators in normal service.

B. Simplex selective collective operation:

1. Arrange for simplex selective collective automatic operation. Operate elevators from a single riser of landing buttons and from operating device in car.
2. Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a car or landing call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.
3. Double door operation not permitted. If an up traveling car has a passenger for an intermediate floor and a down call is registered at that floor, with no calls above car, it travels to floor, opens door to let passenger out, then lights down direction arrow in hall lantern and accepts waiting passenger without closing and reopening doors.

2.05 SPECIAL OPERATIONS:

A. Inspection operation:

1. Provide key-operated hoistway access device and car top operating device. Key switches shall be mounted in door frames with only ferrule exposed at terminal landings.

B. Independent service:

1. Independent service operation shall be provided so that, by means of a switch located in the car service cabinet, the car can be removed from automatic operation and be operated by an attendant. The attendant shall have full control of the starting, stopping and direction of car travel.
2. The car shall respond to car buttons only. The hall signals for the car on independent service shall not operate.

- C. Operation under fire or other emergency conditions:
 - 1. Provide special emergency service to comply with current ASME and CCR Title 8, CBC Title 24 and local codes having jurisdiction.
 - 2. Provide Phase 1 recall switch at main floor elevator lobby of passenger elevator only.
 - 3. Key switches at main floor shall be integrated in hall button station hoistway entrance jamb with engraved instructions.
- D. Operation under standby/emergency power system:
 - 1. General: The standby power system is sized to operate one elevator in each group simultaneously. Elevators shall be grouped as follows:
 - a. Group 1 = Elevators No. HQ
 - 2. When normal power fails and standby power becomes available, a signal will be given to the controllers, all elevators will shut down, and all car lights, etc., will be extinguished.
 - 3. When emergency power comes onto the line, power for lighting car fan and alarm bell shall be automatically transferred and all cars on automatic operation shall be sequentially returned one at a time from each group, to the main floor.
 - 4. After all cars are parked at main floor, one car of each group shall resume normal operation.
 - 5. Provide interlocking illuminated strip switches or keyed rotary switch to permit manual or automatic selection of desired elevator to operate on emergency power.
 - 6. When normal power fails and emergency power is used, or when normal power is restored, the elevator manufacturer shall provide all circuitry necessary, including time delay or auxiliary relays required to accomplish safe, continuous elevator operation. The cars will start in sequence, not simultaneously; allow 10 seconds between starts.
 - 7. Fire service shall be operable when system is on emergency power operation.
- E. Tenant security:
 - 1. Arrange control system to enable and disable car call buttons as follows:
 - a. Function, which locks out all cars in a group so that all car and corridor buttons are inoperative, except the main floor.
 - b. Function which locks out any selected car button for all elevators in a group serving that floor.
 - c. Tenant security operations can be overridden by cars on independent, any special emergency service or by card reader/Keypad access.
 - 2. Arrange controls system for courtyard elevator to enable and disable hall calls from any input.
 - a. Supply a 24/7 time clock with a time clock override switch in the lobby push button.

2.06 DOOR OPERATION:

- A. Passenger type:
 - 1. Provide door times available as specified under "Design Criteria."
 - 2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.

