PASADENA COURTHOUSE ELEVATOR MODERNIZATION

ELEVATOR SPECIFICATIONS

90% CONSTRUCTION DOCUMENTS
DECEMBER 12, 2016

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Pasadena Courthouse Elevator Modernization

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Judicial Council of California

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Specifications

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Refer to 90% Construction Document drawings for associated Electrical and Mechanical specifications.

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SECTION 14211

MODERNIZATION OF EXISTING TRACTION ELEVATORS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope: Provide materials, labor, and services necessary for the complete modernization of existing electric traction elevators.

B. Elevator Lists:

1. Modernize:

a) Passenger Elevators 1 to 3

b) Custody Elevators 4 & 6

c) Judge's Elevator 5

C. The Contractor shall work normal hours and normal days with the exception of noisy work, which shall be performed from 5 a.m. to 8 a.m. Noisy work is considered work which will create disruption to normal court or building operation and is performed in the hoistways/lobbies/elevator cabs. The work in the machine room is not considered to be part of this "noisy" work

D. Any cranes used to bring equipment into the building shall be the responsibility of the Elevator Contractor and shall be scheduled for use on weekends. Permits for cranes are the Elevator Contractor's responsibility.

E. Upon bidding the work, the Contractor shall indicate any additional code compliance items which may be affected as a result of this work. This shall be reported to Owner and Consultant, regardless of whether it is included in any contract document including the specifications and drawings.

F. If additional work is required for compatibility with the Contractor's equipment, that shall be identified and itemized with the bid submittal.

G. The new cab and car components shall be designed to stay within 5% of the original car weight, as stamped on the crosshead. Should the original weight be exceeded by more than 5%, comply with all ASME, A17.1 requirement and report the specific conditions to Owner and Consultant prior to manufacture of any equipment.

H. The Contractor is required to design all changes to not exceed a 5% increase in the original deadweight of the car enclosure, plus rated capacity. Should the total car weight be exceeded, Contractor shall be responsible for the following:

1. All code required changes.

2. Provide structural calculations as required by code to determine integrity and capability of existing elevator components including machine support beams, with ASME A17.1, to withstand the new weights.

3. Review of existing structural electrical and mechanical provisions for compatibility with Contractor's products.

4. Documentation shall be furnished to the enforcing code authorities verifying the results.

5. Purchaser shall not be responsible for changes to structural, mechanical, electrical or other systems required to accommodate Contractor's equipment.

1.02 NON-PROPRIETARY EQUIPMENT

A. 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 Owner 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, wiring diagrams and spare parts as listed in part 3 of this specification shall be provided in each machine room, controller room or machine space as a permanent part of the installation and become the property of the Owner. Devices shall be permanent at no additional cost to Owner, shall not self-destruct, and 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 be responsible for the costs to install such updates at no cost to Owner.

3. Provide contact information for their separate parts warehouse so that the Owner or designated service Owner can order parts on a 24-hour basis and delivered with 48 hours.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at closeout of the project and estimated escalation cost. The cost of these parts is what would be charged to Owner or other service Owner.

5. Provide contact information for technical support so that the Owner or designated service Owner can obtain technical support on a 24-hour basis to provide assistance in troubleshooting problems. Indicate hourly rate charged to Owner or designated service Owner for such service.

1.03 CONTRACTOR RESPONSIBILITY

A. GENERAL REQUIREMENTS

1. Should additional work be required either due to code or the elevator contractor's specific requirements, these shall be noted and included with the bid. In the absence of such a list it is assumed the Contractor's equipment is compatible with the existing building system and any resulting work or revisions to the building or to the elevators shall be the responsibility of the Elevator Contractor.

2. Verify existing building systems including but not limited to mechanical, electrical system and fire life safety is compatible with the new equipment being proposed, identify any necessary modifications and include modifications in bid.

3. Provide all floor protection to disburse the weight of materials being removed and/or brought into the facility. Floor protection shall be adequate to prevent damage to existing flooring. Contractor accepts responsibility for cost of replacing any building surfaces, features or finishes damaged by their actions.

4. Provide, identify and protect clear pathway, subject to Owner's prior approval, for any and all movement and storage of equipment, material and tools, around the property and within the building.

5. Provide guards and barricades to shield people from worksite hazards, including open hoistway, machinery, materials, equipment, and tools.

6. Protect premises from damage throughout course of construction, including floors, walks, walls, thresholds, entrance frames, doors, equipment, etc. Repair or replace items damaged or marred during construction.

7. Clean and paint areas and equipment as specified.

8. Paint the machine room walls, ceilings and floors.

9. Perform code and performance related tests as specified.

10. Remove and properly dispose of discarded equipment and materials, including debris, rubbish, oil and lubricants.

11. Adjust all safety and emergency control related devices and perform code mandated safety tests.

12. Remove and legally dispose of all elevator equipment replaced by this modification. Removed equipment shall be disposed of as fast as it accumulates and shall not be staged in public spaces.

13. Contractor shall include all code required items, permits, testing, records and inspection costs.

14. Coordinate with the Contractor to restore all damaged building finishes, including carpet, door frames, walls, ceilings, etc. to pre-modernization condition.

15. All modifications to the entry/exit areas shall be the Owner responsibility but are the Contractor's responsibility to coordinate.

16. Provide fluorescent pit lighting of not less than 100 lx (10 fc), measured at the pit floor. Furnish properly located light switch and GFCI duplex outlet near pit entry.

17. Provide GFCI convenience outlets in pit for sump pump.

18. Removal all non-elevator equipment from machine room, as required by the Elevator Bureau.

19. Provide a class "ABC" fire extinguisher mounted inside each machine room.

20. Secure the storage space for tools and materials.

21. Include all costs associated with the safe hoisting of new equipment to the machine room.

1.04 RELATED

A. Building Work. The following work shall be the responsibility of the other trades.

NOTE: To the Contractor: Should additional work be required either due to code or the Contractor's specific requirements, these shall be noted and included with the bid. In the absence of such a list it is assumed the Contractor's equipment is compatible with the existing building system and any resulting work or revisions to the building or to the elevators shall be the responsibility of the Contractor.

1. Patching and finishing around entrances and adjacent flooring after installation.

2. Provide code required machine room door signage.

3. All modifications to the entry/exit areas shall be the Owner responsibility but are the Contractor's responsibility to coordinate.

4. Bevel all shaft ledges with an angle of not less than 75 degrees with the horizontal, where required.

5. Provide all required hoistway wall patching.

6. Modifications to the existing hoistway walls.

7. Wall block outs and fire rated closure for control and signal fixture boxes which penetrate walls.

8. Patching and finishing around entrances and adjacent flooring after installation.

9. All modifications to the entry/exit areas shall be the Owner responsibility but are the Contractor's responsibility to coordinate.

10. Coordinate with the Contractor to restore all damaged building finishes, including carpet, door frames, walls, ceilings, etc. to pre-modernization condition. Build back surfaces and or building areas to match pre-existing finishes.

11. Removal of all non-elevator equipment from machine room.

12. Provide storage space for tools and materials. Contractor shall be responsible for securing the area.

B. Mechanical: Refer to Mechanical Contract Documents. The following are general guidelines. Provide adequate machine room heating and cooling necessary to maintain an ambient temperature between 55 and 85 degrees Fahrenheit, with relative humidity not exceeding 85% non-condensing.

C. Electrical: Refer to the Electrical Contract Documents. The following are general guidelines.

1. Verify existing electrical system is compatible with the new equipment being

proposed, identify any necessary modifications and include modifications in bid.

2. Provide LED pit lighting of not less than 100 lx (10 fc), measured at the pit floor. Furnish properly located light switch and GFCI duplex outlet near pit entry. All to be NEMA 4 for wet application.

3. Provide one GFCI type duplex utility receptacle near each elevator hoist machine. Replace existing outlets with GFCI type. Receptacles shall be manually reset type

4. Provide single non-GFCI outlet in pit when there is an existing sump pump.

5. Provide required conduit between hoistway and remote elevator control panel.

6. Provide proper machine room lighting arranged for optimal viewing of control equipment. The light level must be a minimum of 200 lx (19 fc), measured at the machine room floor. Provide sufficient quantity of T8 fluorescent fixtures with wire cage bulb guards. Locate light switch near the lockable side of the entry door.

7. Provide properly sized, 3-phase power with lockable, fused disconnect switch at code required location for each elevator. Run feeder wires in separate code compliant conduit, terminated at each individual car controller or transformer. If alternate for auxiliary power supply is accepted, disconnect switch must be equipped with auxiliary contacts. Verify requirements with Contractor.

8. Provide 120 VAC single phase with fused disconnect switch mounted adjacent to group controller, where required. Verify requirements with Contractor.

9. Provide insulated copper grounding conductor from the main building ground to each power disconnect switch.

D. Fire Alarm—Refer to contract documents.

1.05 PURCHASER RESPONSIBILITY:

A. ACCESS TO SITE/GENERAL:

1. On-site Parking shall be provided for the Contractor.

2. Provide and designate adequate storage space for tools and materials.

3. No objects adjacent to, and below, the hall push button station shall project more than 4-inches from the wall.

B. MACHINE ROOM:

1. Service all air conditioning systems and clean all vents.

C. COMMUNICATION AND SECURITY:

1. Provide security camera equipment, where desired.

2. Provide card readers where desired.

1.06 REFERENCES

A. California Trial Court Facilities Standards

B. JCC Requirements

C. Applicable Codes (Latest Edition):

1. All work shall be completed in accordance with national, state and local codes in effect at time of award. All requirements of local building department and fire jurisdictions shall be fulfilled by the Contractor.

2. The American Society of Mechanical Engineers, Safety Code for Elevators and Escalators (ASME A17.1)

3. The American Society of Mechanical Engineers, Safety Code for Existing Elevators and Escalators (ASME A17.3 - 2005)

4. American National Standard Accessible and Usable Buildings and Facilities (ICC/ANSI A117.1-Latest Edition)

5. National Fire Protection Association (NFPA 13)

6. National Fire Protection Association (NFPA 72)

7. National Electrical Code (NFPA 72)

8. Americans with Disabilities Act (ADA)

9. California State Building, Fire, Elevator and Accessibility Code

10. American Welding Society (AWS) D1.1 - Structural Welding Code - Steel

11. Authorities having jurisdiction

1.07 CONTRACT

A. Contractor shall advise Consultant and Owner of any discrepancies or ambiguities found in the project specifications prior to submitting bid.

B. Contract includes all engineering, labor, tools, materials, permits, equipment, required to complete the specified work, except those items defined as to be performed by the Contractor.

C. Contractor shall familiarize itself with the site conditions and include all incidental work that might occur or be required as part of this project.

1.08 DEFINITIONS

A. The following definitions apply to work of this Section:

1. “Owner”: as used herein, refers to JCC.

2. “Contractor”: refers to the Contractor having the contract with Owner to furnish labor and materials for the execution of work as specified herein.

3. "Consultant": refers to the Syska Hennessy Group, Inc.

4. "Provide": to furnish and install, complete for safe operation, unless specifically indicated otherwise.

5. "Install": to erect, mount and connect complete with related accessories.

6. "Refurbish": to modify as required for like new operation and characteristics, meeting all current code requirements.

7. "Supply": to purchase, procure, acquire and deliver complete with related accessories.

8. "As required", "where required", "as needed", "if required", and "if necessary": repair or replace components to provide like new operation or meet code requirements.

9. "Work": labor and materials required for proper and complete installation.

10. "Wiring": raceway, fittings, wire, boxes, and related items.

11. "Concealed": embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.

12. "Exposed": not installed underground or "concealed" as defined above.

13. "Indicated", "shown", or "noted": as indicated, shown or noted on Drawings or as specified.

14. "Similar" or "equal": of base bid manufacturer, equal in materials, weight, size, design and efficiency of specified product, conforming to "Acceptable manufacturers."

15. "Reviewed", "satisfactory", "accepted", or "directed": as reviewed, satisfactory, accepted or directed, by or to Owner.

16. Where a device or a part of equipment is referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

1.09 INSTRUCTIONS TO CONTRACTORS:

A. Bids shall be subject to all the requirements of the contract documents and any other documents issued in connection with this project.

B. Contractor shall identify any operations and features that are unique to their product or practices.

C. If Contractor desires to furnish items differently than specified, Contractor shall submit substitution as an alternate quotation along with bid. Contractor shall supply information in regard to the proposed substitution of components or materials.

D. Contractor shall identify any conflicts or problems/issues with the implementation of this work. In the absence of such identification, Contractor is responsible for existing conditions

and modifications to the existing hoistway, machine rooms, elevator cars, etc. pertaining to this work, shall be the responsibility of the Contractor. Modifications to building systems, i.e. mechanical, structural, and electrical, etc., shall not be made to accommodate Contractor's equipment.

1.10 HAZARDOUS MATERIALS NOTIFICATION, TRAINING & REQUIREMENTS:

A. If asbestos containing building materials or other hazardous materials are found to be present within the elevator machine rooms and hoistways, moving, drilling, cutting or otherwise disturbing such materials can pose a health risk and should not be attempted by untrained personnel. Contractor shall immediately notify Owner if there is need to disturb such materials as part of the project or if they observe any materials that they suspect contain asbestos or other hazardous materials that are not properly maintained.

B. All technicians working on the project are to have undergone hazardous materials awareness training to learn about adverse health effects, necessary precautions, emergencies, inspections, and maintenance.

C. Should removal or abatement be required, it shall be performed by others and the responsibility of the Owner.

1.11 MATERIALS:

A. All exposed retained metal in the hoistway and on the car tops shall have all rust removed, shall be mechanically and chemically cleaned, followed immediately by the application of common, low-VOC, low-odor, rust-inhibiting coating.

B. Stainless Steel: Type 302 or 304 or 316 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength and durability.

C. Paint: Clean all new, exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, apply one finish coat of low-VOC, low-odor, industrial enamel paint. Galvanized metal need not be painted.

1.12 OPERATION PERFORMANCE

A. The control system shall provide smooth acceleration and deceleration with 1/8-inch leveling accuracy at all landings, from no load to full rated load in the elevator, under normal or unloading conditions. The self-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct for over travel and under travel. The car shall remain at the landing irrespective of load.

B. The floor-to-floor performance time shall be is measured from the start of door close at one floor to ¾ open at the next floor:

1. Passenger Elevators: 9.0 seconds

2. Judge's Elevator: 10.0 seconds

3. Custody Elevators: 12.0 seconds

C. The door open time shall be measured from start of door open to fully open.

1. Passenger Elevators: 1.8 seconds

2. Judge's Elevator: 1.6 seconds

3. Custody Elevators: 2.4 seconds

D. The door close time shall be seconds from start of door close to fully closed.

1. Passenger Elevators: 2.4 seconds

2. Judge's Elevator: 2.2 seconds

3. Custody Elevators: 4.4 seconds

E. The door close time shall be based on the Code requirements with a door delay feature.

F. The hall call door dwell time shall be based on the code requirements with a door delay feature. The door delay is the minimum acceptable time from notification that a car is answering a call (lantern and audible signal) until the doors of the car start to close. The minimum acceptable time for doors to remain fully open after answering a hall call shall not be less than 5-seconds. Time shall be calculated by the following equation:

T = D/(1.5 ft/s)

T = Total time in seconds.

D = Distance from a point in the lobby 60-inches directly in front of the hall station to center line of the door opening.

G. Car call door dwell time: The minimum acceptable time for doors to remain fully open after answering a car call shall not be less than 3-seconds, per code. Initial setting shall be 3.5-seconds.

H. The speed of the elevator shall not vary by more than +/- 3% under loading conditions.

I. Differential Door Timing Feature: Provide adjustable timers to vary the time that the doors remain open in response to a car or hall call. The doors shall remain open for 4.0-seconds in response to a car call and 5 to 8-seconds for a hall call. The doors shall remain open as long as passengers are crossing the threshold.

J. Nudging: When doors are prevented from closing for 20-seconds due to failure of the proximity device or obstruction, the doors shall remain open and a buzzer shall sound.

K. Prior to final acceptance, and again prior to the termination of the maintenance period, the elevators shall be adjusted as required to meet these performance requirements.

1.13 SOUND CONTROL/NOISE AND VIBRATION/RIDE QUALITY

A. Limit overall elevator noise emissions to the building to the following maximum A-weighted sound pressure levels in any mode of operation:

1. 55-decibels measured 5-feet above the cab floor near center while running at rated speed.

2. 55-decibels measured 5-feet above the cab floor near center while the doors are opening or closing.

3. 55-decibels measured in the elevator lobby 10-feet from the elevator doors.

4. All elevator equipment including their supports and fastenings to building, shall be mechanically and electrically isolated from the building structure and main line power feeders to minimize objectionable noise and vibration transmission to car, building structure, or adjacent occupied areas of building.

5. Ride Quality requirements shall include a horizontal acceleration measured inside of the cab during all conditions to not exceed 12 mg peak to peak within the 1-10 MHz range.

6. Vertical acceleration and deceleration shall free of bumps, jerk, and sway, and shall be not less than 3.3 feet/sec2 with initial ramp of between 0.5 and 0.75-seconds.

7. Make all necessary modifications or replacement of equipment as necessary prior to final acceptance or warranty expiration to meet the performance requirement. This shall be performed at no additional charge.

1.14 SUBMITTALS

A. Submit the following before beginning fabrication of equipment:

1. The source of all finishes shall be provided by Ownership. The Contractor shall coordinate procurement of those materials with the Ownership and shall direct any of its subcontractor accordingly. Sourcing of all materials and the intended manufacturer/Contractor shall be submitted for approval.

2. Shop Drawings: Provide an electronic set of complete, fully-dimensioned shop drawings, to scale in PDF format. Include layouts of pits, overhead, plan view of hoistway, cab, machine room, equipment loads, power and heat data for all equipment and required clearances. Provide detailed signal fixture drawings and cut sheets for all major components (controller, door operator, roller guides, etc.)

3. Details of hold-to interior dimensions shall be provided. Drawings shall include details of cab interior including plans, and elevations. Fixture details shall be submitted for review. Generic brochures shall be rejected as not job specific. All details are to reflect modification to existing conditions and exact locations of the new materials. Provide hoistway, overhead and pit sections, and plan view of pit and machine room. Include all applicable structural, electrical and mechanical loads for new equipment.. Provide manufacturer cut sheets for control system, power unit and door operator.

4. Design Information: Provide calculations verifying the following:

a) Adequacy of existing electrical provisions.

b) Adequacy of retained equipment relative to Code requirements if car weight increased by more than 5%.

c) Machine room heat emissions in B.T.U.

d) Adequacy of existing retained elevator machine beams.

e) Adequacy of existing car platform structure for intended loading.

