

Superior Court of San Francisco County –Hall of Justice
Request for Proposal

**ATTACHMENT A
PLANS AND SPECIFICATIONS PROVIDED BY HKA ELEVATOR CONSULTING**



**VERTICAL TRANSPORTATION
MODERNIZATION SPECIFICATIONS**

**SAN FRANCISCO HALL OF JUSTICE
850 Bryant Street, San Francisco, California**

MODERNATION OF ELEVATORS

NOVEMBER 20, 2013

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SECTION 14221

ALTERATIONS OF TRACTION ELEVATORS

PART 1 - GENERAL

1.1 WORK INCLUDED IN THIS SECTION

- A. Provide all labor, materials, plant, appliances, tools, transportation and equipment required for Alterations and Rehabilitation of four (4) elevators in the San Francisco Hall of Justice Building, 850 Bryant Street, complete as specified. Judicial Council of California, Administrative Office of the Courts Contract Conditions, is to apply to all the work of this Section. All specified work will be for all elevators, except where specified to be for individual elevators.

1.2 DESCRIPTION AND SCHEDULE OF CONTRACT

- A. Complete Alterations, Rehabilitation and Renovations of Nos. 9-12 elevators:
 - 1. Scope of Work includes: Specified, new motion, simplex controls, machine room CRT monitoring, floor position selectors, new isolation transformers and static drives, complete specified repairs to geared machines and governors, new hall call fixtures, car and hall stations and interface controls to Security Control station as specified.
 - 2. Detailed requirements include: New car door operators, new car door equipment, in-car cameras where included, rehabilitate selected car enclosures, new hoist way access key switches, new hoisting ropes where specified and other new equipment for each elevator as specified. New specified electrical disconnects, wiring and recondition other equipment as specified. Provide associated electrical installation work where specified in this contract section 14221.
 - 3. Maintenance & Warranty includes: Responsibility by the contractor for providing contract maintenance and operations of the four (4) elevators being altered as specified, from start of the alterations and related work in this contract through to completion and acceptance of the last elevator and for the 12-month maintenance and warranty period. Warranty for the entire project will commence after the acceptance of the last elevator.
 - 4. Permits: Scope includes cost and performance of preparation of design and plans suitable for obtaining required permits by the contractor, including permit costs.
- B. Examination of Site
 - 1. Pre-Bid: A mandatory pre-bid site conference and walk thru of the elevators machine rooms and hoist ways will be conducted through the project area as

stipulated in the Request for Proposals schedule.

2. **Mandatory Pre-Bid Job Walk:** Bidders shall visit the building, examine the existing elevators, machine rooms and hoist ways to determine condition of all retained components, space conditions, power supply capacity, three phase conductor sizing, electrical vault and machine room three phase disconnects, existing security and additional security control of elevators, emergency power provisions, Security Control Room operations of elevators; alterations of cab interiors and make all surveys necessary to meet the requirements of this specification.
3. **Discrepancies:** If any discrepancies are noted or, if work not specified is required, bidders shall bring such matters in writing to the Contracting Officer per submission of questions in the bid schedule. If no discrepancies are noted or exceptions taken, it is assumed that all conditions are satisfactory and contractor shall complete the specified work and comply with all the referenced codes and regulations.
4. **Extent of work:** All work specified should be for the four (4) nominated elevators unless specified for individual elevators.
5. **Machine and Control Room:** All existing machine room and control room features provided in the cabs and landing hall stations are to be incorporated into the new controls unless specified to be deleted. Any existing fixtures specified to be retained, shall be modified as required for satisfactory operation with the new controller's voltages.
6. **Components:** All components specified as new shall be provided as new. All components specified for repair may be provided as new subject to the new item being submitted for approval. All retained components are to be checked, cleaned, adjusted, repaired and/or replaced with new parts as specified. Bidders must be willing to accept all retained equipment on full maintenance without prorating.
7. **Weighing:** Within 4 weeks after award of contract, elevator Nos. 9, 11 & 12, car and counterweight frame shall be weighed and the condition of balance of the counterweight to be determined. Contractor shall keep a log of all equipment and weight removed and added to the suspension system of each car. At the completion of the Alterations the Contractor shall be responsible for re-weighing the Nos. 9, 11 & 12 elevators to determine the deadweight and for re-balancing of the counterweight and not increasing the gross weight of the car and capacity by 5% for all elevators.
8. **Safety and security:** Contractor shall provide and maintain pre-approved full height of entrances, temporary security locked safety screens across hoist way openings whenever the landing doors, at any floor, are not mechanically locked from within the hoist way. Additionally safety screen of same design shall be permanently located at the terminal floor that the contractors' staff enter or leave the elevator hoist way during the Alterations of each elevator. All screens shall be of fireproof material, steel un-perforated and shall be secured in place by

attachment to inside the hoist way entrance steel struts. Screens shall extend a maximum of 2'-0" from the lobby wall line and incorporate steel full height entrance door. Paint the outside of screens as directed by AOC Contracting Officer or designee.

9. Protection: Contractor shall provide protection to the floors and wall surfaces in the lobbies or areas where equipment is being worked upon, removed or delivered. The degree of floor protection shall be sufficient to prevent marking or damage to the finishes. Floor protection shall also be maintained under each of the safety screens at the elevator entrances. Contractor shall be responsible for completing repairs as directed by the AOC Contracting Officer or appointee.
 10. Drills and cores: The Contractor shall not drill, core or remove any structural slab or steel work without the approval of the AOC Contracting Officer or appointee.
 11. Hazard abatement: Asbestos containing material discovered or disturbed during contract work: There are no known areas of asbestos containing sprayed fireproofing in the hoist ways or machine rooms. The elevator contractor shall not disturb any fireproofing or insulation or make any penetrations in existing materials, i.e. walls, floors, ceilings, etc. without notifying and obtaining approval from the AOC Contracting Officer or designee. If asbestos-containing material is found and disturbed accidentally, work shall temporarily stop and the AOC Contracting Officer or designee. Repair work shall be done by licensed contractor, the terms of which cost and responsibility shall be determined at the as a result of each occurrence on a case-by-case basis.
 12. Car Lighting Circuit: Install Junction box in hoistway at car lighting connection and extend the car lighting circuits to each individual machine room and install over-current protected lockable type disconnect in each respective machine room.
 13. Security Badging: Each of the Contractor's site and supervisory staff shall comply with the minimum security requirements; details of such will form part of the Contractors contract requirements as provided, as required in the HOJ.
- B. Related Work Included To be Accomplished by the contractor (to be coordinated by AOC or building management as required pertaining to active building systems):
1. Machine Room Air Conditioning System: Provision of temperature controlled ventilation units to each of the 4 machine rooms to maintain temperature between 50° F to 85° F and each system must be connected to emergency generator when individual elevator is operating on emergency power. This pertains to all references to emergency power and requirements thereof.
 2. Hoistways Ventilation: Clean the corrosion and lint from existing natural ventilation louvers at upper section of hoistways.
 3. Smoke Detection Circuits: Ensure that the existing smoke detectors are in compliance with NFPA and that such are dedicated systems for the elevators.

Confirm that building management is to install smoke detectors in machine rooms and at each elevator entrance lobby, where they do not exist. Individual Fire Alarm panels are to monitor the condition of the smoke detection systems must be on 24/7, 365 days per year basis as a condition of the scope of work of the contractor.

4. Emergency Standby Power: Confirm with the building management to provide adequate emergency standby power system for the elevators as follows:
 - a. Power source shall be sized to absorb regenerative power from elevator systems, which equals approximately 30% of full load running. In general, the total standby power should be no less than twice the standby load imposed by the elevators alone.
 - b. Provide time delay automatic transfer switch to distribute standby power through the normal 3 phase feeders of power circuits. Provide two pairs of No. 14 gauge wires from each auxiliary contact on transfer switch to the machine room to operate as follows:
 - i. One dry contact to open when normal power fails and emergency standby power becomes available and to close when normal power returns to signal elevator controllers.
 - ii. One dry contact to open on emergency power and to close 30 to 60 seconds prior to transfer back to normal power to allow elevators to come to rest prior to normal power restoration.
 - c. Connect car lighting, fan and emergency telephone communications circuits to emergency power source.
5. Machine Room Lighting & Control Switch: Provide additional lighting to maintain a uniform lighting intensity of 19 ft candles minimum at floor level in each machine room. Provide protective covers to any exposed lighting fixtures. Locate switch for machine room lighting to be immediately adjacent to the lock side of machine room door.
6. Machine Rooms Convenience Outlets & Elevator Car Lighting: Provide two additional convenience outlets in each machine room. Replace the existing outlets with minimum of one GFI outlets in each machine room. Provide additional lighting fixtures to provide an even 19 ft candles throughout each machine room.
7. Provide continuous ground conductor from building ground to each elevator machine room disconnect panel grounding terminal; AWG 8 minimum sized conductor per elevator.
8. Sprinkler Heads: Confirm that where sprinkler heads are installed in machine rooms, on top of hoistways or pits, etc.; that owner has provided metal protective guards over the sprinkler heads where required as a condition of agency approval.

9. Sprinkler Heads & Piping: Subject to compliance by the owner with requirements of the by City of San Francisco Fire Department; do not remove or otherwise disturb sprinkler heads and piping from each machine room, pits, hoistways and permanently seal the piping outside the hoistways and machine rooms.
 10. Provide code complying door hardware and automatic door closer for each machine room door. Where new doors are required, those will be priced for approval on a case-by-case basis.
 11. Access Lighting to Machine Rooms: Ensure lighting to each machine room door is operational per code.
 12. Car Emergency Communications: Provide dedicated two-way telephone lines to each elevator for emergency communication per CBC applicable sections and elevator code requirements.
 13. Non Elevator Related Conduits: In the event that non-elevator conduits are exposed by the contractor when the old controllers are removed from the machine rooms, remove and relocate on a case by case basis if identified and approved beyond the specified scope of work in this specification.
 14. Pit Sump Pumps: Service each of the sump pumps to ensure they operate satisfactorily and liquid is drained into non-sanitary drains.
 15. Security Control Room Interface Wiring To Elevator Machine Rooms: Retain the existing wiring and conduits and add additional new wiring and conduits, per the Security contract requirements to each elevator machine room. Reuse existing conduits for wiring to the main Security Control room. Make all connections at each end of the wiring in machine room existing panels. Type and size of wiring and conduits pathway will be specified and drawn in the shop design documents, which may be coordinated with the building management and the local sheriff. The building security contractor will notify and advise the elevator contractor of the wiring size and type of inter-connection required.
 16. Elevators Intercom Wiring: Extend the wiring from the elevator contractor's termination point in 9-12 machine rooms to the Security Control Room intercom for communications stations at each elevator lobby and to connection point in each machine room. Contractor to extend wiring to each car communication location within the new elevator car operating panels where required.
 17. Headroom: Maintain a clear 7' -0" clearance to all equipment, support brackets and rods, when installed in any elevator machine rooms.
- C. Related work: To be provided by contractor: for all elevators, unless noted.
1. Contractor to investigate and confirm that the full load current demands and regeneration of the new elevator equipment meet the applicable codes and regulations, and that the source mainline disconnects are sufficient in size per code to serve the new connected load. If new feeders and / or switches are

required to suit the elevators' maximum demand or code, from the electrical vault to the machine room two levels, the cost of such is to be included in the Contractors bid. Remove the Nos. 9 and 10 existing machine room three phase disconnects and provide new lockable fused disconnects for each elevator in each of the machine rooms, rated per the new controller and static drive requirements. Reuse Nos. 11 and 12 three phase disconnects.