3. Door hold open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door hold times shall be adjustable independent of other floors.
 4. Provide closed loop regulated speed performance, onboard diagnostics, adjustable times, nudging, and test switches.
- B. Door operator:
1. Elevator No. All: Provide new heavy-duty master type solid state closed loop door operators mounted on car enclosure utilizing minimum 12-gauge support angles to isolate from direct mounting of operator on the car top.
 2. Pre-approved closed loop heavy duty door operators:
 - a. GAL MOVFR
 3. Provide code compliant door weight data tag.
- C. Door Protection:
1. Elevator No. All: Remove existing door protection devices and provide new electronic optical 3D scanning type:
 - a. Provide a door protective system which does not rely on physical contact with a person or object to inhibit door movement or initiate door reversal.
 - b. Pre-approved optical door sensors:
 - 1) Elevator Contractor
 - 2) Adams GateKeeper Max
 - 3) Formula Systems
 - 4) Janus Pana40 Plus
 - 5) Janus Pana Chrome 3D, with voice annunciation
 - 6) Tritronics Leading Edge
 - c. The system shall be able to detect a 2 inch diameter rod introduced at any position within the door movement and between the height of 2 inches and 63 inches above sill level.
 - d. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the open position and, if closing, to reverse to fully open position.
 - e. If doors are prevented from closing for an adjustable period of 15 to 45 seconds or upon activation of fire emergency service, they shall proceed to close at reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lb. when door re-opening device is not in operation.
 - f. For side-opening doors, the detector for the strike jamb side shall be recessed, flush with strike jamb.

2.07 SIGNALS AND OPERATING FIXTURES:

- A. General:
1. Provide signals and fixtures as shown and specified. Location and arrangement of fixtures shall comply with disabled access requirements.
 - a. Elevator Buttons: Provide vandal resistant stainless steel minimum 1 inch diameter mechanical buttons with integral illumination. Buttons shall be raised 1/8 inch from surrounding surface with square shoulders. Operation of car or hall button shall cause button to illuminate.
 - b. Switches: Toggle type typically or key operated where noted.

- c. Provide four (4) keys for each elevator keyed device, with proper labeled identification upon turnover of elevator.
 - d. Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.
 - e. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.
 - f. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected. No applied engraved plates.
 - g. Lamps: Miniature LED type.
 - h. Audible Chimes: Electronic adjustable audible chimes; bell type gong not acceptable.
 - i. Provide floor passing signal of the adjustable electronic audible chime type.
 - j. Tactile Markings: Provide raised Braille and alpha characters, numerals or symbols adjacent to operating buttons and devices used by the public according to local codes. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons.
 - k. Acceptable manufacturers: EPCO, ERM, MADD, or INNOVATION, fixtures with 5/8" engraved identifications. Operation of car or hall button shall cause button to illuminate. Response of car to car or hall call shall cause corresponding button to extinguish.
 - l. Faceplates: Provide of material and finish as indicated and specified; 1/8 inch minimum thickness with sharp edges relieved. Faceplates shall be sized to cover holes left by removal of existing fixtures where new fixtures are provided and provided with engraved fire sign, per A17.1.
 - m. Audible chimes: Electronic adjustable audible chimes from 75 to 85 dB in elevator lobby 3' - 0" above floor and 3' - 0" away from elevator entrance; bell type gong not acceptable.
- B. Car operating panels:
- 1. General: Provide buttons numbered to conform to floors served and the following:
 - a. Locate top operating button at 48 inches above floor.
 - b. Locate emergency stop switch and illuminated alarm button in bottom row at 35 inches above floor.
 - c. Provide "Door Open", "Door Close", and for booking elevator, "Door Hold" buttons located above emergency stop and alarm of same design as car button.
 - d. All signage required by local codes shall be engraved and painted as directed by Owner's representative.
 - e. Provide fire emergency features, per code. Provide FEO-F1 key switch for fire service unless local code requires different.
 - 2. Elevator No. Courtyard: Provide one new panel, integrate cabinets, buttons and engraving into hinged single piece faceplate mounted to front return panel.
 - 3. Elevator No. FD: Provide two new panels, integrate cabinets, buttons and engraving into hinged single piece faceplate mounted to front return panel