5. Samples: Provide three sets of materials and finishes exposed to public view, 6-inch by 6-inch panels or 12-inch lengths as applicable.

6. Color Charts: Provide three sets of color charts for all paint and car interior, entrance finish selections.

7. Product Brochures: Provide an electronic submittal in PDF format including literature on controller, landing system, motor starter, door operator and related door operating equipment, and door detector.

B. Before acceptance of work, submit the following:

1. Provide an electronic submittal in PDF format of job specific manufacturer's equipment brochures and service manuals. Assemble manuals in chronological order according to the specification alphanumerical system. Provide in manufacturers standard binders consisting of:

a) Equipment and components, descriptive literature.

b) Performance data, model number.

c) Installation instructions.

d) Operating instructions.

e) Maintenance and repair instructions.

f) Spare parts lists.

g) Lubrication instructions.

h) Detailed, record and as-built layout drawings.

2. Detailed, simplified, one line, wiring diagrams. Provide one complete set per manual.

3. Diagnostics: Controller and system shall include all necessary on-board diagnostics for performance of routine maintenance and troubleshooting. Contractor shall provide all diagnostic documentation required for troubleshooting and maintaining the elevator system upon completion including a composite listing of the individual settings chosen for variable software parameters stored in the software programs.

4. Layout Drawings: Provide a minimum of two sets of record as-built layout drawings. Drawings shall be prepared in AutoCAD. Provide one (1) complete set of drawings on compact disk.

5. Wiring Diagrams: Provide a minimum of three (3) sets of "as-built" wiring diagrams that include all electrical circuits in the cars, hoistways and machine rooms. Diagrams shall include definition of all nomenclature and symbols. Provide two (2) sets of wiring diagrams in protective binders or in laminated format and one (1) set on compact disk.

6. Keys: Provide six sets of keys for all keyed switches installed as part of this project,

including: controller cabinet, fire service, stop switch, service cabinet, inspection and others if provided.

7. Certificate of Warranty in accordance with Specifications.

C. Consultant shall review and return to Contractor all submittals including shop drawings, samples and color charts, where applicable. Consultant shall review all close-out documents, including service manuals, wiring diagrams, letter from structural engineer, keys, etc. and deliver to Owner upon approval.

1.15 QUALITY ASSURANCE:

A. Contractor and Maintenance Qualifications:

1. Be able to show evidence of recent, local installations of similar scope and size with the proposed control system.

2. Directly employ sufficient competent personnel within 50-miles of project to handle modernization and maintenance duties.

3. Modernization work and maintenance duties shall be separately performed by specialized crews and individuals.

B. Quality and Gauges of Materials:

1. New, best of their respective kinds free from defects. Gauges as noted.

a) Materials, equipment of similar application; same manufacturer, except as noted.

b) Entire elevator equipment shall operate without irregularities and quietly by use of high-grade materials, first class workmanship and adjustments.

1.16 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ship in factory crated sections of a size to permit passage through available space.

B. Obtain approval and schedule delivery of material to meet Owner's requirements.

C. Storage of equipment and materials shall be coordinated with Owner.

D. Hoisting and Storage: All hoisting operations and storage of equipment and materials shall be coordinated in advance of delivery with Owner's Agent.

1. Supply a plan detailing the proposed methods for hoisting of equipment including anticipated roof preparation, hoisting times and durations, traffic control and other special requirements.

2. Supply a proposed location and size of area needed for tools, materials and equipment to be stored.

3. Schedule of anticipated delivery, hoisting and storage dates.

1.17 SEQUENCING AND SCHEDULING

A. Schedule of Operations:

1. Within thirty (30) days after contract award, the Contractor shall submit a complete plan and schedule of its proposed operations for approval. In preparation of its plan and schedule, the Contractor shall make due allowance for and include the following:

a) Preparation of equipment and material submittal.

b) Review of each submittal (four weeks)

c) Manufacturing lead times for the equipment.

d) Shipping durations and anticipated delivery dates.

e) Related work by other trades, whether under the Contractor's or Purchaser's responsibility.

f) The schedule shall be updated and resubmitted on a monthly basis.

g) The schedule may be in the form of a bar chart, graph or other approved system by which are shown predicted sequence, dependencies, durations, starting and completion dates for the various work units or trades involved, together with such other information relative to job progress and completion. If required, the schedule shall be submitted in PDF Format.

B. Sequence of the work:

1. The Contractor shall be responsible for providing a sequencing schedule based on the Purchaser's requirement. The Contractor shall base their bid on removing three (3) elevators from service simultaneously but never more than one of the three passenger elevators shall be out of service. Sample sequencing may be:

a) Custody Elevator Number 1 and Public Elevator Number 1

b) Judge's Elevator Number 5, Custody Elevator Number 2 and Public Elevator Number 2

c) Public Elevator Number 3 and Annex Elevator Number 4 (Hydraulic).

C. Interruptions of Building Elevator Service:

1. All work shall be done with a minimum amount of interference to the operation of the building. The Contractor shall not interrupt the services without the prior written permission of the Owner.

2. Contractor shall perform as much pre-work as possible, prior to removing the first elevator from service. As a minimum, all new equipment shall be hoisted to the machine room.

3. The Contractor shall be responsible for cross connection of the modernized and non-modernized Passenger Elevators.

4. The elevator shall be tested and accepted by the Owner prior to starting work on

another elevator. Contractor shall run each elevator on auto-call operation for a minimum of 72 hours without cycling doors and at least 8 hours with cycling doors, before turning the elevator over to the building.

5. Work may only begin after detailed work schedule has been approved.

6. Liquidated Damages

a) In the event the work is not completed per the contract schedule, the following liquidated damage provision shall be used to calculate the damages.

b) If the work is still not completed, as defined by the Specifications, liquidated damages will be assessed as follows: Initial assessment of 2% of contract value (defined as the original contract price plus any authorized change orders) plus 0.25% of contract value for each calendar day until the project is completed.

1.18 WARRANTY

A. The elevators and associated equipment shall be free of defective material, imperfect work and faulty operation not due to ordinary wear and tear or improper use or care, for a period of three years to run concurrent with warranty maintenance from final acceptance after completion of the final elevator. Defective work shall be repaired or replaced at no additional cost to the Owner. Provide Certificate of Warranty with start date effective on the date the Consultant accepts all work, including completion of all punch list items.

1.19 MAINTENANCE SERVICE

A. Interim Maintenance: Submit with base bid a separate monthly price to provide Full Service on the elevators, from the first day of the month following contract award until the first elevator is removed from service for modernization. Coverage shall be in accordance with Vertical Transportation Interim Maintenance Agreement.

B. Construction Maintenance: Submit with base bid a separate monthly price per elevator to provide Full Service from the date the first elevator is removed from service until all elevators are complete and warranty date is established. Coverage shall be in accordance with Vertical Transportation Construction Maintenance Agreement.

C. Warranty Maintenance: Submit with base bid a separate monthly price for three-year maintenance service during warranty period. Maintenance shall commence upon completion and acceptance of all elevator work on the final elevator. Coverage shall be in accordance with Vertical Transportation Warranty Maintenance Agreement.

D. On-Going Maintenance: Submit with base bid a separate monthly price should the maintenance be extended past the three-year period for on-going maintenance agreement following warranty period. Coverage shall be in accordance with Vertical Transportation Maintenance Agreement.

E. The Owner reserves the right to accept or reject any or all maintenance terms noted above at any time prior to their commencement date.

1.20 PROTECTION OF PERSONS AND PROPERTY

A. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work.

B. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

1. Employees working on the project and other persons who may be affected thereby.

2. The work, materials, and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-Subcontractors.

3. The property, including but not limited to roofing, walls, ceilings, flooring, furnishings, etc. Contractor shall repair or replace all damaged items. Under no circumstances shall any employees of Contractor or subcontractor employees smoke while on-site. Contractor shall advise all employees and Subcontractors that smoking on roof may void Owner's roofing warranty and Contractor shall be responsible for all costs associated with violation of this requirement.

C. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner.

D. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authority having jurisdiction for the safety of persons, property or to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the work, all partitions for safety and protection, including posting danger signs, and other warnings against hazards, promulgating safety regulations and notifying Owners and users of adjacent utilities. The Contractor shall restore all damaged building.

E. In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damages, injury or loss.

1.21 PERMITS AND INSPECTION FEES

A. The Contractor shall obtain without cost to the Owner, all permits and certificates as required.

1.22 SIGNS

A. Provide "Temporarily out of Service for Modernization" signs and post on all affected elevator entrances at all floors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Product of individuals, firms or corporations regularly engaged in modernizing elevators comparable with this contract and in satisfactory operation for a period of not less than five years.

B. Qualified Contractors—or Approved Equal:

1. Kone Elevator Company

2. Otis Elevator Company

3. Schindler Elevator Company

4. ThyssenKrupp Elevator Company

5. Mitsubishi Elevator Company

C. Approved Base Bid Control System:

1. Non Proprietary Equipment; Alternate for Motion Control Engineering: iControls.

2.02 OUTLINE OF EQUIPMENT

A. Passenger Elevator Numbers 1, 2, & 3 (All information shall be field verified by Contractor):

1. Elevator Type:	Gearless Traction
2. Contract Load, in Pounds:	Retain Existing
3. Contract Speed, in FPM:	Retain Existing
4. Machine Location:	Retain Existing
5. Machine Type:	Retain and Refurbish Machine To New Condition
6. Type of Control:	Provide new SCR Drives
7. Operation	Group Automatic
8. Guide Rails	Retain existing; Realign; remove all dirt, debris rust; apply one finish coat of low VOC, low odor, and industrial enamel paint on the non-running surfaces
9. Buffers and Pit Channels	Retain existing; rust removed, shall be mechanically and chemically cleaned followed immediately by the application of common, low VOC low-odor, rust inhibiting coating. Test and make any modifications necessary to pass state tests.
10. Roller Guide Assembly	Provide new car and counterweight assemblies and rollers.
11. Traveling Cable	Provide new
12. Door Operation	Provide new VVVF-AC Closed Loop type; GAL MOVFR or approved equal.
13. Door Detector	Provide new infrared full screen full height of door device with differential timing, nudging and interrupted beam time.
14. Car Safety and Platform	Retain and refurbish safety; test to ensure proper operation and make all necessary adjustments. Remove all rust, debris and dirt; Apply one finish coat of low VOC, low odor, and industrial enamel

	paint all exposed areas. Check all fastenings, tighten and secure. Platform: tighten all fastenings, remove rust, dirt and debris and chemically clean. Restore to like new condition.
15. Cab Enclosure	New car doors with textured stainless steel finish; refer to drawings. Interior Finishes: Refer to drawings.
16. Cab Door Equipment:	Provide all new GAL or approved equal door equipment including headers, tracks, rollers, hangers, etc.
17. Cab Sills	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
18. Top of Car Inspection Station:	Provide new with light fixture and convenience outlet.
19. Hoistway Entrances:	Retain existing configuration.
20. Hoistway Entrance Equipment:	All new equipment shall be GAL or approved equal. New interlocks, door tracks, headers, hanger's rollers and closers. Any retained equipment: Remove all rust, dirt, debris, wire brush and shall mechanically and chemically clean all equipment which is being retained. Apply with one finish coat of low VOC, low odor, and industrial enamel paint all non-running surfaces.
21. Lobby Hoistway Sills & Sill Angles	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
22. Lobby Hoistway Doors & Frames:	Provide new doors with satin stainless steel finish at all floors. Frames: Retain existing frames; clean down, check all fastenings.
23. Car Operating Panel:	Provide new main and auxiliary applied car operating panels Incorporate a 12" to 15" CEC Elite P.I into the main car operating panel.
24. Hall Fixtures	Provide all with new; reuse of existing boxes is acceptable. All fixtures shall be mounted to meet disabled height requirements.

25. Combination Hall Position Indicator and Hall Lanterns:	Provide new surface mounted type with vandal resistant lens integral on same faceplate with voice annunciation as required by code and with adjustable chimes at all floors for all elevators.
26. Hall Call Stations:	Provide new surface mount type with oversized faceplate and engraved fire exit signs. Provide new hall pushbutton riser and locate with the fire key switch. Fixture required at the first floor only. Provide fully illuminated white vandal resistant buttons and button assemblies to meet code requirements. Provide key switch operation to match existing.
27. Phase 1 Fire Recall Switch and Emergency Power switch & Jewel:	Provide new at main return landing; integrate with new hall pushbutton station
28. Access Switches:	Provide new in existing location.
29. Car Blower:	Provide new three speed blower.
30. Communication System:	Provide new self-dialing vandal resistant push to call two way communication system with recall, tracking and voiceless communication.
31. Under Car Light:	Provide new car light under car platform with switch in service cabinet.
32. Security Systems	Camera Provisions Panic Button Operation Car To Lobby Operation: Key switch located with the hall pushbutton at Ground Floor which will call all elevators to the main lobby floor. Provide a key switch inside the elevator car on the car operating panel. Override Key switch in service cabinet. All key switches shall have positions identified with blue bezel.
33. Special Features:	Load weighing device, fire recall operation, emergency power operation, verbal floor and direction annunciation and communication system

B. Custody Elevator Numbers 4 & 6 (All information shall be field verified by Contractor):

1. Elevator Type:	Gearless Traction
2. Contract Load, in Pounds:	Retain Existing
3. Contract Speed, in FPM:	Retain Existing
4. Machine Location:	Retain Existing Location

5. Machine Type:	Retain and Refurbish Machine To New Condition.
6. Type of Control:	SCR Drive
7. Operation	Selective Collective
8. Car & Landing Door Type:	Retain existing type
9. Guide Rails	Retain existing; remove all dirt, debris and rust; apply one finish coat of low VOC, low odor, and industrial enamel paint on the non-running surfaces
10. Buffers and Pit Channels	Retain existing; remove all debris, rust and dirt; apply one finish coat of low VOC, low odor, and industrial enamel paint. Test and make any modifications necessary to pass state tests.
11. Roller Guide Assembly	Provide new car and counterweight assemblies and rollers.
12. Traveling Cable	Provide new
13. Door Operation	Provide new VVVF-AC Closed Loop type; GAL MOVFR or approved equal.
14. Door Detector	Provide new infrared full screen full height of door device with differential timing, nudging and interrupted beam time.
15. Car Safety and Platform	Retain and refurbish safety; test to ensure proper operation and make all necessary adjustments. Remove all rust; apply one finish coat of low VOC, low odor, and industrial enamel paint all exposed areas. Check all fastenings, tighten and secure. Platform: tighten all fastenings, remove rust and clean. Restore to like new condition.
16. Cab Enclosure	Retain existing car shell and finishes; refurbish, check and tighten all fastenings.
17. Cab Door Equipment:	Provide all new GAL or approved equal door equipment including headers, tracks, rollers, hangers, etc.
18. Cab Sills	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
19. Top of Car Inspection Station:	Provide new with light fixture and convenience outlet.
20. Hoistway Entrances:	Retain existing configuration.
21. Hoistway Entrance Equipment:	All new equipment shall be GAL or approved equal. New interlocks, door tracks, headers, hanger's rollers and closers.

	Any retained equipment: Remove all rust, dirt, debris, wire brush and chemically clean all equipment which is being retained. Apply one finish coat of low VOC, low odor, and industrial enamel paint.
22. Lobby Hoistway Sills & Sill Angles	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
23. Lobby Hoistway Doors & Frames:	Retain existing, clean down, check all fastenings. Frames: Retain existing frames; clean down, check all fastenings.
24. Car Operating Panel:	Provide new main applied car operating panel.
25. Hall Fixtures	Provide all with new; reuse of existing boxes is acceptable. All fixtures shall be mounted to meet disabled height requirements.
26. Combination Hall Position Indicator and Hall Lanterns:	Provide new surface mounted type vandal resistant type with adjustable chimes at all floors for all elevators.
27. Hall Call Stations:	Provide new surface mount type with oversized faceplate and engraved fire exit signs. Provide vandal resistant buttons and button assemblies to meet CBC requirements. Provide key switch operation to match existing.
28. Phase 1 Fire Recall Switch:	Provide new at main return landing; integrate with hall pushbutton station
29. Access Switches:	Provide new in existing location.
30. Car Blower:	Provide new three speed blower.
31. Communication System:	Provide new self-dialing vandal resistant push to call two way communication system with recall, tracking and voiceless communication.
32. Under Car Light:	Provide new car light under car platform with switch in service cabinet.
33. Security Systems	Camera Provisions Panic Button Operation Car To Lobby Operation: Key switch located with the hall pushbutton at Ground Floor which will call all elevators to the main lobby floor. Provide a key switch inside the elevator car on the car operating panel. Override Key switch in service cabinet. All key switches shall have positions identified with blue bezel.
34. Special Features:	Load weighing device, fire recall operation, emergency power operation, verbal floor and direction annunciation and communication

system

C. Judge's Elevator Number 5 (All information shall be field verified by Contractor):

1. Elevator Type:	Geared Traction
2. Contract Load, in Pounds:	Retain Existing
3. Contract Speed, in FPM:	Retain Existing
4. Machine Location:	Adjacent at the Top; Machine room mounted
5. Machine Type:	Provide new Gearless Permanent Magnet AC Machine
6. Type of Control:	Provide new VVVF-AC
7. Operation	New Non-Proprietary Microprocessor l; Selective Collective
8. Car & Landing Door Type:	Retain existing type.
9. Guide Rails	Retain existing; realign; remove all dirt, debris rust; Apply one finish coat of low VOC, low odor, and industrial enamel paint on non-running surfaces
10. Buffers and Pit Channels	Retain existing; rust removed, shall be mechanically and chemically cleaned followed immediately by the application of common, low VOC low-odor, rust inhibiting coating. Test and make any modifications necessary to pass state tests.
11. Roller Guide Assembly	Provide new car and counterweight assemblies and rollers.
12. Traveling Cable	Provide new
13. Door Operation	Provide new VVVF-AC Closed Loop type; GAL MOVFR or approved equal.
14. Door Detector	Provide new infrared full screen full height of door device with differential timing, nudging and interrupted beam time.
15. Car Safety and Platform	Retain and refurbish safety; test to ensure proper operation and make all necessary adjustments. Remove all rust; Apply one finish coat of low VOC, low odor, and industrial enamel paint. Check all fastenings, tighten and secure. Platform: remove rust. Clean and provide treatment as required. Restore to like new condition. Provide stainless steel plate over the bottom of the platform.
16. Cab Enclosure	New car doors with textured stainless steel finish; refer to drawings. Interior Finishes: Refer to drawings attached to the specification.