2. Provide new three phase feeders and continuous ground conductor from the new 3 phase disconnect panel to new isolation transformers and controllers. Enclose in existing or new conduit and raceways.
3. Machine Room Normal & Emergency Lighting: Provide new code complying lighting with protective covers. Provide machine room emergency lighting in event of loss of normal power to lighting circuits.
4. Provide, as required, any non-polluted 110 V.A.C. feeders and disconnects for elevator computers, with emergency power supply off the same source as the three phase supply to the respective elevators.
5. Protect the top of car convenience outlets circuits with ground fault interruption devices per applicable codes and regulations.
6. Pit Convenience Outlets & Lighting: Provide one additional dual convenience outlets in each pit. Protect the convenience outlet circuits with ground fault interruption devices per State of California Electrical Code requirements. Provide an additional light fixture in each pit at 48" above the pit floor on the side or rear wall which will allow running clearance of each car and counterweight. Connect to the existing light switch adjacent to the ladder. Pit light fixtures to have metal guards and be grounded.
7. Provide over current protected, lockable type 1 disconnects to each of the car lighting and power circuits and locate them in each of the respective machine rooms.
8. The Contractor shall provide all necessary lifting equipment that is required to locate new controls or equipment or remove the old controls and equipment. Promptly remove from building site all discarded elevator equipment that is not being refurbished or altered.
10. Repair machine rooms floor or walls where discarded elevator equipment is removed. Repaint the walls where repaired and repaint the machine room floor after all installation and testing is completed.
11. Patching and Painting: Patching and painting of lobby walls and all surfaces, disturbed by the Contractor to match existing finishes. Contractor shall list on the bid form any specialist subcontractors they wish to use on this contract.
12. Car Load Weighing Devices: Provide new top of crosshead type device to operate at 80% and 100% of load. The device is to be adjusted to satisfactorily operate the anti-nuisance feature and the 80% of load by passing of landing calls.

Such load weighing device shall be accurate within 100 lbs. with both increasing and decreasing loads and its settings shall remain stable over extended periods.

13. Smoke Detector Systems: Connect to new controllers and test for code complying operation. Ensure the smoke detector system and automatic recall of elevators is in operation during the Alterations contract. Reconnection to the system shall be done outside of normal hours of the building and in coordination with the building management, secure operations, and associated requirements of the project.
14. Remote Control Rooms Interface Wiring: Provide all necessary new or existing conduits and wiring from each of the existing machine rooms interconnection panels to the new controller locations in each machine room. Coordinate with the building management, secure operations, and associated requirements of the project to ensure seamless connections and testing of all control functions.
15. Emergency Communication Circuits: Extend the existing circuits to elevator machine rooms and wire to dedicated communication devices for each elevator, connect and test for satisfactory two-way verbal and non-verbal operation.
16. Pit Ladders: Provide a steel top rung at 48” above the floor level to each existing ladder. Provide light switch adjacent to the ladder rung that is reachable from elevator pit entrance, per code requirements.
17. Standard Top of Car Railings & Toe Board: Install a standard railing per ASME A17.1-2004 elevator code section 2.10.2 to top of each elevator canopy.
18. Ground Floor Supervisory Panel: Provide all new conduits and wiring to the Supervisory panel at main lobby terminal floor.
19. Elevators 9-12 Intercom: Provide speaker recessed flush into each elevator canopy (ceiling) to connect in each machine room to the intercom system.
20. Fire Control Room: Reuse existing conduit and wiring and or provide additional conduit and wiring from each controller to designated location at Ground Floor; and terminate in junction box as required. Where required, and with approvals as needed, wiring will be installed by from the junction box outside each hoistway to the Fire Control Room elevator control panel for each elevator. Replace bulbs if necessary for the new voltages of the new controllers.

D. Special Controls:

1. Temporary Signs and Notices: The Contractor shall post and maintain all notices, signs and other safeguards required by law or ordinance or by the AOC and State of California. No Contractor logos or advertisements shall be installed, where exposed to staff or public. Pre-Approved notices are to be exhibited and maintained at each floor for each elevator when the individual elevators are shut down for Alterations. Contractor shall notify the sheriff or AOC project representative for the secure operation 30 days ahead of the next elevator starting alterations.

2. The contractor shall ensure that no radios or stereophonic devices are operated in the elevator machine rooms or hoistways during alterations.
3. Temporary Safety Barriers: The Contractor shall construct and maintain all temporary barriers, as specified as a safeguard around the construction area.
4. Scaffolding, Barricades: The Contractor shall install and maintain in safe condition, whatever scaffolding, hoisting equipment, barricades, walkways, or other temporary structures as may be required. Such structures shall be adequate for the intended use and capable of safely accepting all loads that may be imposed upon them and shall be installed and maintained in accordance with applicable codes and regulations.

E. Definitions:

1. Main Lobby: Ground Floor
2. Terminal Dispatch Floor: Ground Floor
3. Fire Recall Floor: Designated Floor
4. Alternate Fire Recall Floor: To be designated and confirmed by Court, Sheriff and San Francisco Fire Marshal

1.3 QUALITY ASSURANCE

- A. Controller and Selector Manufacturer: Companies specializing in manufacturing elevator control equipment are listed below. The controllers, drive and door control equipment shall be of non-proprietary design and shall fully comply with all the specified requirements. Provide Regenerative Digital AC VVVF drives.
1. Motion Control Engineering I CONTROL VVAC
 2. Elevator Controls Corporation V900 ACVF drive
 3. Computerized Elevator Controls Swift Futura ACVF drives
- B. The selection of elevator equipment and supervisory systems has been predicated on installations of equipment and controls of the highest quality and standard performance available in the elevator industry in order to adequately and safely handle the traffic flow. It is essential that the equipment supplied be the best quality offered by the above three manufacturers and that requirements of these specifications are strictly adhered to. The efficiency, safety and operation of the systems and equipment furnished are of paramount importance to the AOC, Jail and Court representatives.
- C. Submit manufacturer's certificate stating that the existing geared machines are compatible with the new VFAC drives and microprocessor motion/power controllers integral system being provided or retained as specified. Include this information with the Contractors submittals.
- D. Contractor Responsibilities: Contractor shall be responsible for:
1. The preparation of all engineering and shop drawing submittals.

2. The material delivery and construction schedule.
3. The equipment installation meets manufacturer's requirements and contract documents.
4. Equipment and performance guarantees.
 - a. Contractor's Responsibilities: Contractor must meet the following qualifications, experience and responsibilities requirements and submit with the bid confirmation that they meet or exceed the qualifications and will comply with such throughout the project:
 - b. Project Personnel: The Contractor shall assign responsibility of this project to a journeyman level, Field Superintendent who is a direct employee of the Contractor (not a contract employee); has five years experience in the management and supervision of elevator Alterations and maintenance, and has served in their respective roles. The Contractor also shall assign two journeymen level site personnel, with an apprentice/helper classification, both of whom are experienced in similar sized Alterations projects. The Contractor shall also assign journeyman level personnel to provide the contract maintenance duties. Separate site staff is to perform each function throughout this project.
 - c. Contractors project mechanic, adjusting technician and maintenance personnel shall have recently attended at least two days of intense training at the nominated controller manufacturer factory on the control equipment to be installed, within the last six months prior to starting the site construction. Provide signed documents of competence of nominated site staff from the selected product manufacturer. Have controller and drive manufacturer's engineering full support for the design and completion of the Alterations.
 - d. Contractor shall have the controller manufacturer provide proper and qualified technical staff to inspect the site work after the first elevator is completed adjusting and prior to the elevator being inspected to verify that the elevator is operating in peak adjustment as designed by the controller manufacturer. The Contractor shall have the controller manufacturer prepare Installation Inspection Reports, which shall be co-signed by the Contractor. The Contractor shall submit copies of each report to the AOC's project representative within the required project documentation.
 - e. Contractor shall have an existing Company office and permanent resident maintenance field staff in San Francisco area, such office shall remain in operation throughout the project and for the 12- months warranty period.
 - f. Contractor shall maintain local stock of all parts within 40 miles of building, adequate for replacement on permanent or emergency basis.
 - g. Contractor shall maintain the four (4) elevators being altered from the

state of the alterations and related work through to completion and acceptance of the last elevation and for the 12 month maintenance and warranty period. The maintenance is to be performed strictly in accordance with AOC's Standard Elevator Maintenance Contract Specification and/or in coordination with any contracted elevator maintenance resources working in the building at the time of the execution of work.

- h. Contractor shall respond to emergency calls within maintenance contract times. Contractors' staff to be equipped with paging system/radio communication or cellular phone equipment. Emergency calls are when persons are trapped in an elevator. Other calls to be responded to within the maintenance contract times.

E. Design Criteria:

1. Performance:

- a. Contract Speed: Maximum two percent (2%) speed variation under any loading condition in either direction.
 - b. Floor-to-Floor Time: Brake release to brake set as measured in both directions for a typical one floor run under any loading conditions. Initiate movement of car within 0.2 seconds after make-up of hoistway door interlock. Nos. 9-12 Elevators: 7 seconds.
 - c. Door Open Times: 2.5 Seconds
 - d. Door Close Times: Minimum, without exceeding kinetic energy and closing force allowed by code.
 - e. Door Dwell Times: Initial settings shall be as follows:
 - 1) Hall Calls: 5.0 seconds from doors fully open.
 - 2) Car Call: 5.0 seconds from doors fully open.
 - 3) Interruption of Door Protective Device: Car Door reopening device shall remain effective for at least 20 seconds while any object is in the protection path.
 - f. Leveling: Within one-quarter (1/4) inch under any loading condition. Level into floor at all times, do not overrun floor and level back. Security elevator doors shall not open until the Sheriff staff initiates the control key switch.
 - g. Re-leveling: Provide smooth and accurate re-leveling required due to cable stretch.
2. Operating Qualities: AOC's Representative/Elevator Consultant will judge riding quality of cars and enforce the following requirements. Make all necessary adjustments.

