

SECTION 14221

MODERNIZATION OF TRACTION ELEVATORS #4-#6, #7 & #8
March 2000

PART 1 GENERAL

Provide all labor, materials, plant, appliances, tools, transportation and equipment required for modernizing three (3) gearless elevators, Elevators No. 4-6 and (2) geared elevators #7-#8 complete as specified herein for the D.O.D. Center located at 400 Gigling Road, Seaside, CA. General and Supplementary Conditions and Division-1, General Requirements apply to all the work of this Section

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

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| ASME A17.1 | (1996) Safety code for elevators and escalators |
| ASME A17.3 | (1996) Safety code for existing elevators and Escalators |

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- | | |
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| ASTM A 167 | (1989A) Stainless heat resistant Chromium-Stainless Steel plate, Sheet, and Strip |
| ASTM A 366 | (1985) Steel, Carbon, Cold-Rolled Sheet, Commerical Quality |

1.2 DESCRIPTION

1.3 WORK INCLUDED IN THIS SECTION

Modernize three (3) existing gearless electric traction elevators and two (2) existing geared electric traction elevators complete as specified.

It is anticipated that the work specified herein will be accomplished prior to the prime building contract work starting or shortly thereafter. This contract will not be novated to the prime building contractor, however the elevator installer will coordinate his activities with the prime building contractor with respect to final scheduling activities, emergency power and fire and life safety activities. The elevator installer shall provide all labor and assistance in the implementation of these activities.

1.4 MODERNIZE PASSENGER ELEVATORS NO. 4 THROUGH 6

Modernize passenger Elevators No. 4 through 6 with new motion and group controls, new static drives, new wiring, selectors, and operating

equipment, rehabilitate machines, car door controls and recondition other equipment as specified. Refinish existing cab interiors as specified.

1.5 MODERNIZE PASSENGER ELEVATORS NO. 7 THROUGH 8

Modernize passenger Elevators No. 7 through 8 with new motion and group controls, new static drives, new wiring, selectors, motors and static drives and operating equipment, rehabilitate car door controls and recondition other equipment as specified. Refinish existing cab interiors as specified. The top terminal floor is to be disabled. Entrances are to remain in place.

1.6 CONTRACT FOR COMPREHENSIVE MAINTENANCE

The contractor shall provide for comprehensive maintenance of three (3) gearless passenger elevators and two (2) geared passenger elevators immediately upon award of construction contract:

- A. Interim Maintenance Period
- B. Warranty Maintenance Period
- C. Five (5) Year Optional Maintenance Period
- D. Monthly firefighters' recall operation of Elevators #1-3 & #4-6.
....(Reference ASME A17.1 code in conjunction with California Title 24
.....Building Standards Code).

1.7 UNIT PRICES

Provide unit prices for the following items:

Replacement of one (1) set of two (2) deflector sheave bearings for gearless elevators.

Replacement of one (1) set of two (2) deflector sheave bearings for geared elevators.

Replacement of one (1) set of motor field coils (gearless equipment).

Replacement of one (1) machine bearing (commutator end for gearless equipment).

Replacement of one (1) machine bearing (sheave end for gearless equipment).

Rewind one (1) brake coil for gearless equipment.

Rewind one (1) brake coil for geared equipment.

1.8 CONDUIT AND WIRING

Provide conduit and wiring from elevator machine room to transfer switch located at roof level. Contractor is to provide all necessary signals and time delay circuits required for operation of the elevator system.

1.9 EXAMINATION OF SITE

1.10 PRE-BID JOB INSPECTION

A mandatory pre-bid job inspection will be conducted through the project area.

A. Bidders shall visit the building, examine the existing elevators, determine condition of all retained components, space conditions, power supply, mainline disconnects, emergency power provisions, communication systems and make all surveys necessary to meet the requirements of this specification.

B. If any discrepancies are noted or, if work not specified is required, bidders shall bring such matters to the Contracting Officer's attention two weeks prior to bidding. If no discrepancies are noted or exceptions taken, it is assumed that all conditions are satisfactory.

1.11 EXISTING CONTROL FEATURES

All existing control features provided in the cabs and landing hall stations are to be incorporated into the new controls unless specified to be deleted or added.

1.12 THE INSTALLATION

It is intended that, when completed, the installation shall be modern in all respects.

1.13 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.

1.14 ELEVATORS NO. 4, NO. 6 & NO. 7

A. Elevator No. 4, No. 6 and No. 7 shall be weighed within eight (8) weeks after issue of Contract to determine actual weights of gross suspended loads. Elevator Contractor shall keep a log of all equipment and weight removed and added to the suspension system. Elevator Contractor shall include in his bid the expenses of a structural engineer to comply with ASME A17.1 .

B. Should weight of the elevator(s) exceed the 5% weight addition, Contractor shall provide additional counterweight tie-brackets which may be required by ASME A17.1 . Advise Contracting Officer prior to bidding of any required changes not included in specification relating to providing a code complying elevator.

1.15 BARRICADES

Elevator Contractor shall provide and maintain approved full height temporary locked barricades across hoistway openings whenever the landing doors, at any floor, are not mechanically locked from within the hoistway. Barricades shall be secured in place by attachment to inside the hoistway.

Paint the outside of barricades as directed by Contracting Officer. No sign to be erected on screens unless approved by the Contracting Officer.

1.16 FLOOR PROTECTION

Elevator 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 stop marking or damage to the finishes. Elevator Contractor shall be responsible for completing repairs as directed by the Contracting Officer.

1.17 OPERATION AND MAINTENANCE MANUALS

The Elevator Contractor shall provide face to face operating instructions to selected Owner's employees. Instructions shall be given in two (2) hour maximum sessions at times selected by the Contracting Officer. Provide three (3) sets of O&M Manuals and six (6) sets of "as-built" prints to the COE Contracting officers Representative.

1.18 RELATED WORK NOT INCLUDED IN THIS SECTION

1.19 HOISTWAYS

Adequate smoke ventilation of hoistways. Existing hoistway ventilation shall be maintained.

1.20 ACCESS

Legal access consisting of self-closing and locking access doors, gratings and steps to machine rooms, controller areas and hoistways.

1.21 SUPPORTS

As existing.

1.22 MECHANICAL VENTILATION

Existing ventilation to remain.

1.23 ELECTRICAL WORK

A. Electrical Feeders to the Elevator Controls: Retain existing.

B. Electrical Disconnects: Retain existing disconnects. Elevator Contractor shall be responsible for the wiring from the disconnect to the new controllers.

Smoke and Fire Sensors: Sensors at all floors for automatic recall of all elevators to remain. Contractor to notify the Contracting Officer in the event one or more of the smoke detectors is not functioning.

1.24 RELATED WORK TO BE PROVIDED BY ELEVATOR INSTALLER

1.25 ELECTRICAL FEEDERS AND MAINLINE SWITCHES

The existing elevator electrical feeders to the machine room and mainline switches are to be tested using a 1000 volt megger and reused provided that the insulation is satisfactory. Should the insulation fail during the test, the Corps of Engineers shall contract with a licensed electrical contractor

to replace the feeders from the building panel through the disconnect and to the new elevator drive transformer. It is the responsibility of the Elevator Contractor to confirm, at time of bidding, that the feeder sizes are of adequate current carrying capacity, fused and complying with the National Electrical Code to protect the maximum demand of the proposed modernized elevators. Provide additional auxiliary disconnects to meet the requirements of ASME A17.1 .

1.26 EMERGENCY POWER WIRING

Elevator Installer to run interconnection conduits and wiring between Elevators No. 1-3, 4-6 & 7-8.

A junction box shall be installed in the crawl space by the elevator installer which will connect with the transfer switch signal wires prior to be extended to the elevator machine room. Conduit and wiring from the transfer switch to the j-box in the crawl space will be by others. Additional wire lengths from transfer switch shall be provided and shall be of sufficient length to reach the elevator machine room for the master controller. The Elevator Installer shall extend the signal wires to the master controller (Elevators No. 4-6). Elevator Installer shall coordinate and provide assistance to the prime building contractor to connect emergency power system to the existing transfer switch and to the new electrical system as provided by the prime building contractor, i.e., elevator installer shall include a minimum of four (4) days to coordinate, assist and test the first electrical hook-up and an additional four (4) days to coordinate, assist and test the second electrical hook-up to the emergency power system.

Following the installation of new transfer switch by others, Elevator Installer shall connect new sequencing scheme and coordinate with prime building contractor and electrical primecontractor.

2.1 COMMUNICATION CIRCUITS

Telephone wiring to be extended from existing controllers or locations and extend to new controller.

2.2 PROVIDE FEEDERS AND DISCONNECTS

Provide, as required, any non-polluted 120 V.A.C. signal and computer feeders and disconnects.

2.3 REMOVE DISCARDED EQUIPMENT

Remove from building site all discarded elevator equipment that is not being refurbished as part of the modernization.

2.4 REPAIR AND PATCH FLOOR OR WALLS

Repair and patch each machine room floor or walls where discarded elevator equipment is removed. Repaint the machine room floors after all phases of the modernization is completed. Areas to be painted include the transformer room and machine room area housing Elevators No. 4-6 only. Touch up any marks in the paint in the area of Elevators No. 1-3.

2.5 LIGHTING AND POWER CIRCUITS

If satisfactory to the National Electrical Code, and ASME A17.1 , reuse the present lighting and power circuits. Complete the wiring from the disconnects to the new controllers and from the controllers to the hoistways and provide necessary interconnections between car controllers and/or group supervisory controllers (if applicable). Advise prior to bid any additional circuits which would be required.

2.6 SENSING DEVICES

Connect automatic fire recall system for elevators.

2.7 CAR LOAD WEIGHING DEVICE

Provide new top of car strain gauge type or top of crosshead device to operate at 60 percent, 80 percent and 100 percent of load. The device is to be adjusted to satisfactorily operate the anti- nuisance feature and the 80 percent (80%) of load by-passing of landing calls.

2.8 REMOTE CRT MONITORING

Provide suitable junction box on outside of new controller for connection of wiring to remote locations. Provide all required conduits and wiring to remote CRT location in each machine room. Provide and coordinate installation of new telephone lines into machine rooms and connect to modems in controllers. Contractor is to use the Center's local telephone company for this service.

2.9 SPECIAL CONTROLS

2.10 TEMPORARY SIGNS AND NOTICES

The Contractor shall post and maintain all notices, signs and other safeguards required by law or ordinance or by the Corps of Engineers. No advertisements shall be installed on the premises. Approved notice to be exhibited and maintained at each floor when elevators are shut down for modernization.