17. Cab Door Equipment:	Provide all new GAL or approved equal door equipment including headers, tracks, rollers, hangers, etc.
18. Cab Sills	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
19. Top of Car Inspection Station:	Provide new with light fixture and convenience outlet.
20. Hoistway Entrances:	Retain existing configuration.
21. Hoistway Entrance Equipment:	All new equipment shall be GAL or approved equal. New interlocks, door tracks, headers, hanger's rollers and closers. Any retained equipment: Remove all rust, dirt, debris, wire brush and clean all equipment which is being retained. Apply one finish coat of low VOC, low odor, and industrial enamel paint on all non-running surfaces.
22. Lobby Hoistway Sills & Sill Angles	Retain existing; remove rust, dirt, debris, wire brush and clean. Check and tighten all fastenings. Polish sills.
23. Lobby Hoistway Doors & Frames:	Doors: Provide new doors with satin stainless steel finish at all floors. Frames: Retain existing frames; clean down, check all fastenings and refinish.
24. Car Operating Panel:	Provide new main applied car operating panel. Incorporate a 12" to 15" CEC Elite P.I into the main car operating panel.
25. Hall Fixtures	Provide all with new; reuse of existing boxes is acceptable. All fixtures shall be mounted to meet disabled height requirements.
26. Combination Hall Position Indicator and Hall Lanterns:	Provide new surface mounted type vandal resistant type with adjustable chimes at all floors for all elevators.
27. Hall Call Stations:	Provide new surface mount type with oversized faceplate and engraved fire exit signs. Provide vandal resistant buttons and button assemblies to meet CBC requirements. Provide key switch operation to match existing. Provide card reader/proximity type reader provisions (for future installation) wherever key switches presently exist in hall push button panels.
28. Phase 1 Fire Recall Switch:	Provide new at main return landing; integrate with

	hall pushbutton station
29. Access Switches:	Provide new in existing location.
30. Car Blower:	Provide new three speed blower.
31. Communication System:	Provide new self-dialing vandal resistant push to call two way communication system with recall, tracking and voiceless communication.
32. Under Car Light:	Provide new car light under car platform with switch in service cabinet.
33. Security Systems	Camera Provisions
	Panic Button Operation
	Car To Lobby Operation: Key switch located with the hall pushbutton at Ground Floor which will call all elevators to the main lobby floor. Provide a key switch inside the elevator car on the car operating panel. Override Key switch in service cabinet. All key switches shall have positions identified with blue bezel.
34. Special Features:	Load weighing device, fire recall operation, emergency power operation, verbal floor and direction annunciation and communication system

2.03 MACHINE ROOM EQUIPMENT

A. Provide equipment to fit in existing machine room space. Any and all costs for re-design of, and revisions to, building spaces and structure due to selection of Contractor, Manufacturer, change to equipment availability, production or selection shall be borne by Contractor.

B. Hoist Machine:

1. Passenger and Custody Elevators: : Hoist Machines: Existing hoist machines shall be retained and reused. The Installer shall perform all Work required for placing the machinery in first-class operating condition, including, but not limited to the following:

a. Repair gearbox leaks, replace seals as needed.

b. Motor: Provide and install quiet, new, flange-mounted, low-slip AC Motor designed specifically for elevator duty, fitted to the existing machine and compatible with new solid-state drive and existing electrical service.

c. Cleaning: Using cleaning solvents, thoroughly clean the entire machine and bedplate area.

d. Brake:

i. Brake assemblies shall be dismantled, inspected, cleaned and properly lubricated. Replace contaminated or worn brake linings. Replace springs, pins, bushings, sleeves, levers, liners and switch contacts as warranted. Adjust brakes for proper, equal and

minimum lift and to hold 125% of full load in the car.

ii. Brake coils shall be inspected for damage and repaired as needed. Coil cores and alignment pins and bushings shall be cleaned and properly lubricated.

iii. Brake switches, if required for manufacturers control system, are preferred to be proximity type.

e. Bearings: Retain. Replace any bearings indicating excessive heating, noise or vibration. Bearing lubrication: Remove bearing grease covers and clean bearing cavity of excess lubricant. Apply new lubricant per manufacturer's recommendations for type and filling level.

f. Gearbox Lubrication: Drain and flush gearbox. Replenish per manufacturer's recommendations for oil type and capacities.

g. Seals: Replace any leaking gear-case, bearing or shaft seals.

h. Worm Shaft Bearings: Replace if indicating excessive thrust, heating, noise or vibration.

i. Drive Sheave: Sheaves are to be retained. In the event excessive or uneven sheave wear is found, describe the condition in writing and include a separate line item price with your bid submission for replacement or re-grooving per the manufacturer's limitations.

j. Sheave Guarding: Provide pinch hazard cable guards protecting the areas where a hazard exists and at a minimum from the machine bed plate to the point where cables contact the sheave grooves. Integrate existing cable lubricator devices with the sheave/cable guards.

k. Suspension Ropes: Replace hoist ropes. Provide rope data tag following Code requirements listing rope manufacturer, installing company, construction classification, installation date, size, type, and breaking strength. Equalize cable tensions and provide rope thimble spin restraints on all cars. Provide new AC Synchronous Permanent Magnet gearless type machine with permanent magnet motor.

2. Judge's Elevator: Provide a new machine which is a single worm or helical geared type with AC Synchronous or P.M.S.M. motor, gear, deflector sheave and gear case. The new machine shall be mounted in proper alignment on an isolated bedplate.

3. Hire a licensed structural engineer to verify the adequacy of existing supporting structure and machine beams relative to weight increase and redistribution of loads. Provide additional support beams, as required. Include all required blocking beams and supports. Provide machine manufacturer's standard rubber isolation pads. Provide new deflector sheave and supporting structure.

C. Passenger and Custody Elevators: Motor Drive: Provide a regenerative solid-state motor drive. Solid state units shall be designed to limit current, suppress airborne or structural noise, and shall limit the overall distortion factor at the point of connection of the elevator converter feeders to the electrical distribution system to a maximum of 3%. This shall include compensation for harmonic distortion, power factor, flicker and line notching.

1. Drives, isolation transformers and ripple filter cabinets shall be sound isolated from the building structure through rubber isolation mounts or pads.

2. System will operate at plus or minus 10% of normal feeder voltage and 3% of normal frequency without damage or interruption of elevator service.

3. The drive shall be capable of on-site programming of the acceleration and deceleration ride profiles to adjust the ride quality to drive control characteristics.

4. The drive shall not create excessive audible noise in the elevator motor.

5. The drive shall be capable of delivering sufficient current to accelerate the elevator to contract speed at the rated load. The drive shall provide speed regulation within 3% during all phases of acceleration, deceleration and leveling.

6. The use of solid-state equipment shall not interfere with any of the Owner's sensitive electronic equipment. In addition, provide adequate sound suppression equipment acceptable to the Owner to control airborne and/or structure-borne noises and vibration.

7. Inform the Owner of any possible or foreseeable problems associated with noise, vibrations, electrical interference, etc., as related to solid state equipment.

D. Judge's Elevator: VVVF Motor Drive Remove existing motor generator and provide VVVF motor drive as follows:

1. The drive shall be capable of varying the torque on the motor during acceleration and deceleration.

2. The drive shall be capable of on-site programming the volts per Hertz acceleration and deceleration ride profiles to adjust the ride quality to drive control characteristics.

3. The flux vector drive shall control AC induction motors through the use of a high resolution, dual channel optical reader.

4. The flux vector drive shall be capable of delivering 100-percent rated motor torque from base speed down to zero speed.

5. The flux vector drive shall not use DC injection for slowdown braking.

6. The flux vector drive shall be adjustable to achieve the required current motor voltage and frequency so as to match the characteristics of the hoist motor.

7. The drive shall not create excessive audible noise in the elevator motor.

8. The drive shall be capable of delivering sufficient current to accelerate the elevator to contract speed at the rated load. The drive shall provide speed regulation within 3-percent during all phases of acceleration, deceleration and leveling.

E. Isolation Transformer: Provide necessary isolation transformers, reactors, capacitors and other devices to limit the overall Distortion Factor at the point of connection of the elevator converter feeders to the electrical distribution system to a maximum of 3-percent. This shall include compensation for the following: Harmonic distortion, Power factor, Flicker, Line Notching.

All control wiring shall be isolated from power wiring to minimize inductive coupling.

1. Submit for approval, applicable brochures and technical information as required for solid state equipment (motor drives, system processors, etc.)

2. The use of solid state equipment shall not interfere with any of Owner's sensitive electronic equipment. In addition, provide adequate sound suppression equipment acceptable to Owner to control airborne and/or structural-borne noises and vibration.

F. Controller: Disconnect and completely remove the existing controller and selector for each elevator and replace with a new microprocessor system.

1. Provide non-proprietary diagnostic control system from approved manufacturer. Provide NEMA – 1 enclosures and doors arranged with locks or mechanical latches.

2. All controller components shall be designed to provide the required operation as herein specified.

3. All assemblies, power supplies, switches, relays and other items shall be securely mounted on a substantial, self-supporting steel frame of angles or channels and shall be totally enclosed with hinged or removable covers in a floor mounted cabinet. Equipment shall not be mounted on any of the covers.

4. All controller switches and relays shall be magnet operated with contacts of design and material to ensure maximum conductivity, long life and reliable operation without overheating or excessive wear and shall provide a wiping action to prevent sticking due to fusion.

5. Where time delay relays are used in the circuits, they shall be of an acceptable design that is reliable and consistent, such as condenser timing or electronic timing circuits. No dashpot time relays shall be used.

6. Each device on all panels shall be properly identified by name, letter, or standard symbol that shall be neatly stencil painted (or otherwise marked), in an indelible and legible manner, on device or panel. Identification markings shall be coordinated with identical markings used on wiring diagrams. The ampere rating shall be marked adjacent to all fuse holders. All spare conductors shall be neatly formed, laced and identified.

7. Safety switch shall cut off current, automatically apply brake and stop car upon current failure or upon operation of any electrical safety device.

8. All high voltage (110-volt or above) contact points inside the controller cabinet shall be protected from accidental contact when the doors are open.

9. Controllers shall be designed, tested and certified for Electromagnetic Interference (EMI) immunity in compliance with EN12015.

10. Provide adequate ventilation fans.

11. Provide isolated input with opto-isolation modules.

12. Power Supplies: All power supplies utilized shall be UL recognized. They shall all

have short-circuit protection.

13. Frame: All assemblies, power supplies, chassis, switches, relays, and other items shall be securely mounted on a substantial, self-supporting steel frame. The equipment shall be completely enclosed with covers. No equipment is to be mounted on the covers.

14. Wiring: All factory wiring shall utilize UL labeled copper wires. All wiring interconnections shall be neatly routed. All wiring connections to studs of terminals shall be made by means of solder or solder less lugs.

15. Marking: All components shall be clearly and permanently identified adjacent to each device and shall be identical to the wiring diagram.

16. Terminals shall be provided for a future connection to a computerized test system. An adequate number of terminals shall be provided so as to monitor all of the various functions of the elevators. These shall include but not be limited to car positions, running functions up and down, door open and close, hall and car calls, door protective devices, safety circuits, elevator recapture, etc.

17. Printed Circuits and Related Hardware:

18. All solid-state hardware and devices shall have built-in noise suppression devices that provide a level of noise immunity compliant with EN12015.

19. Power supplies shall have noise suppression devices provided.

20. All inputs from external devices (such as pushbuttons) and all outputs to external devices (such as indicators, relays) shall be isolated.

21. The use of relays as input/output devices is not acceptable.

22. A separate regulated power supply shall be used for each computer chassis.

23. The control circuits shall be so designed so that one side of the power supply is grounded to provide for testing.

24. Under no circumstances shall the safety circuits be affected by accidental grounding of any part of the system.

25. In the event of a power failure or interruption, the system shall be designed so that it will start properly when power is returned.

26. System memory shall be provided so that data shall not be lost in the event of a power failure or disturbance.

G. Auxiliary Disconnects shall be provided where the equipment is not in the line of sight of the Main Line Disconnects. These are the responsibility of the Contractor.

H. Speed Regulation:

The rate of acceleration and deceleration of the cars under any condition of load shall be as nearly constant as is possible with the method of control specified and employed and shall be independent of the operating devices in the car.

The acceleration, deceleration and velocity shall all be computer controlled. The detection of velocity and position of the car shall be fed into the computer. The computer shall compare this information with the velocity profile and adjust as necessary to insure a fast and smooth acceleration and deceleration curve. The minimum acceleration/deceleration shall be 3.3 feet/sec2 and shall change uniformly.

I. Diagnostic Tools: Subcontractor shall provide all diagnostic tools and documentation required for the adjustment, troubleshooting, and reprogramming of the elevator system upon completion, including:

1. Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.

2. A composite listing of the individual settings chosen for variable software parameters stored in the software programs.

3. A complete dictionary of fault codes with recommended steps for resolution, in sequence from highest to lowest probable cause.

4. Provide one project laptop capable of and configured for displaying elevator status, hoistway position and direction, door position and direction, approximate percentage loading, existing issue and direction of hall and car calls and any current or recent faults for troubleshooting the equipment. It is the intent that the laptop be left on-site for diagnostic use in each control room.

J. Encoder: Provide solid-state, optical, digital-count type, mechanically coupled to car, machine or car governor.

K. Provide vibration sound isolation to eliminate structure-borne sound being transmitted to the building. Vibration isolators shall be equivalent to Mason Industries Model RBA or SWM waffle pad with neoprene grommet and washer isolated bolt attachment. Select isolators to compress a minimum of 0.1-inches under load.

L. Seismic Protective Features: Provide per the Code requirements.

M. Governor and Tension Sheave:

1. Elevators 1 & 2, 4, 5 & 6: Governor: Provide new centrifugal type governor.

2. All Elevators: Tension Sheave: Provide new with tension weight.

3. Elevators 1 & 2: Governor Rope: Provide new.

4. All Elevators: Adjustment: The governor shall be accurately adjusted and full-load, full-speed tested to operate within limits specified by code. All adjustable parts shall be sealed. Provide each unit with a test tag.

2.04 SYSTEM OPERATION AND FEATURES

A. Selective Collective Operation—Judge's and Custody Elevators:

1. Controls shall be a microprocessor based system.

2. Registration of car call button shall cause the car to start. The car shall respond to its own car calls and corridor calls, in the direction of travel, and in order in which

the landings are reached.

3. The car shall remain at the arrival floor for an adjustable interval to permit passenger transfer. Doors shall close after a predetermined interval, unless the car is parked at the main floor, after opening unless closing is interrupted by car door reversal device or door open button in car.

4. Delayed Car Protection: The system shall automatically disassociate a car from the Duplex system in the event the car is delayed for a predetermined time. The car shall be automatically restored to the Duplex System when the cause of the delay has been eliminated.

5. Programmed Door Control: Separate adjustable times shall be provided for each car to establish minimum passenger transfer time for car stops, intermediate floor hall call stops and lobby floor stops. All timing shall be computerized to coincide with traffic demands.

6. Designated Parking: The system shall provide for cars to park as designated by the Duplex system or park at its last call.

7. Provisions shall be made in the dispatch computer so that the elevator system dispatching can be modified at a future time. The system shall be so designed that the modifications to the software shall be all that is required to revise the dispatching. It shall be further designed so that there will be minimum shut down time should changes be required.

B. Group Supervisory System: Passenger Elevators 1, 2, & 3:

1. Provide a temporary cross connection between the modernized and non-modernized controllers.

2. Provide a solid state microprocessor dispatch system that shall provide for continuously changing operations in various traffic situations, and efficiently handle the varying passenger traffic demands:

3. Provide reprogrammable software as provided by MCE or approved equal.

4. The system shall provide for a continuously changing program of varying combinations when there are landing calls registered. These shall include components of incoming, outgoing, interflow and special traffic in varying intensities.

5. The main floor up call is to be given priority.

6. The system shall measure the call waiting times on all floors, and determine through forecasting whether the elevator on becoming vacant shall continue in the previous running direction or reverse and assist in concentrated inter-floor traffic in specific areas of the building.

7. The system shall have forecasting capabilities that will assign the desired degree of priority to any additional entrance floor.

8. The system shall constantly evaluate the service quality of all forecasted waiting times. The process of optimization will allocate the landing calls with no final assignment established until the total quality of passenger service is assessed.

9. A light traffic mode is assumed when there are no registered landing calls within a preset time. During periods of traffic, elevators shall be parked in anticipation of new landing calls. At least one elevator is to be parked at the main floor. Other elevators can be parked at upper or lower floors, as previously stated. The elevators shall be parked with the doors closed. The need for parking shall be checked by the system at frequent intervals.

10. With the increasing traffic intensity, a priority method of call assignments shall be initiated. Priority of service for landing calls is determined by the call waiting time in relation to the prevailing traffic condition. The system shall prevent waiting times that are excessive as compared to the traffic intensity.

11. Peak type of demands shall be recognized by monitoring the total traffic flow including a predominance of car calls in one direction, a high intensity of landing calls in one direction, a sudden high percentage of load increase when answering landing calls, main floor landing hall call intensities and departure of elevators from a designated floor with a predetermined load several times in a preset time.

12. The system operation shall continuously change by demand and shall not require forced system changes to provide optimum operation and call response.

13. Dispatch Protection: The system shall automatically provide dispatching in the event of failure of the primary system. A visible and audible alarm shall be provided to indicate loss of the dispatching computer.

14. Delayed Car Protection: The system shall automatically disassociate a car from the Group System in the event the car is delayed for a predetermined time. The car shall be automatically restored to the Group System when the cause of the delay has been eliminated.

15. Designated Parking: The system shall provide for cars to park as designated by the Group Controller or park at its last call.

C. Independent Service: Provide controls to remove elevator from normal operation and provide control of the elevator from car buttons only. Car shall travel at contract speed and shall not respond to corridor calls.

D. Car Top Inspection Operation: Provide new per Code requirements.

E. Emergency Recall Operation (Fire Service): Provide operation and equipment per Code requirements. Contractor shall provide relays, wiring, and terminal strips to receive signals from the fire alarm system.

F. Load Weighing: Provide automatic load weighing device for passenger elevators set at approximately 80% of full load. The device when activated shall cause the elevator to bypass corridor calls and shall initiate dispatch of car at main terminal prior to elapse of normal dispatching interval. Provide adjustable setting from 50 - 80% of full load.

G. False Call Canceling: Provide device to cancel all passenger car calls when car loading is not equal to the number of calls registered.

H. Differential Door Timing Feature: Provide adjustable timers to vary the time that the doors remain open in response to a car or hall call. The doors shall remain open for 3.5-seconds in response to a car call and 5 to 8-seconds for a hall call.

I. Nudging: When doors are prevented from closing for 20-seconds due to failure of the

proximity device or obstruction, the doors shall close at reduced speed and a buzzer shall sound.

J. Fan and Light Output Timer: Provide an adjustable timer (Range 5 to 10-minutes) that when activated will turn off the fan and light within the car. The time will start when the car becomes inactive.