- C. Car position indicators:
1. Provide car position indicators with 2 inch indications corresponding to floor designations with matching direction arrows. Provide "X" or "E" indications for elevators with express zones.
 - a. Elevator No. All: Provide new digital alpha numeric type segmented LED readout indicator with minimum two-inch high indications mounted integral with each car operating panel.
- D. Service cabinet:
1. Provide new cabinet, door with a lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator-operating permit, mounted horizontally. Service cabinet shall contain the following :
 - a. Independent service switch
 - b. Two-speed ventilation switch (Hi-Off-Low)
 - c. Light switch as applicable
 - d. Inspection switch, key operated
 - e. Duplex GFI convenience outlet
 - f. Buzzers as required
 - g. Constant pressure test switch for emergency car lighting
 - h. Card reader over-ride switch-key operated
- E. Communication equipment:
1. Elevator No. All: Provide a new complete communication system in compliance with ADA regulations consisting of a combination speaker/microphone, amplifier, automatic dialer with 4 number rollover capability and matching car station push button with telephone symbol to activate system and acknowledgment lights. Mount in car operating panel behind a pattern of holes, wire to machine room and program automatic dialer as directed by Owner's Representative.
- F. Hall button fixtures:
1. Each fixture shall contain buttons, which light to indicate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two buttons and terminal fixtures with one. Engrave fire-exiting instructions on faceplates. Provide minimum of two fasteners at top and bottom of faceplate.
 - a. Elevator No. Courtyard: Provide each elevator with one riser of hall button stations.
 - b. Elevator No. FD: Provide each elevator with one riser of hall button stations on front and one on rear.
- G. Car lanterns:
1. Manufacturer's standard dual car riding lantern mounted at a maximum height above floor. Lens shall be flush with faceplate or face of jamb. Use the vandal type with the protruding pins so it can be seen from all angles and have a less chance of being damaged..
 2. Lantern illuminates and chimes as doors open. Provide single chime for up direction and double chime for down direction.

H. Disabled access requirements:

1. Provide to meet local codes having jurisdiction including handrail and button configuration.
 - a. Car operating panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Indications may be engraved directly on faceplates or separate plates flush mounted with hairline joints and concealed mechanical fasteners. Plates shall be of same size and shape as buttons. Raised characters shall be white on a black background with Braille designations directly below the character. Provide "star" at main egress landing.
 - b. Entrances: Provide raised Braille and alpha characters, numerals or symbols similar to those for car stations of size required by governing authority. Locate on each entrance jamb at 60 inches above floor indicating floor designation. Material and finish of plates shall match hall button station faceplates. Provide with contrasting background and mounting means similar to those on car panels. Braille designation shall be to the bottom of the raised character. Provide "star" at main egress landing.
 - c. Entrances: Provide plate with elevator number for first floor entrance. Character shall be a minimum of 3".

2.08 WIRING:

A. General:

1. Exterior Installed Environment: All hoistway equipment shall be designed for a damp environment.
 - a. Electrical components in the pit, hoistway, car top and at each hoistway landing including hall fixtures shall be NEMA 4 design.
 - b. All hoistway entrance equipment shall be galvanized steel or fabricated from a non-ferrous material.
 - c. At exterior lobby landing, provide gutter under hoistway entrance sill, sloped in one direction and extended to side wall of hoistway. Connect gutter to a vertical drain tube and extended to pit sump pit or drain area. Drill ¼" diameter holes in sill groove outside visible area to permit water to weep through to gutter.
2. Provide all necessary wiring and 25% spares between cars and controllers and to all remote control stations; minimum of eight. Furnish shielded wires in cables for all communications card readers, cameras, digital displays, and speakers. Include eight additional pairs of shielded spares and two RG-6 coaxial cables or equivalent, for each car. Electrical wire runs will be free of splices or connection unless at designated junction points.

B. Traveling Cables:

1. Use minimum number of traveling cables. Include shielded wires and spares as noted above. Cord thoroughly and protect cables from rubbing against hoistways or car items. Provide with steel cable core and properly anchored to relieve strain on individual conductors.
2. All traveling cables shall be wired from machine to elevator, without junction box or spliced connections.