2.11 RADIOS OR STEREOPHONIC DEVICES

The Elevator Contractor shall ensure that no radios or stereophonic devices are operated in the elevator machine rooms or hoistways. The use of such devices shall be limited to areas approved by the Contracting Officer.

2.12 TEMPORARY BARRIERS

The Contractor shall construct and maintain all temporary barriers provided as a safeguard around the construction area and/or as security around stored materials and equipment.

2.13 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.

#.1 DEFINITIONS

ELEVATORS NO. 4-6

ELEVATORS NO. 7-8

Main Lobby	2nd Floor	Main Lobby	2nd Floor
Fire Recall Floor	2nd Floor	Fire Recall Floor	2nd Floor
Alternate Fire	3rd Floor	Alternate Fire	1 st Floor

Contractor to confirm recall floors with Fire Department.

#.1 QUALITY ASSURANCE

3.2 MANUFACTURER FOR MICROPROCESSOR CONTROLLER EQUIPMENT

Provide new microprocessor controller equipment as manufactured. Provide new SCR microprocessor controller equipment as manufactured by Motion Control Engineering (MCE), Rancho Cordova, CA to match existing SCR control system at Elevators No. 1-3 for Elevators No. 4-6. This is a proprietary item, no equal will be accepted. Provide new VVVF microprocessor controller equipment as manufactured by Motion Control Engineering (MCE), Rancho Cordova, for Elevators No. 7-8. This is a proprietary item, no equal will be accepted.

3.3 DIAGNOSTICS AND SECURITY SYSTEM

Additional controls and features as specified are to be incorporated. Updated diagnostics and security system to be as specified. No substitute manufacturers' equipment to be offered.

3.4 INSTALLER RESPONSIBILITIES

- A. The preparation of all engineering and shop drawing submittals.
- B. The performance of Branch Office or Agent installing equipment.
- C. The material delivery and construction schedule.
- D. The equipment installation meets manufacturer's requirements and Contract documents.
- E. Equipment and performance guarantees.

3.5 INSTALLER AND MAINTENANCE QUALIFICATIONS

- A. Be able to show evidence of successful experience with the control equipment to be installed
- B. Have completed two (2) similar sized modernizations as specified and provide with the bid, details of the extent of previously completed modernizations including contact names for referral. This Contract will not be awarded to Contractors who cannot satisfy the Owner as to their previous experience.
- C. Have manufacturer's engineering support for the design and completion of the modernization.

D. Have the financial capacity to complete the project and provide to the Owner complete detail of such capacity.

E. Directly employ sufficient competent personnel experienced in modernization projects within fifty (50) miles of project to handle construction and maintenance duties. Submit resumes of superintendent and foreman for review by Contracting Officer.

F. Maintain local stock of parts adequate for replacement on permanent or emergency basis.

G. Maintain the five (5) elevators to be modernized under this specification under one (1) contract, simultaneously with the modernization project. The Interim Maintenance period on each elevator shall start upon award of contract and terminate with the completion of the last elevator in the group. Upon completion of the last elevator, the contractor shall begin a twelve (12) month warranty service period. Within 90 days prior to the conclusion of the warranty service period, the Owner will sign a full maintenance contract for a period of five (5) years.

H. Be able to respond to emergency calls within sixty (60) minutes. Staff to be supplied 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 twenty four (24) hours.

3.6 DESIGN CRITERIA

3.7 PERFORMANCE

A. Contract Speed: Maximum two and one half percent (2-1/2%) speed variation under any loading condition in either direction.

B. Floor-to-Floor Time; Elevators No. 4-6 - five seconds; Elevators No. 7-8 - 6.8 seconds. 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 1.2 seconds after make-up of hoistway door interlock.

C. Door Open Times: 2.0 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) All Lobby Hall Calls: Comply with ADA Disability Requirements.

(2) Car Call: 3.0 seconds

(3) Interruption of Door Protective Device: Reduce dwell to one (1) second and doors to close time to be adjustable.

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.

G. Releveling: Provide smooth and accurate releveling required due to cable stretch.

3.8 OPERATING QUALITIES

Contracting Officer/Consultant will judge riding quality of cars and enforce the following requirements.

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 violent.

(1) Vertical Acceleration; Elevators No. 4-6 - Maximum 3.5 ft. per second squared; Elevators No. 7-8 - 2.8 ft. per second squared.

(2) Maximum Jerk; Elevators No. 4-6 - 8 ft. per second cubed; Elevators No. 7-8 - 12 ft. per second cubed.

B. Full Speed Riding: Free from vibration and sway.

3.9 MOTOR CONTROL

A. Equipment: Capable of operating at plus or minus ten percent ($\pm 10\%$) of normal feeder voltage and plus or minus three percent ($\pm 3\%$) of feeder frequency without damage or interruption of elevator service.

B. Control System: Closed loop 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.

C. Car Load Sensing (Pre-Torquing): The control system shall sense the actual load condition of the elevator prior to there being any movement of the elevator. The start/acceleration pattern shall be adjusted to reflect the car load to achieve a smooth start/acceleration under all load conditions and location in the hoistway. Load sensing devices that utilize crosshead deflection or hoisting rope pressures are acceptable provided they are accurate within 100 pounds and be stable over extended periods. Systems using pre-torquing of the D.C. motor armature is acceptable; variable voltage control of the brake energization is not acceptable.

3.10 SOUND CONTROL:

A. Vibration: Sound isolate isolation transformers and solid state motor control units from beams and building structure to prevent objectionable noise and vibration transmission to occupied building spaces.

B. Airborne Noise: Maximum acoustical output level of:

(1) 80 dBA measured in machine room.

(2) 55 dBA measured in elevator cars during all sequences of operation.

(3) 45 dBA measured in elevator lobbies.

3.11 REQUIREMENTS OF REGULATORY AGENCIES

3.12 CODES

In accordance with the latest applicable edition requirements of the following and as specified:

- A. ASME: ASME A17.1 ; Safety Code of Elevators and Escalators.
- B. ADA: Americans With Disabilities Act.
- C. NEC: National Electric Code.
- D. UBC: Uniform Building Code.
- E. All local codes which govern.

NOTE: The most stringent code requirement shall be complied with.

3.13 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 A 366, uncoated, pickled, free from defects.
- D. Stainless Steel: ASTM A 167; Type 302 or 304.

3.14 FINISHES

3.15 EXPOSED-TO-VIEW SURFACES

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

3.16 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 Contracting Officer.

3.17 SPECIAL REQUIREMENTS

3.18 OPERATIONS OF THE BUILDING

The D.O.D. will maintain the D.O.D. Center in operation while the execution of this Contract and the Contractor must cooperate with Building Management staff, through the Contracting Officer in scheduling his work. The Contractor must carry on his work in such a way as not to cause interruption of or interference with the operations of the building. The Contractor shall not cause damage or injury to persons nor property in, on or about the building or adjacent grounds.

3.19 AREAS OF CONSTRUCTION

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 Contracting Officer. 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 Contracting Officer. Rooms which need not be entered for construction operations shall not be entered by the Contractor's personnel.

3.20 CONSTRUCTION PHASING

All material and equipment to complete the first elevator, including the new group control dispatcher is to be on site in the machine room before the group operator is transferred from the existing dispatcher to the new group supervisory controller. All the required functions of Clause 2.02 of the specification, where applicable, are to operate on the new group supervisory control.

The specified three phase sequence is to follow when each elevator is completed and interconnected to other modernized elevators. Interfacing and encoding, where required, is to be provided to allow for satisfactory change over from the existing group control to the new micro processor group control. Contractor shall schedule and coordinate his operations in such a way that the remaining elevators in the group shall be available for Owner's use at all times. Temporary shutdown of a second elevator to complete circuit connection must be approved and coordinated by Contracting Officer upon request by Contractor. Such work is to be done outside of normal office hours.

3.21 PARKING

Persons engaged in the construction work shall not park vehicles in any of the established building parking or receiving areas. Parking locations will be assigned by the COE contracting officers representative.

3.22 DAMAGE CAUSED BY OPERATIONS

Contractor shall be responsible for all damage caused by its operations to the curbs, sidewalks, driveways and to the building interior and exterior

surfaces and equipment.

3.23 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Equipment Performance; G

Indicate on layouts or separate data sheets; machine spaces heat release, car and counterweight roller guides and seismic supports.

Maintenance Data; G

Maintenance Description; G

Parts Catalogs; G

Wiring Diagrams; G

Manufacturer's Catalog Data; G

Manufacturer's standard catalog data describing and depicting each requirement in sufficient detail to demonstrate specification compliance.

Microprocessor Controller Equipment; G

Diagnostics and Security System; G

Solid State Equipment; G

Sound Suppression Equipment; G

security system; G

Components; G

SD-04 Drawings

"as-built" plans and specifications; G

"as-built" wiring diagrams; G

Shop Drawings; G

Contracting Officer reserves the right to require any details of any portion of the equipment. Submit 100 percent submittal package. No partial submittals will be accepted for review.

Layouts; G

Plan and section of elevator hoistways, pits and machinery spaces;

include location of machine room ventilation and required clearances around equipment. Submit scaled drawings of cab interiors for approval.

Details; G

Submit details of new isolation transformers, electronic door controls, load weighing device, emergency lighting, door operators, faceplates, button and indicator or any other equipment as required by Contracting Officer.

SD-06 Instructions

Operating Instructions

Submit copies of manufacturer's literature describing system operations and special operations as specified in addition to requirements of "Quality Assurance" paragraph.

Face to Face Operating Instructions

Tool and Software Servicing

SD-07 Schedules

construction schedule; G

SD-08 Statements

resumes

sub-contractor list

SD-09 Reports

Tests; G

Elevator Safety inspections; G

Pollution Free Feedback; G

Currents, Power Consumption, Voltage and Speed; G

Overload and Overtime Protective Devices; G

Follow-Up Tests; G

SD-13 Certificates

Controller

transformers and chokes

SCR Drive Configuration

SD-14 Samples

Provide samples of materials and finishes exposed to public view and additional, if specifically requested, 6 inch x 6 inch panels, 12 inch lengths or full size if smaller, as applicable.

3.24 PRODUCT DELIVERY, STORAGE AND HANDLING

Protect equipment during transportation, erection and construction. Store under cover to prevent damage due to weather conditions. Replace damaged materials. The Owner shall not be responsible for accepting delivery of any elevator equipment.