K. Ascending Car Over-speed and Unintended Car Movement Protection: Provide future operation to prevent the elevator from striking the hoistway overhead and prevent unintended car movement per code.

L. Seismic Operation: Provide operation and equipment per Code.

2.05 SECURITY SYSTEM:

A. Interface with building security systems shall be required.

B. Cameras: Provisions Only; All Elevators:

1. Provisions for future camera provisions shall be installed for all elevators. These provisions shall include wiring and mounting brackets.

2. One (1) pair wires shall be provided and installed per elevator cab in traveler cable. Shielding shall not be required. Must be separated from 480 v power sources.

3. Wire shall be terminated in machine room with connection point for MCM outside of machine room. MTM to distribute from machine room as needed

C. Judge's Elevator: Provisions for future card/proximity readers shall be installed for Judge's elevator. The security systems such as the hardware, the readers, etc. are not to be included in the elevator modernization scope of work. Floor by floor control for each card reader in machine room with location for extra circuit board installation. This is a function of the card reader software. The elevator controller shall be programmed to receive a signal for each floor button to be activated.

1. Provisions only between the elevator machine room and the car/hall pushbuttons are included

2. These provisions will include wiring, filler plates and mounting brackets on the car operating panels (insider the car) and at each hall pushbutton station

D. Traveling cable will include adequate wiring for the security system and tracking of registered calls. The following will be required:

1) A minimum of three (3) conductor wires per card reader is required. Additional shielded pair will be provided.

2) One pair shielded pair per card reader

3) A total of 5 wires per card reader in traveler cable.

E. All Elevators: Provide a Panic Button in each car and a two-way intercom system which

will allow for the Sheriff to communicate with passengers in any of the elevators. This system shall be separate and exclusive from the telephone 24 hour system. This system shall be connected to a sheriff's station at a pre-designated location. Wring and conduit from the elevator machine room to this station shall be the responsibility of the Contractor.

F. Car To Lobby: All Elevators: Key switch located adjacent to the hall pushbutton at the Ground Floor for each group of elevators which will call all elevators to the Ground Floor and key switch inside the elevator car on the car operating panel. Override Key switch in service cabinet. All key switches shall have positions identified with blue bezel. The cars shall park and remain at the landing until the manual override switch is activated.

G. Panic Button/Communication: All Elevators: This shall be a two-way system and activation of the panic button can occur either by the passenger inside the elevator or from a remote location by a designated building personnel. Activation of the panic button will illuminate a jewel and audible signal in the elevator and in the Sheriff's control panel.

2.06 SEISMIC

A. Provide a minimum of one seismic switch for each single or group of elevators. A dual axis seismic switch shall activate per code requirements in both vertical and horizontal directions.

B. Each elevator shall have a dual counterweight derailment device. The counterweight frame shall include derailment rings.

C. Provide retainer plates on all car and counterweight guides.

2.07 HOISTWAY EQUIPMENT

A. Guide Rails and Brackets:

1. Retain existing car and counterweight guide rail brackets.

2. Thoroughly clean all guide rails free of grease, oil and other foreign substances, file and remove all rough edges and surfaces. Realign, and tighten bracket bolts and guide rail clips as required for smooth and quiet operation of car and counterweight. Provide additional rail brackets or backing as required by code or as necessary to meet ride quality standards.

B. Buffers:

1. Existing car and counterweight oil buffers shall be refurbished. Clean thoroughly, flush and refill units with new oil.

2. Provide inspection ladder and under car platform, where required by code.

3. Apply one finish coat of low VOC, low odor, and industrial enamel paint on exterior of buffer and stencil number the car number on each buffer.

4. Buffers shall be load tested and tagged prior to turnover.

C. Pit Stop Switch: Provide new red colored stop switches to meet code requirements.

D. Alarm Bell: Provide car top alarm bell and second alarm bell inside hoistway at lobby level.

E. Counterweight Roller Guides:

1. Roller Guides: Provide new roller type guides to provide smooth and quiet ride free of rumbles, bumps, vibrations, and excessive sway. Guides shall consist of three or more spring mounted rollers per guide assembly (3 1/2-inch minimum diameter) to maintain rail contact and include adjustable stops. Rollers shall be constructed of neoprene or other similar sound deadening material. Rollers shall have high memory characteristics, enabling the rollers to quickly regain their round shape after an elevator sits still overnight or for a moderate period of time. Provide adapter plates and mounting hardware as necessary.

F. Compensation: If required with the manufacturer's application provide as:

1. Provide new Whisper-Flex® compensating chains of appropriate quantity and size.

2. Provide new Swayless® dampening device for each compensating chain.

G. Final Terminal Stopping Devices:

1. Final Device Operation: New final limit switches located at top and bottom of the hoistway shall be arranged to automatically stop the car and counterweight within the predetermined over travel limits, independently of all other devices.

2. Rollers: Switches shall be equipped with engaging arms provided with polyurethane-tired rollers for engagement with cams.

H. Electrical Wiring: Terminal connections for all conductors at equipment panels, center of hoistway and on elevator car shall be made with terminal blocks or studs having identifying numbers. All conductor connections shall be made with terminal eyelets of the solderless type.

1. Conductors: Provide copper insulated wiring with flame retarding and moisture resisting outer cover. Install in galvanized metal wireways and raceways. Conductors from shaft riser to door interlocks shall be SF-2 type or equal, maximum operating temperature 392-degrees F. All terminations shall be insulated to maintain integrity of wiring. Flexible conduit may be used for short connections. Provide 10-percent conductors throughout.

2. Traveling Cables: UL- labeled fire and moisture resistant outer braid and steel supporting strand. Provide a minimum of eight (8) pairs of shielded communication wires and car lighting circuits.

3. Provide wiring as required for fire alarm initiating devices, emergency two way communication, and firefighter's phone jacks, paging speaker's intercom, announcement speakers and card reader interface.

4. Remote Wiring: Provide wiring between machine room, hoistway and remote locations of guard, security, life safety and fire control panels.

5. Work Light and Plug Receptacles: Provide on top and bottom of car with lamp guards.

6. Stop Switches: Provide Code required stop switches in the pit, near the governor access door, in the machinery spaces of machine room less elevators and where split level machine rooms occur.

7. Provide NEMA4 weatherproof electrical equipment and wiring identified for use in wet locations when any electrical devices are located less than four (4) feet above the pit floor.

8. Note: Conduits or other wiring shall not be exposed in the lobby or other occupied parts of the building.

I. Raceway: Remove all rust, wire brush, clean and Apply one finish coat of low VOC, low odor, and industrial enamel paint. Retain existing raceway where suitable and replace sections as necessary for new equipment. Modify lower section, where required, to accommodate proper pit ladder access.

2.08 DOORS AND ENTRANCE EQUIPMENT

A. Retained Equipment: Remove all rust, dirt, debris; clean all surfaces on the hoistway and lobby side. Apply one finish coat of low VOC, low odor, and industrial enamel paint on all non-running surfaces.

B. Frames: Retain existing entrance frames. Remove all rust, debris and dirt from face and back side of frames. Clean both hoistway and lobby side of frames. Remove all scratches and dents. If removal of existing braille plate's scars or leaves marks on the jambs, clean and refinish jambs as necessary to restore to like new finish. Apply one finish coat of low VOC, low odor, and industrial enamel paint to match existing.

C. Provide new rubber door strike astragals for all center opening hoistway doors.

D. Remove existing and provide new Braille plates centered at a height of 60-inches above the floor, mounted at each entrance side jamb. Match design of car Braille plates. Provide epoxy adhesively mounted plates; no rivets or visible fasteners. Braille and Designation plates shall have white characters with black background at typical floors. Plates shall be manufactured by SCS, Vison Mark or Entrada; cast design.

E. Sills and Sill Angles: Reuse existing; check and tighten all fastenings. Polish all sills.

F. Struts: Reuse existing and clean thoroughly. Check and tighten all fastenings.

G. Headers: Provide new.

H. Dust Covers: Reuse existing. Align, adequately reinforce and secure as required. Replace any missing covers or fasteners. Check and tighten all fastenings.

I. Fascia: Reuse existing and clean thoroughly. Align, adequately reinforce and secure as necessary to prevent contact with the car. Replace any missing fascia and fasteners. Check and tighten all fastenings. Paint floor number on fascia.

J. Door Panels:

1. Stencil paint 4-inch high floor number on the back of each landing door panel

2. Passenger Elevators and Judge's Elevator at all floors:

a) Provide new 14 gauge panels with a satin stainless steel finish. Provide rubber astragals on leading edge. Each door panel shall have two gibs

which shall remain in the sill the entire length of door travel. Any cladding shall wrap around the trailing edge of the door a minimum of ½"

b) Provide 14 gauge sight guards with finish to match doors.

3. Custody Elevators at All Floors:

a) Reuse existing door panels. Align and plumb doors as required for smooth operation.

b) Provide two new door guides per panel.

c) Sight Guards: Retain existing sight guards. Replace where missing or damaged with finish to match existing door panels.

K. Door Hangers: Provide new removable two-point suspension type with provisions for vertical and lateral adjustments. Sheaves shall be 2 ½-inch diameter with sealed or roller bearings.

L. Door Tracks: Provide new removable steel tracks with smooth roller contact surface.

M. Door Closers: Spring, spirator or jamb/strut mounted counterweight type. Design and adjust to ensure smooth, quiet mechanical close of doors.

N. Interlocks: Provide new interlocks and door release roller assembly at each entrance. Where door release assembly is replaced with new design, roller assembly shall be mounted to an 8-inch by 6-inch (10-gauge) reinforcement plate, properly screwed to the back of each landing door. Reinforcement plate shall be equipped with two (2) ¼-20 by 1-inch long self-clinching zinc studs designed specifically for door release roller assembly attachment. Where new interlock design is provided, the interlock shall be the same make as the door operator.

2.09 CAR EQUIPMENT

A. All existing equipment shall have all rust, dirt and debris removed, wire brushed, cleaned and apply one finish coat of low VOC, low odor, and industrial enamel paint. Platform: Reuse existing platform. Balance in order to distribute, as evenly as possible, the pressure of the individual guides on the guide rails surfaces. Tighten fasteners and clean. Modify underside as required for code compliance.

B. Car Frame:

1. Retain and refurbish existing car frame. Remove rust, wire brushed, clean and apply one finish coat of low VOC, low odor, and industrial enamel paint.

2. Square and adjust frame within guide rails in order to center, as evenly as possible, between the guide rail surfaces. Tighten fasteners and clean.

3. Stencil paint 4" high car number on crosshead.

C. Under Car Lighting: Provide new incandescent light fixture with bulb guard in NEMA 4 water tight and weather resistant box. Provide switch in service cabinet to turn light on/off.

D. Platform:

1. Retain and refurbish existing platform.

2. Balance in order to distribute, as evenly as possible, the pressure of the individual guides on the guide rail surfaces. Tighten fasteners and clean.

3. Provide new rubber platform isolation pads.

4. Repair or replace any missing or damaged brace or support angles.

E. Test at full load and full speed at the end of the equipment modernization. Replace all defective components or devices that do not function properly, including new safety actuating ropes as required.

F. Toe Guard: Provide new 48', apply one finish coat of low VOC, low odor, and industrial enamel paint.

G. Roller Guides: Provide new roller type guides to provide smooth and quiet ride free of rumbles, bumps, vibrations, and excessive sway. Guides shall consist of three or more adjustable, spring-mounted rollers per guide assembly (3 1/2-inch minimum diameter) to maintain rail contact and include adjustable stops. Rollers shall be constructed of neoprene or other similar sound deadening material. Rollers shall have high memory characteristics, enabling the rollers to quickly regain their round shape after an elevator sits still overnight or for a moderate period of time. Provide adapter plates and mounting hardware as necessary.

H. Door Hangers: Provide new removable two-point suspension type with provisions for vertical and lateral adjustments. Sheaves shall be 2 ½-inch diameter with sealed or roller bearings. Hangers shall be galvanized metal or treated with 3 coats of Rustoleum.

I. Door Tracks: Removable steel tracks with smooth roller contact surface.

J. Door Protection: Infrared detector: Provide a door proximity edge that projects an infrared curtain of light guarding the door opening. Unit shall extend the height of the door panel. Arrange to reopen doors if one beam of the curtain is penetrated. Unit shall have Transmitters and Receivers spaced at a minimum distance to provide the maximum amount of protection within the height of the doorway. Systems which have the availability to turn off or on individual zones within the curtain will not be allowed. Door Detector shall extend the entire height of the door panel.

K. Door Operator: Provide new VVVF-AC, high speed, closed-loop door operator to automatically open and close the car and hoistway doors. The doors shall be capable of smooth and quiet operation without slam or shock.

1. Opening speed shall not be less than 3.0-f.p.s. with reversal in no more than 2-1/2-inches.

2. An auxiliary-closing device shall automatically close hoistway doors if car leaves the landing zone.

3. In case of a power interruption, it shall be possible to manually operate car and hoistway doors from inside the cab.

L. Door Restrictor: Provide new mechanical zone lock. Electronic door restrictor shall not be allowed.

M. Car Door Contact: Electrical contact shall prevent the operation of the elevator by normal

operating devices unless car doors are closed or within tolerances allowed by Code.

N. Emergency Exit Contact: Provide electrical contact to shut-off power to the elevator if emergency exit is open.

O. Car Top Service Guardrail: Provide a 42-inch high railing on the car top with intermediate rail, toe board and stationary posts, where required by Code.

2.10 CAR ENCLOSURE

A. All retained metal shall have the rust, dirt, and debris removed, wire brushed and cleaned; Apply one finish coat of low VOC, low odor, and industrial enamel paint. If removal of rust compromises the integrity of the equipment, the Contractor shall indicate as such with their bid.

B. All Elevators:

1. General: The enclosure shall be adequately reinforced and ventilated to meet Code requirements. Weigh all interiors and verify weight of new interiors is per code and manufacturers weight requirements. Provide verification of weights prior to ordering any material. Check and tighten all fastenings. Confirm the structural integrity of the cab shell and platform.

2. Confirm the structural integrity of the cab shell and platform. Repair platform and remove all rust. Check for termites and any deterioration. Replace platform if necessary. If platform is to be retained check and tighten all fastening. Broken welds on the floor support braces shall be re-welded or replaced. Reinforce the existing platform as required. The Contractor shall survey the sub floor to ensure it is free of deterioration and rust. The broken welds on the floor support braces underneath the floor shall be either replaced or repaired.

C. Custody Elevators:

1. Ensure there is adequate ventilation and if necessary provide new vent slots.

2. Ensure and modify if necessary unobstructed access to the emergency exit.

3. Verify weight of interiors is per code and manufacturers weight requirements. Provide verification of weights.

4. Check and tighten all fastenings of all retained materials.

5. Replace ceiling and lights with new to match existing.

6. Provide new EPCO Flexi light emergency cab lighting system, capable of re-lighting two normal -light fixtures. Emergency light transformer and fixture to be mounted in a water tight/weather proof enclosure.

7. Handrail check and tighten all fastenings.

D. Passenger and Judge's Elevators:

1. An approved company shall manufacture car enclosure. Interior finishes as manufactured by Forms + Surfaces, City Lift, Sterling Corporation or approved equal. Provide the following features:

2. Shell: Arrange shell to accept interior panels as specified. Check and tighten all fastenings. Provide one coat of paint on the interior.

3. Refer to attached drawings for all new finishes.

4. Canopy: Check and tighten all fastenings. Modify canopy for light fixtures. Lighting fixtures that uniformly distribute not less than foot-candles of light at handrail height as required by Code. Provide clear and easily accessible access to the emergency exit per Code requirements.

5. Drop Ceiling and Lighting: Provide new EPCO Flexi light emergency cab lighting system, capable of re-lighting two normal down-light fixtures. Emergency light transformer and fixture to be mounted in a water tight/weather proof enclosure.

6. Floor Covering Provide new as shown on the drawings.

7. Transom, Front Return Panels and Entrance Columns: Provide as detailed on the drawings.

8. Car Door Panels: Door panels shall be 14 gauge hollow metal flush door construction, furniture steel. Provide reinforcement by formed vertical sections running full height of door. Doors shall be provided with two removable, gibs with fire tabs, located at the leading and trailing edge of the door panel. Finish shall be textured stainless steel. There shall be no visible exposed or protruding fasteners.

9. Ventilation: Three-speed type AA exhaust blower mounted to car canopy on isolated rubber grommets.

2.11 SIGNALS AND FIXTURES

A. All new fixtures shall be provided.

B. Car Operating Panel

1. Provide new applied-type main car operating panel in compliance with applicable Code

a) Car Operating Panel: Provide new illuminating stainless steel vandal resistant pushbuttons or approved equal product. Faceplate shall have Satin stainless steel finish. Faceplate shall have continuous hinge with three point latching.

b) Provide a keyed stop switch and alarm bell button, door open and door close buttons. All floor pushbuttons shall be located no higher than 48-inches above the car floor, the keyed in car stop switch and alarm button shall be located no lower than 35-inches above finished floor height. Provide fire service cabinet, phase 2 switch, fire jewel, call cancel button, emergency light fixture, and voice annunciation grill and flush mounted speaker grill for the Hands Free telephone.

c) Braille/Arabic designations shall be identified by a minimum of 5/8-inch Arabic numeral, standard alphabet character, or standard symbol immediately to the left of the control button. Braille shall be located immediately below the numeral, character or symbol. Controls and emergency equipment shall be identified by raised symbols, including but not limited to, door open, door close, alarm bell, emergency stop and

telephone. The call button for the main entry floor shall be designated by a raised star at the left of the floor designation. Braille and Arabic designations shall be flush with inconspicuous mechanical mounting. The plaques shall have raised white characters on a black background. Provide cast Oval Surround style Braille plates as provided by Entrada, Vison Mark or SCS.

d) Provide a lockable service cabinet with concealed hinges. Cabinet door shall be flush with the faceplate with hairline joints.

1) Cabinet shall contain the following toggle type controls:

(a) Light toggle switch.

(b) Three speed fan switch.

(c) Inspection keyed switch.

(d) Independent service toggle switch.

(e) Emergency Light test button

(f) Duplex 120 volt, A.C. GFCI convenience outlet.

2) Light switch for under car platform light.

3) 2 USB Ports and key board plug in for programing the Digital Display. All programing for the Elite PI shall be possible thru the ports in the service cabinet.

e) Engrave the following; the font shall be as directed by architect and code:

1) Elevator Number. Minimum ½-inch high lettering.

2) Elevator Capacity below Elevator Number.

3) Building Name and Address.

4) Fire Instruction signage.