C. Hoistway Wiring:

1. All wiring shall be neatly terminated, tied within a junction box and properly marked as to its content.

2. If junction boxes are used, NEC approved terminal strips shall be used and properly identified.
 3. No splices shall be allowed.
- D. Work light and GFCI convenience outlet:
1. Provide on top of car with protective plastic lamp guard. Provide compact fluorescent type (CFL)
- E. Stop switch:
1. Provide in each pit. Provide NEMA 4 enclosure.
 2. Provide on each top of car.
- F. Alarm gong:
1. Provide on top of each car and to be actuated by corresponding alarm button or emergency stop switch.
- G. Auxiliary disconnect switches:
1. Provide as required in remote controller rooms or at remote equipment not in view of mainline switches; include all wiring and conduit.
- H. CCTV circuit:
1. Provide provisions for closed circuit television camera in elevators. Run from elevator car top to outside of the elevator machine room, as directed by Owner at no additional cost to the Owner.

2.09 CAR ENCLOSURES:

- A. General: All stainless surfaces are to have the 3M anti-graffiti material applied:
1. Fabricate finish work smooth and free from warps, buckles, squeaks and rattles; joints lightproof. Car shall be sound isolated from car frame. Paint outside of car with 3/16-inch thick sound deadener. No visible fastenings except as indicated.
 2. All elevators shall be weighed before work begins to determine actual weight of car enclosures. Contractor shall keep a log of all equipment and weight removed and added to the suspension system. Contractor is responsible for complying with all applicable ASME and local codes.
 3. All elevators shall be weighed at the completion of the project. Provide all documentation to the governing authority and Owner's Representative for permanent record.
 4. Provide new crosshead data as required by ASME and local code authorities.
- B. Emergency lighting; All elevators:
1. Elevator No. All: Provide an emergency car lighting unit mounted on top of car, battery driven and self-rechargeable. Upon outage of normal power the unit shall, within 5 seconds, light two lamps as part of normal car lighting. The unit shall have sufficient capacity to keep the lights in continuous operation for four hours and the alarm bell for one hour. Provide a readily accessible means for testing the unit in service cabinet. Light fixtures mounted in car front returns or operating panels are not acceptable. Illuminate lights directly over car operating panels.

C. Elevator No. All: Retain existing shell enclosure and rehabilitate as follows:

- | | | |
|-----|-----------------------|---|
| 1. | Front returns: | Clad |
| 2. | Car operating panels: | Provide new |
| 3. | Wall FD: | Retain |
| 4. | Wall Panels Courtyard | Provide New |
| 5. | Transom: | Clad |
| 6. | Hand rails: | Provide new CA, ADA Compliant Public Elevator only |
| 7. | Ceiling and lighting: | Provide new Provide a suspended aluminum frame and tee bar ceiling grid with LED light fixtures to provide uniform illumination of lay-in panels and 25 foot-candles at handrail height. Lay-in panels shall be manufacturer's standard Stainless Steel.. |
| 8. | Ventilation: | Provide new Retain two-speed squirrel cage exhaust blower (Morrison OE, Toshiba FV40) with sound isolation mounting on canopy. |
| 9. | Emergency exit: | Retain, provide code compliant switch (if req.) |
| 10. | Car Doors: | Provide new |
| 11. | Finish flooring: | Provide new resilient rubber flooring of owners choice |

2.10 HOISTWAY ENTRANCES; PASSENGER TYPE:

- A. General: All stainless surfaces (entrances and doors) are to have the 3M anti-graffiti material applied
1. Retain existing
- B. Hangers and Tracks:
1. Elevator No. All: Provide all new door tracks and hanger assemblies. Sheave type with two-point suspension. Steel sheaves with flanged groove and resilient sound-absorbing tires. Minimum 2-1/2 inch diameter for hoistway, 3 inch for car. Manufacturer's heavy-duty tracks and ball or roller bearing with adjustable up thrusts.
- C. Hanger headers:
1. Elevator No. All: Retain existing.
- D. Struts:
1. Elevator No. All: Retain existing and clean.
- E. Closers:
1. Elevator No. All: Provide new cable relating torsion spring mechanical type or broken arm jack knife type as required for door assembly.
- F. Dust and hanger covers:
1. Elevator No. All: Retain existing, clean and refinish with black paint. Replace damaged and missing dust covers.

