PART 1 - GENERAL

1.01 SCOPE OF WORK

A. Furnish all engineering, materials, labor, tools, equipment, transportation, supervision, testing and inspections to *modernize three (3) Schindler MPH II hydraulic passenger elevators* as specified herein. In addition, perform full coverage preventive maintenance service for the elevators commencing thirty (30) day's after Notice to Proceed and continuing for three (3) years.

B. In all cases where a device or part of the equipment is herein referred to in the singular number, it is intended that such reference shall apply to as many such devices as are required to complete the installation.

C. Any items not specified in detail by the Specification but which are incidental to or necessary for the complete installation and proper operation of the work described herein or reasonably implied, shall be furnished as if called for in detail by the Specification.

D. Bidders must report discrepancies or ambiguities occurring in the Specification prior to the submission of the bid proposal. Submission of the bid without clarification will reflect acceptance of the Specification as written.

1.02 CONSULTANT'S RESPONSIBILITIES

A. The Consultant shall act as a representative of the Owner in matters pertaining to the work of the Contract, including interpretation of Specifications and contract documents, review of shop drawing submissions, approval of payment applications, review of project progress, and final review of the completed work prior to acceptance by the Owner.

1.03 STANDARDS AND REGULATIONS

A. All material, design, clearances, construction, workmanship, operation and tests shall be in accordance with the requirements of ASME A17.1 2019 Safety Code for Elevators as amended by the State of Oregon, Oregon Specialty Code including, A17.2 2020, A17.3 2020, Buildings Codes Division, Chapter 918, the National Electrical Code, the IBC 2020 Code, the 2021 NFPA 70 Code, the Americans with Disabilities Act and all other Codes, regulations, laws, and ordinances as may govern. Where conflicts occur in the above codes, the most rigid shall apply.

B. Nothing contained in this Specification shall conflict with any codes or federal, state or local laws, ordinances, rules or regulations governing the work.

1.04 PERMITS AND INSPECTIONS

A. The Elevator Contractor shall give all requisite notices, obtain and pay for all permits, and pay all deposits and fees necessary for the installation of all work provided under this Specification. In addition, the Elevator Contractor shall obtain and pay for all necessary state and local inspections and conduct such tests as may be required by the regulations of such authorities. These tests shall be made in the presence of the authorized representative of such authorities and in the presence of the Owner. An elevator installation permit shall be displayed on the job site and visible to interested parties.

B. The installation, when complete, shall receive the final approval of all constituted authorities and the Elevator Contractor shall submit evidence of the inspection results and the Certificate of Operation from the constituted authority.

C. Inspection results and Certificate of Operation from the constituted authority be provided no later than 15 days from Substantial Completion of Work

1.05 ELEVATOR CONTRACTOR QUALIFICATION

D. The Elevator Contractor shall be one regularly engaged in the business of design, engineering, manufacture, installation, modernization, and/or servicing of elevators of the type and character required by this Specification, shall be or represent an approved manufacturer, and shall assume full responsibility for the products used in assembling the elevator equipment. The Elevator Contractor shall provide certified engineering drawings and descriptive technical data on the proposed equipment, as furnished by the component manufacturer.

E. The Elevator Contractor shall show successful experience in the complete installation, modernization, and maintenance of elevators, that it employs competent personnel trained in the installation, modernization, and maintenance of the equipment required in this Specification, that it maintains locally an adequate stock of parts for replacement or emergency, and that it has qualified employees locally available to ensure the fulfillment of the service without unreasonable delay. This maintenance service shall be performed solely by the Elevator Contractor and shall not be assigned or transferred to any agent or subcontractor.

1.06 SHOP DRAWINGS/SUBMITTALS/AS BUILT DRAWINGS

A. Job specific shop drawings and technical coordination information shall be submitted for review prior to commencing with fabrication of the equipment. The first shop drawing submittal shall be complete and include three (3) hard copy sets and one (1) electronic version. Partial shop drawings will not be reviewed until they are complete. Delay in the project as a result of partial submittals shall be the responsibility of the Elevator Contractor. Shop drawing submission shall include, but not be limited to, the following:

1. Hoistway and Machine Room Layouts.

2. Signal Operating Fixture Details.

3. Electrical and Fire Alarm coordination information.

4. Catalog cuts for major components such as signal fixtures, power units, valves, controllers, door operators, jacks, etc.

5. Cab interiors including elevation, section and details if this alternate is accepted.

B. Upon completion of the project, the Elevator Contractor shall submit the following hard copies in quantities as specified and one additional electronic set of each:

1. One (1) set of diagnostic tools, including all manuals, codes and sundries necessary to operate the tools to test, adjust and maintain the elevator equipment provided. The tool shall become the property of the owner.