5) All Code Required Signage/Verbiage Shall be engraved on the new car operating panel.

f) Floor Annunciator: Provide new digitized voice annunciator providing both male and female voices in a system capable of up to 5-minutes of speech. Provide concealed speaker. Messages shall include the following announcements:

1) Floor number and direction of travel.

2) Notice of doors closing prior to nudging operation.

3) Notice of car on independent service.

4) Emergency operation announcements:

5) Firefighter's Service, "Elevator returning to lobby."

C. Car Position Indicator: Provide new segmented digital readout type with 2-inch high (minimum) indications at upper section of car operating panel. Indicator shall provide car position and direction of travel. Incorporate in CEC Digital Display for Passenger and Judge's elevator.

D. CEC Digital Display; Passenger and Judge's Elevators:

1. CE Electronics, Elite PI Display: Provide on main car operating panel. Use to display information and customize with USB port or from main control station. Provide a 12 inch minimum display. Display elevator position, direction of travel and priority messages. The system shall also be capable of displaying floor-based messages, time, date, temperature as well as scheduled messages.

2. Configure display to provide messages such as security override, fire service, earthquake alert, special club activities, etc.

E. Fixture Requirements: Provide new faceplates constructed of Satin brushed stainless steel at all floors, minimum thickness 1/8-inch. All edges shall be relieved. All hall fixtures to have concealed fasteners. Wherever feasible, reuse existing electrical boxes; otherwise, perform all required cutting and patching. Extend faceplates as required to cover holes left by removal of existing fixture.

F. Hall Pushbutton Station:

1. Passenger Elevators No. 1, 2 and 3: Provide a new second riser for the Passenger elevators. A new hall pushbutton fixture shall be provided for the second riser at the Main Lobby Floor only.

2. All Elevators: The existing hall pushbutton riser: The new stations shall include flush mounted satin stainless steel faceplate. Extend faceplates as required to cover holes left by removal of existing fixture. Centerline of riser to be at 3-feet-6-inches above the finished floor. Buttons shall have a minimum dimension of 3/4-inch, be raised 1/8-inch plus or minus 1/32-inch above the surrounding surface, and have a detectable mechanical motion. A minimum clear space of 3/8-inch separation shall be provided. Button design shall be vandal resistant fully illuminated white. Provide spanner type security fasteners. New fixtures shall be equipped with key switches where they are existing.

G. Fire Key Switch, Fire Sign and In Case of Fire Sign:

1. Locate the fire key switch and Emergency Power switch and jewel with the hall pushbutton at the main return landing.

2. Provide Code required pictograph Fire signs incorporated with the hall buttons, at all floors. Provide 3-position Code required Phase I key switch and operational instructions engraved minimum 1/8-inch high on the faceplate at the main return floor. In Case of Fire signs minimum 1/2-inch high shall be integral within the faceplate, at all floors. Faceplate edges shall be relieved. Finish shall be stainless steel No. 4 brushed finish. Backfill for engraving shall be epoxy filled. Integral signs shall be as follows:

a) Fire Signs. Minimum 1/2-inch high lettering.

b) Fire Operational Instructions. Minimum 1/8-inch high lettering.

3. Provide spanner type security fasteners. Finish matching faceplate.

H. Hoistway Access Switch: Mount in existing location and reuse existing electrical boxes; otherwise, coordinate all required cutting and patching. Extend faceplates as required to cover holes left by removal of existing fixture.

I. Combination Hall Position Indicators/Hall Lanterns: Provide new digital position indicators with vandal resistant arrows in an integral fixture. Provide with satin stainless steel faceplate. Provide arrow shaped up and down lanterns with audible signals at each entrance per architectural drawings. The visual signal for each direction, minimum 2 ½-inches by 2 ½-inches, shall be visible from the proximity of the hall station. Indicators shall have audible signals consisting of voice annunciation and volume adjustable chimes that sound once for the up direction and twice for the down direction of travel. Extend faceplates as required to cover holes left by removal of existing fixture.

2.12 COMMUNICATION AND SECURITY SYSTEMS

A. Telephone System: Provide automatic dial Hands Free telephone station located in the car station. A button shall suitably identify activation of auto dialer for the visually impaired. Speaker shall be mounted without faceplate or visible fasteners and located either behind the control station or within the telephone box. Communication shall be capable of being heard from any location within the car enclosure. Provide a means to communicate to each car individually from telephone unit at the elevator control panel, in compliance with ASME A17.1, rule 2.27.1.1.4.

1. Provide a telephone symbol minimum 2-inch high, and raised 1/32-inch with Braille indications adjacent to a separate activation button mounted on the control panel.

2. Provide engraved emergency instructions above the activation button. Instructions shall read: TO USE EMERGENCY TELEPHONE, PRESS BUTTON BELOW. DIALING WILL OCCUR AUTOMATICALLY. Identical instructions in Braille shall be provide below the engraved instructions.

3. Provide a visual indication, approximately ¾-inch in diameter, or a jewel that illuminates once a call has been received. Instructions under the visual indicator or within the lighted jewel shall read: ASSISTANCE IS ON THE WAY.

B. Provide wiring from car to telephone terminal box in elevator machine room.

C. Mount fire alarm speaker on each car top and run required wiring from speaker to life safety terminal box in machine room. Speakers to be provided by fire alarm contractor.

D. Mount security camera in each elevator cab and run required wiring from car top junction box to security camera terminal box in machine room. Security cameras to be provided by Owner.

PART 3 - EXECUTION

3.01 EXAMINATION OF EXISTING BUILDING AND CONTRACT DOCUMENTS

A. Contractor shall carefully examine all existing building conditions and be informed as to facilities for delivery of materials and equipment, floor loading limitations, and be familiar with difficulties that may be encountered in completing execution of all work, prior to bid.

B. Contractor will be held to have examined all specifications and all other data pertaining to work.

C. The Owner shall bear no responsibility for any incomplete or missing wiring diagrams or other data that may be needed to adapt the new equipment to the existing equipment. Obtaining such information from other sources is the Contractor's responsibility.

D. No consideration or allowance will be granted for failure to visit site, or for alleged misunderstanding of materials to be furnished, or work to be done, it being understood that tender of proposal carries with it agreement to all items and conditions referred to herein.

3.02 MAJOR ALTERATION - INCREASE IN DEAD WEIGHT

A. The Contractor is required to design all changes to not exceed a 5% increase in the original deadweight of the car enclosure, plus rated capacity. Should the total car weight be exceeded, Contractor shall be responsible for all code required changes. Documentation shall be furnished to the enforcing code authorities verifying the results.

3.03 FIELD QUALITY CONTROL

A. Tests:

1. Perform as required by code, and authorities having jurisdiction.

2. Provide labor, material, equipment and connections.

3. Repair or replace defective work as required.

4. Pay for restoring or replacing damaged work due to tests.

B. Final Inspection: When all work is completed, and tested, notify the Owner in writing that the elevator is ready for final inspection and acceptance test. A testing and inspection date shall then be arranged. The proper operation of every part of the elevator system and compliance with contract requirements of the code shall be demonstrated to the Owner. Furnish all test instruments, weights, and materials, required at the time of final inspection. The following tests shall be made on each elevator at the time of final inspection:

1. Test Period: The elevator shall be subjected to a test for a period of one hour continuous run, with full specified load in the car. During the test run, the car shall be stopped at all floors in both directions of travel for a standing period of 10-seconds per floor.

2. Speed Load Tests: The actual speed of the elevator car shall be determined in both directions of travel with full contract load and with no load in the elevator car. Speed shall be determined by a tachometer. The actual measured speed of elevator car with full load shall be within 5% of rated speed. The maximum difference in actual measured speeds obtained under the various conditions outlined between the UP and the DOWN directions shall be checked.

3. Floor-to-floor times with no load in the car, balanced load in the car and full load

in the car shall be checked.

4. Car Leveling Tests: Elevator car leveling devices shall be tested for accuracy of landing at all floors with no load in the car, balanced load, and full load, in both directions of travel. Accuracy of floor landing (plus or minus 1/8-inch) shall be determined both before and after the full-load run test.

5. Final System Tests for Smoke Detection/Fire Elevator Recall: After work is completed, conduct a final test of entire system. Perform testing "after hours" unless normal business hours testing is authorized by Owner. Submit results on approved test report forms.

6. Re-inspection: If any equipment is found to be damaged or defective, or if the performance of the elevator does not conform to the requirements of the contract specifications or the Safety Code, no approval or acceptance of the elevators shall be issued until all defects have been corrected. When the repairs and adjustments have been completed and the discrepancies corrected the Owner shall be notified and the elevator shall be re-inspected. Rejected elevators shall not be used until they have been re-inspected and approved.

3.04 ADJUSTING, CLEANING, LUBRICATION AND PAINTING

A. In order to maintain cleanliness throughout the project, Contractor shall thoroughly clean all hoistways, car tops, pits and landing sills free of dirt, grease, oil and debris, prior to disabling the first elevator from service for modernization.

B. Perform the following work prior to final testing and acceptance:

1. Adjust all equipment for optimum performance, including controllers, motors, motor drive, landing systems, hoistway switches, door operating equipment and safety equipment to achieve the required performance levels.

2. Thoroughly clean all equipment and equipment areas free of all dust, dirt, debris and excessive oil and grease.

3. Lubricate all equipment in accordance with manufacturer's guidelines.

4. Patch and paint exposed work soiled or damaged during installation. Repair to match adjoining work prior final acceptance.

5. Clean and paint the following equipment and areas: Hoist machine, machine room floor, car top, buffers and pit floor.

3.05 INSTRUCTIONS

A. Upon completion of all work, the Contractor shall provide an instruction period. Instructions shall be given by competent supervisory personnel and shall apply to actual field conditions. The instructions shall cover, but shall not be limited to the following:

1. Operation of elevators under emergency conditions, maintenance, adjustment, troubleshooting and diagnostic procedures.

2. Operation and maintenance of smoke detectors and elevator fire recall system.

3. Operation of elevator communication, door reversal device, etc.

END OF SECTION

SECTION 14241

MODERNIZATION OF EXISTING HYDRAULIC ELEVATOR

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope: Provide materials, labor, and services necessary for the complete modernization of existing electric hydraulic elevators.

1. Modernize one hydraulic elevator located in the Annex.

B. The Contractor shall work normal hours and normal days with the exception of noisy work, which shall be performed from 5 a.m. to 8 a.m. Noisy work is considered work which will create disruption to normal court or building operation and is performed in the hoistways/lobbies/elevator cabs. The work in the machine room is not considered to be part of this "noisy" work

C. Any cranes used to bring equipment into the building shall be the responsibility of the Elevator Contractor and shall be scheduled for use on weekends. Permits for cranes are the Elevator Contractor's responsibility

D. Upon bidding the work, the Contractor shall indicate any additional code compliance items which may be affected as a result of this work. This shall be reported to Owner and Consultant, regardless of whether it is included in any contract document including the specifications and drawings.

E. If additional work is required for compatibility with the Contractor's equipment, that shall be identified and itemized with the bid submittal.

F. The new cab and car components shall be designed to stay within 5% of the original car weight, as stamped on the crosshead. Should the original weight be exceeded by more than 5%, comply with all ASME, A17.1 requirement and report the specific conditions to Owner and Consultant prior to manufacture of any equipment.

G. The Contractor is required to design all changes to not exceed a 5% increase in the original deadweight of the car enclosure, plus rated capacity. Should the total car weight be exceeded, Contractor shall be responsible for the following:

1. All code required changes.

2. Provide structural calculations as required by code to determine integrity and capability of existing elevator components including machine support beams, with ASME A17.1, to withstand the new weights.

3. Review of existing structural electrical and mechanical provisions for compatibility with Contractor's products.

4. Documentation shall be furnished to the enforcing code authorities verifying the results.

5. Owner shall not be responsible for changes to structural, mechanical, electrical or

other systems required to accommodate Contractor's equipment.

1.02 NON-PROPRIETARY EQUIPMENT

A. 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, wiring diagrams and spare parts as listed in part 3 of this specification shall be provided in each machine room, controller room or machine space as a permanent part of the installation and become the property of the Owner. Devices shall be permanent at no additional cost to Owner, shall not self-destruct, and 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 be responsible for the cost to 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 with 48 hours.

4. Provide a list of parts of each component manufactured and stored at the warehouse and the retail cost of each at closeout 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 troubleshooting problems. Indicate hourly rate charged to Owner or designated service provider for such service.

1.03 CONTRACTOR RESPONSIBILITY

A. GENERAL REQUIREMENTS

1. Should additional work be required either due to code or the elevator contractor's specific requirements, these shall be noted and included with the bid. In the absence of such a list it is assumed the Contractor's equipment is compatible with the existing building system and any resulting work or revisions to the building or to the elevators shall be the responsibility of the Elevator Contractor.

2. Verify existing building systems including but not limited to mechanical, electrical system and fire life safety is compatible with the new equipment being proposed, identify any necessary modifications and include modifications in bid.

3. Provide all floor protection to disburse the weight of materials being removed and/or brought into the facility. Floor protection shall be adequate to prevent damage to existing flooring. Contractor accepts responsibility for cost of replacing

any building surfaces, features or finishes damaged by their actions.

4. Provide, identify and protect clear pathway, subject to Owner's prior approval, for any and all movement and storage of equipment, material and tools, around the property and within the building.

5. Provide guards and barricades to shield people from worksite hazards, including open hoistway, machinery, materials, equipment, and tools.

6. Protect premises from damage throughout course of construction, including floors, walks, walls, thresholds, entrance frames, doors, equipment, etc. Repair or replace items damaged or marred during construction.

7. Clean and apply one finish coat of low VOC low odor, industrial enamel paint on areas and equipment as specified.

8. Apply one finish coat of low VOC low odor, industrial enamel paint on the machine room walls, ceilings and floors.

9. Perform code and performance related tests as specified.

10. Remove and properly dispose of discarded equipment and materials, including debris, rubbish, oil and lubricants.

11. Adjust all safety and emergency control related devices and perform code mandated safety tests.

12. Remove and legally dispose of all elevator equipment replaced by this modification. Removed equipment shall be disposed of as fast as it accumulates and shall not be staged in public spaces.

13. Contractor shall include all code required items, permits, testing, records and inspection costs.

14. Coordinate with the Contractor to restore all damaged building finishes, including carpet, door frames, walls, ceilings, etc. to pre-modernization condition.

15. All modifications to the entry/exit areas shall be the Owner's responsibility but are the Contractor's responsibility to coordinate.

16. Provide fluorescent pit lighting of not less than 100 lx (10 fc), measured at the pit floor. Furnish properly located light switch and GFCI duplex outlet near pit entry.

17. Provide GFCI convenience outlets in pit for sump pump.

18. Removal all non-elevator equipment from machine room, as required by the Elevator Bureau.

19. Provide a class "ABC" fire extinguisher mounted inside each machine room.

20. Secure the storage space for tools and materials.

21. Include all costs associated with the safe hoisting of new equipment to the machine room.

1.04 RELATED BUILDING WORK.

A. The following work shall be the responsibility of the other trades.

1. Patching and finishing around entrances and adjacent flooring after installation.

B. Provide code required machine room door signage.

2. All modifications to the entry/exit areas shall be the Owner's responsibility but are the Contractor's responsibility to coordinate.

3. Bevel all shaft ledges with an angle of not less than 75 degrees with the horizontal, where required.

4. Provide all required hoistway wall patching.

5. Modifications to the existing hoistway walls.

6. Wall block outs and fire rated closure for control and signal fixture boxes which penetrate walls.

7. Patching and finishing around entrances and adjacent flooring after installation.

8. All modifications to the entry/exit areas shall be the Owner's responsibility but are the Contractor's responsibility to coordinate.

9. Coordinate with the Contractor to restore all damaged building finishes, including carpet, door frames, walls, ceilings, etc. to pre-modernization condition. Build back surfaces and or building areas to match pre-existing finishes.

10. Removal of all non-elevator equipment from machine room.

11. Provide storage space for tools and materials. Contractor shall be responsible for securing the area.

B. Mechanical: Refer to Mechanical Contract Documents. The following are general guidelines. Provide adequate machine room heating and cooling necessary to maintain an ambient temperature between 55 and 85 degrees Fahrenheit, with relative humidity not exceeding 85% non-condensing. The existing ventilation for the machine room for the Annex elevator will remain in place.

C. Electrical: Refer to the Electrical Contract Documents. The following are general guidelines.

1. Verify existing electrical system is compatible with the new equipment being proposed, identify any necessary modifications and include modifications in bid.

2. Provide LED pit lighting of not less than 100 lx (10 fc), measured at the pit floor. Furnish properly located light switch and GFCI duplex outlet near pit entry. All to be NEMA 4 for wet application.

3. Provide one GFCI type duplex utility receptacle near each elevator hoist machine. Replace existing outlets with GFCI type. Receptacles shall be manually reset type

4. Provide single non-GFCI outlet in pit when there is an existing sump pump.

5. Provide required conduit between hoistway and remote elevator control panel.

6. Provide proper machine room lighting arranged for optimal viewing of control equipment. The light level must be a minimum of 200 lx (19 fc), measured at the machine room floor. Provide sufficient quantity of T8 fluorescent fixtures with wire cage bulb guards. Locate light switch near the lockable side of the entry door.

7. Provide properly sized, 3-phase power with lockable, fused disconnect switch at code required location for each elevator. Run feeder wires in separate code compliant conduit, terminated at each individual car controller or transformer. If alternate for auxiliary power supply is accepted, disconnect switch must be equipped with auxiliary contacts. Verify requirements with Contractor.

8. Provide 120 VAC single phase with fused disconnect switch mounted adjacent to group controller, where required. Verify requirements with Contractor.

9. Provide insulated copper grounding conductor from the main building ground to each power disconnect switch.

D. Fire Alarm—Refer to contract documents; Minimally the following is required?

1. Provide code compliant elevator recall fire alarm panel.

2. Provide addressable smoke detectors installed in accordance with NFPA 72 and City of Pasadena building code, capable of initiating Phase 1 Emergency Recall Operation and notifying the Fire Department via the Central Monitoring station or City Tie Fire Alarm Box where required.

3. Provide required main and alternate floor signals with wiring and contacts terminated in junction box, located in appropriate machine room. Machine room and elevator hoist way must be equipped with at least one smoke detector and one heat detector within 18” of each sprinkler head. Include required signals to flash the in-car fire hat in the event smoke or heat detector is activated in the machine room or hoistway.

1.05 OWNER RESPONSIBILITY:

A. ACCESS TO SITE/GENERAL:

1. On-site Parking shall be provided for the Contractor.

2. Provide and designate adequate storage space for tools and materials.

3. No objects adjacent to, and below, the hall push button station shall project more than 4-inches from the wall.

B. MACHINE ROOM:

1. Service all air conditioning systems and clean all vents.

C. COMMUNICATION AND SECURITY:

1. Provide security camera equipment, where desired.

2. Provide card readers where desired.

1.06 REFERENCES

A. California Trail Court Facilities Standards.

B. JCC Requirements

C. Applicable Codes (Latest Edition):

1. All work shall be completed in accordance with national, state and local codes in effect at time of award. All requirements of local building department and fire jurisdictions shall be fulfilled by the Contractor.