- G. Fascia, toe and head guards:
1. Elevator No. All: Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.
- H. Interlocks:
1. Elevator No. All: Provide all new. Equip each hoistway door with a tamper-proof interlock which shall prevent operation of the car until doors are locked in the close position as defined by the Code and shall prevent opening of doors at landing from corridor side unless car is at rest at landing in leveling zone or, hoistway access switch is used. Provide all new type "SF" high temperature wiring for interlock circuits.
- I. Pick-up roller assemblies:
1. Elevator No. All: Provide all new pick-up roller assemblies as required for door operating equipment furnished.
- J. Door restrictor:
1. Elevator No. All: Provide new, door restrictor device compatible with new door equipment.
- K. Sills:
1. Elevator No. All: Retain existing, power clean to metal and refinish, full length of sill.
- L. Limit Switches:
1. Elevator No. All: Provide new
- M. Frames:
1. Elevator No. All: Retain existing. Clean and refinish as scheduled.
- N. Hoistway doors:
1. Elevator No. All: Provide New, provide two new gibs per panel and one fire gib per panel which will remain engaged in sill if guiding member is destroyed.
 2. Provide new full height astragals and missing or damaged non vision wings matching finish of door panels. Contractor must use the original reinforcing on existing hoistway and car doors for mounting hangers, pickup rollers, drive vanes, etc. If original reinforcing is not reusable for drive vanes and pickup rollers, Contractor shall furnish new reinforcing (minimum of 1/4" thick plate) welded to the door face. A minimum of four (4) 5/16" threaded bolts is to be used for attachment to the reinforcing plate. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up. Clean and refinish door panels as scheduled. Door panels to be refinished by others. Vandal resistant paint.
- O. Passenger Elevator Entrance Schedule:
1. Elevator No. HQ and Courtyard:
 - a. Size: 3' - 6" wide by 7' - 0" high.
 - b. Type: Side opening, Single speed
 - c. Frames:
 - 1) Main floor: Clad Stainless Steel
 - 2) Typical floors: Clad Stainless Steel
 - d. Doors
 - 1) Main floor: Stainless Steel

- | | | | |
|----|----|-----------------|-----------------|
| | 2) | Typical floors: | Stainless Steel |
| e. | | Sills: | |
| | 1) | Main floor: | Re-finish |
| | 2) | Typical floors: | Re-finish |

2.11 HYDRAULIC ELEVATOR EQUIPMENT:

A. Design Criteria:

1. Performance:

- a. Contract Speed: Maximum ten percent (10%) speed variation under any loading condition in the up direction.
- b. Motion Time: From start to stop of elevators motion as measured in both directions for a typical one floor run under any loading condition.
 - 1) Elevator No. 8.0: seconds
- c. Door Open Times:
 - 1) Elevator No. : 2.3 seconds
- d. Door close times: Minimum, without exceeding kinetic energy and closing force, allowed by code.
- e. Door dwell times: Comply with A.D.A. formula and provide separate adjustable timers with initial settings as follows:
 - 1) Main lobby hall call: 5.0 to 6.0 seconds.
 - 2) Upper lobby hall call: 5.0 to 6.0 seconds.
 - 3) Car call: 5.0 to 6.0 seconds. Choose one.
 - 4) Interruption of door protective device: Reduce dwell to 1 second.
- f. Leveling: Within 1/4 inch under any loading condition. Level into floor at all times, do not overrun floor and level back.
- g. Hydraulic pressure: Hydraulic components shall be factory tested for 600 PSI. Maximum operating pressure shall be 425 PSI.