3.25 EQUIPMENT MANUFACTURE, CONSTRUCTION SCHEDULE AND PAYMENTS

A. Elevator Contractor, by submitting its bid, agrees that the following program for the manufacture, delivery, installation, testing and commissioning of the elevators will be achieved.

B. Each phase shall be completed as per the sequencing and scheduling as specified. All four phases shall be completed within the schedule as shown below. Payments for manufactured equipment and labor will be paid monthly as each phase is being completed. Advanced payment of Phases Two, Three and Four manufactured equipment will not be considered.

C. Award of Contract to on site delivery of equipment. 16 Weeks

D. PHASE ONE: Installation, testing and commissioning of Elevator No. 4 6. 12 Weeks

E. PHASE TWO: Installation, testing and commissioning of Elevator No. 5. 10 Weeks

F. PHASE THREE: Installation, testing and commissioning of Elevator No. 4. 10 Weeks

PHASE FOUR: Installation, testing and commissioning of Elevators No. 7-8. 14 Weeks

3.26 SEQUENCE

3.27 DESCRIPTION

Work under this Contract shall be done in the above sequence. Any change to the sequence must be approved by the Contracting Officer. Complete all work for each sequence before proceeding with the next.

A. PHASE ONE: Modernize Elevator No. 6.

PHASE TWO: Modernize Elevator No. 5.

PHASE THREE: Modernize Elevator No. 4.

Phase Four: Modernize Elevator No.7-8.

NOTE: Phase sequencing of individual elevators may be adjusted depending on job requirements.

3.28 CONSTRUCTION PROGRAM

- A. Weighing Elevator No. 4, 6 & 7 as specified.
- B. Modernize elevators per Phases 1, 2, 3 & 4.
- C. Following the completion of each elevator, the elevator shall be subjected to acceptance testing as required by this specification. Subject to satisfactory group interconnection and testing, the elevators shall be placed into normal service and shall run for a minimum period of five (5) working days prior to the next elevators being withdrawn from service.
- D. The Contractor is to include all costs for group testing to the satisfaction of the Contracting Officer outside normal hours of the Building.
- E. The construction schedule required by the specification is to detail all requirements of above four (4) Items.

3.29 HOURS OF WORK

Contractor shall perform the work of this Contract on normal work days and within normal work hours.

Welding and painting work in hoistway and painting of existing hoistway doors is to be done outside normal hours.

3.30 ELECTRICAL SHUTDOWNS

Temporary electrical shutdowns will not be allowed except for brief periods to be scheduled for outside normal hours and that at least forty eight (48) hours in advance notification is given and approved by Contracting Officer.

3.31 PROJECT RECORD DOCUMENTS

3.32 AS-BUILT DRAWINGS

The Contractor shall maintain, at the job site, a separate and complete set of contract drawings which will be used solely for the purpose of recording changes made in any portion of the work during the course of construction, regardless of the reason for such changes. Changes, as they occur, will be marked on the record set of drawings on a monthly basis. The monthly payment will be withheld until the Contracting Officer has verified that "as-built" corrections are current. Before final payment is authorized, the Contractor shall certify that all changes in the work are included on the drawings and will deliver such to the Contracting Officer.

3.33 RECORD DRAWINGS

Contractor shall keep a complete record copy of the plans and specifications for the use in preparing "as-built" plans and specifications at the end of the job. Contractor shall sign and date the prints and

deliver them to the Contracting Officer.

Contractor shall provide, to the Contracting Officer, one (1) complete set of reproducible "as-built" approved drawings and three (black line) sets. Drawings to be provided at the conclusion of all acceptance tests. Additionally, the Contractor is to provide one (1) complete set of reproducible "as-built" wiring diagrams and five (black line) sets. All modifications to the original wiring diagrams shall be included on the sets provided to the Corps of Engineers.

3.34 PROGRESS MEETINGS

Progress meetings shall be called at the discretion of the Contracting Officer and shall be weekly during the modernization period as a minimum during the first month of the project. Meetings will then be scheduled monthly for the duration of the project. The project foreman shall attend all meetings. The project superintendent shall attend monthly meetings. The Elevator Consultant shall attend meetings on as needed basis.

#.1 NOISE CONTROL OF THE WORK

Contractor, in the preparation and the execution of the work, shall recognize the particular and mandatory requirements of the modernization project due to the character of the work and the use occupancy of the Building and their tenants.

3.37 CONFLICTS WITH THE BUILDING FUNCTION

Noise and vibration generated by the construction for this work may, at times, create a problem for the operations of the Building. In the event the noise produced by the construction work conflicts with the building function, the Contractor, at the request of the Contracting Officer shall reduce or stop the noise.

3.38 NOISE LEVEL LIMITS

The noise level limits during construction at all floors shall be measured on the "A" Scale of a sound level meter as follows

- A. With the meter located 3'-0" from the nearest staff work station to the elevator lobby, the sound level shall not exceed 70 dBA
- B. With the meter located 3'-0" from each machine room door at a height of 5'-0" above floor level, the sound level shall not exceed 75 dBA.
- C. With the meter located 3'-0" from any hoistway door at any floor, the sound level shall not exceed 70 dBA.

3.39 NOISY WORK

Contractor shall perform all noisy work as is generally outlined below with the prior approval of the Contracting Officer. Types of noise generating work:

- A. All heavy demolition (clay tile or concrete walls and floors).
- B. All grinding, welding, chipping, pounding, sanding and cutting of holes.

3.40 GUARANTEE

All material and workmanship of the apparatus installed and/or retained equipment shall be guaranteed first-class in every respect and any defective materials not due to ordinary wear and tear or improper use or care which may develop within one (1) year from date of completion and acceptance of the entire installation. "Defective" is hereby defined to include, but not by way of limitation, operation or control system failure, performances below required minimums, excessive wear, unusual deterioration or aging of materials or finishes, unsafe conditions, the need for excessive maintenance, abnormal noise or vibration and similar unusual, unexpected and unsatisfactory conditions. Final payment shall not void this guarantee.

3.41 INTERIM MAINTENANCE PERIOD

Bidders are requested to include costs to provide interim comprehensive maintenance from start of construction throughout the term of the modernization construction project for the modernized elevators only. Personnel from Miller/East Bay shall maintain the existing elevators until removed by the Contractor for the modernization work. The maintenance is to be performed strictly in accordance with the requirements of this of specification.

3.42 EXISTING MAINTENANCE

The existing maintenance for the Center (Elevators No. 1-3 & 4-6) is being maintained by personnel from Millar Elevator Company/ East Bay Elevator Company and will be continued until the first elevator is removed for modernization by the Contractor. Contractor shall provide Interim Maintenance on the remaining and modernized elevators (Elevators No. 4-6) until the last elevator is completed. Note: Maintenance is not currently being performed on Elevators No. 7-8 as these units are shut down. Elevators No. 1-3 shall be maintained by Millar/East Bay.

3.44 REPAIR WORK NOT COVERED BY FULL MAINTENANCE CONTRACT

In event of vandalism or need for repair work not covered by full Maintenance Contract, Contractor is to gain approval from Contracting Officer prior to work being started. A change order would be issued as "add costs".

3.45 WARRANTY MAINTENANCE PERIOD

3.46 MAINTENANCE

Bidders are requested to include costs to provide twelve (12) months warranty comprehensive maintenance from Notice of Final Completion of the entire project. The maintenance is to be performed strictly in accordance with the specification.

3.47 REPAIR WORK NOT COVERED BY FULL MAINTENANCE CONTRACT,

In event of vandalism or need for repair work not covered by full

Maintenance Contract, Contractor is to gain approval from Owner prior to work being started. A purchase order will be issued from the Owner.

3.48 FIVE (5) YEAR OPTIONAL MAINTENANCE PERIOD

3.49 CONTINUING COMPREHENSIVE FULL MAINTENANCE

Bidders are requested to submit offers with the modernization bid for continuing comprehensive full maintenance of the three (3) traction elevators on a five year minimum basis. The Contract to start immediately following the expiration of the warranty maintenance period and be in accordance with the Manufacturer's standard maintenance agreement as modified by the Corps of Engineers.

3.50 CONTRACT NEGOTIATIONS.

Contractor is to furnish a signed copy of the agreement with the bid. Changes and additions and deletions to the service agreement shall be agreed to during contract negotiations.

3.51 SUB-CONTRACTORS

3.52 RESPONSIBILITY

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 Contracting Officer shall be through the contractor to the sub-contractor. 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 workmen is properly made good by the sub-contractor or by the Contractor at his cost. Contractor shall submit names of its sub-contractors on a sub-contractor list for approval by the Contracting Officer.

3.53 LIMITS

The use of sub-contractors is to be limited to work outside the scope of elevator construction work; example, patching, painting, coring of floors or walls, granite repair work and refinishing. Maintenance services may be contracted only at the discretion of the Corps of Engineers.

PART 2 PRODUCTS

4.1 DESCRIPTION OF SYSTEM

Elevators No. 4-6; Service Elevators & Elevators No. 7-8:

- | | |
|--------------------|--|
| A. Type: | #4-6 Service; #7-8 Passenger. |
| B. Capacity: | #4-5 - 4000 Pounds.
#6 - 4500 Pounds.
#7-8 - 2500 Pounds. |
| C. Speed: | #4-6 - 500 FPM.
#7-8 - 200 FPM. |
| D. Stops/Openings: | Elevators No. 4-5 - 8; Floors 1-8.
Elevator No. 6 - 9; Floors I, 1-8. |

- Elevators No. 7-8 - 3 (Existing)
Elevators No. 7-8 - 2 (Delete stop)
- E. Entrance Size: Elevators No. 4-6
4'-0" wide by 7'-0" high.
Side Opening Two Speed.
Elevators No. 7-8
3'-6" wide by 7'-0" high.
Center Opening.
- F. Control: Elevators No. 4-6: New variable
Voltage; SCR digitized closed
loop with all new equipment.

Elevators No. 7-8: New VVVF;
Digitized closed loop with all new
Equipment.
- G. Operation: Elevators No. 4-6: Group Operation
Elevators No. 7-8: Duplex
- H. Machines: Elevators No. 4-6: Retain existing
GE#324E gearless machines;
rehabilitate as specified.

Elevators No. 7-8: Retain existing
Montgomery geared machines;
Rehabilitate as specified.
- I. Power Conversion: Elevators No. 4-6: Provide new.
Elevators No. 7-8: Delete
Generators and provide new static
Drives.