2. Three (3) sets of complete certified engineering data, including parts lists and parts numbers on all equipment as will be necessary for maintaining the equipment and for ordering replacements. Certified engineering data shall be permanently bound.

3. One (1) original reproducible and three (3) complete and legible sets of blue or black line wiring diagrams and straight-line diagrams showing the complete electrical connections, functions and sequence of operation of all apparatus connected with the elevator, including door operator, both in the machine room and in the hoistway, together with photographs or cuts of controller repair parts with numbers listed. Each device on the wiring diagrams and also on the controller panels shall be properly and permanently identified by name and part number.

4. One (1) original reproducible and three (3) complete sets of As-Built shop drawings, including layouts and signal operating fixture details.

5. Three (3) complete parts catalogs listing all replacement parts and numbers for all equipment installed and the names of the equipment suppliers and reordering procedures. Parts catalogs to be bound in permanent binders.

6. Three (3) sets of neatly bound instructions explaining all operating features including apparatus in the car and lobby control panels, control sequence of operation, adjusting and troubleshooting procedures.

7. Three (3) sets of lubrication charts indicating lubrication points and type of lubrication recommended for all equipment. One (1) set shall be bound and permanently maintained in the elevator machine room.

8. Ten (10) sets of keys to operate all key operated functions all marked and identified.

1.07 MATERIALS & EQUIPMENT

A. All materials and equipment to be furnished under this Specification shall be new, of the best grade and quality used for the purpose of commercial practice and shall be the latest standard product as advertised in printed catalogs by reputable manufacturers. All equipment or apparatus of any one system must be the product of one manufacturer, or equivalent products of a number of manufacturers which are suitable for use in a unified or assembled system. All parts of the elevator equipment shall be built to standard dimensions, tolerances and clearances in order to ensure complete interchangeability of similar parts of similar machines and devices.

1.08 HOISTING, HANDLING AND INSTALLATION OF EQUIPMENT

A. The Elevator Contractor shall provide for all cartage, handling and receiving, hoisting and lowering and removal of equipment related to the work, from the property. The Elevator Contractor shall be responsible for all permits, fees and coordination with local authorities, including local police and fire departments, for use of crane service on and around the property.

B. The equipment shall be installed in accordance with the equipment manufacturer's direction, referenced codes and Specifications.

C. The machine room equipment shall be installed with clearances complying with referenced and applicable codes and Specifications.

D. All items shall be installed so that they are safely accessible for maintenance and so that they may be removable via portable hoist or other means for maintenance and repair.

1.09 ACCEPTANCE OF EQUIPMENT

A. No approval, either written or verbal, of any drawings, descriptive data or samples of such material, equipment and/or appurtenances shall relieve the Elevator Contractor of his responsibility to turn over the same to the Owner in perfect working order at the completion of the work. Any material, equipment, or appurtenances, the operation, capacity or performance of which does not comply with the Specification requirements, or which is damaged prior to acceptance by the Owner, shall be held to be defective material and shall be removed and replaced with proper and acceptable materials, equipment and/or appurtenances, or put in proper and acceptable working order, satisfactory to the Owner, without additional cost the Owner.

1.10 SPECIAL TOOLS AND INSTRUCTIONS FOR USE

A. The Elevator Contractor shall provide all required specialized tools, instructions for their use and sundries as necessary to perform diagnostic evaluations, adjustments and/or programmable software changes on any unit of the microprocessor based elevator control equipment provided. Diagnostic tools shall become the property of the Owner.

B. Diagnostic tools that require periodic recalibration and / or re-initiation shall be performed by the Elevator Contractor at no cost to the Owner for a period of ten (10) years from the date of final acceptance of the equipment, regardless of whether the Elevator Contractor is or is not the maintenance contractor for the equipment. Should a diagnostic tool be required to be repaired, recalibrated or reinitiated, the Elevator Contractor shall provide a similar “loaner” tool to the Owner, until the original Owner's tool is returned.

C. Diagnostic tools provided to the Owner shall be capable of performing all levels of diagnostics, systems adjustments and software program changes that are available to the Elevator Contractor.

D. The Elevator Contractor shall provide three (3) bound sets of printed instructions and one electronic set for use of any tool that may be necessary to perform diagnostic evaluations, systems adjustment and / or programmable software changes on any unit of the microprocessor based elevator control equipment. The Elevator Contractor shall provide access codes, passwords and other proprietary information that is necessary to interface with the microprocessor control equipment. In addition, the Elevator Contractor shall provide step by step adjusting, programming and troubleshooting procedures as pertain to the microprocessor control equipment, a composite listing of the individual settings chosen for the variable software parameters stored on the software programs of both motion and dispatch controllers.