2. Operating qualities: Owner's Representative will judge riding qualities of cars and enforce the following requirements. Make all necessary adjustments.

- a. Acceleration and deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Elevator shall start movement within .5 seconds of fully closed doors. Stopping upon operation of emergency stop switch shall be rapid but not violent.
- b. Horizontal Acceleration (ISO A95 Scaling): Maximum 10 mg peak-to-peak measured at full speed for full travel in both directions.
- c. Vertical Vibration: Ride shall be free of vibration throughout acceleration, full speed and deceleration for full travel in both directions.

3. Sound control: (A Scaled – fast – Lmax over the duration of the operation).

- a. Vibration: Sound isolate machines and motor drives from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.
- b. Airborne noise: Maximum acoustical output level of:

- 1) 65 dB measured in machine room. With the meter located 3' - 0" from each machine room door at floor level
- 2) 55 dB measured in elevator cars during all sequences of operation.
- 3) 50 dB measured in elevator lobbies. From the nearest staff work station to the elevator lobby

2.12 HYDRAULIC HOISTWAY EQUIPMENT:

A. Guide rails and brackets:

1. Elevator No. All: Retain existing rails, realign, clean, check, tighten and replace Code non-complying brackets, fishplates and bolts. Provide log of the alignment corrections to the Owner's Representative.

B. Guide shoes:

1. Elevator No. All: Provide new guide shoes of the roller type with neoprene tires, minimum 3/4 inch wide and fully adjustable spring loaded to provide continuous contact with rail surfaces. Balance car to insure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Nominal roller diameter shall be 4" 6".
 - a. Static balance car.

C. Buffers:

1. Retain existing.

D. Car frame and platform:

1. Elevator No. All: Retain existing car frame. Clean down and tighten frame bolts. Static balance weight to be added as required.

E. Platen isolation:

1. Provide minimum 3/4 inch thick steel plates between top of plunger and car frame with 1 inch rubber or neoprene isolation material between.
 - a. Packing: Provide packing, which inhibits leaking of oil with drip ring and means to collect any oil leakage. Example, 5-gallon bucket.
2. Piping:
 - a. Reuse existing.
 - b. Provide new gaskets for victaulic fittings and test for leaks.
3. Isolation coupling
 - a. Provide at least two isolation coupling one in the machine room and one in the pit.

F. Pit Valves:

- 1) Provide in each elevator pit a gate valve to shut off oil between cylinder and pumping plant.
- 2) Provided new a pressure type line rupture safety valve to shut off oil between cylinder head and pit valve. Activation of safety valve shall not void operation of lowering valve.

G. Oil:

1. Hydraulic Fluid: USDA certified bio-based product, ultra-low toxicity, "readily" biodegradable, high performing fluid made from rapidly renewable plant stock; with antioxidant, anticorrosive, antifoaming, and metal passivating additives. Hydraulic fluid is approved by elevator manufacture for use with elevator equipment.

- a. USDA certified bio-based product, >90% bio-based content, per ASTM D6866
- b. Classified "Readily" biodegradable, per OECD 301B
- c. >70% Biodegradability, per ASTM D5864
- d. >20,000 ppm Aquatic toxicity, per EPA-821-R-02-012
- e. >220 Viscosity Index, ASTM D2270
- f. 25 Viscosity at 400C, cSt., per ASTM D445
- g. >2200C, Flash Point, per ASTM D92

2.13 MACHINE ROOM EQUIPMENT:

A. General:

1. Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical work with other trades.