- a. Acceleration and Deceleration: Starting and stopping shall be smooth and comfortable, without obvious steps of acceleration. Slowdown, stopping and leveling shall be without jars or bumps. Stopping upon operation of emergency stop switch shall be rapid but not abrupt.
 - b. Vertical Acceleration: Maximum 4 ft. per second squared.
 - c. Full Speed Riding: Free from vibration and sway.
3. Motor Control:
- a. Equipment: Capable of operating at plus or minus ten percent of normal feeder voltage and plus or minus 4 Hz of feeder frequency of 60 Hz, without damage or interruption of elevator service.
 - b. Control System: VVVF Closed loop fully digitized feedback control incorporating positional and velocity selector system that is capable of operating continuously at contract speed and load for one hour without exceeding 50 degrees Centigrade from ambient machine room temperature. Design system to not adversely affect stability of voltage and frequency controls of emergency generator set or loads connected to emergency power bus during standby power operation.
 - c. Car Load Sensing: The control system shall sense the actual load condition of the elevator prior to there being any movement of the elevator. The start/acceleration/deceleration pattern shall be adjusted to reflect the car load to achieve a smooth start/acceleration/ deceleration under all load conditions and location in the hoistway.
 - 1) Load sensing devices that utilize crosshead deflection or hoisting rope pressures are acceptable provided they are accurate within 100 pounds and stable over extended periods.
 - 2) Systems using pre-torque of the motor armature is acceptable; pre-energizing variable voltage control of the brake is not acceptable.
4. Sound Control: Vibration: Sound isolate all solid state motor control, isolation transformers and filters units from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.

F. Requirements of Regulatory Agencies:

1. Codes: In accordance with the listed applicable edition requirements of the following and as specified:
 - a. ASME A 17.1. 2004. Section 8.7; Safety Code For Elevators and Escalators
 - b. CCR Title 8, Elevator Safety Orders Article 3141.2: Alterations
 - c. CBC: Chapter 30, Accessibility Regulations
 - d. ADA: Americans with Disabilities Act

- e. CSEC: State Electric Code.
 - f. CBC: California Building Code.
 - g. All State codes, which govern.
- G. Permits: Arrange and pay for inspections by governing authorities and submit to the State of California, Department of Industrial Relations, DOSH, ER&TU Engineering Division Certification of the new car safety equipment complies with the car load and speed of the elevators being altered. Provide copy of the Certificates to the AOC Project Representative.

1.4 MATERIALS

- A. Aluminum: Alloy and temper best suited for anodizing finish specified.
- B. Plywood: PS-1, A-D exterior Grade Douglas Fir, fire retardant treated.
- C. Sheet Steel: ASTM A366, uncoated, pickled, free from defects.
- D. Sound Deadener: 3 M's coating ED-1000, Presstite's No. 105A, Vibradamp Corporation's No. 111 or equal; fire rated compound for spray applications; black. Minimum thickness of application, 3/16".
- E. Stainless Steel: ASTM A167; type 302 or 304 or Patterned 5WL Stainless Steel

1.5 FINISHES

- A. Exposed-to-View Surfaces:
 - 1. Aluminum: Clear anodized finish unless otherwise specified.
 - 2. Sheet Steel:
 - a. Shop Prime: Degrease clean of foreign substances and apply one coat of corrosion inhibiting primer compatible with finish paint selected. Hoistway and car header assembly items visible to public shall be painted one additional coat of black paint.
 - 3. Stainless Steel:
 - a. Plain: Satin, directional polish, No. 4 finish unless otherwise specified.
 - 4. Touch-Up:
 - a. Prime Surfaces: Use same paint as factory for field touch-up.
 - b. Finish Painted Surfaces: Refinish whole panel with shop prime and

finish paint as specified above.

- B. Non-Exposed-to-View Surfaces: Degrease and shop paint manufacturer's standard corrosion inhibiting primer and one final coat. Final color to be selected by AOC Representative.

1.6 SPECIAL REQUIREMENTS

- A. The Contractor must carry on its work in such a way as not to cause interruption of or interference with the operations of the Court and Sheriff.
- B. The Contractor and Sub-Contractors shall confine their operations to the areas of construction specified in the Contract Documents. No other areas, interior or exterior are to be used for the construction activities of this contract without the consent and prior scheduling of the AOC Representative. Upon completion of the work of this contract, the areas used for construction purposes shall be restored to a condition equivalent to the original and acceptable to the AOC Representative. Areas which need not be entered for construction operations shall not be entered by the Contractor's personnel.
- C. All contractors' staff working on site shall require security background checking as required by AOC Project Representative. Background checks shall be in accordance with the AOC's Office of Emergency Response and Security background check policy and within the requirements of the Superior Court of San Francisco and the San Francisco Sheriff. The contractor's site staff shall wear the company's uniform which identifies the company name and the individual person's full name whenever within the Court's building site. Contractor's site or visiting supervision staff is to comply with building security, the AOC's Tool Control Policies then in effect will be followed.
- D. Construction work of the four elevators shall proceed as per the specified approved schedule at time of contract award. All material and equipment to complete the specified work, is to be on site in the machine rooms or other approved local bonded storage facility, before the start of on-site work. The approved schedule is to be followed when each elevator is complete. Interfacing and encoding, where required, to allow for satisfactory change over. Contractor shall not start the next elevator, until all the punch list items to the completed elevator have been satisfactorily completed by the Contractor and checked off by AOC Project Representative.
- E. Temporary shutdown of elevators to complete the installation of the new three phase disconnects change over or other circuit connection must be pre-approved and coordinated with AOC's Project Representative and Sheriff's staff. Such work is to be done outside of normal working hours of the building.
- F. Refer to Parking restrictions within the Hall of Justice building and property.
- G. The Contractor shall be responsible for all damage caused by their operations to the curbs, sidewalks, driveways and to the building interior and exterior surfaces and equipment.

1.7 SUBMITTALS

- A. Shop Drawings & Other Requirements: Submit in accordance with applicable sections of the bid documents. The Contractor may require any details of any portion of the equipment needed for pricing, award and execution of the work:
1. Layouts: Plan and section of elevator hoistways, pits and machinery spaces; access to rooms; include location of new machine room ventilation and required vertical and horizontal clearances around equipment.
 2. Details: Submit details of new controllers, VFAC drives, isolation transformers, chokes, rope gripper, new governors, controllers, security locking systems, Security card reader modules, card reader override controls, key locks, car door operators, door operating equipment or any other equipment as requested by AOC's Project Representative. Provide number and size of conductors that the Contractor will require from the Emergency Generator and Fire Control Room to each machine room. Provide sample of the Contractors maintenance recording charts that are to be located in the elevator machine room for each elevator, per ASME A17.1-2004-8.6.1.4 Maintenance Records.
 3. Data & Requirements: Indicate on layouts or separate data sheets; electrical feeder demands as required by bid documents, machine spaces heat release, car and counterweight roller guides, new controller seismic supports and any other equipment as required by the AOC's Project Representative. All new equipment being installed or modified shall comply with Seismic Zone 4 requirements.
 4. Samples: Provide car interior finishes, hall security stations, samples of materials and finishes exposed to public view and additional, if specifically requested, 12" x 12" panels, 12" lengths or full size if smaller, as applicable.
 5. Calculations: Submit the design and calculations for any required additional supports, new equipment anchorage, rope gripper, car frame retainer plates, building structure attachments. Calculations shall be certified by licensed California Structural Engineer retained by the Contractor.
 6. Maintenance Data: Provide three (3) sets of complete and accurate maintenance data specific for each elevator, per section 3.7 H.
- B. Operating Instructions: Submit copies of manufacturer's literature describing system operations and special operations as specified.
- C. Project Delivery, Storage and Handling: Sections of this Court's building are secured areas and all deliveries or removal of old equipment to the dock level or by portable street crane is to be coordinated with the AOC Project Representative. Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. The Contractor is responsible for delivery and management of all materials; AOC shall not be responsible for accepting delivery of any elevator equipment.

1.8 CONTRACT MANUFACTURE AND CONSTRUCTION SEQUENCE AND

SCHEDULE

- A. Contractor shall provide a detailed construction schedule with Submittals verifying that they can meet or exceed the individual and final completion times shown below. The schedule is to be approved by the AOC Representative before starting at the site. Sequence of the project works is proposed as follows and are based on Calendar Weeks.
- B. Approval of Submittals to site delivery of all equipment 10 weeks
- C. Alterations of No. 9 elevator & testing 11 weeks
De-bug period. 3 calendars days
- D. Alterations of No. 10 elevator & testing: 10 weeks
De-bug period 3 calendar days
- E. Alterations of No. 11 elevator & testing: 9 weeks
De-bug period. 3 calendar days
- F. Alterations of No. 12 elevators & testing: 9 weeks
- TOTAL CONSTRUCTION PERIOD** **60 weeks**
- Maintenance and Warranty Period: 52 weeks
- G. Hours of Work:
1. Contractor shall perform the work of this Contract on normal and extended shift working days, as necessary to complete the work in the specified times in coordination with ongoing building operations.
 2. Welding and painting work in hoistways is to be done at time pre-approved by AOC Project and Court Representatives, including scheduling of off-hours work..
- H. Temporary Electrical Shutdowns: Refer to Division One Document.

1.9 NOISE CONTROL

- A. The Contractor, in the preparation and the execution of the work, shall cause minimal disruption of the building operations.
- B. Noise and vibration generated by the construction for this work may create a noise concern for the Courts or secure operation of the building. In the event the noise produced by the construction work conflicts with the occupants of the building, the Contractor, at the request of AOC Representative, shall reduce or stop the noise.
- C. The noise level limits at all floors shall be measured on the "A" Scale of a sound level meter as follows;
1. With the meter located 3'-0" from the nearest office or Court rooms front door to

the elevator lobby, the sound level shall not exceed 55 Dba.

- D. Contractor shall perform all noisy work at off-hours times pre-approved by AOC Project and Court Representatives.
- E. Types of noise generating work:
 - 1. All heavy demolition (concrete walls and floors).
 - 2. All grinding, chipping, pounding, sanding and cutting of holes.
- F. Over-Speed Safety Tests: To minimize disruptions to the building operations, all over-speed safety testing scheduling shall be pre-approved by the AOC's Representative.