5.1 AUTOMATIC OPERATION

5.2 GENERAL OPERATION

Elevators No. 4-6 & 7-8

5.3 MICROPROCESSOR CONTROLLED DISPATCHING SYSTEM

Provide a microprocessor controlled dispatching system designed to monitor all types of traffic and sufficiently flexible so that program will react to accommodate changes in traffic patterns. Include hardware necessary to protect hoist motors, motors, and door operators. Software shall control group and simplex program operations. Each elevator controller shall be provided with its own computer to enable direct serial link to group computer.

5.4 MONITOR THE DEMAND

The system shall continuously monitor the demand based on real time calculations to assign and reassign the elevators to handle the traffic in the most efficient manner. Time clocks, as installed, shall be accurate to ten (10) seconds per month.

5.5 REPROGRAMMING

Design the control system to accept reprogramming with no shutdown of system.

5.6 CONTROLLERS CONTAINING MEMORY EQUIPMENT

The controllers containing memory equipment must be properly shielded from line feeder pollution.

5.7 FLEXIBILITY

The system shall be flexible irrespective of the number of elevators in normal service.

5.8 CAR CALLS

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" whereby, all car calls will be canceled 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.

5.9 FAULT DIAGNOSTIC SYSTEM

Provide a non-proprietary windows-based 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 1000 entries, status conditions of the last five changes, and shall be displayed on a colored CRT monitor in the machine room and transmitted to remote location by telephone modem line. System must have software that will allow the transfer of information and control changes. Provide a compatible printer and keyboard which can print the CRT display and print logistic stored information. Provide manufacturer's standard modem for remote communication.

Provide, at no additional cost to Owner, required hardware such as keyboard or maintenance tool as specified under "Maintenance Data.

5.10 GROUP OPERATION DURING MODERNIZATION

A., When First Car is Removed: The remaining two elevators shall operate as a group from the existing hall button riser.

B. When Second Car is Removed: The remaining existing elevator and the newly modernized elevator shall dispatch from the new supervisory controller.

C. When Third Car is Removed: Both newly completed elevators shall be dispatched from the new supervisory controller.

5.11 GROUP AUTOMATIC OPERATION; FOR TWO OR MORE CARS

Provide an "on-demand" hall call response system that will continuously scan the hall calls and shall assign the closest elevator in time conditional that the longest hall call wait shall not extend ninety (90) seconds with three (3) cars in the group. The system shall be capable of reassigning the elevator if demand changes the real time calculation.

5.12 UP-PEAK MODE

The "up-peak" mode shall become effective automatically to meet heavy inflow of traffic into the building via the main dispatching floor at 2nd Floor (lobby) and shall provide for the following conditions:

A. Each car departing from the dispatching level with 60% load shall initiate an adjustable sampling period of up to 5 minutes. "Up-Peak" mode shall become immediately effective if a second such car departs within the sampling period.

B. One of the cars shall be homed to the main dispatching level.

C. Adjustable interval timing between the departures of cars from the dispatching floor shall be provided. The interval shall be adjustable between one (1) and fifty (50) seconds and shall be varied automatically in approximately inverse proportion to the number of cars standing at the dispatching level.

D. While a car is awaiting dispatching, its "door close" button shall be inoperative.

E. Cars shall be immediately dispatched from the dispatching floor when loaded to sixty (60%) full load

F. Cars leaving the dispatching level not loaded to sixty (60%) full load shall answer up landing calls in the normal manner.

G. "Down-Peak" mode shall not be established while "up-peak" mode is operative.

5.13 DOWN-PEAK MODE

A. The "down-peak" mode shall become effective automatically to meet intense down traffic to the main dispatching level and shall provide the following conditions.

B. "Down-Peak" mode shall be initiated and maintained in the same manner as for the "up-peak" mode but through the agency of eighty (80%)

loaded cars arriving at the main dispatching level instead of departing from it.

C. The parking call to the main dispatching level shall be inoperative.

D. Cars shall be dispatched upward from the main dispatching level immediately after passenger exit has ceased.

5.14 HEAVY "TWO-WAY" TRAFFIC PERIODS

During heavy "two-way" traffic periods, the system shall assign hall calls to the car closest to real time response while still maintaining a maximum wait time of ninety (90) seconds with three (3) cars in group.

5.15 PARKED CARS

The system shall park cars with their doors closed at the last landing served. This system shall also provide for an adjustable number of cars to be assigned to a high zone during off peak conditions.

5.16 ZONE PARKING

The elevators must continuously scan hall calls outside their zone so that they are capable of responding outside the zone if they are the closest elevator in response time. A car shall be assigned, when available, to park at the first floor (lobby) and third floor. Zone parking function shall be capable of manual, keyboard instructions to change zones.

5.17 DEMAND SERVICES

When no demand occurs for a predetermined time, all cars shall shut down and extinguish its normal car lighting. When a demand for service occurs, the closest elevator in time shall start up and answer that call. Provide sequential starting with the maximum number of elevators that are starting at one time is two (2).

5.18 NUMBER OF CARS

The number of cars brought into service shall be appropriate to the landing call requirements.

5.19 PREFERENCE

Landing call demand shall take preference over parking calls. Unassigned cars shall reverse as required to answer calls without the necessity of traveling to a terminal level.

5.20 PERCENT LOADED

If a 60% loaded car leaves an upper level and there is still an unanswered landing call in the related zone, the next available car shall be dispatched to that zone.

5.21 PERCENT LOADED

Landing calls assigned to a particular car shall be immediately reallocated when the car is loaded to 80% of full load.

5.22 FORWARD SET DIRECTION

A landing call corresponding to a forward set direction of travel of a car shall be capable of being re-registered at the level at which the car is standing, provided that the car is loaded to 80% of full load, or after the car fails to start as in paragraph "Other Required Features" below.

5.23 RUNNING

Except for predicted traffic demand and parking calls, cars shall only run when a service demand exists.

5.24 OTHER THAN NORMAL SERVICE

If a car is placed on other than normal service all landing calls assigned to this car shall be allocated to other elevators.

5.25 FAILURE OF THE DISPATCHING SYSTEM

In the event of a failure of the dispatching system due to failure of power supply to such equipment or to the landing buttons, each elevator shall be allocated to a group of landings that includes the main dispatching levels so that all levels are served and shall proceed to and stop at these landings in rotation. After picking up passengers on such landings, the car shall proceed to the landings for which car calls are registered and shall then return to the group of landings to which it has been allocated and stop at these landings in rotation.

5.26 BOTH "UP" AND "DOWN" HALL CALLS

A car with no car calls registered arriving at a floor where both "up" and "down" hall calls are registered shall respond to the hall call in the direction of travel and illuminate the appropriate lantern. If no car call is registered for that direction, the lantern shall be extinguished, the lantern for the other direction shall light and the car shall respond to the call in that direction. The doors shall not close and reopen.

5.27 COINCIDENTAL CALLS

The system shall be capable of monitoring hall and car calls to monitor coincidental calls. The cars will continuously scan the whole system to determine the closest elevator in time taking into account the coincidental car and hall call. Note: No double door operation will be allowed.

5.28 ILLUMINATION

Illumination of the hall call button shall not be extinguished until the direction lantern for the selected elevator has illuminated.

5.29 OTHER REQUIRED FEATURES

A. Should a car be delayed from leaving a floor for any reason, other cars shall respond to the hall calls at that floor and shall be dispatched in a normal manner.

B. Provide an adjustable load weighing device which will immediately dispatch cars and bypass hall calls when car is loaded to predetermined load. The load weighing device is to be mounted on the crosshead.

5.30 GENERAL PROGRAM ADJUSTMENTS

A. After the group of elevators have been placed in regular service, the elevators shall be observed under normal operating conditions. Minor adjustments shall be made as found necessary to ensure that the elevators operate at maximum efficiency.

B. If zones are employed, arrangements shall be made in the control circuits of the elevators for the division between each zone to be raised or lowered by keyboard commands if found necessary due to uneven distribution of traffic between the zones and/or staffing requirements.

5.31 SPECIAL OPERATIONS

5.32 INSPECTION OPERATION

Provide new key-operated hoistway access device. new key switches shall be mounted in the same upper section of door frames with only ferrule exposed to replace existing key switches. Provide new Code compliant crosshead inspection station with GFI outlet, light and alarm bell. Locate new hoistway access switch for Elevators No. 7-8 at the second floor. Note: Top floor entrances are to be disabled.

5.33 INDEPENDENT/SPECIAL SERVICE

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

5.34 OPERATION UNDER FIRE OR OTHER EMERGENCY CONDITIONS

5.35 GENERAL

Elevators No. 4-6: Provide special emergency service to comply with ASME A17.1 and local codes having jurisdiction. Replace existing Phase 1 recall switch at second floor elevator lobby. Key switch at second floor shall be relocated to new lobby panel and integrated with Fireman's key box with instructions for Phase I and II operation posted on the inside cover of the key box. Elevator Installer shall assist the prime building contractor and prime electrical contractor with the testing of Lobby smoke detectors. Provide with proper number of keys as directed by the local authorities.

Elevators No. 7-8: Provide special emergency service to comply with ASME A17.1. Elevator Installer shall assist the prime building contractor and prime electrical contractor with the testing of Lobby smoke detectors. Elevator Installer shall provide for two (2) separate testing phases due to the phasing of the prime building contract. Elevator installer shall be present and provide for three (3) days of testing of the original smoke detector systems and three (3) days of testing of the smoke detector system provided in the prime building contract. Elevators No. 1-3 shall be included with the testing of Elevators No. 4-6 & 7-8

5.36 IN-CAR SERVICE - PHASE 2

Elevators No. 4-6; Retain existing Phase II switch. Provide new circuitry; Elevators No. 7-8; Provide new Phase II key switch.

- A. Operation of switch to "ON" position shall be effective only after cars have returned to fire recall floor by activation of the Phase 1 switch or a smoke sensor.
- B. In-car service operation of the elevator shall be available only by a person in the elevator who shall have complete control of starting, stopping and door operation by continuous pressure on door open and door close buttons or a floor button.

5.37 FIRE SENSING DEVICE

Smoke and product of combustion detectors are existing and terminated in machine room. Connect to new controls and provide circuitry 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 "BY-PASS" position.
- C. To restore normal service, turn Phase 1 switch to "OFF" and remove key. Each car must be at fire recall floor.