2. The American Society of Mechanical Engineers, Safety Code for Elevators and Escalators (ASME A17.1)

3. The American Society of Mechanical Engineers, Safety Code for Existing Elevators and Escalators (ASME A17.3 - 2005)

4. American National Standard Accessible and Usable Buildings and Facilities (ICC/ANSI A117.1-Latest Edition)

5. National Fire Protection Association (NFPA 13)

6. National Fire Protection Association (NFPA 72)

7. National Electrical Code (NFPA 72)

8. American with Disabilities Act (ADA)

9. California State Building, Fire, Elevator and Accessibility Code

10. American Welding Society (AWS) D1.1 - Structural Welding Code - Steel

11. Authorities having jurisdiction

1.07 CONTRACT

A. Contractor shall advise Consultant and Owner of any discrepancies or ambiguities found in the project specifications prior to submitting bid.

B. Contract includes all engineering, labor, tools, materials, permits, equipment, required to complete the specified work, except those items defined as to be performed by the Contractor.

C. Contractor shall familiarize itself with the site conditions and include all incidental work that might occur or be required as part of this project.

1.08 DEFINITIONS

A. The following definitions apply to work of this Section:

1. “Owner”: as used herein, refers to Pasadena Courthouse Association.

2. "Contractor": refers to the Contractor having the contract with Owner to furnish labor and materials for the execution of work as specified herein.

3. "Consultant": refers to the Syska Hennessy Group, Inc.

4. "Provide": to furnish and install, complete for safe operation, unless specifically indicated otherwise.

5. "Install": to erect, mount and connect complete with related accessories.

6. "Refurbish": to modify as required for like new operation and characteristics, meeting all current code requirements.

7. "Supply": to purchase, procure, acquire and deliver complete with related accessories.

8. "As required", "where required", "as needed", "if required", and "if necessary": repair or replace components to provide like new operation or meet code requirements.

9. "Work": labor and materials required for proper and complete installation.

10. "Wiring": raceway, fittings, wire, boxes, and related items.

11. "Concealed": embedded in masonry or other construction, installed in furred spaces, within double partitions or hung ceilings, in trenches, in crawl spaces or in enclosures.

12. "Exposed": not installed underground or "concealed" as defined above.

13. "Indicated", "shown", or "noted": as indicated, shown or noted on Drawings or as specified.

14. "Similar" or "equal": of base bid manufacturer, equal in materials, weight, size, design and efficiency of specified product, conforming to "Acceptable manufacturers."

15. "Reviewed", "satisfactory", "accepted", or "directed": as reviewed, satisfactory, accepted or directed, by or to Owner.

16. Where a device or a part of equipment is referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

1.09 INSTRUCTIONS TO CONTRACTORS:

A. Bids shall be subject to all the requirements of the contract documents and any other documents issued in connection with this project.

B. Contractor shall identify any operations and features that are unique to their product or practices.

C. If Contractor desires to furnish items differently than specified, Contractor shall submit substitution as an alternate quotation along with bid. Contractor shall supply information in regard to the proposed substitution of components or materials.

D. Contractor shall identify any conflicts or problems/issues with the implementation of this work. In the absence of such identification, Contractor is responsible for existing conditions and modifications to the existing hoistway, machine rooms, elevator cars, etc. pertaining to this work, shall be the responsibility of the Contractor. Modifications to building systems, i.e. mechanical, structural, and electrical, etc., shall not be made to accommodate Contractor's equipment.

1.10 HAZARDOUS MATERIALS NOTIFICATION, TRAINING & REQUIREMENTS:

A. If asbestos containing building materials or other hazardous materials are found to be present within the elevator machine rooms and hoistways, moving, drilling, cutting or otherwise disturbing such materials can pose a health risk and should not be attempted by untrained personnel. Contractor shall immediately notify Owner if there is need to disturb such materials as part of the project or if they observe any materials that they suspect contain asbestos or other hazardous materials that are not properly maintained.

B. All technicians working on the project are to have undergone hazardous materials awareness training to learn about adverse health effects, necessary precautions, emergencies, inspections, and maintenance.

C. Should removal or abatement be required, it shall be performed by others and the responsibility of the Owner.

1.11 MATERIALS:

A. All exposed retained metal in the hoistway and on the car tops shall have all rust removed, shall be mechanically and chemically cleaned, followed immediately by the application of common, low-VOC, low-odor, rust-inhibiting coating. Stainless Steel: Type 302 or 304 or 316 complying with ASTM A240, with standard tempers and hardness required for fabrication, strength and durability.

B. Paint: Clean all new exposed metal parts and assemblies of oil, grease, scale, and other foreign matter and factory paint one shop coat of standard rust-resistant primer. After erection, provide one finish coat of low VOC, low odor, and industrial enamel paint. Galvanized metal need not be painted.

1.12 OPERATION PERFORMANCE

A. The control system shall provide smooth acceleration and deceleration with 1/8-inch leveling accuracy at all landings, from no load to full rated load in the elevator, under normal or unloading conditions. The self-leveling shall, within its zone, be entirely automatic and independent of the operating device and shall correct for over travel and under travel. The car shall remain at the landing irrespective of load.

B. The floor-to-floor performance time shall be 15.0 as measured from the start of door close at one floor to ¾ open at the next floor.

C. The door open time shall be 2.5 seconds as measured from start of door open to fully open.

D. The door close time shall be 3.6 seconds as measured from start of door close to fully closed.

E. The door close time shall be based on the Code requirements with a door delay feature.

F. The hall call door dwell time shall be based on the code requirements with a door delay feature. The door delay is the minimum acceptable time from notification that a car is answering a call (lantern and audible signal) until the doors of the car start to close. The minimum acceptable time for doors to remain fully open after answering a hall call shall not be less than 5-seconds. Time shall be calculated by the following equation:

T = D/(1.5 ft/s)

T = Total time in seconds.

D = Distance from a point in the lobby 60-inches directly in front of the hall station to center line of the door opening.

G. Car call door dwell time: The minimum acceptable time for doors to remain fully open after answering a car call shall not be less than 3-seconds, per code. Initial setting shall be 3.5-seconds.

H. The speed of the elevator shall not vary by more than +/- 5% under loading conditions.

I. Differential Door Timing Feature: Provide adjustable timers to vary the time that the doors remain open in response to a car or hall call. The doors shall remain open for 4.0-seconds in response to a car call and 5 to 8-seconds for a hall call. The doors shall remain open as long as passengers are crossing the threshold.

J. Nudging: When doors are prevented from closing for 20-seconds due to failure of the proximity device or obstruction, the doors shall remain open and a buzzer shall sound.

K. Prior to final acceptance and prior to the termination of the maintenance period, the elevators shall be adjusted as required to meet these performance requirements.

1.13 SOUND CONTROL/NOISE AND VIBRATION/RIDE QUALITY

A. Limit overall elevator noise emissions to the building to the following maximum A-weighted sound pressure levels in any mode of operation:

1. 55-decibels measured 5-feet above the cab floor near center while running at rated speed.

2. 55-decibels measured 5-feet above the cab floor near center while the doors are opening or closing.

3. 55-decibels measured in the elevator lobby 10-feet from the elevator doors.

4. All elevator equipment including their supports and fastenings to building, shall be mechanically and electrically isolated from the building structure and main line power feeders to minimize objectionable noise and vibration transmission to car, building structure, or adjacent occupied areas of building.

5. Ride Quality requirements shall include a horizontal acceleration measured inside of the cab during all conditions to not exceed 15 mg peak to peak within the 1-10 MHz range.

6. Vertical acceleration and deceleration shall free of bumps, jerk, and sway, and shall be not less than 3.3 feet/sec2 with initial ramp of between 0.5 and 0.75-seconds.

7. Make all necessary modifications or replacement of equipment as necessary prior to final acceptance or warranty expiration to meet the performance requirement. This shall be performed at no additional charge.

1.14 SUBMITTALS

A. Submit the following before beginning fabrication of equipment:

1. The source of all finishes shall be provided by Ownership. The Contractor shall coordinate procurement of those materials with the Ownership and shall direct any of its subcontractor accordingly. Sourcing of all materials and the intended manufacturer/Contractor shall be submitted for approval.

2. Shop Drawings: Provide an electronic set of complete fully dimensioned shop drawings, to scale in PDF format. Include layouts of pits, overhead, plan view of hoistway, cab, machine room, equipment loads, power and heat data for all equipment and required clearances. Provide detailed signal fixture drawings and cut sheets for all major components (controller, door operator, roller guides, etc.)

3. Details of hold-to interior dimensions shall be provided. Drawings shall include details of cab interior including plans, and elevations. Fixture details shall be submitted for review. Generic brochures shall be rejected as not job specific. All details are to reflect modification to existing conditions and exact locations on the new materials. Provide hoistway, overhead and pit sections, and plan view of pit and machine room. Include all applicable structural, electrical and mechanical loads for new equipment. Provide manufacturer cut sheets for control system, power unit and door operator.

4. Design Information: Provide calculations verifying the following:

   a) Adequacy of existing electrical provisions.

   b) Adequacy of retained equipment relative to Code requirements if car weight increased by more than 5%.

   c) Machine room heat emissions in B.T.U.

   d) Adequacy of existing retained elevator machine beams.

   e) Adequacy of existing car platform structure for intended loading.

5. Samples: Provide three sets of materials and finishes exposed to public view, 6-inch by 6-inch panels or 12-inch lengths as applicable.

6. Color Charts: Provide three sets of color charts for all paint and car interior, entrance finish selections.

7. Product Brochures: Provide an electronic submittal in PDF format including of literature on controller, landing system, motor starter, door operator and related door operating equipment, and door detector.

B. Before acceptance of work, submit the following:

1. Provide an electronic submittal in PDF format of job specific manufacturer's equipment brochures and service manuals. Assemble manuals in chronological order according to the specification alphanumerical system. Provide in manufacturers standard binders consisting of:

   a) Equipment and components, descriptive literature.

   b) Performance data, model number.

   c) Installation instructions.

   d) Operating instructions.

   e) Maintenance and repair instructions.

   f) Spare parts lists.

   g) Lubrication instructions.

   h) Detailed, record and as-built layout drawings.

2. Detailed, simplified, one line, wiring diagrams. Provide one complete set per manual.

3. Diagnostics: Controller and system shall include all necessary on-board diagnostics for performance of routine maintenance and troubleshooting. Contractor shall provide all diagnostic documentation required for troubleshooting and maintaining the elevator system upon completion including a composite listing of the individual settings chosen for variable software parameters stored in the software programs.

4. Layout Drawings: Provide a minimum of two sets of record as-built layout drawings. Drawings shall be prepared in AutoCAD. Provide one (1) complete set of drawings on compact disk.

5. Wiring Diagrams: Provide a minimum of three (3) sets of "as-built" wiring diagrams that include all electrical circuits in the cars, hoistways and machine rooms. Diagrams shall include definition of all nomenclature and symbols. Provide two (2) sets of wiring diagrams in protective binders or in laminated format and one (1) set on compact disk.

6. Keys: Provide six sets of keys for all keyed switches installed as part of this project, including: controller cabinet, fire service, stop switch, service cabinet, inspection and others if provided.

7. Certificate of Warranty in accordance with Specifications.

C. Consultant shall review and return to Contractor all submittals including shop drawings, samples and color charts, where applicable. Consultant shall review all close-out documents, including service manuals, wiring diagrams, letter from structural engineer, keys, etc. and deliver to Owner upon approval.

1.15 QUALITY ASSURANCE:

A. Contractor and Maintenance Qualifications:

1. Be able to show evidence of local installations of similar scope and size with the proposed control system.

2. Directly employ sufficient competent personnel within 50-miles of project to handle modernization and maintenance duties.

3. Modernization work and maintenance duties shall be separately performed by specialized crews and individuals.

B. Quality and Gauges of Materials:

1. New, best of their respective kinds free from defects. Gauges as noted.

a) Materials, equipment of similar application; same manufacturer, except as noted.

b) Entire elevator equipment shall operate without irregularities and quietly by use of high-grade materials, first class workmanship and adjustments.

1.16 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Ship in factory crated sections of a size to permit passage through available space.

B. Obtain approval and schedule delivery of material to meet Owner's requirements.

C. Storage of equipment and materials shall be coordinated with Owner.

D. Hoisting and Storage: All hoisting operations and storage of equipment and materials shall be coordinated in advance of delivery with Owner.

1. Supply a plan detailing the proposed methods for hoisting of equipment including anticipated roof preparation, hoisting times and durations, traffic control and other special requirements.

2. Supply a proposed location and size of area needed for tools, materials and equipment to be stored.

3. Schedule of anticipated delivery, hoisting and storage dates.

1.17 SEQUENCING AND SCHEDULING

A. Schedule of Operations:

1. Within thirty (30) days after contract award, the Contractor shall submit a complete plan and schedule of its proposed operations for approval. In preparation of its plan and schedule, the Contractor shall make due allowance for and include the following:

a) Preparation of equipment and material submittal.

b) Review of each submittal (four weeks)

c) Manufacturing lead times for the equipment.

d) Shipping durations and anticipated delivery dates.

e) Related work by other trades, whether under the Contractor's or Owner's responsibility.

f) The schedule shall be updated and resubmitted on a monthly basis.

g) The schedule may be in the form of a bar chart, graph or other approved system by which are shown predicted sequence, dependencies, durations, starting and completion dates for the various work units or trades involved, together with such other information relative to job progress and completion. If required, the schedule shall be submitted in PDF Format.

B. Sequence of the work:

1. The Contractor shall be responsible for providing a sequencing schedule based on the Owner's requirement. The Contractor shall base their bid on removing three (3) elevators from service simultaneously but never more than one of the three passenger elevators shall be out of service. Sample sequencing may be:

a) Custody Elevator Number 1 and Public Elevator Number 1

b) Judge's Elevator Number 5, Custody Elevator Number 2 and Public Elevator Number 2

c) Public Elevator Number 3 and Annex Elevator Number 4 (Hydraulic).

C. Interruptions of Building Elevator Service:

1. All work shall be done with a minimum amount of interference to the operation of the building. The Contractor shall not interrupt the services without the prior written permission of the Owner.

2. Contractor shall perform as much pre-work as possible, prior to removing the first elevator from service. As a minimum, all new equipment shall be hoisted to the machine room.

3. The Contractor shall be responsible for cross connection of the modernized and non-modernized Passenger Elevators.

4. The elevator shall be tested and accepted by the Owner prior to starting work on another elevator. Contractor shall run each elevator on auto-call operation for a minimum of 72 hours without cycling doors and at least 8 hours with cycling doors, before turning the elevator over to the building. During door cycling period, Contractor shall provide personnel in the elevator at all times, preventing the public from entering the elevator.

5. Work may begin after detailed work schedule has been approved.

6. Liquidated Damages

a) In the event the work is not completed per the contract schedule, the following liquidated damage provision shall be used to calculate the damages.

b) If the work is still not completed, as defined by the Specifications, liquidated damages will be assessed as follows: Initial assessment of 2% of

contract value (defined as the original contract price plus any authorized change orders) plus 0.25% of contract value for each calendar day until the project is completed.

1.18 WARRANTY

A. The elevators and associated equipment shall be free of defective material, imperfect work and faulty operation not due to ordinary wear and tear or improper use or care, for a period of three years concurrent with the warranty maintenance from final acceptance after completion of the final elevator. Defective work shall be repaired or replaced at no additional cost to the Owner. Provide Certificate of Warranty with start date effective on the date the Consultant accepts all work, including completion of all punch list items.

1.19 MAINTENANCE SERVICE

A. Interim Maintenance: Submit with base bid a separate monthly price to provide Full Service on the elevators, from the first day of the month following contract award until the first elevator is removed from service for modernization. Coverage shall be in accordance with Vertical Transportation Interim Maintenance Agreement.

B. Construction Maintenance: Submit with base bid a separate monthly price per elevator to provide Full Service from the date the first elevator is removed from service until both elevators are complete and warranty date is established. Coverage shall be in accordance with Vertical Transportation Construction Maintenance Agreement.

C. Warranty Maintenance: Submit with base bid a separate monthly price for three-year maintenance service during warranty period. Maintenance shall commence upon completion and acceptance of all elevator work on the final elevator. Coverage shall be in accordance with Vertical Transportation Warranty Maintenance Agreement.

D. On-Going Maintenance: Submit with base bid a separate monthly price should the maintenance be extended past the three-year period. Coverage shall be in accordance with Vertical Transportation Maintenance Agreement.

E. The Owner reserves the right to accept or reject any or all maintenance terms noted above at any time prior to their commencement date.

1.20 PROTECTION OF PERSONS AND PROPERTY

A. The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work.

B. The Contractor shall take reasonable precautions for the safety of, and shall provide reasonable protection to prevent damage, injury or loss to:

1. Employees working on the project and other persons who may be affected thereby.

2. The work, materials, and equipment to be incorporated therein, whether in storage on or off the site, under the care, custody or control of the Contractor or any of his Subcontractors or Sub-Subcontractors.

3. The property, including but not limited to roofing, walls, ceilings, flooring, furnishings, etc. Contractor shall repair or replace all damaged items. Under no

circumstances shall any employees of Contractor or subcontractor employees smoke while on-site. Contractor shall advise all employees and Subcontractors that smoking on roof may void Owner's roofing warranty and Contractor shall be responsible for all costs associated with violation of this requirement.

C. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated in writing by the Contractor to the Owner.

D. The Contractor shall comply with all applicable laws, ordinances, rules, regulations and lawful orders of public authority having jurisdiction for the safety of persons, property or to protect them from damage, injury or loss. He shall erect and maintain, as required by existing conditions and progress of the work, all partitions for safety and protection, including posting danger signs, and other warnings against hazards, promulgating safety regulations and notifying Owners and users of adjacent utilities. The Contractor shall restore all damaged building

E. In any emergency affecting the safety of persons or property, the Contractor shall act, at his discretion, to prevent threatened damages, injury or loss.

1.21 PERMITS AND INSPECTION FEES

A. The Contractor shall obtain without cost to the Owner, all permits and certificates as required.

1.22 SIGNS

A. Provide "Temporarily out of Service for Modernization" signs and post on all affected elevator entrances at all floors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Product of individuals, firms or corporations regularly engaged in modernizing elevators comparable with this contract and in satisfactory operation for a period of not less than five years.