1.10 COMPREHENSIVE MAINTENANCE

- A. The existing maintenance contract for the four (4) specified elevators will be cancelled from midnight on the day preceding the Notice to Proceed to the Contractor.
- B. Bidders shall include costs to provide continuing comprehensive maintenance and call-back service of these four (4) elevators, from award of the contract for the project until the project is completed and for the 12-month maintenance and warranty period. The maintenance is to be performed strictly in accordance with Specification section 3.7 and the AOC's Standard Elevator Maintenance specification in place during the contract work.
- C. In event of vandalism or need for repair work not covered by full maintenance contract, Contractor shall gain approval from AOC's Representative prior to work being started.

1.11 SUB-CONTRACTORS

- A. The Contractor shall be solely responsible for any and all of the work done by its sub-contractor or other employees and all others or instructions from the AOC's Representative shall be through him to them. It shall be the Contractor's duty to see that all of its sub-contractors commence their work properly at the proper time and carry it on with due diligence so that they do not delay or injure either work or materials and that all damage caused by them or their workers is properly made good by them or by the Contractor at its cost. Contractor shall submit names of its sub-contractors for approval by the AOC Representative.
- B. The Contract will include use of qualified sub-contractors for all associated electrical, fire and life safety, patching, painting, coring of floors or walls and refinishing work required in connection with this project.

PART 2 - PRODUCTS

2.1 OUTLINE DESCRIPTION OF SYSTEM AFTER ALTERATIONS

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- A. **NOTE:** Elevators Nos. 9, 10, 11 & 12: Specified work shall be for all elevators, unless specified for individual elevators
1. Type: Passenger
 2. Capacity & Speed:
 - No. 9 - 4000 Pounds @ 300 fpm
 - No.10- 3500 Pounds @300 fpm
 - No. 11-3000 Pounds @ 300 fpm
 - No.12-4500 Pounds @ 350 fpm
 3. Openings:
 - No. 9- G, 2, 4, 6 & 7
 - No.10- G, 2, 3, 6 & 7
 - No. 11- 2, 3, 4, 5, 6 & 7
 - No.12- 2, 3, 6 & 7
 4. Control: Variable Voltage AC
 5. Operation: Single collective & Independent Provision of Security as existing
 6. Machines/ Motors: Retain, repair machines, new motors
 7. Drive Control: New VVVF drive as spec.
 8. Ropes:
 - a. Hoisting: New ropes when specified
 - b. Governor: New rope when specified
 9. Compensation chain: All new as specified
 10. Selector: Provide new non-mechanical or sensor type
 11. Drive & Wrap Sheaves: Retain and re-hab as specified
 12. Safety: Retain and re-hab as specified
 13. Governor:
 - Nos. 9 & 10 Provide new governors
 - Nos. 11 & 12 rehab as specified
 14. Buffers:
 - a. Car: Retain, overhaul, adjust & test
 - b. Counterweight: Retain, overhaul, adjust & test
 15. Hoistway Access Switch: Provide new to operate per code
 16. Car Top Station: Provide new per code
 17. Guide Shoes:
 - a. Car: 9-12: Provide all new rollers
 - b. Counterweight: 9-12: Provide all new rollers

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- | | | |
|-----|--|--|
| 18. | Guide Rails:
a. Car:
b. Counterweight: | Retain, as specified
Retain, as specified |
| 19. | Car Emergency Light: | Provide new as specified |
| 20. | Counterweights: | Reuse; weigh and re-balance |
| 21. | Unsupported
Counterweight Brackets: | Install at mid point, as specified |
| 22. | Wiring in Machine
Room and Cab: | Provide new as specified. |
| 23. | Wiring, Conduit &
Raceway in Hoistway: | Reuse existing conduit and raceway;
replace all the wiring with new wiring. |
| 24. | Machine Room Disconnects: | 9 & 10: Provide new as specified
11 & 12: Retain and service as spec. |
| 25. | Traveling Cables: | Provide all new |
| 26. | Car Door Operators: | Provide new with solid state controls
as specified |
| 27. | Car Door, Tracks,Hangers and
Castings: | Provide new as specified |
| 28. | Car Doors: | Retain existing doors |
| 29. | Hoistway Door Closers, &
Associated Equipment: | Provide new equipment as
specified and adjust at all landings. |
| 30. | Door Interlocks: | Provide all new |
| 31. | Hoistway Doors: | Retain and re-hang as specified. |
| 32. | Car Enclosure: | Retain as specified |
| 33. | Car Interiors: 10-11: | Retain as specified 12: Fit Security
Gates |
| 34. | Car Sills: | Retain |
| 35. | Car Signals:
a. Car Operating Panel:
b.Car Position Indicator: | New as specified
Provide new as specified |
| 36. | Car Door Protective Devices: | Provide new as specified |
| 37. | Lobby Signals: | |

- | | | |
|-----|---|---|
| | a. Hall Pushbuttons: | Provide new as specified |
| | b. Lanterns; Gongs: | 9 & 10: Install all new 11 & 12: Retain lanterns and connect to new controls. Provide new gongs |
| | c. Position Indications 9 & 10: | Provide new as specified 11 & 12: Retain & rehab as specified |
| 38. | Hoistway Sills: | Retain |
| 39. | Removal of Material: | By Contractor as specified. |
| 40. | Miscellaneous Items: | |
| | a. Smoke Detectors: | Connect to modified system |
| | b. Accessibility: | Comply with State Chapter 30 code |
| | c. Emergency Power: | Provide circuitry in new controls for emergency power generator |
| | d. Security Monitoring: | Provide as specified |
| | e. Seismic Requirements: | Zone 4, per code as specified |
| | f. Medical Emergency Signs: | Provide per code |
| | g. COP Security: | 9-12: Provide in COP as specified |
| | h. Phase I & II Operation: | Provide per code for new controllers |
| | i. Car Communications: | Provide as specified. |
| | j. Communications Lobby to car: | Provide as specified. |
| | k. Overspeed in Up Direction: | Provide per code |
| | l. Fire Control Rooms: | Provide controls as specified |
| | m. Unintended Car Movement: | Provide per code |
| 41. | Floor numbers for specified elevators cited here will be confirmed in the on-site walk-through conducted prior to the bid and in the pre-construction meeting conducted following award and at the start of work. | |

2.2 SIMPLEX OPERATION

A. General Operation:

1. Provide the specified non proprietary microprocessor controlled dispatching system designed to monitor all types of traffic and sufficiently flexible so that it can be modified to accommodate changes in traffic patterns. Include hardware necessary to protect hoist motors, motor drives and door operators. Software shall control all simplex program operations.
2. Design the control system to accept reprogramming with no shutdown of system. The controllers containing memory equipment must be properly shielded from line feeder pollution.
3. Nos. 9-12: Individual elevators shall operate on the basis of directional single cancellation collective automatic control in accordance with the following:
 - a. The control and indicating devices and supplementary service modes to be provided together with the basic functioning of these and of power doors, door protective devices and similar items as detailed in the relevant paragraphs of this specification.

- b. Car and landing calls in each direction of travel shall be answered in the order in which required floors are approached by the car, provided that the call is registered sufficiently in advance of the car's arrival to permit a stop to be made.
 - c. Provide "anti-nuisance service" for elevators, whereby all car calls will be cancelled if the load weighing device detects that an abnormal number of calls are registered given the number of passengers in the car. System using false call answering to accomplish this is not acceptable.
4. Fault Diagnostic System:
- a. Provide a non-proprietary diagnostic system for micro processor systems capable of determining faults most difficult to find. It shall constantly monitor the condition of all car computers. When variances occur from the normal mode, the change or fault shall be detected, the location of the elevator, time of day, number of times fault occurred, along with fault code message shall be stored on memory. This information shall be retrievable to a minimum of the last 200 entries and shall be displayed on an inbuilt diagnostic screen within each of the controllers.
 - b. Provide, at no additional cost or lease agreement to AOC, all the required hardware such as keyboard or maintenance / adjusting tool/ laptop computer, password access codes, adjusters manual and all levels of fault codes, diagnostic troubleshooting, wiring diagrams and software as specified under "Maintenance Data".
- B. Selective Collective Operation: Provide selective collective operation as specified for general operation of individual elevators.
- F. Security Car-to-Lobby Function: Provide means to return individual cars non stop to the Ground floor lobby and park with doors closed until key switch in the respective Ground floor panel is returned to normal position.

2.3 SPECIAL OPERATIONS

- A. Inspection Operation: All Elevators: Remove the existing keyed access and provide new card reader operated access device at existing location in new stainless steel faceplate. Provide new top of car operating controls to comply with code. Locate the new top-of-car control box to the side of the crosshead, on the same side as the hoistway access switch.
- B. Independent/Special Service: Independent service operation shall be provided so that, by means of a switch located in the car service cabinet or on car panel, the car can be removed from automatic operation and be operated by an attendant. The Sheriffs staff shall have full control of, the opening and closing of the car doors, the starting, stopping and direction of car travel. The car shall respond to car buttons only. The hall signals for the car on Independent service shall not operate.
- C. Operation Under Fire or Other Emergency Conditions:

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1. General: Provide special emergency service to comply with other sections of this specification and applicable codes and regulations by authorities having jurisdiction. Provide key storage box with proper number of keys per code and San Francisco Fire Marshal requirements. Replace the existing Phase I and II Firefighters key switches, indication and instructions, with new equipment to be located at Ground floor call button location and in car operating panels as applicable.
2. Confirm and provide Phase I control station at the Ground floor lobby of elevators 9-12; to be visible to each elevator car doors upon recall operation. Provide Phase II control panel per code, behind locked main car operating panel in elevators 9-12.
3. Elevators 9-12 are exempt from auto recall in event of fire in their respective machine rooms, per Title 8 3141.7 (14). These elevators will be recalled to Ground floor or to the 2nd floor as applicable for Elevators 11 and 12 by Sheriffs staff, once Security conditions of Inmates are verified.
4. Smoke Detectors: Existing smoke detector system is to be modified by Other Contractors to comply with current code. Connect elevator controls to the modified system in each of the elevator machine rooms. Contractor is to ensure that the Fire Fighters service is fully operational throughout the Alterations project. Test the system at the completion of the new elevator controls. Coordinate the change over from the existing system to the new system and to operate as follows:
 - a. Activation of any sensing device shall place each car on fireman's service in the same manner as if the Phase 1 switch was activated.
 - b. To by-pass sensing devices and allow normal elevator service, turn Phase 1 switch to "Reset" position.
 - c. To restore normal service, turn Phase 1 switch to "Off" and remove key. Each car must be at fire recall floor.