5.38 OPERATION UNDER EARTHQUAKE CONDITIONS

- A. Seismic Trigger Device: Provide new dual acting (horizontal and vertical) seismic trigger device and connect to new controls.
- B. Departure from the Rails: Recondition and retain existing "ring and string" type counterweight derailment device to each elevator to sense its departure from the rails. The device is to be fail safe in the event of string fracturing and comply with ASME A17.1 requirements.

5.39 OPERATION UNDER EMERGENCY POWER SYSTEM

Provide circuitry provisions for operation of Elevators No. 1-3, 4-6 and 7-8 as follows:

Upon loss of power, all elevators shall stop.

Upon acquisition of emergency power signal from transfer switch Elevators No. 7-8 shall lower, to the lowest landing and shut down with the doors open.

Following the lowering of Elevators No. 7-8, Elevators No. 1-3 & 4-6 shall sequence start and begin automatic operation under emergency power.

Prior to returning to normal power, the master elevator group controller, Elevators No. 4-6, shall receive a 60 second time delay signal from the auxiliary contacts of the transfer switch. Upon receipt of the signal, Elevators No. 1-3 & 4-6 shall sequence start, followed by Elevators No. 7-8

on normal power.

For future use, Elevator Installer is to provide a second set of EPROMs with the following sequence:

For future use, Elevator Installer is to provide a second set of EPROMs with the following sequence:

- a. Sequence lower all elevators (Elevators No. 7-8, 1-3 & 4-6).
- b. Run Elevators No. 3, 5 & 6.
- c. Sequencing and operation shall be as described above.

2.40.6 EPROMs shall be tested at the completion of the last elevator being modernized. Following the testing, the EPROMs shall be delivered to the Project Manager with the final closeout documents.

For future use, Elevator Installer is to provide a second set of EPROMs with the following sequence:

- a. Sequence lower all elevators (Elevators No. 7-8, 1-3 & 4-6).
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- c. Sequencing and operation shall be as described above.

2.40.6 EPROMs shall be tested at the completion of the last elevator being modernized. Following the testing, the EPROMs shall be delivered to the Project Manager with the final closeout documents.

5.41 EMERGENCY POWER

When emergency power comes onto the line, power for lighting car fan and alarm bell shall be automatically transferred and all cars are automatically transferred to the emergency buss. The Elevator installer shall provide all conduit, wiring and circuitry necessary including time delay or auxiliary relays required to accomplish the operation specified.

5.42 KEY SWITCHES

Elevators No. 4-6: Reuse existing switches and pilot lights to permit manual selection of desired elevator to operate on emergency power. The key switches and pilot lights are located in the second floor lobby panel for Elevators No. 1-3. Switches for Elevators No. 1-3 & 4-6 shall be retained and positioned in the auto position so that all cars will operate on emergency power. These switches will allow manual shut down of elevators if desired.

Elevators NO. 7-8: Provide new key switch in hall push button station to allow manual selection of elevators. . Key switches shall be positioned in the off position.

5.43 INDICATOR JEWEL

Provide indicator jewel in the main car operating panel which shall illuminate when elevator is operating on emergency power.

5.44 EMERGENCY OR NORMAL POWER RESTORED

When normal power fails and emergency power is used or, when normal power

is restored, the cars will start in sequence not simultaneously. Allow thirty (30) seconds between starts. A signal will be given twenty (20) seconds prior to normal power restoration.

5.45 CIRCUITRY AND TRANSFER TIMES

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. Transfer switch and auxiliary timing contacts by others.

5.46 FIRE SERVICE AND DERAILMENT DEVICES

Fire service and derailment devices shall be operable when system is on emergency power operation.

5.47 DOOR OPERATION

5.48 OPERATION

Adjust and retain existing door operators.

- A. Provide door times available as specified under "Design Criteria."
- B. Provide nudging feature. Doors to stop when obstructed and not re-open. When obstruction clears, the doors shall fully close under reduced speed.
- C. 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.
- D. The car and landing door operation is to be modified to ensure they open flush to their respective jambs during full open mode.
- E. Adjust the door buffers located in strut angles, replace where missing.

5.49 CAR DOOR OPERATOR; HANGERS, TRACKS AND ASSOCIATED EQUIPMENT

Refurbish, adjust and retain existing hangers, tracks and associated door operating equipment.

- A. Clean, adjust and retain existing door operator.
- B. Adjust the door operators to provide smooth and quiet operation. Door speeds shall comply with design criteria.
- C. Retain existing car header, tracks and hangers. Refurbish rollers, upthrusts, spirators and related components.

5.50 DOOR PROTECTION

Elevators NO. 4-6: Test and retain existing electronic detectors. Replace if necessary. Elevators No. 7-8 Remove existing safety edges and photo eyes and provide new electronic door edge protection.

- A. Detection of intrusion into the protected area shall cause the

doors, if fully open, to be held in the "open" position and, if closing, to reverse to fully "open" position.

B. The normal hall or call dwell time shall be reduced to zero upon activation of the door protection system and doors shall commence to close.

C. The first intrusion during a stop at any landing shall cancel the normal dwell time and substitute a door protective system time delay which shall be adjustable between zero (0) to ten (10) seconds commencing with removal of the intrusion. If, during this period, a further intrusion occurs, upon its removal, the same delay period shall be reimposed and this cycle shall continue until traffic through the doorway ceases.

D. The doors shall commence to close immediately after the expiration of the determined period once the last intrusion has been removed.

E. If the doors are further prevented from closing for an adjustable period of fifteen (15) to forty-five (45) seconds, or if elevators are operating on Phase I or II Fire Service, they shall proceed to close at a reduced speed and a loud buzzer (nudging) shall sound. Closing speed shall comply with ASME A17.1 .

5.51 HOISTWAY EQUIPMENT

5.52 GUIDE RAILS AND BRACKETS

Retain existing car and counterweight rails, clean running faces, adjust D.B.G and front to back dimensions, tighten brackets, fishplates and bolts. Paint brackets and guide rails black with semi-gloss enamel.

5.53 ROLLER GUIDE

Retain existing roller guides on both car and counterweight for Elevators No. 4-5 and Elevators 7-8. Replace any cut or flat rollers. Adjust springs or rubber shock mounts to provide continuous contact with rail surfaces. Balance car to ensure equal guide shoe pressure on all wheels and not exceed manufacturer's recommendations. Provide new spring loaded roller guides for Elevator No. 6. Rollers shall be a minimum of 6" in diameter.

5.54 HOIST ROPES

Elevators No. 4-6: Retention, lubricate and retain existing ropes. Shorten as required for code clearances. Provide new cable lubricators on each elevator.

Elevators NO. 7-8: Provide new hoist ropes to match existing. Provide new cable lubricators on each elevator.

5.55 GOVERNOR ROPES

Elevators No. 4-6 & 7-8: Provide new governor ropes.

5.56 COMPENSATION ROPES

Elevators No. 4-6: Provide new compensation ropes

5.57 BUFFERS

Elevators No. 4-6: Retain existing oil buffers. Clean ram, readjust to car buffer plates, drain and flush out all oil tanks, clean down, refill and test with full load at contract speed.

Elevators No. 7-8: Retain existing spring buffers.

5.58 COUNTERWEIGHTS

Retain existing, realign, correct balance to 42% of capacity, clean down and tighten frame bolts. Comply with ASME A17.1 . Provide viewing panel in counterweight guard of Elevators No. 7-8.

5.59 SAFETIES

Elevators No. 4-6 & 7-8: Retain existing. Clean, lubricate as required and test its operation with full load.

5.60 GOVERNOR

Elevators No. 4-6 & 7-8: Retain existing add switches to comply with ASME A17.1. Re-calibrate and test.

5.61 CAR FRAME AND PLATFORM

- A. Retain existing platforms and car frames.
- B. Tighten all side stays and remove all squeaks from frames.
- C. Modify platforms on Elevators No. 4-6 similar to modifications previously made on Elevator No. 1. Add jack bolts as work previously accomplished on Passenger Elevators No. 2-3.

5.62 DEFLECTOR AND COMPOUNDING SHEAVES

Retain existing and relubricate.

5.63 HOISTWAY SWITCHES

Provide and install all new for new controls. Not limited to, but including, directions and final limits, floor stop and magnetic leveling switches, car TM switch, vanes and cams, etc.

5.64 HOISTWAY ENTRANCES

5.65 GENERAL

Retain, paint and provide new hoistway entrance components as specified. Preparation for painting may be done during regular time hours. All painting shall be done on off hours.

5.66 HEADERS, HANGERS AND TRACKS

Retain existing headers, hangers and tracks. Refurbish and adjust hanger rollers, closers and upthrusts.

5.67 INTERLOCKS; BRIDGING BLOCKS AND CONTACT ARMS; ALL CARS

Retain existing. Provide all new high temperature wiring for interlock circuits.

5.68 PICK-UP ROLLER ASSEMBLIES; ALL CARS

Refurbish, adjust and retain existing pick-up rollers.

5.69 STRUTS; ALL CARS

Retain existing, clean, tighten and paint.

5.70 CLOSERS; ALL CARS

Refurbish existing. Components shall be replaced if not suitable in providing required closing operation.

5.71 DUST AND HANGER COVERS; ALL CARS

Retain existing, clean, reinforce and refinish with black paint. Provide new where missing in minimum 16 gauge sheet steel painted black.

5.72 FASCIA, TOE AND HEAD GUARDS; ALL CARS

Retain existing, modify to comply with code, refinish with black paint and refasten for greater rigidity.

5.73 HOISTWAY SILLS; ALL CARS

Retain existing, power clean to metal and refinish. Remove any burrs in the sill grooves.

5.74 FRAMES; ALL FLOORS; ALL CARS

Retain existing. Clean and polish stainless steel frames for Elevators 4-6.

5.75 HOISTWAY DOORS; ALL FLOORS; ALL CARS

Retain existing. Modify as specified.

A. Existing loose sight guards sections to be fastened with shake proof washers.

B. Paint existing doors in color as selected for Elevators 4-6.

C. Replace missing door key hole escutcheons.

D. Clean and repair existing stainless steel kick plates for Elevators No. 4-6. Kick plates may be re-riveted to the door panels. Replace any damaged kick plates. Match existing material.