1.11 RELATED WORK INCLUDED AS PART OF THE ELEVATOR CONTRACT

A. The Elevator Contractor shall submit its proposal based on acceptance of the hoistways and machine room as exists. The Elevator Contractor shall notify the Owner of any changes to the hoistways and / or machine room, which are necessary to accommodate the Elevator Contrac-

tor's equipment or to comply with Code prior to the submission of the bid for the elevator modernization.

B. The Elevator Contractor shall assist the Owner with coordination of the work to be performed which is not part of the Elevator Contract, as required, during the course of the project to assure that all work required of the other trades is completed in such a manner and in such time as will be required to permit the Elevator Contractor to commence and complete the Contract work within the project schedule requirements.

C. The following Electrical work is to be included as a separate line item on the bid form:

1. Provide new fused mainline disconnects in the elevator machine room adjacent to the strike side of the door in same location as existing. Disconnects shall have auxiliary contacts for battery lowering and shunt trip operation with power monitoring.

2. Provide new wiring for telephone communication. Owner will retain telephone company to terminate a new phone line in the machine room.

3. Provide new internet connection to the elevator machine room for video text feature.

4. Contractor to run wiring for True earth ground from elevator machine room to main building ground.

5. Provide new outlets in the pits and machine room with GFCI protection. If existing meet code they can be retained.

6. Provide new 110 volt disconnect for cab lighting that is lockable and has 15-amp fuse.

7. Provide new LED light fixtures in pit with proper guards to attain 10 fc. New machine room lights with LED light fixtures that have 19 fc.

8. Provide and pay for all permits for this work.

D. The following Fire Alarm work is to be included as a separate line item on the bid form:

1. Provide new smoke detectors in front of each door at all floors and in the machine room. At the main lobby floor provide an alternate floor recall. When any of the smoke detectors at a typical floor is activated, the elevators shall recall to the main floor. When the main lobby or machine room activates the elevators shall recall to the alternate floor as designated by local fire marshal. In addition, if the machine room detector is activated the fire hat in the elevator cab shall blink. Contractors can retain existing devices if they comply with current code.

2. Provide new heat detector within 2’ of each sprinkler in the machine room. Upon activation the power shall be removed from the main line disconnect.

3. Provide necessary modifications to the existing fire alarm system in the building so that all items in item 1 above are properly interfaced with the existing fire life safety system.

4. Provide and pay for all permits for this work.

1.12 DEMOLITION, CUTTING, ALTERATIONS AND REMOVALS

A. All demolition, cutting, alterations and removal required to prepare the building to receive the new work, and any such demolition, cutting, alterations and removal which may be necessary to complete the work in a first-class workmanlike manner, shall be performed by the Elevator Contractor.

B. All surfaces, such as roofs, walls, windows, floorings, ceiling, etc., which are damaged or disturbed due to the performance of the work of this contract, shall be repaired by the Elevator Contractor in a first-class workmanlike manner to match existing and surrounding areas.

C. All permanent and temporary bracing and anchoring required for the support or transfer of any load while demolition or installation work is in progress shall be provided by the Elevator Contractor. All work shall be made absolutely stable and secure and the Elevator Contractor shall be held strictly responsible for any damage resulting from failure to properly furnish such support.

D. The Elevator Contractor shall protect Owner's property, equipment and stored materials against damage, dust and dirt at all times and shall confine all methods of construction to promote safety and reduce noise and dust, due to occupancy of the property and provide necessary protective guards, barricades, tarpaulins and drop cloths.

E. The Elevator Contractor shall remove all unused and demolished equipment and rubbish on a continual basis and shall keep the premises clean at all times during the term of the project. At the completion of work, the Elevator Contractor shall leave the premises clean and in such condition as is satisfactory to Owner.

1.13 MATERIAL AND EQUIPMENT DELIVERY, STORAGE

A. All materials shall be delivered in the original unopened protective packaging and shall be stored in the protective packaging to prevent soiling, physical damage and wetting.

B. Equipment and exposed finishes shall be protected during transportation, erection and construction against damage and stains.

C. The Elevator Contractor shall confine his apparatus and the storage of materials to limits established by law, ordinances, permits or directions of the Owner and shall not unreasonably encumber the premises with his materials. All flammable or combustible materials shall be properly stored to eliminate potential fire hazards.