D. Operation Under Emergency Power System:

1. General: Emergency power will be made available for operation of each single elevator. Contractor to provide all necessary control equipment in the new controllers to operate as follows.
 - a. When normal power fails and standby power becomes available, an automatic signal will be given to the individual elevator controllers, elevators will stop and shut down; and all car lights, etc. will be extinguished. Emergency light in each car will automatically illuminate.
 - b. When emergency power comes onto the power line for each elevator, power for lighting car fan and alarm bell shall be automatically transferred to each car, subject to the availability of emergency power from the generators being sufficient. When individual elevators receive the signal of emergency power available, they shall be available for

operation. The Elevator Manufacturer shall provide all circuitry necessary including time delay or auxiliary relays required to accomplish the operation specified.

- c. When normal power fails and emergency power is used or, when normal power is restored, the individual cars will start in sequence not simultaneously. Allow 30 seconds between starts. A signal will be given 20 seconds prior to emergency power being provided or when normal power is restored.
 - d. The elevator manufacturer shall provide all circuitry and transfer times necessary to accomplish the safe and continuous operation when transferring normal power to emergency power and emergency power to normal power.
 - e. Fire service shall be operable when system is on emergency power operation.
- E. Operation Under Earthquake Conditions: Install dual seismic “ring and string” counterweight derailment-sensing devices to No.9 and No.10 counterweight frame. Provide a combination type seismic trigger device in each machine room level to sense seismic ground vibration and test for satisfactory operation. Each device is to be fail-safe in operation and connected to emergency power circuits with battery power back-up. Retain the existing “ring and string” devices on Nos. 11 and 12 elevators and test them for satisfactory operation. Retain the seismic devices on Nos. 11 & 12 elevators.
- 1. Upon activation of displacement device or seismic switch, elevator that is in motion shall either slow to a speed not greater than 150 FPM and proceed to next floor in direction of travel, stop and open doors, or, stop and then proceed to next floor at speed not greater than 150 FPM in direction away from the counterweight, stop and open doors.
- F. Card Reader Restricted Operation: Retain existing key switch control of each elevator.

2.4 DOOR OPERATION

- A. Operation of Nos. 9-12 Elevators:
- 1. Provide door times available as specified in this document.
 - 2. Car and hoistway doors shall open and close simultaneously, quietly and smoothly; door movement shall be cushioned at both limits of travel. Door operation shall not cause cars to move appreciably.
 - 3. Door open times shall be readily and independently adjustable when car stops for a car or hall call. Main floor door times shall be adjustable independent of other floors.
 - 4. The car and landing door operation is to be modified to ensure that all hoistway doors open flush to their respective jambs and the car doors to be a maximum of ½” beyond the car jamb.

5. Adjust the door stop buffers in side angles to prevent the hoistway doors opening beyond ½” of their respective jambs; provide new stoppers where any are missing, damaged or were not installed.
6. Provide reduced speed closing when under "car door protection failure" conditions. Speed shall comply with CCR Title 8.
7. Provide “Door Restrictor” devices to each car door operators installed.
8. Adjust all car door contacts to comply with code.
9. The opening and closing of the 9-12 elevator doors will be individually controlled by the Security card reader as applicable at the elevator entrances. Elevators car doors shall only start to open when car is stopped and at floor level.

B. Car Door Operator; Hangers, Tracks, Rollers and Associated Equipment:

1. Elevators Nos. 9-12; Remove the existing car door equipment from each car entrances. Provide new heavy-duty operator with direct current motor mounted on structural framing; operator to be equal to GAL, MOVFR car door operator, with new hangers, rollers, gate switch, operating arms and associated equipment, provide new car door clutch and new closed-loop feedback solid state controls. Lubricate all new operating equipment. The closed-loop feedback controls shall monitor the position and velocity of the doors, current and voltage drawn by the motor and shall electronically adjust the operation to provide constant closing force and soft start under all conditions.

C. Car Door Protection:

1. Remove the existing protection and provide new electronic scan door protection. Provide system equal to Janus Panachrome 3D or Adams Gatekeeper Infrared Max Door Protection devices.
2. The system shall be able to detect a one-inch diameter rod introduced at any position within the car door movement and between the height of 2 inches and 70 inches from sill level. The device module shall extend to the top of the car door.
3. Detection of intrusion into the protected area shall cause the doors, if fully open, to be held in the full open position and, if closing, reverse to the full open position and stay in that position while the intrusion is in the path of the sensor for a minimum of 20 seconds, before sounding a warning buzzer and then commencing to close.
4. Upon activation of the Fire Emergency Service, the doors shall proceed to close at a reduced speed and a loud buzzer shall sound. Door closing force shall not exceed 2-1/2 ft.-lbf. when door re-opening device is not in operation.

2.5 HOISTWAY EQUIPMENT

A. Guide Rails and Brackets:

1. Retain existing car and counterweight rails. Provide additional counterweight rails reinforcement at mid point of existing structure support to comply with code for the span distance and weight of counterweight frame for each elevator. Install equal to Low-Profile Fishplate Model A design by Smart Elevator Tech. Thoroughly clean corrosion from all running faces of each car and counterweight rails. Utilize a vacuum exhaust device to collect all the corrosion fillings and dust. Tighten all brackets, fishplates and bolts.
- B. Roller Guide Assembly:
1. Car Frames: Elevators Nos. 9 & 10: Replace the existing roller wheels with new wheels of the same diameter and manufacturer. Set the pressures as recommended by the roller guide manufacturer. Elevators Nos. 11 & 12: Retain the roller guides and re-adjust the spring pressure of of the roller guides to be equal contact with the face of respective rail, to maintain code clearances.
 2. Counterweight Frames Guides: Nos. 9-12 Elevators; Retain the existing car guides frame assemblies and adjust pressures to be equal on each face of rail.
- C. Hoisting Ropes:
1. Elevator Nos. 9-12: When directed by the State of California, provide new ropes of a size, type to suit the machine drive sheave manufacturer's specifications and the crosshead data plate. Set the rope tension pressures to be equal for each elevator. The costs for replacement of hoist ropes that are directed to be replaced by the State Elevator Division of the Department of Industrial Relations shall be covered by this contract.
- D. Governor Rope:
1. Elevators: 9 & 10: Provide new rope to suit the retained governor and safeties.
 2. Elevators: 11 & 12: Replace the existing governor rope, if directed by the State Elevator Inspector, during their testing of the governors. Cost of replacement of ropes to be covered by this contract.
- D. Car and Counterweight Buffers:
1. Elevators Nos. 9-12: Retain the existing car and counterweight buffers, top up oil levels in cylinders and set clearances per code to the car buffer strike plates. Check counterweight buffer clearances, add or reduce extension sections to comply with code. Clean rams and perform load test per code.
- E. Counterweight Rails & Frame:
1. Nos. 9-12: Retain existing, realign, correct balance to 42% of capacity, clean and tighten frame bolts. Reduce the side clearance of frame to guide rail face to ½". Nos. 9 & 10: Install dual Ring & String seismic devices to monitor the condition of the counterweight frame within the guide rails under seismic action.

F. Counterweight Guards:

1. Provide code complying guards in pit.

G. Safeties:

1. Elevators Nos. 9-12: Retain, clean and lubricate per manufacturer's recommendations. Test the safety gear as required by the State Elevator Division for the Alterations completed to each elevator. Correct any defective parts of the safety gear or damage resulting from the tests performed.

H. Governor:

1. Elevators Nos. 9-10: Remove the existing governors in the machine room where existing are located. Provide new governors and idler sheaves with a device that is certified by the State of California as being compatible with the existing safeties and complies with code and test for satisfactory operation. Retain the Existing Nos. 11-12 governor devices and provide new wiring to each governor from each new controller. Reconnect existing wiring to the governor safety switch or extend wiring and conduit as needed. Attach idler sheave assembly to existing brackets or provide new brackets and restraints to the pit floor. The pit idler sheave to be restrained to pit floor per seismic code requirements. New governors to be sized for existing rope core holes; Contractor is responsible for providing new core holes and support as required

I. 2.6 Car Frame, Platform, Sills and Toe Guards:

1. Nos. 9-12; Retain existing platform and car frame.
2. Tighten all side stays and remove all squeaks from frame.
3. Provide new extended length code complying toe guards to each elevator and paint black, in compliance with Unintended Movement of elevator with doors open subject to applicable codes and regulations.

J. Hoistway Switches:

1. Nos. 9-12 Elevators: Provide and install all new hoistway switches. Not limited to, but including, directions, emergency terminal limits and final limits, floor stop and magnetic leveling switches, car TM switch, vanes and cams, etc.

2.6 HOISTWAY ENTRANCES : ELEVATORS 9-12

A. General: Retain the existing entrances as scheduled.

B. Hanger Headers and Tracks:

1. Nos. 9 & 10: Remove all existing bar tracks for each existing entrance, clean and tighten all bolts. Remove the existing key control locking device from all of No.9 entrance frames, weld steel plate to rear of opening left by removal of control switch and paint in color to match existing finishes.

2. Nos. 11 & 12: Retain the existing hangers and track assemblies and thoroughly clean all debris from tracks.
- C. Door Hanger Roller Assemblies:
1. Nos.9 & 10 Entrances: Provide new custom sized hanger roller assemblies, sized for the existing limited header height, with self-lubricating sheave type two point suspension. Steel sheaves with flanged grooves and resilient sound absorbing tires. Minimum of 2-1/2” diameter sheaves with heavy-duty rollers with ball or roller bearings and adjustable up-thrusts.
 2. Nos. 11 & 12 Entrances: Retain the existing and clean debris for new equipment to be installed.
- D. Struts: Nos. 9-12
1. Retain existing, clean and tighten. Provide new rubber bumpers into struts and adjust for clearance to door panels when fully open.
- E. Closers: Nos. 9-12:
1. Provide new cable relating torsion spring mechanical type. Weight type closers are not allowed.
- F. Dust and Hanger Covers: Nos. 9-12:
1. Retain existing, replace any missing covers and clean.
- G. Fascia and Head Guards: Nos. 9-12:
1. Retain existing, modify to comply with code, refinish with black paint and re-fasten for greater rigidity.
- H. Interlocks; Bridging Blocks And Contact Arms: Nos.. 9-12
1. Remove existing and provide all new. Equip each set of hoistway doors with a tamper-proof interlock which shall prevent operation of the car until the doors are locked in the “close” position as defined by the code and shall prevent opening of the doors at landing from corridor side unless the car is at rest at the landing level in the leveling zone or hoistway access switch is in use. Provide all new high temperature wiring from the controllers to each interlock. Supply voltage to interlocks to be a minimum of 100 volts.
- I. Hoistway Doors: Nos. 9-12
1. Retain existing, re-hang to remove all twists, provide two new guides/gibs/fire tabs per panel, which will remain engaged in sill if guiding member is destroyed. In addition to the new gibbs; install heavy duty steel safety guides, between the gibbs. Replace the existing astragals from the leading edge of door panels, with new astragals to match the existing size as installed. Provide 4” identification of

the floor number on the rear face of the door panels per code.