5.76 PASSENGER ELEVATOR ENTRANCE SCHEDULE

Size: Elevators No. 4-6: 4'-0" wide x 7'-0" high
 Elevators No. 7-8: 3'-6" wide x 7'-0" high

B. Type: Elevators No. 4-6: Side Opening, Two Speed
 Elevators No. 7-8: Center Opening, Single Speed

5.77 MACHINE ROOM EQUIPMENT

5.78 GENERAL

Provide equipment to fit existing space and structural limitations. Coordinate related electrical, structural and mechanical provisions. Do not remove or attach to any fireproofing material.

5.79 SPECIFICS

Elevators No. 4-6: Retain existing GE #324 E gearless machine and rehabilitate machines as follows:

- A. Clean windings, field coils, brush riggings and interior of field ring.
- B. Remove bearing lubricant and provide new; issue report to Contracting Officer on bearing wear.
- C. Commutator: Stone, clean and resurface the commutator. Replace defective brush holders, insulation and brushes to O.E.M. standards.
- D. Brake: Dismantle the brake; remove and clean the operating core. Realign the brake and set to withhold 125% load.
- E. Drive Sheave: Retain existing.

Elevators No. 7-8: Retain existing Montgomery geared machines and rehabilitate machines as follows:

- A. Remove existing DC motor and provide new AC motor matching the torque requirements of the existing duty.

Remove bearing lubricant and provide new; issue report to Contracting Officer on worm and ring gear wear.

Brake: Dismantle the brake; remove and clean the operating core. Realign the brake and set to withhold 125% load.

Drive Sheave: Retain existing.

5.80 CONTROLLER

Provide new power and operational controllers; overload relays in three legs of power circuit; cabinets with NEMA-1 enclosures and doors arranged with locks. 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.

5.81 CONTROLLER WIRING

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.

5.82 EXTERNAL CONNECTIONS

All external connections to the equipment on each controller shall be made by means of approved cable thimbles and/or solderless cable lugs, depending on the current to be carried.

5.83 MAIN CONTACTORS OR STARTER SWITCHES

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.

5.84 CONNECTIONS

Where several connections are to be made to one terminal, they shall be separated from one another by approved means. Wire wrap type connections on controller are not acceptable.

5.85 VOLTAGE SUPPLY

The voltage supply to the hoistway door interlocks shall be minimum of 100 volts.

5.86 RELAYS, AUXILIARY MOTORS, RESISTORS, AND SIMILAR ITEMS

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.

5.87 CONTACT AREA

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.

5.88 AUXILIARY CONTACTS

All auxiliary contacts shall have silver tips. All moving contacts shall be mounted on suitable spring controller contact fingers.

5.89 CONTACTS

All contacts must make with a positive wiping action and shall permit easy adjustment to compensate for wear and changes in alignment.

5.90 THERMAL PROTECTIVE DEVICES

Thermal protective devices and electronic components, where used, shall not

be subject to heat rising from rectifiers, resistors and similar items.

5.91 SUPPLY TO ALL L.E.D. TYPE LAMPS

Supply to all L.E.D. 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.

5.92 CONTROLLER

The controller and all equipment such as SCR, 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 104 degrees F. Submit certification to the Contracting Officer that controller meets this requirement.

5.93 POWER CONVERSION AND REGULATION UNIT

5.94 GENERAL

Provide new Isolation transformers and chokes Controller manufacturer to certify that transformers and chokes are compatible with new control.

5.95 SOLID STATE CONTROL (SCR & VVVF)

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. 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.

5.96 ACCELERATION AND DECELERATION

Provide smooth acceleration and deceleration by variable voltage applied to hoisting motor and by dynamic braking before brake application.

5.97 FAILURE TO OPERATE AS INTENDED

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.

5.98 FAULT PROTECTION

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.

5.99 NOISE SUPPRESSION

Provide noise suppression chokes in the D.C. feeders to the hoist motors to eliminate noise and vibration to the building and to the elevator cab.

5.100 BUILDING SYSTEM POWER LINE

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. Measure voltage distortion requirements at secondary of building system transformer used to provide power to elevator system. The Contractor is to provide all test equipment to verify the requirements and demonstrate such to the Contracting Officer.

5.101 CONTROL WIRING

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

5.102 SOLID STATE EQUIPMENT

Submit, for review, applicable brochure and technical information as required for solid state equipment.

5.103 SOUND SUPPRESSION EQUIPMENT

Provide adequate sound suppression equipment to control airborne and/or structure borne noises and vibrations acceptable to the Contracting Officer.

5.104 REGENERATIVE POWER, NORMAL AND EMERGENCY STANDBY

Manufacturer shall provide means of absorbing regenerative power, normal and emergency standby.

5.105 IN-RUSH CURRENT DEMAND

Limit the total in-rush current demand in the existing feeders to that of the existing static drive units.

5.106 TWO ELEVATORS LOADED

Insure that only two elevators can start in a loaded condition simultaneously.

5.107 MANUFACTURER'S SCR DRIVE CONFIGURATION

Certify that the existing machines can operate with no adverse affects when controlled by the Manufacturer's SCR drive configuration.

5.108 ADJUSTING OR DIAGNOSTIC TOOL

Provide non proprietary adjusting or diagnostic tool with appropriate level of passwords for the Owner with no lease agreement, reprogramming, automatic program destruction or periodic recalibration required.

5.109 START AND DECELERATION CURRENTS

Provide, as required, at no additional costs to the Owner, new elevator supply feeders and disconnect switches with circuit breakers or fuses due to the increased start and deceleration currents if drawn by the SCR.

5.110 MACHINE ROOM ENCLOSURE

Retain existing.

5.111 SIGNALS AND OPERATING FIXTURES

5.112 GENERAL

Provide signals and fixtures with all features as existing and additional as specified:

- A. Buttons: New buttons where specified shall match existing car operating panel buttons.
- B. Switches: Retain existing and/or provide new where specified.
- C. Faceplates: Provide of material and finish as indicated and specified; 1/8 inch minimum thickness with edges relieved.
- D. Fastenings: Provide with tamper proof screws.
- E. Service Cabinets: Retain existing.
- F. Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Contracting Officer's approval.
- G. Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected.
- H. Button Acceptance Pilot Lights or Jewels: L.E.D. rated to minimum of 100,000 hours operating life.
- I. Manufacturer's names may not appear on fixtures.

5.113 CAR OPERATING PANELS

Elevators No. 4-6: Retain existing. Modify as specified below.

- A. Replace screws in car operating panels.
- B. Modify car operating panel for "call cancel" button.
- C. Retain existing operating permit frame. Locate as directed by Contracting Officer.

Elevators No. 7-8: Provide new stainless steel car operating panel. Oversize faceplate to cover existing cutout.

General: Provide signals and fixtures as specified for all elevators. Mounting heights and arrangement of fixtures shall meet handicap requirements.

Buttons: Provide minimum 1 inch diameter mechanical, white illuminated buttons raised 1/8 inch from surrounding surface with square shoulders and with engraved identifications. Operation of car or hall button shall cause button to illuminate.

Switches: Toggle type typically or key operated where installed.

Faceplates: Provide of material and finish as indicated and specified; 1/8 inch minimum thickness with edges relieved. Faceplates shall be sized to cover hole left by removal of existing fixture where new fixtures are provided.

Fastenings: Provide with flush tamper-proof screws of material and finish matching faceplates.

Cabinets: Provide with pulls, concealed hinges and doors mounted flush with hairline joints to adjacent surface.

Arrangement: Arrangement of fixtures shall generally conform to that specified, but components may be rearranged, if desired, subject to Owner's Representative's approval.

Engraving: Of size indicated; color backfill with epoxy paint in contrasting color as selected.

Pilot Lights or Jewels: Miniature LED type or flush tamper-proof illuminating elements.

Car Operating Panels: Provide buttons numbered to conform to floors served and the following:

Locate top operating button at 48 inches above floor; maximum 54 inches when required.

Locate emergency stop and alarm button in bottom row at 35 inches above floor. Wire emergency stop to ring alarm bell.

Provide door open and door close buttons located above emergency stop and alarm of same design as car button.

Engrave main panel with capacity, number of passengers and elevator number in 1/4 inch letters. Engrave NO SMOKING in 1 inch letters. All signage required by local codes shall be engraved on telephone cabinet door.

Provide one new panel per car; integrate cabinets, buttons and engraving into hinge single piece faceplate mounted to front return panel.

5.114 CAR POSITION INDICATORS

Elevators No. 4-6: Remove existing car position indicators and install new scrolling message screen to indicate car position and direction. Combine with Hall Lanterns

Elevators No. 7-8: Retain existing car position indicator and relamp.

Elevators No. 7-8: Retain existing hall position indicators and relamp.

5.115 SERVICE CABINET

Elevators No. 4-6: Retain existing.

5.116 SPEAKER PHONE AND CABINET; ALL CARS

Provide a complete communication system consisting of a hands free telephone instrument and automatic dialer. Mount in existing telephone cabinet as an integral part of side wall panel. Automatic dialer shall be programmed as directed by Contracting Officer.

5.117 DIRECTION LANTERNS

Elevators 4-6: Refurbish and retain existing floor hall lanterns and provide circuitry for double stroke adjustable electronic chime twice for DOWN direction and once for UP direction at typical floors. Replace any damaged or missing lanterns lens and remove paint from faceplates.

Elevators No. 4-6: Refurbish and retain existing car riding lanterns. Do not ring chime on activation of car lantern.

Elevators No. 7-8: Refurbish and retain existing car riding lanterns. Provide double stroke chime.

5.118 HALL BUTTON FIXTURES

Elevators No. 4-6: Replace the existing fixture stations at all floors with new surface mounted stainless steel fixtures. Each fixture shall contain buttons which illuminate hall call registration and extinguish when call is answered. Provide intermediate fixtures with two (2) buttons and terminal fixtures with one (1). Locate fixtures in existing recesses and size fixture to cover the existing hole locations and provide disable access per ADA requirements. Incorporate existing Phase I key switch in second floor hall stations. Retain existing Commandeering key switch at each floor. Existing bezel shall be replaced with new bezel labeled "COMMANDEERING".

Elevators No. 7-8: Retain existing.

5.119 PROVISIONS FOR ACCESSIBILITY USE

Visual and Audible Signal Announcement Signal: Locate in transom above car door of Elevators No. 4-6 only. Match existing system installed on Elevators No. 1-3.