B. Qualified Contractors—or Approved Equal:

1. Kone Elevator Company

2. Otis Elevator Company

3. Schindler Elevator Company

4. ThyssenKrupp Elevator Company

5. Mitsubishi Elevator Company

C. Approved Base Bid Control System:

1. Non-Proprietary Equipment. Alternate for Motion Control Engineering: iControls or approved equal.

2.02 OUTLINE OF EQUIPMENT

A. Annex Elevator No. 7 (All information shall be field verified by Contractor):

1. Elevators Type:	Hydraulic Direct Plunger
2. Contract Load, in Pounds:	Retain Existing
3. Contract Speed, in FPM:	Retain Existing
4. Machine Location:	As presently located
5. Power Unit	Retain existing; Check and tighten all fastenings; make all necessary adjustments.
6. Type of Control:	Soft Start AC
7. Operation	Selective Collective
8. Guide Rails	Retain existing; remove all dirt, debris rust; Apply one finish coat of low VOC, low odor, and industrial enamel apply one finish coat of low VOC low odor, industrial enamel paint on non-running surfaces
9. Buffers and Pit Channels	Retain existing; remove all debris, rust and dirt; Apply one finish coat of low VOC, low odor, and industrial enamel apply one finish coat of low VOC low odor, industrial enamel paint on non-running surfaces. Test and make any modifications necessary to pass state tests.
10. Plunger and Cylinder	Provide new PVC Casing; new plunger and new cylinder
11. Roller Guide Assembly	Provide new car assemblies and rollers.
12. Traveling Cable	Provide new
13. Door Operation	Provide new VVVF-AC Closed Loop type; GAL MOVFR or approved equal.
14. Door Detector	Provide new infrared full screen full height of door device with differential timing, nudging and interrupted beam time.
15. Car Platform	Check all fastenings, tighten and secure. Platform: remove rust, dirt and debris and clean. . Apply one finish coat of low VOC, low odor, and industrial enamel paint
16. Cab Enclosure	New car doors with textured stainless steel finish; refer to drawings. Interior Finishes: Refer to drawings attached to the specification.
17. Cab Door Equipment:	Provide all new GAL or approved equal door equipment including headers, tracks, rollers, hangers, etc.

18. Cab Sills	Retain existing; remove rust, debris and dirt, wire brush, clean and polish. Apply one finish coat of low VOC, low odor, and industrial enamel paint Check and tighten all fastenings.
19. Top of Car Inspection Station:	Provide new with light fixture and convenience outlet.
20. Hoistway Entrances:	Retain existing configuration.
21. Hoistway Entrance Equipment:	All new equipment shall be GAL or approved equal. New interlocks, door tracks, headers, hanger's rollers and closers. Any retained equipment: Remove all rust, dirt, debris, wire brush and clean all equipment which is being retained. Apply one finish coat of low VOC, low odor, and industrial enamel paint on all non-running surfaces.
22. Lobby Hoistway Sills & Sill Angles	Retain existing; remove rust, dirt, debris, wire brush and clean. Apply one finish coat of low VOC, low odor, and industrial enamel paint Check and tighten all fastenings
23. Lobby Hoistway Doors & Frames:	Doors: Provide new doors with satin stainless steel finish at all floors. Frames: Retain existing frames; Apply one finish coat of low VOC, low odor, and industrial enamel paint Check all fastenings and refinish.
24. Car Operating Panel:	Provide new main applied car operating panel. Incorporate a 12" to 15" CEC Elite P.I. into the new applied car operating panel.
25. Hall Fixtures	Provide all with new; reuse of existing boxes is acceptable. All fixtures shall be mounted to meet disabled height requirements.
26. Combination Hall Position Indicator and Hall Lanterns:	Provide new surface mounted type vandal resistant type with adjustable chimes at all floors for all elevators.
27. Hall Call Stations:	Provide new surface mount type with oversized faceplate and engraved fire exit signs. Provide fully illuminated white vandal resistant buttons and button assemblies to meet CBC requirements. Provide key switch operation to match existing.

28. Phase 1 Fire Recall Switch:	Provide new at main return landing; integrate with hall pushbutton station
29. Access Switches:	Provide new in existing location.
30. Car Blower:	Provide new three speed blower.
31. Communication System:	Provide new self-dialing vandal resistant push to call two way communication system with recall, tracking and voiceless communication.
32. Under Car Light:	Provide new car light under car platform with switch in service cabinet.
33. Special Features:	Fire recall operation, emergency power operation, verbal floor and direction annunciation and communication system

2.03 MACHINE ROOM EQUIPMENT

A. Provide equipment to fit in existing machine room space. Any and all costs for re-design of, and revisions to, building spaces and structure due to selection of Contractor, Manufacturer, change to equipment availability, production or selection shall be borne by Contractor.

B. Hydraulic Pump Unit: Retain Existing; check and tighten all fastenings. Adjust motor and shut off valves as required. Test muffler and make necessary adjustment.

C. A pressure switch shall be mounted in line to prevent loss of oil.

D. Controller: Microprocessor-based AC type with unit valve suitable for operation specified and capable of providing smooth, comfortable car acceleration and retardation. Limit the difference in car speed between full load and no load to not more than ±10% of the contract speed in either direction.

E. Controller: Disconnect and completely remove the existing controller and selector for each elevator and replace with a new microprocessor system.

1. Non-proprietary diagnostic control system from approved manufacturer. Provide NEMA – 1 enclosures and doors arranged with locks or mechanical latches.

2. All controller components shall be designed to provide the required operation as herein specified.

3. All assemblies, power supplies, switches, relays and other items shall be securely mounted on a substantial, self-supporting steel frame of angles or channels and shall be totally enclosed with hinged or removable covers in a floor mounted cabinet. Equipment shall not be mounted on any of the covers.

4. All controller switches and relays shall be magnet operated with contacts of design and material to ensure maximum conductivity, long life and reliable operation without overheating or excessive wear and shall provide a wiping action to prevent sticking due to fusion.

5. Where time delay relays are used in the circuits, they shall be of an acceptable

design that is reliable and consistent, such as condenser timing or electronic timing circuits. No dashpot time relays shall be used.

6. Each device on all panels shall be properly identified by name, letter, or standard symbol that shall be neatly stencil painted (or otherwise marked), in an indelible and legible manner, on device or panel. Identification markings shall be coordinated with identical markings used on wiring diagrams. The ampere rating shall be marked adjacent to all fuse holders. All spare conductors shall be neatly formed, laced and identified.

7. Safety switch shall cut off current, automatically apply brake and stop car upon current failure or upon operation of any electrical safety device.

8. All high voltage (110-volt or above) contact points inside the controller cabinet shall be protected from accidental contact when the doors are open.

9. Controllers shall be designed, tested and certified for Electromagnetic Interference (EMI) immunity in compliance with EN12015.

10. Provide adequate ventilation fans.

11. Provide isolated input with opto-isolation modules.

12. Power Supplies: All power supplies utilized shall be UL recognized. They shall all have short-circuit protection.

13. Frame: All assemblies, power supplies, chassis, switches, relays, and other items shall be securely mounted on a substantial, self-supporting steel frame. The equipment shall be completely enclosed with covers. No equipment is to be mounted on the covers.

14. Wiring: All factory wiring shall utilize UL labeled copper wires. All wiring interconnections shall be neatly routed. All wiring connections to studs of terminals shall be made by means of solder or solder less lugs.

15. Marking: All components shall be clearly and permanently identified adjacent to each device and shall be identical to the wiring diagram.

16. Terminals shall be provided for a future connection to a computerized test system. An adequate number of terminals shall be provided so as to monitor all of the various functions of the elevators. These shall include but not be limited to car positions, running functions up and down, door open and close, hall and car calls, door protective devices, safety circuits, elevator recapture, etc.

17. Printed Circuits and Related Hardware:

18. All solid-state hardware and devices shall have built-in noise suppression devices that provide a level of noise immunity compliant with EN12015.

19. Power supplies shall have noise suppression devices provided.

20. All inputs from external devices (such as pushbuttons) and all outputs to external devices (such as indicators, relays) shall be isolated.

21. The use of relays as input/output devices is not acceptable.

22. A separate regulated power supply shall be used for each computer chassis.

23. The control circuits shall be so designed so that one side of the power supply is grounded to provide for testing.

24. Under no circumstances shall the safety circuits be affected by accidental grounding `of any part of the system.

25. In the event of a power failure or interruption, the system shall be designed so that it will start properly when power is returned.

26. System memory shall be provided so that data shall not be lost in the event of a power failure or disturbance.

F. Auxiliary Disconnects shall be provided where the equipment is not in the line of sight of the Main Line Disconnects. These are the responsibility of the Contractor.

G. Diagnostic Tools: Subcontractor shall provide all diagnostic tools and documentation required for the adjustment, troubleshooting, and reprogramming of the elevator system upon completion, including:

Passwords or identification codes required to gain access to each software program in order to perform diagnostics or program changes.

A composite listing of the individual settings chosen for variable software parameters stored in the software programs.

A complete dictionary of fault codes with recommended steps for resolution, in sequence from highest to lowest probable cause.

Provide one project laptop capable of and configured for displaying elevator status, hoistway position and direction, door position and direction, approximate percentage loading, existing issue and direction of hall and car calls and any current or recent faults for troubleshooting the equipment. It is the intent that the laptop be left on-site for diagnostic use in each control room.

H. Provide vibration sound isolation to eliminate structure-borne sound being transmitted to the building. Vibration isolators shall be equivalent to Mason Industries Model RBA or SWM waffle pad with neoprene grommet and washer isolated bolt attachment. Select isolators to compress a minimum of 0.1-inches under load. Seismic Protective Features: Provide per the Code requirements.

2.04 SYSTEM OPERATION AND FEATURES

A. Selective Collective Operation—Annex Elevator:

1. Controls shall be a microprocessor based system.

2. Registration of car call button shall cause the car to start. The car shall respond to its own car calls and corridor calls, in the direction of travel, and in order in which the landings are reached.

3. The car shall remain at the arrival floor for an adjustable interval to permit passenger transfer. Doors shall close after a predetermined interval, unless the car is parked at the main floor, after opening unless closing is interrupted by car door reversal device or door open button in car.

4. Delayed Car Protection: The system shall automatically disassociate a car from the Duplex system in the event the car is delayed for a predetermined time. The car shall be automatically restored to the Duplex System when the cause of the delay has been eliminated.

5. Programmed Door Control: Separate adjustable times shall be provided for each car to establish minimum passenger transfer time for car stops, intermediate floor hall call stops and lobby floor stops. All timing shall be computerized to coincide with traffic demands.

6. Designated Parking: The system shall provide for cars to park as designated by the Duplex system or park at its last call.

7. Provisions shall be made in the dispatch computer so that the elevator system dispatching can be modified at a future time. The system shall be so designed that the modifications to the software shall be all that is required to revise the dispatching. It shall be further designed so that there will be minimum shut down time should changes be required.

B. Independent Service: Provide controls to remove elevator from normal operation and provide control of the elevator from car buttons only. Car shall travel at contract speed and shall not respond to corridor calls.

C. Car Top Inspection Operation: Provide new per Code requirements.

D. Hydraulic Elevator Low Oil Control: Should the elevator determine a low oil condition, the elevator shall be automatically retuned to the bottom floor and park until the condition is remedied.

E. Emergency Recall Operation (Fire Service): Provide operation and equipment per Code requirements. Contractor shall provide relays, wiring, and terminal strips to receive signals from the fire alarm system.

F. Hydraulic Elevator Battery Lowering: In the event of a power loss, the elevator shall return to the lowest landing and the doors shall automatically open. The elevator shall then automatically deactivate. The standby power source shall be a 12 volt DC battery unit with solid state charger and testing. Battery to be rechargeable with a ten year life. Upon restoration of normal power, the elevator shall automatically resume its operation.

G. Differential Door Timing Feature: Provide adjustable timers to vary the time that the doors remain open in response to a car or hall call. The doors shall remain open for 3.5-seconds in response to a car call and 5 to 8-seconds for a hall call.

H. Nudging: When doors are prevented from closing for 20-seconds due to failure of the proximity device or obstruction, the doors shall close at reduced speed and a buzzer shall sound.

I. Fan and Light Output Timer: Provide an adjustable timer (Range 5 to 10-minutes) that when activated will turn off the fan and light within the car. The time will start when the car becomes inactive.

J. Ascending Car Over-speed and Unintended Car Movement Protection: Provide future operation to prevent the elevator from striking the hoistway overhead and prevent unintended car movement per code.

K. Seismic Operation: Provide operation and equipment per Code.

2.05 SECURITY SYSTEM:

A. Interface with building security systems shall be required.

B. Cameras: Provisions Only; All Elevators:

1. Provisions for future camera provisions shall be installed for all elevators. These provisions shall include wiring and mounting brackets.

2. One (1) pair wires shall be provided and installed per elevator cab in traveler cable. Shielding shall not be required. Must be separated from 480 v power sources.

3. Wire shall be terminated in machine room with connection point for MCM outside of machine room. MTM to distribute from machine room as needed

C. Provide a Panic Button in each car and a two-way intercom system which will allow for the Sheriff to communicate with passengers in any of the elevators. This system shall be separate and exclusive from the telephone 24 hour system. This system shall be connected to a sheriff's station at a pre-designated location. Wring and conduit from the elevator machine room to this station shall be the responsibility of the Contractor.

D. This shall be a two way system and activation of the panic button can occur either by the passenger inside the elevator or from a remote location by a designated building personnel. Activation of the panic button will illuminate a jewel and audible signal in the elevator and in the Sheriff's control panel.

2.06 SEISMIC

A. Provide a minimum of one seismic switch for each single or group of elevators. A dual axis seismic switch shall activate per code requirements in both vertical and horizontal directions.

2.07 HOISTWAY EQUIPMENT

A. Guide Rails and Brackets:

1. Retain existing car guide rail brackets.

2. Thoroughly clean all guide rails free of grease, oil and other foreign substances, file and remove all rough edges and surfaces. Realign, and tighten bracket bolts and guide rail clips as required for smooth and quiet operation of car. Provide additional rail brackets or backing as required by code or as necessary to meet ride quality standards.

B. Buffers:

1. Existing car spring buffers shall be refurbished. Clean thoroughly, flush and refill units with new oil.

2. Provide inspection ladder and under car platform, where required by code.

3. Apply one finish coat of low VOC, low odor, and industrial enamel paint on the exterior of buffer and stencil number the car number on each buffer.

4. Buffers shall be load tested and tagged prior to turnover.

C. Hydraulic Jack Assembly:

1. Cylinder: Provide a seamless steel pipe and design head to receive unit type packing.

2. Provide water tight PVC casing.

3. Plunger: Provide a polished seamless steel pipe. The lengths shall not exceed 24'-0"

4. Provide over speed valves and shut off valve adjacent to the jack unit.

D. Well Hole and Casing:

1. Reuse the existing jack hole. Provide all necessary drilling and expand hole diameter as required for the new jack unit. Remove existing jack and oil. Removal of all spoils shall be the elevator contractor's responsibility.

2. Drilling rig and attachments, access to the building, and any associated drilling costs shall be included. A rock clause shall not be acceptable.

3. Install a PVC watertight casing which shall be capable of accommodating the new jack unit and additional fluid capacity.

4. Seal well opening at the pit floor with hydraulic quick setting cement.

5. Provide vision and access ports in the PVC.

E. Pit Stop Switch: Provide new red colored stop switches to meet code requirements.

F. Alarm Bell: Provide car top alarm bell and second alarm bell inside hoistway at lobby level.

G. Final Terminal Stopping Devices:

1. Final Device Operation: New final limit switches located at top and bottom of the hoistway shall be arranged to automatically stop the car within the predetermined over travel limits, independently of all other devices.

2. Rollers: Switches shall be equipped with engaging arms provided with polyurethane-tired rollers for engagement with cams.

H. Electrical Wiring: Terminal connections for all conductors at equipment panels, center of hoistway and on elevator car shall be made with terminal blocks or studs having identifying numbers. All conductor connections shall be made with terminal eyelets of the solderless type.

1. Conductors: Provide copper insulated wiring with flame retarding and moisture resisting outer cover. Install in galvanized metal wireways and raceways. Conductors from shaft riser to door interlocks shall be SF-2 type or equal, maximum operating temperature 392-degrees F. All terminations shall be insulated to maintain integrity of wiring. Flexible conduit may be used for short connections. Provide 10-percent conductors throughout.

2. Traveling Cables: UL- labeled fire and moisture resistant outer braid and steel supporting strand. Provide a minimum of eight (8) pairs of shielded communication wires and car lighting circuits.

3. Provide wiring as required for fire alarm initiating devices, emergency two way communication, and firefighter's phone jacks, paging speaker's intercom, announcement speakers and card reader interface.

4. Remote Wiring: Provide wiring between machine room, hoistway and remote locations of guard, security, life safety and fire control panels.

5. Work Light and Plug Receptacles: Provide on top and bottom of car with lamp guards.

6. Stop Switches: Provide Code required stop switches in the pit, near the governor access door, in the machinery spaces of machine room less elevators and where split level machine rooms occur.

7. Provide NEMA4 weatherproof electrical equipment and wiring identified for use in wet locations when any electrical devices are located less than four (4) feet above the pit floor.

8. Note: Conduits or other wiring shall not be exposed in the lobby or other occupied parts of the building.

I. Raceway: Remove all rust, wire brush, clean and apply one finish coat of low VOC, low odor, and industrial enamel paint. Retain existing raceway where suitable and replace sections as necessary for new equipment. Modify lower section, where required, to accommodate proper pit ladder access.

2.08 DOORS AND ENTRANCE EQUIPMENT

A. Retained Equipment: Remove all rust, dirt, debris; clean all surfaces on the hoistway and lobby side. Apply one finish coat of low VOC, low odor, and industrial enamel paint on all non-running surfaces.

B. Frames: Retain existing entrance frames. Remove all rust, debris and dirt from face and back side of frames. Clean both hoistway and lobby side of frames. Clad existing frames with satin stainless steel as detailed on the drawings.

C. Provide new rubber door strike astragals.

D. Remove existing and provide new Braille plates centered at a height of 60-inches above the floor, mounted at each entrance side jamb. Match design of car Braille plates. Provide epoxy adhesively mounted plates; no rivets or visible fasteners. Braille and Designation plates shall have white characters with black background at typical floors. Plates shall be manufactured by SCS, Vison Mark or Entrada; cast design.

E. Sills and Sill Angles: Reuse existing; check and tighten all fastenings.

F. Struts: Reuse existing and clean thoroughly. Check and tighten all fastenings.

G. Header: Provide new.

H. Dust Covers: Reuse existing. Align, adequately reinforce and secure as required. Replace any missing covers or fasteners. Check and tighten all fastenings.