- J. Pick-Up Roller Assemblies: Nos. 9-12
 - 1. Retain pick-up roller assemblies and replace all rollers and springs for satisfactory operation. Where slotted holes are provided in the attachment block, a 1/4" dowel pin is to be fitted after doors locks are set up.
- K. Sills: Nos. 9-12
 - 1. Retain existing and power clean.
- L. Frames; All Floors: Nos. 9-12
 - 1. Retain existing at all floors.
 - 2. Identification Numbering: Install minimum of 3" height elevator identification numbering at the ground or second floor as applicable immediately above the entrance frame.

2.7 MACHINE ROOMS EQUIPMENT: Elevators 9-12

- A. General: Provide new equipment to fit each machine room area and structural limitations. Coordinate all related electrical installation, smoke detectors, structural, and modifications to the ventilation systems. Do not damage existing fire proofing materials. Do not attach any new equipment in the machine rooms or in hoistways to fireproofing material. Provide code complying seismic bracing of all new equipment for Zone 4.
 - 1. Retain the existing geared machines and overhaul as detailed, test and rehabilitate as specified. Remove the existing DC motor and replace with new AC hoisting motor to the existing bed plate. New AC hoist motor to incorporate a flexible coupling, designed by the Contractors factory and detailed on submittal drawings. The new AC hoisting motor shall be of the low slip design, not to exceed 2%, and be selected to provide the required horsepower at contract speed as required by the machine manufacturer. Unsupported overhung motor design will not be acceptable. Tram the alignment of the new motor shaft coupling flange to the machine shaft coupling and brake for vibration free operation. Contractor to submit optional line item labor and material costs with their bids for works not detailed in the base bid, refer to specification section **1.2.C**. Base bid repairs, rehabilitation and testing is as follows:
 - a. Brake: Dismantle the brake assembly, remove and clean operating core. Remove all pivot pins, clean rusting, re-lube, reinstall. Replace brake linings of each machine brake. Test and set the brake to hold 125% load per code.
 - b. Machines: Clean down all oil leaks from machines and replace the gearbox and thrust race seals with new seals. Replace the existing bolts, rubber bushings, castle nuts and washers for connection of flanges to motor and machine shafts.

- c. Provide earthquake rope retainer brackets at each 30 degrees of arc of rope contact to sheave.
 - d. Paint the machines in color to match existing.
- B. Controller: Provide new power and operational controllers from the pre-approved non-proprietary manufacturers, provided they comply fully with the specified clauses; provide overload relays in three legs of power circuit; cabinets with NEMA-1 enclosures and doors arranged with locks. Provide closed loop fully digitized control with velocity sensed feedback. Provide permanently marked symbols or letters identical to those on wiring diagrams adjacent to each component. Provide exhaust fan at top of cabinet and adequately louver walls of cabinet to induce through ventilation.
1. The controller wiring shall be carried out in a neat and workmanlike manner in accordance with relevant requirements of National Electrical Code. No equipment is to be mounted at greater than 6'-0" from floor level. The new controllers construction framing shall be stamped for Seismic Zone 4 locations.
 2. All external connections to the equipment on each controller shall be made on terminal blocks, by means of approved cable thimbles and/or solder-less cable lugs, depending on the current to be carried.
 3. Main contactors or starter switches shall be A.C. motor horsepower rated and are not to be mounted directly to the steel cabinets, to ensure quiet operation of controllers.
 4. Where several connections are to be made to one terminal, they shall be separated from one another by approved means.
 5. The voltage supply to the hoistway door interlocks shall be minimum of 100 volts.
 6. All resistors used for the start-stop-run operation of the elevators are to be mounted in separate cabinet above the controller or in a completely isolated area suitably ventilated at top of controller.
 7. All contactors, switches, relays, auxiliary motors, electronic devices, resistors, reactors, capacitors and similar items shall consist of standardized equipment and shall be so designed and constructed and accurately set up and adjusted to:
 - a. Operate the elevator under the conditions of load and speed specified, silently and without undue arcing;
 - b. Provide absolutely smooth acceleration and retardation of the elevator under all conditions of loading; and,
 - c. Give satisfactory service with a minimum amount of attention and maintenance.
 8. Contact area and pressure shall be adequate for the currents and voltage applicable and, where necessary, arc shields and/or blow out coils shall be

provided to ensure that all contacts have long life compatible with other controller equipment.

9. All auxiliary contacts shall have silver tips. All moving contacts shall be mounted on suitable spring controller contact fingers.
10. All contacts must make with a positive wiping action and shall permit easy adjustment to compensate for wear and changes in alignment.
11. The number and arrangement of contacts shall be such that flexible connections between fixed and moving contacts will be minimized.
12. Thermal protective devices and electronic components, where used, shall not be subject to heat rising from rectifiers, resistors and similar items.
13. Supply to all LED or neon type lamps used shall be a minimum of 48 volts and provide separate transformer with tapping to allow lamps to be operated at 20% less than their rated voltage.
14. The controller and all equipment such as resistors and similar items mounted thereon, shall be provided with permanent nameplates setting out the maker's name, voltage, rating and all relevant particulars as required by the various standards. The controllers must be labeled as to its compliance with constant operating temperatures of 90°F.

C. Power Conversion and Regulation Unit:

1. Remove existing motor generators from each machine room and provide new VVVF drive equipment for each elevator. It is the contractor responsibility to confirm that the total full load currents drawn by VVVF's, controller and their isolation transformers does not exceed the current carrying capacity of the existing three phase electrical feeders.
2. VVVF: Provide subject to all specified conditions being complied with. All circuitry shall be as approved by the enforcing code. Operation shall be quiet and the performance standards herein specified shall be provided. Design system to control starting and stopping and to prevent damage to motor from overload or excess current and to automatically disconnect power supply.
 - a. Apply brake and bring car to rest in event of power failure or of safety device operation. Controllers shall not have failure modes which results in full power being applied to drive machine operation in event of phase reversal, phase failure or low voltage which might result in elevator malfunction.
 - b. Provide smooth acceleration and deceleration by variable voltage applied to hoisting motor and by dynamic braking before brake application.
 - c. Failure of any static control device, speed measuring circuit or speed pattern generating circuit to operate as intended or occurrence of single accidental ground or short circuit shall not permit car to start or run if

any hoistway door or gate is open or unlocked.

- d. Provide coordinated fault protection which protects entire power circuit and power semi-conductors against short circuit conditions; protects against limited faults arising from partial grounds, partial shorts in motor armature, or in power unit itself; protects drive motor against sustained overloads; and provides semi-conductor transient and incoming line phase sequence protection.
- e. Protect building system power line against line voltage transients by providing each elevator drive with isolation transformer and devices to limit distortion to not more than 4% RMS of base 60 Hz line voltage, with frequencies above 600 Hz attenuated at minimum of 12 dB per octave.
- f. Measure voltage distortion requirements at secondary of building system transformer used to provide power to elevator system.
- g. All control wiring shall be isolated from power wiring to minimize inductive coupling.
- h. Submit, for review, applicable brochure and technical information as required for solid state equipment.
- i. Provide adequate sound suppression equipment to control airborne and/or structure borne noises and vibrations acceptable to the AOC's Representative/Elevator Consultant.
- j. Manufacturer shall provide means of absorbing regenerative power, normal and emergency standby.
- k. Provide non-proprietary adjusting or diagnostic tool with all levels of passwords for the unconditional ownership and use by the AOC Contractor with no lease agreement, reprogramming, automatic program destruction or periodic recalibration being required.

2.8 SIGNALS AND OPERATING FIXTURES

- A. General: Provide new signals and fixtures with all features as existing and additional as specified.
 - 1. Buttons: Provide 1/8" raised button from surrounding surface with square shoulders; full face of the button is to illuminate white, with the halo set flush with the faceplate surface. Operation of car or hall button shall cause the full face of the button to illuminate. Response of car to car or hall call shall cause corresponding button halo to extinguish. Provide Innovation PB-3, EPCO SSL-HPC Series or pre-approved equal, where specified.
 - 2. Switches: Toggle type typically in the service cabinet or card key operated where

exposed on the faceplate. Emergency stop switches to be key operated.

3. Faceplates: Provide of material and finish as indicated and specified; 1/8" minimum thickness with edges relieved.
 4. Materials and Finishes:
 - a. Faceplate material and finishes of car and hall buttons to be stainless steel with No. 4 satin finish.
 5. Fastenings: Provide with flush tamper-proof screws of material and finish matching faceplates.
 6. Cabinets: When required, to be of identical size, provided with pulls, concealed hinges flush mounted doors with hairline joints to adjacent surface.
 7. Arrangement: Arrangement of fixtures shall match the existing layout.
 8. Engraving: When required, of size indicated; color backfill with epoxy paint in contrasting color as selected.
 9. Button Acceptance Pilot Lights or Jewels: LED or neon type rated to minimum of 100,000 hours operating life. Filament type bulbs are not acceptable.
 10. Contractor or Manufacturer's names not to appear on any fittings or fixtures.
- B. Car Operating Panels: Elevators Nos. 9-12; Replace the existing operating panel and provide all new operating panels to include all code required functions, buttons, switches, internal lobby to car emergency communications, external source emergency communication device as specified. Provide new Phase II lockable control panels in all elevators per code requirements. Elevators 9 & 10 car operating panel, including the Phase II fire service operation, is to be located behind a locked panel. Elevators 11 and 12 car floor buttons activation, shall be subject to use of the card reader before the selected floor button is registered. Provide a fire indication jewel in the car operating panel of all elevators when the Phase I key is switched to Recall and when the smoke detector in the respective machine room is activated and ring alarm bell on the car top.
1. General: Provide buttons numbered to conform to floors served and the following:
 - a. Locate lowest operating button at 35" above floor and top operating button at a maximum of 48 inches above floor. The intent is to locate buttons at the lowest height above 35", provide a minimum of two inch vertical space between the lowest floor button and the door open and close buttons.
 - b. Locate keyed emergency stop and illuminated alarm button in bottom row at 35 inches above floor.
 - c. Provide "Door Open" and "Door Close" buttons, with engraved wording on the button; located above emergency stop and alarm and of same design as car button.