B. Pumping plant:

1. Provide new.
 - a. General: Self-contained unit with sound reducing cabinet and sound isolated base.
 - b. Pump: IMO, Roper or accepted equal for 150 SSU oil, belt driven or submersible. Maximum speed 3600 RPM. Maximum pressure 425 pounds per square inch.
 - c. Tank: Capacity equal to plunger displacement plus 50%. Provide strainers, oil level gauge and device to maintain uniform oil temperature.
 - d. Valves: Integral type by Elevator Equipment Company, Maxton Company or by elevator manufacturer. Provide conveniently located manual lowering valve accessible without removing pumping plant enclosure panels.
 - e. Motor: General Electric, Imperial, Westinghouse or accepted equal; maximum speed 1800 RPM for belt driven and 3600 RPM for submersible. Provide minimum 80 start heavy-duty motor, continuous rated, 50 degrees C. temperature rise, Class A insulation or 70 degrees C. rise for Class B insulation.
 - f. Muffler: Blow-out proof type between pumping plant and cylinder.

C. Controller:

1. Integral, floor or wall mounted as applicable to space conditions. Include door operating relays combined with controller. Provide solid state soft starting with starting switches rated at minimum 57% of horsepower rating. IEC method of line starter application is unacceptable. Provide three (3) manual reset overload relays, one in each line and reverse phase relay. Provide externally mounted permanently identified junction boxes on controller cabinets for termination of communication circuits. Pre-approved controllers:
 - a. Motion Control Engineering HMC-2000

D. Hydraulic elevator protective circuit:

1. In the event the car should stall due to low oil in the system or, if for other cause the car fails to reach the top landing within a predetermined time while traveling "up", a special circuit shall be provided which shall automatically return the car to the bottom landing and open the doors for 10 seconds after which the elevator will close doors and completely shut down. Recycling the mainline switch shall restore Service.

PART 3 - EXECUTION:

3.01 INSTALLATION:

- A. General:
 - 1. Install per manufacturer's requirements, those of regulatory agencies and as specified.
- B. Welded Construction:
 - 1. Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts.
 - 2. Comply with AWS standards for workmanship and for qualifications of welding operators.
- C. Sound Isolation:
 - 1. Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.
- D. Lubrication:
 - 1. Lubricate operating parts of systems as recommended by manufacturer.
- E. Hazardous Disposal Certification:
 - 1. Contractor to provide oil and hazardous waste removal documentation per required EPA standards. Provide copy of documentation to Owner.
- F. Alignment:
 - 1. Coordinate alignment of hoistway entrances with elevator guide rails, for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe workable dimensions at each landing.
 - 2. Align guide rails plumb and parallel with maximum deviation of 1/16 inch. Anchorage of guide rails in pits shall not compromise waterproofing.
- G. Graphics:
 - 1. Provide graphics visible to public as selected by Owner's Representative.
- H. Manufacturer's nameplates:
 - 1. Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.
- I. Cleaning of the installation:
 - 1. After the installation of each elevator has been completed and immediately prior to the carrying out of the tests, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish shall be removed from site.
- J. Finish painting after tests:
 - 1. After satisfactory completion of the tests, any damage to the paint work shall be made good and the installation re-cleaned, if necessary, after which at least one final coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in

Contractor's customary colors to all the existing and new equipment in the machine room and also to such items in the hoistway or elsewhere which have received only a primer coat.

2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

K. Painting of machine room floor, walls and pit floors:

1. After the completion of the entire installation, the floor and walls of each machine room and pit areas shall be thoroughly cleaned down and brush painted with one coat of traffic paint having oil resistant properties. Pit floors shall be painted after the completion of the waterproofing. Owner's Representative will advise the color.
2. Painting shall be performed either during normal working hours or after hours at no additional cost to the Owner.

3.02 NOISE CONTROL:

A. General:

1. Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the remodeling project due to the character of the work and the use occupancy of the building.
2. Contractor shall perform all noisy work as directed by Owner's Representative.

B. Building operations:

1. Noise and vibration generated by this construction for this work may, at times, create a problem for the operations of the building. In the event the noise produced by the construction work conflicts with the building function, Contractor, at the request of the Owner's Representative, shall reduce or stop the noise.
2. All disruptive work including removal of old materials and deliveries of new materials shall be done on overtime at no additional cost to Owner.
3. All disruptive work will be performed after hours at no additional cost to Owner.