I. Fascia: Reuse existing and clean thoroughly. Align, adequately reinforce and secure as necessary to prevent contact with the car. Replace any missing fascia and fasteners. Check and tighten all fastenings. Paint floor number on fascia.

J. Door Panels:

1. Stencil paint 4 inch high floor numbers on the back of each landing door panel.

2. Annex Elevator at all floors:

a) Provide new 14 gauge panels with a satin stainless steel finish. Provide rubber astragals on leading edge. Each door panel shall have two gibs which shall remain in the sill the entire length of door travel. Any cladding shall wrap around the trailing edge of the door a minimum of ½"

b) Provide 14 gauge sight guards with finish to match doors.

K. Door Hangers: Provide new removable two-point suspension type with provisions for vertical and lateral adjustments. Sheaves shall be 2 ½-inch diameter with sealed or roller bearings.

L. Door Tracks: Provide new removable steel tracks with smooth roller contact surface.

M. Door Closers: Spring, spirator or jamb/strut mounted counterweight type. Design and adjust to ensure smooth, quiet mechanical close of doors.

N. Interlocks: Provide new interlocks and door release roller assembly at each entrance. Where door release assembly is replaced with new design, roller assembly shall be mounted to an 8-inch by 6-inch (10-gauge) reinforcement plate, properly screwed to the back of each landing door. Reinforcement plate shall be equipped with two (2) ¼-20 by 1-inch long self-clinching zinc studs designed specifically for door release roller assembly attachment. Where new interlock design is provided, the interlock shall be the same make as the door operator.

2.09 CAR EQUIPMENT

A. All existing equipment shall have all rust, dirt and debris removed, wire brushed, cleaned and apply one finish coat of low VOC, low odor, and industrial enamel paint.

B. Platform: Reuse existing platform. Balance in order to distribute, as evenly as possible, the pressure of the individual guides on the guide rails surfaces. Tighten fasteners and clean. Modify underside as required for code compliance.

C. Car Frame:

1. Retain and refurbish existing car frame. Remove rust, wire brushed, cleaned and apply one finish coat of low VOC, low odor, and industrial enamel paint.

2. Square and adjust frame within guide rails in order to center, as evenly as possible, between the guide rail surfaces. Tighten fasteners and clean.

3. Stencil paint 4" high car number on crosshead.

D. Under Car Lighting: Provide new incandescent light fixture with bulb guard in NEMA 4 water tight and weather resistant box. Provide switch in service cabinet to turn light on/off.

E. Platform:

1. Retain and refurbish existing platform.

2. Balance in order to distribute, as evenly as possible, the pressure of the individual guides on the guide rail surfaces. Tighten fasteners and clean.

3. Provide new rubber platform isolation pads.

4. Repair or replace any missing or damaged brace or support angles.

F. Test at full load and full speed at the end of the equipment modernization. Replace all defective components or devices that do not function properly, including new safety actuating ropes as required.

G. Toe Guard: Provide new 48', paint with one coat of black enamel.

H. Roller Guides: Provide new roller type guides to provide smooth and quiet ride free of rumbles, bumps, vibrations, and excessive sway. Guides shall consist of three or more adjustable spring mounted rollers per guide assembly (3 1/2-inch minimum diameter) to maintain rail contact and include adjustable stops. Rollers shall be constructed of neoprene or other similar sound deadening material. Rollers shall have high memory characteristics, enabling the rollers to quickly regain their round shape after an elevator sits still overnight or for a moderate period of time. Provide adapter plates and mounting hardware as necessary.

I. Door Hangers: Provide new removable two-point suspension type with provisions for vertical and lateral adjustments. Sheaves shall be 2 ½-inch diameter with sealed or roller bearings. Hangers shall be galvanized metal or treated with 3 coats of Rustoleum.

J. Door Tracks: Removable steel tracks with smooth roller contact surface.

K. Door Protection: Infrared detector: Provide a door proximity edge that projects an infrared curtain of light guarding the door opening. Unit shall extend the height of the door panel. Arrange to reopen doors if one beam of the curtain is penetrated. Unit shall have Transmitters and Receivers spaced at a minimum distance to provide the maximum amount of protection within the height of the doorway. Systems which have the availability to turn off or on individual zones within the curtain will not be allowed. Door Detector shall extend the entire height of the door panel.

L. Door Operator: Provide new VVVF-AC, high speed, closed-loop door operator to automatically open and close the car and hoistway doors. The doors shall be capable of smooth and quiet operation without slam or shock.

1. Opening speed shall not be less than 3.0-f.p.s. with reversal in no more than 2-1/2-inches.

2. An auxiliary-closing device shall automatically close hoistway doors if car leaves the landing zone.

3. In case of a power interruption, it shall be possible to manually operate car and hoistway doors from inside the cab.

M. Door Restrictor: Provide new mechanical zone lock. Electronic door restrictor shall not be allowed.

N. Car Door Contact: Electrical contact shall prevent the operation of the elevator by normal operating devices unless car doors are closed or within tolerances allowed by Code.

O. Emergency Exit Contact: Provide electrical contact to shut-off power to the elevator if emergency exit is open.

P. Car Top Service Guardrail: Provide a 42-inch high railing on the car top with intermediate rail, toe board and stationary posts, where required by Code.

2.10 CAR ENCLOSURE

A. All retained metal shall have the rust, dirt, and debris removed, wire brushed and cleaned; Apply one finish coat of low VOC, low odor, and industrial enamel paint. If removal of rust compromises the integrity of the equipment, the Contractor shall indicate as such with their bid.

B. Annex Elevator:

1. An approved company shall manufacture car enclosure. Interior finishes as manufactured by Forms + Surfaces, City Lift, Sterling Corporation or approved equal. Provide the following features:

2. General: The enclosure shall be adequately reinforced and ventilated to meet Code requirements. Weigh all interiors and verify weight of new interiors is per code and manufacturers weight requirements. Provide verification of weights prior to ordering any material. Check and tighten all fastenings. Confirm the structural integrity of the cab shell and platform.

3. Confirm the structural integrity of the cab shell and platform. Repair platform and remove all rust. Check for termites and any deterioration. Replace platform if necessary. If platform is to be retained check and tighten all fastening. Broken welds on the floor support braces shall be re-welded or replaced. Reinforce the existing platform as required. The Contractor shall survey the sub floor to ensure it is free of deterioration and rust. The broken welds on the floor support braces underneath the floor shall be either replaced or repaired.

4. Shell: Arrange shell to accept interior panels as specified. Check and tighten all fastenings. Provide one coat of paint on the interior.

5. Refer to attached drawings for all new finishes.

6. Canopy: Check and tighten all fastenings. Modify canopy for light fixtures. Lighting fixtures that uniformly distribute not less than foot-candles of light at handrail height as required by Code. Provide clear and easily accessible access to the emergency exit per Code requirements.

7. Drop Ceiling and Lighting: Provide new EPCO Flexi light emergency cab lighting system, capable of re-lighting two normal down-light fixtures. Emergency light transformer and fixture to be mounted in a water tight/weather proof enclosure.

8. Floor Covering Provide new as shown on the drawings.

9. Transom, Front Return Panels and Entrance Columns: Provide as detailed on the drawings.

10. Car Door Panels: Door panels shall be 14 gauge hollow metal flush door

construction, furniture steel. Provide reinforcement by formed vertical sections running full height of door. Doors shall be provided with two removable, gibs with fire tabs, located at the leading and trailing edge of the door panel. Finish shall be textured stainless steel. There shall be no visible exposed or protruding fasteners.

11. Ventilation: Three-speed type AA exhaust blower mounted to car canopy on isolated rubber grommets.

2.11 SIGNALS AND FIXTURES

A. All new fixtures shall be provided.

B. Car Operating Panel

1. Provide new applied type main car operating panel in compliance with applicable Code.

a) Car Operating Panel: Provide new illuminating stainless steel vandal resistant pushbuttons or approved equal product. Faceplate shall have Satin stainless steel finish. Faceplate shall have continuous hinge with three point latching.

b) Provide a keyed stop switch and alarm bell button, door open and door close buttons. All floor pushbuttons shall be located no higher than 48-inches above the car floor, the keyed in car stop switch and alarm button shall be located no lower than 35-inches above finished floor height. Provide fire service cabinet, phase 2 switch, fire jewel, call cancel button, emergency light fixture, and voice annunciation grill and flush mounted speaker grill for the Hands Free telephone.

c) Braille/Arabic designations shall be identified by a minimum of 5/8-inch Arabic numeral, standard alphabet character, or standard symbol immediately to the left of the control button. Braille shall be located immediately below the numeral, character or symbol. Controls and emergency equipment shall be identified by raised symbols, including but not limited to, door open, door close, alarm bell, emergency stop and telephone. The call button for the main entry floor shall be designated by a raised star at the left of the floor designation. Braille and Arabic designations shall be flush with inconspicuous mechanical mounting. The plaques shall have raised white characters on a black background. Provide cast Oval Surround style Braille plates as provided by Entrada, Vison Mark or SCS.

d) Provide a lockable service cabinet with concealed hinges. Cabinet door shall be flush with the faceplate with hairline joints.

1. Cabinet shall contain the following toggle type controls:

(i) Light toggle switch.

(ii) Three speed fan switch.

(iii) Inspection keyed switch.

(iv) Independent service toggle switch.

(v) Emergency Light test button

(vi) Duplex 120 volt, A.C. GFCI convenience outlet.

(vii) Light switch for under car platform light.

e) Engrave the following; the font shall be as directed by architect and code:

1. Elevator Number. Minimum ½-inch high lettering.

2. Elevator Capacity below Elevator Number.

3. Building Name and Address.

4. Fire Instruction signage.

5. All Code Required Signage/Verbiage Shall be engraved on the new car operating panel.

f) Floor Annunciator: Provide new digitized voice annunciator providing both male and female voices in a system capable of up to 5-minutes of speech. Provide concealed speaker. Messages shall include the following announcements:

1. Floor number and direction of travel.

2. Notice of doors closing prior to nudging operation.

3. Notice of car on independent service.

4. Emergency operation announcements:

5. Firefighter's Service, "Elevator returning to lobby."

C. Car Position Indicator: Provide new segmented digital readout type with 2-inch high (minimum) indications at upper section of car operating panel. Indicator shall provide car position and direction of travel.

D. Fixture Requirements: Provide new faceplates constructed of Satin brushed stainless steel at all floors, minimum thickness 1/8-inch. All edges shall be relieved. All hall fixtures to have concealed fasteners. Wherever feasible, reuse existing electrical boxes; otherwise, perform all required cutting and patching. Extend faceplates as required to cover holes left by removal of existing fixture.

E. Hall Pushbutton Station: Provide a single riser for each elevator. Station shall include flush mounted satin stainless steel faceplate. Extend faceplates as required to cover holes left by removal of existing fixture. Centerline of riser to be at 3-feet-6-inches above the finished floor. Buttons shall have a minimum dimension of 3/4-inch, be raised 1/8-inch plus or minus 1/32-inch above the surrounding surface, and have a detectable mechanical motion. A minimum clear space of 3/8-inch separation shall be provided. Button design shall be vandal resistant fully illuminated white Provide spanner type security fasteners.

F. Fire Key Switch, Fire Sign and In Case of Fire Sign:

1. Locate the fire key switch with the hall pushbutton at the main return landing.

2. Provide Code required pictograph Fire signs incorporated with the hall buttons, at all floors. Provide 3-position Code required Phase I key switch and operational instructions engraved minimum 1/8-inch high on the faceplate at the main return floor. In Case of Fire signs minimum 1/2-inch high shall be integral within the faceplate, at all floors. Faceplate edges shall be relieved. Finish shall be stainless steel No. 4 brushed finish. Backfill for engraving shall be epoxy filled. Integral signs shall be as follows:

   a) Fire Signs. Minimum 1/2-inch high lettering.

   b) Fire Operational Instructions. Minimum 1/8-inch high lettering.

3. Provide spanner type security fasteners. Finish matching faceplate.

G. Hoistway Access Switch: Mount in existing location and reuse existing electrical boxes; otherwise, coordinate all required cutting and patching. Extend faceplates as required to cover holes left by removal of existing fixture.

H. Combination Hall Position/Hall Lanterns Provide new digital position indicators with vandal resistant arrows in an integral fixture. Provide with stainless steel faceplate in locations where presently existing. Extend faceplates as required to cover holes left by removal of existing fixture. Provide arrow shaped up and down lanterns with audible signals at each entrance per architectural drawings. The visual signal for each direction, minimum 2 ½-inches by 2 ½-inches, shall be visible from the proximity of the hall station. Indicators shall have audible signals consisting of voice annunciation and volume adjustable chimes that sound once for the up direction and twice for the down direction of travel. Extend faceplates as required to cover holes left by removal of existing fixture.

2.12 COMMUNICATION AND SECURITY SYSTEMS

A. Telephone System: Provide automatic dial Hands Free telephone station located in the car station. A button shall suitably identify activation of auto dialer for the visually impaired. Speaker shall be mounted without faceplate or visible fasteners and located either behind the control station or within the telephone box. Communication shall be capable of being heard from any location within the car enclosure. Provide a means to communicate to each car individually from telephone unit at the elevator control panel, in compliance with ASME A17.1, rule 2.27.1.1.4.

1. Provide a telephone symbol minimum 2-inch high, and raised 1/32-inch with Braille indications adjacent to a separate activation button mounted on the control panel.

2. Provide engraved emergency instructions above the activation button. Instructions shall read: TO USE EMERGENCY TELEPHONE, PRESS BUTTON BELOW. DIALING WILL OCCUR AUTOMATICALLY. Identical instructions in Braille shall be provide below the engraved instructions.

3. Provide a visual indication, approximately ¾-inch in diameter, or a jewel that illuminates once a call has been received. Instructions under the visual indicator or within the lighted jewel shall read: ASSISTANCE IS ON THE WAY.

B. Provide wiring from car to telephone terminal box in elevator machine room.

C. Mount fire alarm speaker on each car top and run required wiring from speaker to life

safety terminal box in machine room. Speakers to be provided by fire alarm contractor.

D. Mount security camera in each elevator cab and run required wiring from car top junction box to security camera terminal box in machine room. Security cameras to be provided by Owner.

PART 3 - EXECUTION

3.01 EXAMINATION OF EXISTING BUILDING AND CONTRACT DOCUMENTS

A. Contractor shall carefully examine all existing building conditions and be informed as to facilities for delivery of materials and equipment, floor loading limitations, and be familiar with difficulties that may be encountered in completing execution of all work, prior to bid.

B. Contractor will be held to have examined all specifications and all other data pertaining to work.

C. The Owner shall bear no responsibility for any incomplete or missing wiring diagrams or other data that may be needed to adapt the new equipment to the existing equipment. Obtaining such information from other sources is the Contractor's responsibility.

D. No consideration or allowance will be granted for failure to visit site, or for alleged misunderstanding of materials to be furnished, or work to be done, it being understood that tender of proposal carries with it agreement to all items and conditions referred to herein.

3.02 MAJOR ALTERATION - INCREASE IN DEAD WEIGHT

A. The Contractor is required to design all changes to not exceed a 5% increase in the original deadweight of the car enclosure, plus rated capacity. Should the total car weight be exceeded, Contractor shall be responsible for all code required changes. Documentation shall be furnished to the enforcing code authorities verifying the results.

3.03 FIELD QUALITY CONTROL

A. Tests:

1. Perform as required by code, and authorities having jurisdiction.

2. Provide labor, material, equipment and connections.

3. Repair or replace defective work as required.

4. Pay for restoring or replacing damaged work due to tests.

B. Final Inspection: When all work is completed, and tested, notify the Owner in writing that the elevator is ready for final inspection and acceptance test. A testing and inspection date shall then be arranged. The proper operation of every part of the elevator system and compliance with contract requirements of the code shall be demonstrated to the Owner. Furnish all test instruments, weights, and materials, required at the time of final inspection. The following tests shall be made on each elevator at the time of final inspection:

1. Test Period: The elevator shall be subjected to a test for a period of one hour continuous run, with full specified load in the car. During the test run, the car shall be stopped at all floors in both directions of travel for a standing period of 10-seconds per floor.

2. Speed Load Tests: The actual speed of the elevator car shall be determined in both directions of travel with full contract load and with no load in the elevator car. Speed shall be determined by a tachometer. The actual measured speed of elevator car with full load shall be within 5% of rated speed. The maximum difference in actual measured speeds obtained under the various conditions outlined between the UP and the DOWN directions shall be checked.

3. Floor-to-floor times with no load in the car, balanced load in the car and full load in the car shall be checked.

4. Car Leveling Tests: Elevator car leveling devices shall be tested for accuracy of landing at all floors with no load in the car, balanced load, and full load, in both directions of travel. Accuracy of floor landing (plus or minus 1/8-inch) shall be determined both before and after the full-load run test.

5. Final System Tests for Smoke Detection/Fire Elevator Recall: After work is completed, conduct a final test of entire system. Perform testing "after hours" unless normal business hours testing is authorized by Owner. Submit results on approved test report forms.

6. Re-inspection: If any equipment is found to be damaged or defective, or if the performance of the elevator does not conform to the requirements of the contract specifications or the Safety Code, no approval or acceptance of the elevators shall be issued until all defects have been corrected. When the repairs and adjustments have been completed and the discrepancies corrected the Owner shall be notified and the elevator shall be re-inspected. Rejected elevators shall not be used until they have been re-inspected and approved.

3.04 ADJUSTING, CLEANING, LUBRICATION AND PAINTING

A. In order to maintain cleanliness throughout the project, Contractor shall thoroughly clean all hoistways, car tops, pits and landing sills free of dirt, grease, oil and debris, prior to disabling the first elevator from service for modernization.

B. Perform the following work prior to final testing and acceptance:

1. Adjust all equipment for optimum performance, including controllers, motors, motor drive, landing systems, hoistway switches, door operating equipment and safety equipment to achieve the required performance levels.

2. Thoroughly clean all equipment and equipment areas free of all dust, dirt, debris and excessive oil and grease.

3. Lubricate all equipment in accordance with manufacturer's guidelines.

4. Patch and paint exposed work soiled or damaged during installation. Repair to match adjoining work prior final acceptance.

5. Clean and paint the following equipment and areas: Hoist machine, machine room floor, car top, buffers and pit floor.

3.05 INSTRUCTIONS

A. Upon completion of all work, the Contractor shall provide an instruction period. Instructions shall be given by competent supervisory personnel and shall apply to actual field conditions. The instructions shall cover, but shall not be limited to the following:

1. Operation of elevators under emergency conditions, maintenance, adjustment, troubleshooting and diagnostic procedures.

2. Operation and maintenance of smoke detectors and elevator fire recall system.

3. Operation of elevator communication, door reversal device, etc.

END OF SECTION