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- d. Engrave panel with capacity, number of passengers and elevator number in 1/4 inch letters.
 - e. The new Car Operating panels in Nos. 9-12 shall be controlled by card reader.
 - f. Provide current code requirements for Phase II emergency key switch, engraved instructions and call cancel button with audible/visual signals located above the top floor operating buttons in locked panel per code.
 - g. Provide card reader control of Elevator Nos. 9-12.
 - h. Emergency Communications device to be incorporated into all elevators main car operating panel, refer to paragraph below for details.
2. All new faceplates shall be stainless steel No.4 finish and sized to cover openings left by removal of existing car operating panels. Provide new mounting boxes for the new car operating panels, if the existing boxes are of insufficient size for the new panels. Car returns to be No.4 finished stainless steel material.
- C. In-Car Voice Announcement Device: Nos. 9-12; Provide an announcement device that will sound when a car is passing through a floor or is to stop at the floor. Provide audible adjustment means from zero to 60 dBA range.
- D. Service Cabinet; Nos. 9-12 Elevators: Provide cabinet, door with lock and concealed hinge as an integral part of car operating panel mounted with flush hairline joints. Cabinet door shall be provided with a flush glazed window of required size to hold elevator operating permit. Service cabinet shall contain the following:
1. Independent service toggle switch.
 2. Two-speed ventilation toggle switch.
 3. Light switch, toggle type.
 4. Inspection switch, key operated.
 5. Duplex GFI convenience outlet.
 6. Buzzers as required.
 7. Test switch for emergency car lighting. Momentary pressure toggle type. Test switch shall break the 110-volt feed to the lights if normal lights are being operated by the emergency battery.
- E. Emergency Communication Equipment.
1. Nos. 9-12: Remove existing emergency communications device and provide new complete communication system in compliance with ADA and Title 8 regulations consisting of a combination speaker/microphone, back box, amplifier,

automatic dialer push button to activate system and acknowledgment normal and flashing lights and an Off button to terminate call. Mount speaker in the upper section of the new car operating panel behind a pattern of holes as an integral part of the car operating panel, with the push button and acknowledgement light to be below the DO & DC buttons. Wire to machine room and program automatic dialer as directed by AOC or Sheriffs Representative. Provide communications concentrator device, built into each car circuit board that automatically records and stores the elevator number and building location to issue such information to receiving station. Device shall operate with the Building's existing emergency telephone system.

F. Hall Lanterns & Position Indication:

1. Nos. 9-12: Replace existing hall lanterns and position indication with new stainless steel fixtures and incorporate their operations in the new controllers. Replace the existing audible bell with new electronic chime, that is audibly adjustable in the range of 20 to 65 dBA. Provide new wiring from controllers and conduits to the location of the lanterns. Operation of lanterns to comply with ADA code requirements. The circuitry shall be changed to sound twice when the Down direction lens illuminates and once when the intended direction is Up, per ADA code.

a. Hall Call Button & Direction Fixtures:

3. Elevators Nos.9, 11. & 12. : All Floors: Remove the existing fixtures and provide new stainless steel No.4 finished stainless steel faceplates. Enlarge the core cutout in concrete wall to install appropriate size mounting box for new fixtures. Provide new mounting boxes as required for new controls. Provide 2 hour rated approved fire proofing material at the rear of each new mounting box and conduits when they penetrate through the existing walls. Provide Phase One manual recall key switch, operating instructions and illuminated signal and engraving. Phase II operation is operated from within the elevator.
4. Elevator No.10: Replace the existing hall button station at side of entrance frames, with new mounting box and new fixture to incorporate UP and Down direction buttons, Door Open and Door Close, Floor Position indicator and Security card reader to lock off use of the faceplate devices. Enlarge the core hole to accommodate the new enlarged fixture panel.

G. Machine Room Monitors:

Provide in Nos. 9, 10, 11, & 12 Machine Rooms a colored monitor panel, either inbuilt into the individual controllers or mounted on a table; with the following features as a minimum. Such shall comprise of colored CRT screen, processor and keyboard. Following features are to be incorporated:

1. Car position indicator for each car with direction arrows.
2. Lights for each car showing car calls registered.
3. Non Proprietary Diagnostics and adjustment capabilities.

4. Lights showing hall calls registered.
 5. Jewel for each car indicating that it is parked and is available car.
- H. Medical Emergency Labels (Star of Life): Provide code required, labels on each door frame entrance at all floors, and at the designated height, for the designated Elevator determined by the Fire Marshal or State Elevator Inspector.
- I. Accessibility Requirements: All Elevators: Provide to meet local codes having jurisdiction including handrail and button configuration.
1. Car & Hall Station Operating Panels: Provide raised Braille and alpha characters, numerals or symbols to the left of operating buttons and devices used by the public. Provide Grade II Braille, 1/10" dots on centers, with 2/10" space between cells and raised a minimum of 1/40" with Alpha characters raised 1/32" minimum and 5/8" high, sans serif upper case in white on black background. All elevators shall meet accessibility requirements.
 2. Entrances: Provide new plates to comply with CBC Title 24, Part II, and Chapter 30. Sample of plate is to be submitted for approval.

2.9 WIRING

- A. General: Complete rewire in the machine rooms, control rooms, hoistways, hall lanterns and cars as necessary on each car for connection to new car fixtures and features, new car intercom, leveling systems, load weighing and new controls, hall button stations, hall position indicators, hall lanterns, supervisory panels, Fire Control room, remote monitoring stations at Main Lobby floor and fire recall key switch. Furnish shielded or as specified wires in cables for communications system, magnetic card security system, remote monitors, fire life safety speaker and for fireman's jack; termination to be a selected position in each machine room. Include two additional pairs of shielded spares for each car.

Existing conduit and duct work in machine rooms can be reused provide electrical code space requirements are complied. Hoistway conduit may be reused where satisfactory to codes. All wiring connections throughout the installation shall be made on approved terminal blocks within the component connection terminals, labeled at each end of connections in accordance with the wiring diagrams; no compression type, splicing or crimp type connectors are to be used, no wiring connections to be made in any hoistway, cars or machine room raceways. Provide new high temperature wiring from controllers to each door interlock.

- B. Traveling Cables: Replace all traveling cables for each elevator. Use minimum number of traveling cables with flame retarding and moisture resisting covers. Include steel core. Cord thoroughly and protect cables from rubbing against hoistways or car items. Terminate traveling cables at ½ way or top of each hoistway and wire in conduit or raceway to each controller. Sheathed traveling cables shall not be run in ductwork or raceway to the controllers. Provide traveling cable with shielded cables as required for the all car communications.

- C. Work Light and Convenience Outlet: Provide two (2) work lights on top of each car with metal wire lamp guard and with grounding conductor. Provide convenience outlet with GFI on top of each car.
- D. Stop Switch: Provide in pits and on top of each car.
- E. Alarm Bell: Six-inch size, 110 volt. Provide alarm bell, to be located on car top and be actuated by corresponding alarm button or emergency stop switch. Intensity of alarm bell shall not exceed 75 dBA.
- F. Auxiliary Disconnect Switches: Provide within the machine rooms and controller rooms and at remote equipment not in view of mainline switches; include all wiring and conduit.

2.10 CAR ENCLOSURES

- A. General: All Elevators: Retain the existing steel shell walls, canopy, interiors, drop ceilings, lighting, doors and flooring.
 - 1. Emergency exit: Retain.
 - 2. Mechanical and Natural Ventilation: Provide new two-speed squirrel cage exhaust fan.
 - 3. Car Doors: Retain.
 - 4. Front Jambs & Return Panels: Retain and install new car operating panels in same location as existing.
 - 5. Flooring: Retain.
 - 6. Ceiling and Lighting: Retain.
 - 7. Handrail: Remove existing handrails and install new 1-1/2" diameter stainless steel handrail at nominal 32" to center above car floor. Fill holes in wall panels and fill with stainless steel dome cap with threaded studs with spacers, washers to bolt fasten at rear of cab walls.
 - 8. Interior Wall Panels: Retain.
 - 9. Interior Wall Panels: Retain.
 - 10. Sill: Retain.
 - 11. Inmate Security Enclosures: Retain the security enclosures as existing and provide matching design and depth enclosure in No. 12 elevator.
- B. Emergency Lighting: Provide for each elevator, an emergency lighting power pack on top of the canopy, battery driven and self rechargeable. Upon outage of normal power, the unit shall, within 5 seconds, light two individual bulbs over car panel with the emergency communications device. The bulbs to be set into a fixture that is to be flush with the underside of the canopy and be of sufficient intensity to provide 0.25 ftc at the Door open

and Close buttons. The units shall have sufficient capacity to keep the lights, fan and emergency communications in continuous operation for four hours. Provide a readily accessible test switch in the car service panel.

PART 3 - EXECUTION

3.1 GENERAL

- A. Bidding Documents: Bidders shall attend a mandatory bid conference, visit the site, examine all existing conditions of the "to be retained" equipment, examine existing electrical feeders adequacy for new equipment. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to the AOC's Representative's attention in writing at least two weeks prior to the bid date. If no discrepancies are presented, changes required to accommodate bidders equipment becomes the responsibility and cost to Contractor. All work is to comply with the requirements of A 17.1-2004 for Alterations of Nos. 9-12 elevators and current CCR Title 8 for Alterations or repairs of elevators.

3.2 PREPARATION

- A. Field Measurements: Field verify all dimensions before proceeding with the work. Coordinate related work by other trades. Verify the following to be acceptable for Alterations to the elevators.
 - 1. Hoistway and machine room are satisfactory to complete the Alterations.
 - 2. Do not begin Alterations of any elevator until unsatisfactory conditions have been corrected and approval in writing has been given by the AOC's Representative to the Contractor's schedule of site work.

3.3 INSTALLATION & ALTERATIONS

- A. General: Install per manufacturer's requirements, those of regulatory agencies and as specified.
- B. Welding and Painting Precautions in Hoistways: Welding in the hoistways shall be limited and be pre-approved by the AOC 's Representative. When welding in hoistways contractor shall have current certified fire extinguishers immediately available at the work station. Contractor shall provide exhaust fans and exhaust flexible duct work of sufficient size to remove the fumes to outside air, from welding and painting.
- C. Welding Construction: Provide welded connections for installation of elevator work where bolted connections are not possible or required by code, or as required for adjustments, inspection, maintenance and replacement of worn parts. Comply with AWS and California standards for workmanship and for qualifications of the welding operators.
- D. Sound Isolation: Mount isolation transformers, rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.