- A. Each message to be a minimum of 1-1/2" in height.
- B. Incorporate a voice announcement signaling feature. The voice is to announce in English:
 - (1). The next level the elevator is to arrive at.
 - (2). The next direction of travel of the elevator.
 - (3). When doors have been held open for an extended period.
 - (4). Standard vendor emergency notification messages.
- C. The audibility of the voice is to be adjustable in volume from

zero to 45 dBA and still maintain clarity.

5.120 MACHINE ROOM MONITOR

Provide in group control panel in each machine room, manufacturer's standard machine room CRT with the following features as a minimum.

- A. Car position indicator for each car with direction arrows.
- B. Lights for each car showing car and hall calls registered.
- C. Lights for each car indicating load weighing device is actuated and by-passing hall calls.
- D. Indication for door position (open/close)
- E. Traffic performance reporting down load function in 15 minute intervals. Traffic analysis recording sheets to show when cars are in or out of group and for the duration of such time. Report shall record the last 60 times when a car changes from group to any other mode and return to group.

5.121 BUILDING SECURITY/REMOTE MONITORING CRT SCREEN

Connect Elevators No. 4-6 to existing CRT screen supporting Elevators No. 1-3 with telephone modem link from group elevator controllers. Provide separate monitor for Elevators No. 7-8. Manufacturer's security system is to be integrated into the monitoring system. The system will be acceptable providing the following features are incorporated:

- A. Car position indicator for each car with direction arrows.
- B. Door position (open/closed).
- C. Indications showing hall and car calls registered.
- D. Sign indicating if system is on fire service or emergency service.
- E. Lights for each car indicating if it is on independent or maintenance service.
- F. CRT screens to have ability to show status of the three (3) elevators on one display and individually show each group status by use of keyboard command. Provide screen layout to incorporate Elevators No. 4-6. Include indicator light which shall flash and continue to flash when a car is being held longer than twenty (20) seconds at a floor or if elevator has malfunctioned. Simultaneously with the flashing light an audible buzzer shall sound.
- G. Security system shall have ability to:
 - (1). Simplex operation by mouse operation to indicate operation mode.
 - (2). Set security of any or all floors for any or all elevators.
 - (3). Set up security requirement for future operation on a weekly schedule.

- (4). Allow car calls to be flagged on each elevator.
- (5). Ability to provide required stops and or single call per trip to assure only authorized access to secure floors.
- (6). Provide screen for inclusion of Elevators No. 4-6.

5.122 ACCESSIBILITY REQUIREMENTS

Provide to meet ADA and local codes having jurisdiction including handrail and button configuration.

A. Car Operating Panels; Elevators No. 4-6: Retain existing braille plates.

Entrances; Elevators No. 4-6: Retain existing braille plates.

Car Operating Panels; Elevators No. 7-8: Provide round braille tag same size of car buttons. Lettering to be white on black background.

Entrances; Elevators No. 7-8: Provide square braille plates. Lettering to be white on black background.

5.123 LOBBY PANEL

Elevators No. 4-6: Remove existing plastic covered lobby indicator and stainless steel switch panel. Remove wiring and back boxes. In-fill wall and paint to the nearest relief in existing wall color.

5.124 WIRING

5.125 GENERAL

Provide new wiring as necessary in hoistway and machine rooms, hoistway and cars. Furnish shielded or as specified wires in cables for telephone and for future fireman's jack; termination to be a selected position in machine room. Provide new conduit and duct work in machine room as needed. Machine room and hoistway conduit may be reused where satisfactory to codes. All new and reuse raceway and conduit to be secured in accordance with the National Electrical Code.

5.126 TRAVELING CABLES

Retain existing traveling cables and provide new traveling cables as required and route from car to controller with no splices. 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. Provide 10% spares for each set of conductors except communication conductors, minimum of six. Provide two (2) spare pair of conductors of communication conductors per car.

5.127 WORK LIGHT AND CONVENIENCE OUTLET

Provide two (2) GFI outlets on top of car with wire lamp guard.

5.128 STOP SWITCHES

Remove existing worn pit switches and provide new in each pit, as required by code and on top of car.

5.129 ALARM GONG

Six-inch size, 110 volt. Provide for each car to be actuated by corresponding alarm button or emergency stop switch. Existing gong may be retained if serviceable following the modernization work.

5.130 AUXILIARY DISCONNECT SWITCHES

Provide as required within the machine room, pits and at remote equipment not in view of mainline switches; include all wiring and conduit.

5.131 CAR ENCLOSURES

5.132 GENERAL

Elevators No. 4-6: Remove, provide and rehabilitate existing cab interiors. Fabricate finish work smooth and free from warps, buckles, squeaks and rattles; joints lightproof. No visible fastenings except as indicated.

5.133 PASSENGER CARS NO. 4-6 & 7-8

6.1 STEEL SHELL

Retain existing steel shell.

6.2 EMERGENCY EXIT

Top of car per code. Provide new lock and electrical contact.

6.3 VENTILATION

Retain existing concealed vents above base. Remove and replace existing fans and provide new cover plate to cover hole in for Elevators #4-#6 & #7-#8 Paint in color to match ceiling.

6.4 CAR DOORS

Elevators No. 4-6: Fabricate new doors from 16 gauge sheet steel sufficiently reinforced with steel to insure rigidity and sound deadened. Provide two guides per panel located 1 inch from each end. Finish car side with stainless steel and return finish 1/2 inch around edge of doors. Provide new rubber door stops for strike jamb of opening.

Elevators No. 7-8: Retain existing car doors. Provide new door gibs.

6.5 PROTECTIVE PADS

Elevators No. 4-6: Provide one (1) set of heavy quilted protection pads. Pads shall cover all walls with cut-out sections for car operating panels. Provide stainless steel pad buttons on all Elevators.

6.6 FRONT RETURN PANELS

Retain existing stainless steel, No. 4 finish fixed return panels. Clean and polish stainless steel.

6.7 INTERIOR PANELS AND TRIM

Elevators No. 4-6 and 7-8: Retain existing plastic laminate and stainless steel wainscot. Clean and polish stainless steel.

6.8 BASE

Elevators No. 4-6 and 7-8: Clean and retain existing stainless steel coved base.

6.9 CEILING AND LIGHTING

Elevators No. 4-6 and 7-8: Repaint existing ceiling and cove sections. Paint coves and ceiling to match existing color. Relamp and provide new ballast in 5, 7 & 8 fluorescent fixtures. fluorescent fixtures.

6.10 HANDRAILS

Elevators No. 4-6: Remove existing handrails and provide new handrail on three side walls. Fabricate from 1-1/2" inch stainless steel, No. 4 finish tube with matching brackets. Securely attached to car shell with concealed fasteners. Close and return ends of tube to wall. Plug holes where existing handrails were removed with stainless steel round head bolts.

Elevators No. 7-8: Retain existing handrails. Provide replacement handrail to match existing on Elevator No. 7.

6.11 BUMPER RAILS

Elevators No. 4-6: Provide new 4" wide by 3'8" thick stainless steel bumper rails centered at 12" above the finish floor on 1" stainless steel stand-offs on three walls installed on approximately 14" centers. Return ends of each bumper rail to wall.

6.12 FLOORING

Existing flooring will be removed by DMDC Facility management personnel using hazardous abatement procedures. Contractor shall repair and patch subflooring and provide one piece vinyl sheeting, Tarkett Coordinates or approved equal. Color as selected by Contracting Officer.

6.13 SILLS

Elevators No. 4-6: Remove existing aluminum sills and install new nickel silver sills.

Elevators No. 7-8: Retain existing nickel silver car sills. Clean and polish.

6.14 EMERGENCY LIGHTING

Retain existing. Relamp fixtures.

PART 3 EXECUTION

8.1 GENERAL

8.2 BIDDING DOCUMENTS

Bidders shall attend a mandatory bid conference, visit the site, examine all existing conditions of the "to be retained" equipment, examine any existing structural, electrical and mechanical plans. Any discrepancies which affect the elevator work or conditions adverse to the bidder's equipment shall be brought to the attention of the Contracting Officer in writing at least two (2) 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 ASME A17.1 and ASME A17.3.

8.3 PREPARATION

8.4 FIELD MEASUREMENTS

Field verify all dimensions before proceeding with the work. Coordinate related work by other trades. Verify the following to be acceptable for modernization of elevators.

A. Hoistway and machine room are satisfactory to complete the modernization.

B. Do not begin modernization of any elevator until unsatisfactory conditions have been corrected and approval in writing has been given by the Contracting Officer to the Elevator Contractor's schedule of site work. All temporary group control system work must be completed before work begins.

8.5 INSTALLATION

8.6 GENERAL

Install per manufacturer's requirements, those of regulatory agencies and as specified.

8.7 WELDED CONSTRUCTION

Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustments, inspection, maintenance and replacement of worn parts. Comply with AWS standards for workmanship and for qualifications of welding operators.

8.8 SOUND ISOLATION

Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent transmission of vibrations to structure and thereby, eliminate sources of structure-borne noise from elevator system.

8.9 MAINTENANCE OF EQUIPMENT

Repair and provide full comprehensive maintenance of equipment complete as required by Maintenance Clause 3.07 of the specification.

8.10 ALIGNMENT

Check alignment of guide rails to be plumb and parallel with maximum deviation of 1/16 inch.

8.11 GRAPHICS

Provide graphics visible to public as selected by Contracting Officer.

8.12 MANUFACTURER'S NAMEPLATES

Manufacturer's nameplates, trademarks or logos not permitted on surfaces visible to public.

8.13 LOCKS, KEYS, AND IDENTIFICATION LABELS

A. General: The design of all key locks shall be by the manufacturer.

B. The following are to be provided at the completion of the first elevator.

(1). Six (6) complete sets of keys to operate each type of key operated switch and lock associated with the elevators.

(2). Six (6)sets of hoistway access keys.

C. The Building Management will provide keys to the machine room door or other access door keys to the Contractor.

D. Each key shall be mounted on a ring with an approved plastic or aluminum label tag, engraved to identify the purpose of the key as specified by Contracting Officer.

8.14 CLEANING AFTER INSTALLATION

After the installation of each elevator has been completed and immediately prior to the carrying out of each acceptance test, the machine room and all equipment therein, the elevator hoistways including outside of car and all ledges and similar areas, the elevator pit and equipment therein, and all door hanger runners, guides, tracks and sills shall be thoroughly cleaned down, preferably with vacuum cleaning equipment, and all dust, fluff, dirt, grit, excessive oil and grease and rubbish generally shall be removed from site.