C. Measurement:

1. The noise level shall be measured on the "A" Scale of a sound level meter as follows:
 - a. With the meter located 3' - 0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 65 db.
 - b. With the meter located 3' - 0" from outside of each machine room door at floor level, the sound level shall not exceed 70 db.
 - c. With the meter located 3' - 0" from any hoistway door at any level, the sound level shall not exceed 70 db.

D. Types of noise generating work:

1. All heavy demolition (concrete walls and floors).
2. All grinding, chipping, pounding, sanding and cutting of holes and core drilling.

3.03 FIELD QUALITY CONTROL:

A. Regulatory agencies inspection:

1. Upon completion of elevators, Contractor shall provide instruments, weights and personnel to conduct test required by regulatory agencies. Contractor shall submit a complete report describing the results of the tests.

- B. Examination and testing:
1. When installation is ready for final acceptance, notify and assist Owner's Representative in making a walk-through inspection of entire installation to assure workmanship and equipment complies with contract documents. Provide equipment to perform the following tests:
 - a. One-hour heat and run test with full load in car. Perform for one car of each duty.
 - 1) Stop car at each floor in each direction.
 - 2) Verify that temperatures do not exceed manufacturer's motor ratings.
 - 3) Performance and leveling tests shall be made before and after heat and run test.
 - b. Check and verify operation of all safety features and special operations.
 - 1) Measure horizontal acceleration.
 - 2) Measure acoustical output levels in machine room, lobbies and cars.
- C. Correction:
1. Make corrections to defects or discrepancies at no cost to Owner's Representative. Should discrepancies be such that re-examination and retesting is required, Contractor shall pay for all costs including those of Owner's Representative's fees.
- D. Final acceptance:
1. Final acceptance of the installation will be made only after all corrections are complete, final submittals and certificates received and the Owner's Representative is satisfied and the installation is complete in all respects. Final payment will not be made until the above is completed.

3.04 INSTRUCTIONS:

- A. Instruct Owner's personnel in proper use of each system.

3.05 PROJECT RECORD DOCUMENTS:

- A. As-built drawings:
1. Contractor shall maintain at the job site a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such change.
 2. Changes, as they occur, will be marked on the record set of drawings on a daily basis.
 3. The monthly payment will be withheld until the Owner's Representative has verified that "as-built" corrections are current. Before final payment is authorized, Contractor shall certify that all changes in the work are included on the drawings and will deliver such to the Owner's Representative.
- B. Record drawings:
1. Contractor shall prepare "as-built" drawings in duplicate of any changes to electrical work on prints supplied by the Owner's Representative. During the course of construction, actual locations to scale shall be shown for all runs of mechanical and electrical work, installed in walls and floors or otherwise concealed. This shall cover all piping, electrical wiring; whether in conduit or cable, duct work, etc. shall be located, in addition, by dimension. All services shall be identified in ink on the prints.

2. In addition, Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and deliver them to the Owner's Representative.

3.06 MAINTENANCE:

- A. General: No 12 month warranty maintenance to be provided. Warranty parts and warranty call backs and repairs only.
- B. Call-Backs: In event of failures, provide 24 hour call-back service at no additional cost to Owner.
- C. Elevator Shutdowns:
 1. Should any elevator become inoperative, repair within 24 hours of notification of such failure. Breakdown of major components shall be completed and service restored within 72 hours.
 2. Failure to comply with above, Owner may order the work done by other contractors at the Contractor's expense.
 3. Devices repaired or replaced by others shall, nevertheless, become provided with maintenance by the Contractor who shall become completely responsible for correct operation of such devices for lifetime of this contract.
- D. Quotation: Base bid shall include cost of maintenance and materials as described above.

END OF SECTION