- E. Repair and provide full comprehensive maintenance of equipment complete as required by Maintenance Clause 3.7.
- F. Graphics: Provide graphics visible to public as selected by AOC's Representative.
- G. Manufacturer's Nameplates: Manufacturer's nameplates, trademarks or logos are not permitted.
- H. Locks, Keys and Identification Labels:
 - 1. General:
 - a. The design of all key locks shall be of the fixture manufacture design and be in accordance with applicable elevator code.
 - 2. The following are to be provided at the completion of the first elevator.
 - a. Three (3) complete sets of keys to operate each type of key operated switches and locks associated with the elevators, identify each key per code section 8.1 Security. The key combination for each function shall be different.
 - 3. Each key shall be mounted on a ring with an approved 3" x 1" plastic or aluminum label tag, engraved to identify the purpose of the key.
- I. Cleaning After Alterations: Following completion of each elevator Alterations and immediately prior to the carrying out of each acceptance test, the machine room floor and all equipment therein, shall be thoroughly cleaned, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish generally shall be removed from site.
- J. Finish Painting After Tests: After satisfactory completion of the last tests, any damage to the paint work of equipment, flooring and walls shall be made good and the installation cleaned, after which at least one final coat of gloss oil resistant or enameled zed paint shall be applied by brushing or spraying in the Contractor's customary colors to all the existing and new equipment, conduit and metal work in each machine room.

3.4 PROGRESSIVE USE BY PARTIES:

- A. The elevator must be tested and inspected by State regulatory agencies and a permit to operate issued. Field quality control tests shall be witnessed by the Contractor and State's Elevator Consultant.
- B. An examination will be performed in the presence of the AOC's Elevator Consultant and Inspector and Contractor, to determine condition of elevator and finishes.
- C. The elevator is to run satisfactorily for a period of three (3) working days after acceptance before next elevator Alterations commences.

- D. During this period, the Elevator Contractor is to maintain elevators as specified by Clause 3.7. The full maintenance period will be effective from the date of the Notice to Proceed and shall continue through the completion of the project (i.e. until alterations for each elevator are complete) and for a twelve (12) month period after the acceptance of the last elevator, and the completion of all punch-list items.

3.5 FIELD QUALITY CONTROL

- A. Tests: Upon completion of each elevator, Contractor shall provide all necessary instruments, weights and personnel to conduct the State of California, ER&TU Elevator Safety inspections and the following performance tests, which shall be witnessed by the AOC's Elevator Consultant, before the elevator shall go into service. The Contractor shall submit to the AOC's Elevator Consultant, a complete report describing the results of the tests and a comprehensive list of all final adjustable parameters and timers, a copy of such is to be included in the maintenance manuals.
- B. Nos. 10 & 12 Elevators: Performance and Energy Consumption Testing. Demonstrate a one (1) hour heat and run test with full load in the car. Perform for one car of each duty, total of two (2) tests. Provide kilowatt hour power consumption electrical recording meter to record the total energy consumed during each 30 minute period of the 60 minutes recordings. Perform a further 30 minute testing and energy consumed recording with balanced load in each elevator. Provide a written report of the energy testing and submit to the AOC's Elevator Consultant.

Additional demonstration testing;

- 1. One-hour heat and run test with full load in car for all elevators.
 - 2. Stop car at each floor in each direction.
- C. Provide well-shielded thermometers for hoist motor and verify that temperatures do not exceed 50 degrees Centigrade above ambient.
 - D. Performance and leveling tests shall be made before and after heat and run test, at full load and balance weight in car.
 - E. Overload test with 125 percent of load in car per Code requirements.
 - F. Check and verify operation of all safety features, particularly:
 - 1. Fire service.
 - 2. Emergency power operation.
 - 3. Door pressure and impact.
 - G. Tests to prove that the elevator power control circuits will maintain a pollution free feedback to the supply feeders, under all conditions of loading.
 - H. Tests to ascertain the starting and running currents, voltage and speed under the

conditions of loading specified in the preceding items.

- I. Tests to demonstrate the settings and effectiveness, under no-load and full-load conditions, of all overload and overtime protective devices.
- J. Demonstrate the program control system complies fully with the specified documents.
- K. Inspection: Contractor to provide adjuster level personnel to assist the AOC's Elevator Consultant in making a thorough inspection of entire installation to assure workmanship and equipment complies with contract documents.
- L. Correction: Make corrections to defects or discrepancies at no cost to the AOC.

INSTRUCTIONS: Instruct AOC's and appointed Sheriffs personnel in proper use of each system. Provide two (2) hours of instructions, given in two one (1) hour sessions.

3.6 MAINTENANCE

- A. General: Contractor shall provide complete continuing comprehensive maintenance of the four (4) elevators. The existing Maintenance contract will be adjusted to remove these four elevators from the existing maintenance contractor's responsibility effective at midnight on the day preceding the Notice to Proceed. The maintenance is to be done strictly in accordance with all requirements of the AOC's Elevator Maintenance specification. Contractor requiring clarifications to the extent of maintenance must notify the AOC's Project Representative in writing before the bid date.

The comprehensive maintenance contract is to start from the date the Alterations contract is awarded and shall continue for each elevator after all of the alterations for the elevators is completed pursuant to the contract documents and return to normal service and for a warranty period of 12 months. The date for the start of the 12 months maintenance and warranty period will be the date of final acceptance of the last accepted elevator. There shall be no added costs for any deferred maintenance or pro rata of the existing retained equipment or exclusions from the comprehensive maintenance contract that will start on the day of contract award.

- B. Examination:
 - 1. Include systematic examination based on the minimum specified hours of maintenance stated in the AOC's maintenance contract. Adjustment and lubrication of elevator equipment whenever required and replacement of defective parts with parts of same manufacture as required for proper operation.
 - 2. Contractor not responsible for repairs to car enclosures, door panels, frames, sills or platform flooring resulting from normal usage or misuse, accidents and negligence for which Contractor is not responsible.
- C. Performance Standards:
 - 1. Maintain the performance standard set forth in the Maintenance Specification and maintain correct operations of the systems.

2. Maintain smooth starting and stopping, smooth riding qualities and accurate leveling at all times.
- D. Call-Backs: In event of failures, provide 24 hour call-back service as detailed in the AOC Standard Maintenance Specification.
- E. Elevator Shutdowns:
1. Should any elevator become inoperative, it shall be repaired within 24 hours of notification of such failure. Breakdown of major components shall be completed and service restored within 72 hours.
 2. Failure to comply with above, the AOC representative may order the work done by other contractor's at the Contractor's expense.
 3. If the AOC requests specific items of work, not covered in the AOC Maintenance Contract, to be completed in overtime hours, the additional costs will be treated as a change in the work in accordance with General Conditions.
- F. Follow-Up Tests: During the 12 months maintenance/ warranty period, test the following safety devices at intervals indicated and submit written report on each test. Make tests at times which do not interfere with building operation.
1. Fire service, every 30 days.
 2. Derailment device & seismic trigger, every 180 days.
- G. Maintenance Materials:
1. Expendable Parts: Elevator Contractor shall provide a metal cabinet in each machine room of project premises containing the following expendable parts which are considered to be the AOC's property and not to be removed upon expiration of maintenance period.
 - a. One set starter contacts and coils.
 - b. Two resistors of each type installed.
 - c. One set hanger sheaves for car and hoistway doors.
 - d. Two relays and relay bases of each type installed.
 - e. Twenty-four lamps of each type installed.
 - f. Car and hall buttons with identical graphics installed; six for manufacturer's standard buttons, one of each type for special buttons.
 - g. Twelve fuses of each type installed.

- h. Any other parts required for prompt replacement.
 - i. Lubricants and cleaners of all types used for maintenance.
 - 2. Replacement Parts: Maintain the following parts in the Contractor warehouse in San Francisco County.
 - a. One door operator motor of each type used.
 - b. Hanger sheaves for car and hoistway doors.
 - c. Two complete door interlocks.
 - d. Plug-in solid state boards for controllers, selectors and door motors.
 - e. One complete set of VFVV drive components.
 - f. Parts for door protective devices.
 - g. One spare solid state control board of each board installed.
 - h. Such other parts as are needed to insure prompt replacement in event of elevator shutdown.
 - H. Maintenance Data: Provide with the Submittal Phase, three (3) sets of complete and accurate maintenance data specific for each elevator. Final payment will not be made until received.
 - 1. Manuals: Describe proper use and maintenance of equipment, lubrication points, types of lubricants used and frequency of lubricant application. A complete report of the Field Quality Control Tests, including final adjustable parameters and all timer settings.
 - 2. Parts Catalogs: Complete listing of all parts of equipment and components used in the installation.
 - 3. Wiring Diagrams: After completion and acceptance, provide one laminated set mounted in each machine room, one reproducible mylar set and hard copy set delivered to AOC's Representative. Satisfactorily mark-up all the retained equipment onto the new wiring diagrams. Wiring diagrams shall be as-built, specific for this installation and reference identification on drawings shall match points identified on terminals of controllers. AOC's Elevator Consultant will advise wall to which wiring diagrams are to be mounted and method of fixing.
 - 4. Maintenance and Adjusting Tool and Software Servicing Instructions: Provide adjusting/maintenance tools and supporting software documentation required for the complete maintenance of the entire system including diagnostics and adjusting. Maintenance tool may be hand held or built into control system and shall be the type not requiring recharging or reprogramming nor of the automatic destruct type. The tool and supporting software may be programmed to operate only with this project's identification serial numbering to protect the manufacturer's program. Maintenance tool and software servicing instructions are to become ownership of the AOC for their selective issue to the elevator maintenance Contractors for their use and return.
 - I. Final Service and Inspection: Two weeks before expiration of the 12-month maintenance and warranty period, the equipment shall be lubricated, fully serviced, adjusted to the

standards designated and emergency service operation devices shall be checked. A complete inspection will be made by a representative of the AOC.

Add Alternates to the Bid Package will include itemized costs for the following in order of priority:

1. **Replacement of parts or equipment in kind:** If, following testing and inspections on existing equipment, it is determined by the contractor and/or the elevator consultant that machine brake coils of each type of equipment need to be replaced in kind, then provide that cost for individual replacement of brake coils.
2. **Contract Maintenance Quotation:** Provide pricing for the 12 months maintenance and warranty period as a separate price on the bid form. Base bid shall include cost of maintenance during construction as described above.
3. **Cameras: For elevators 9, 10, 11 & 12,** provide pricing for cameras in each elevator, to be monitored at the central security location. Contractor shall install all necessary wiring to be nominated position, immediately outside each elevator machine room and terminate in junction box. Contractor will extend conduit and wiring to individual controller connection box for monitoring locations as needed. Security contractor shall mount the camera in each elevator ceiling location and test for satisfactory operation.

END OF SECTION