8.15 FINISH PAINTING AFTER TESTS

After satisfactory completion of the last tests, any damage to the paint work shall be repaired and the installation recleaned, after which at least one coat of gloss oil resistant or enamelled paint shall be applied by brushing or spraying in the Elevator Installer's customary colors to all the existing and new equipment, conduit and metal work in the machine room secondary floors. All other final painting of steel work to be done off site.

8.16 PAINTING OF MACHINE ROOM FLOORS

After the completion of the entire installation, the floor of each level of machine room shall be thoroughly cleaned down and brush painted with one

coat of gray traffic paint having oil resistant properties.

8.17 PROGRESSIVE ACCEPTANCE AND USE BY D.O.D.

8.18 NEAR COMPLETION

When an elevator is near completion and declared ready for service, before completion of other elevators, D.O.D. will be given the elevator and place it into automatic service.

8.19 QUALITY CONTROL TESTS

The elevator must be tested and inspected by regulatory agencies and a permit to operate issued. Field quality control tests will be witnessed by the Contracting Office or his representative and a certifying elevator inspector.

8.20 EXAMINATION OF FINISHES

An examination will be performed in the presence of the Contracting Officer and Elevator Contractor to determine condition of elevator and finishes.

8.21 BEFORE EACH PHASE

The elevator is to run satisfactorily for a period of five (5) working days after acceptance before next elevator modernization commences for each phase of the Contract.

8.22 PERIOD TO MAINTAIN

During this period, the Elevator Contractor is to maintain this and other elevators as specified by Clause 3.#.17 of the specification. It shall continue through the modernization of each elevator for a twelve (12) month period after the acceptance of the last elevator, group control testing and the completion of all punch-list items.

8.23 FIELD QUALITY CONTROL

8.24 TESTS

Upon completion of each elevator, Contractor shall provide all necessary instruments, weights and personnel to conduct the Elevator Safety inspections and the following performance tests, which shall be witnessed by the Contracting Office or his representative. The Contractor shall pay for all fees of the QEI inspector and submit a complete report describing the results of the tests.

- A. Full load safety and buffer tests.
- B. One-hour heat and run test with full load in car.
- C. Stop car at each floor in each direction.

8.25 THERMOMETERS

Provide well-shielded thermometers for hoist motor and verify that temperatures do not exceed 50 degrees Centigrade above ambient.

8.26 PERFORMANCE AND LEVELING TESTS

Performance and leveling tests shall be made before and after heat and run test, at full load and balance weight in car.

8.27 OVERLOAD TEST

Overload test with 125 percent (125%) of load in car per ASME A17.1 .

8.28 VERIFY SAFETY FEATURES

Check and verify operation of all safety features, particularly:

- A. Fire service.
- B. Door pressure and impact.

8.29 POLLUTION FREE FEEDBACK

Tests to prove that the elevator power control circuits will maintain a pollution free feedback to the supply feeders, under all conditions of loading.

8.30 CURRENTS, POWER CONSUMPTION, VOLTAGE AND SPEED

Tests to ascertain the starting and running currents, power consumption, voltage and speed under the conditions of loading specified in the preceding items.

8.31 OVERLOAD AND OVERTIME PROTECTIVE DEVICES.

Tests to demonstrate the settings and effectiveness, under various conditions, of all overload and overtime protective devices.

8.32 CONTROL SYSTEM COMPLIANCE DEMONSTRATIONS

Demonstrate the program control system complies fully with the specified documents. Demonstrations shall be performed outside of normal working hours and completed following the interconnection of elevator group.

8.33 INSPECTION

Assist the Owner in making thorough inspection of entire installation to assure workmanship and equipment complies with Contract documents.

8.34 CORRECTION

Make corrections to defects or discrepancies at no cost to the Owner. Should discrepancies be such that reexamination and retesting is required, all costs including those of the Contracting Officer fees shall be paid for by the Contractor.

8.35 INSTRUCTIONS

Instruct D.O.D.'s personnel in proper use of each system.

8.36 MAINTENANCE

8.37 GENERAL

Contractor shall provide complete continuing comprehensive maintenance of the five (5) elevators being modernized following completion of each modernization phase. The Contractor's elevator personnel shall maintain the existing elevators until each is removed from service to begin the modernization work. The maintenance for the newly modernized elevators is to be done strictly in accordance with all requirements of the specification for the Interim Maintenance and the Warranty Maintenance Periods. Maintenance services shall start immediately upon completion of the first elevator. When each elevator is modernized, it shall be added to the Contractor's maintenance program until the final car is completed. At this time the Contractor shall continue maintenance on all five elevators during the warranty period of twelve (12) months. The date for the start of the twelve (12) month period will be the date of "Notice of Completion". There shall be no add costs for any deferred maintenance or prorata of the existing retained equipment or exclusions from the comprehensive maintenance contract.

8.38 EXAMINATION

Include systematic examination minimum of twice monthly, minimum of six (6) hours for each visit, adjustment and lubrication of elevator equipment whenever required and replacement of defective parts with parts of same manufacture as required for proper operation. A log of maintenance hours spent each month is to be provided in the machine room for checking. 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.

8.39 PERFORMANCE STANDARDS:

8.40 OPERATION

Maintain the performance standard set forth in this Specification and maintain correct operation of the operating system.

8.41 RIDING QUALITIES

Maintain smooth starting and stopping, smooth riding qualities and accurate leveling at all times.

8.42 CALL-BACKS

In event of failures during the Interim Maintenance and Warranty Maintenance Periods, provide 24 hour call-back service at no additional cost to Owner. All emergency calls to be responded to within sixty (60) minutes of call registration. Emergency calls are when persons are trapped in elevator. Twenty Four (24) hour call back service shall be included as an optional item during the five year maintenance period.

8.43 ELEVATOR SHUTDOWNS

8.44 REPAIR WITHIN 24 HOURS

Should any elevator become inoperative, repair within 24 hours of notification of such failure. Breakdown of major components shall be

completed and service restored within 72 hours.

8.45 FAILURE TO COMPLY

Failure to comply with above, Owner may order the work done by other contractor's at the Contractor's expense.

8.46 DEVICES REPAIRED OR REPLACED BY OTHER THAN THE CONTRACTOR

Contractor shall provide maintenance and become completely responsible for correct operation of devices repaired or replaced by other than the Contractor for lifetime of this contract.

8.47 OVERTIME HOURS

If the Owner requests specific items of work to be completed in overtime hours, the additional costs will be treated as a change in the work in accordance with General Conditions.

8.48 FOLLOW-UP TESTS

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.

- A. Fire service, monthly
- B. Derailment device, every ninety (90) days.

8.49 MAINTENANCE MATERIALS

8.50 EXPENDABLE PARTS

Elevator Contractor shall provide a lockable metal cabinet in machine room on project premises containing the following expendable parts which are considered to be the Owner's property and are not to be removed upon expiration of maintenance period.

- A. Two (2) resistors of each type installed.
- B. One (1) set hanger sheaves for car and hoistway doors.
- C. Two (2) relays and relay bases of each type installed.
- D. Twenty-four (24) lamps of each type installed.
- E. Car and hall buttons with identical graphics installed; six (6) for manufacturer's standard buttons, one (1) of each type for special buttons.
- F. Ten (10) fuses (1 box) of each type installed.
- G. One (1) set motor brushes of each type installed.
- H. Any other parts required for prompt replacement.
- I. Lubricants and cleaners of all types used for maintenance.
- J. One (1) spare control board of each type installed, i.e., plug in

boards, power supplies, etc.

8.51 SPARE P.C. BOARD CARDS

Spare P.C. board cards of all card types incorporated in the controllers, selectors and door operator are to be supplied to the Contracting Officer at the completion of the field quality testing. Each card is to be identifiably stamped as to its function rating and locations and cross-referenced to a list exhibited on the machine room wiring diagrams.

8.52 REPLACEMENT PARTS

Keep the following parts in a warehouse within twenty (20) miles of the project premises.

- A. One (1) door operator motor of each type used
- B. Hanger sheaves for car and hoistway doors
- C. Two (2) complete door interlocks
- D. Plug-in solid state boards for controllers, selectors and door motors.
- E. Parts for door protective devices
- F. One (1) complete SCR variable voltage D.C. drive unit identical to units installed.
- G. Such other parts as are needed to insure prompt replacement in event of elevator shutdown

8.53 MAINTENANCE DATA

Three (3) months prior to final acceptance, submit three (3) sets of complete and accurate maintenance data specific for each elevator. Final payment will not be made until received.

8.54 MAINTENANCE DESCRIPTION

Describe proper use and maintenance of equipment, lubrication points, types of lubricants used and frequency of lubricant application.

8.55 PARTS CATALOGS

Complete listing of all parts of equipment and components used in the installation.

8.56 WIRING DIAGRAMS

After completion and acceptance, provide one (1) laminated set mounted in machine room, one (1) reproducible mylar set and three (3) blue/black line sets delivered to Contracting Officer. Wiring diagrams shall be as-built, specific for this installation and reference identification on drawings shall match points identified on terminals of controllers. All drawings must be done on AutoCADD with a DXF file format and supplied on 3-1/2" diskette to Contracting Officer. Contracting Officer will advise wall to which wiring diagrams are to be mounted and method of fixing.

8.57 MAINTENANCE 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 of 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 Owner. Algorithms and source codes are not being requested under this section.

8.58 FINAL SERVICE AND INSPECTION

Two (2) weeks before expiration of the one (1) year maintenance 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 D.O.D.

8.59 CONTRACT MAINTENANCE QUOTATION

Base bid shall include cost of maintenance as described above for the Interim Maintenance and Warranty Maintenance Periods. Costs shall be broken out on a per car basis for each of the maintenance periods. Costs for the Optional Five (5) Year Maintenance shall also be broken out separately and are not to be included as part of the base bid.

#.1 OPTIONAL COMPREHENSIVE FIVE YEAR MAINTENANCE PROPOSAL; ALTERNATE NO. 1

Furnish a separate proposal cost on the Bid Form Pricing Schedule for a Five (5) Year Maintenance Contract to start after the one (1) year warranty period expires. Costs shall include annual testing and certification by a qualified QEI Elevator Inspector. Escalation clause shall be based upon eighty percent (80%) of the contract price being escalated by the percentage increase or decrease in the labor rate for mechanics and twenty percent (20%) of the contract price being escalated by the increase or decrease in the "Wholesale Commodity Prices for Metals and Metal Products" index. It is understood that each year of the five year proposal is an optional item on the part of the D.O.D.

-- End of Section --