1.14 PROJECT MANAGEMENT AND SUPERVISION

A. The Elevator Contractor shall designate an experienced Project Manager to perform the administrative management of the project and place a competent Superintendent in charge of the project throughout the course of the work. The Elevator Contractor's on-site job Foreman shall be responsible for day-to-day operations and scheduling with the Owner. The Project Manager and Superintendent shall be available to the Owner to assist in the progress and coordination of the work of the project and shall represent the Elevator Contractor in all matters relating to the project.

1.15 SAFETY PLAN

A. The Elevator Contractor shall submit a detailed safety plan for this project at time of shop drawing submittal. Safety Plan shall detail the type and construction of the barricades to be used at open hoistways, rigging to be worn by Elevator Contractors, and first aide kit. A full height barricade shall be installed at the top floor during the modernization. The superintendent shall hold a safety meeting on site weekly.

1.16 LIFE SAFETY SYSTEMS

A. The Elevator Contractor shall maintain all operating life safety systems in operation at all times, including elevator Fire/Emergency recall and operation and Emergency Power operation. Elevators operating for the Workman's or Public's use are to be Code compliant at all times throughout the work of the Contract.

1.17 TESTING

A. Upon completion of each elevator and of each system, the Elevator Contractor shall completely test the equipment, both before the local authority and the Owner, to demonstrate that the equipment was provided in accordance with Code and Specification requirements and complies with the Performance criteria listed elsewhere in the Specification.

B. The Elevator Contractor shall provide all labor, tools and equipment necessary for on-site observations, testing, retesting, inspections and re-inspections as may be required to satisfy the Code testing requirements, the requirements of the local testing authority and the requirements of the Owner.

C. Upon satisfactory completion of required tests, the Elevator Contractor shall obtain and submit to the Owner the Certificate of Operation or other instrument, which may be required to legally permit the Owner to operate the elevator.

1.18 FINAL CLEAN-UP

A. Upon completion of the project, the Elevator Contractor shall clean out and remove all loose materials from the hoistway, pit and machine room; remove all crating and packing materials and all unused elevator equipment from the job site; clean the machine room floor of dirt, oil, grease and dust and paint the machine room floor, pit and car top to provide for the machine room pit and car top to be dust free at the time of the Final Acceptance of the elevator system.

1.19 INSTRUCTIONS TO OWNER

A. The Elevator Contractor shall provide a minimum of four (4) hours of instructions to the Owner's personnel upon completion of the elevator installation. Instructions shall include safety procedures, proper operation of all equipment and routine maintenance procedures. In addition, the Elevator Contractor shall provide explanation and demonstration of each control feature and operation, including Independent Service Operation, Emergency Recall Operation, Phase I and Emergency in Car Operation Phase II, and Emergency Power Operation.

1.20 WARRANTY AND GUARANTEE

A. The Elevator Contractor shall warrant and guarantee all equipment provided and installed under this Specification against defects in materials and workmanship and will correct any defects not due to ordinary wear and tear or improper use or care which may develop within one (1) year

from the date the last elevator is completed, placed into operation and accepted by the Owner. This warranty is not intended to supplement normal maintenance service and shall not be construed to mean that the Elevator Contractor shall provide free service or periodic examination, lubrication, or adjustment due to normal use, beyond that included in the Contract/Specifications, nor shall the Elevator Contractor correct, without charge, breakage, maladjustments, or other trouble arising from abuse, misuse, improper or inadequate maintenance, or any other causes beyond his control.

1.21 MAINTENANCE SERVICE

A. **Maintenance**: Thirty days after the award of this Contract the Contractor shall begin maintenance on the elevator. Maintenance shall continue for three years. Once the elevator modernization work has been completed and accepted as substantially complete by the Owner and Elevator Consultant the Elevator Contactor shall continue to provide maintenance in conjunction with warranty. The Maintenance shall be all-inclusive and not include any prorations or exclusions and shall provide coverage as outlined in the attached maintenance agreement, Section 14 01 20. The price for this service shall be stated on a monthly basis on the bid form.

B. All maintenance service work shall be performed solely by the Elevator Contractor and shall not be assigned or transferred to any agent or subcontractor. The work shall be performed by competent personnel under the supervision and in the direct employ of the Elevator Contractor.

C. During the onsite phase while one car has been removed from service to perform the modernization work, service on the remaining two cars shall be on a 24/7 basis. Contractors shall have hall hands on deck to get both operational cars back in service with no additional cost to Owner.

1.22 CONTINUING SUPPORT

A. Should the Elevator Contractor's contract for continuing maintenance services not be executed by the Owner, or should it be canceled for any reason by either the Owner or the Elevator Contractor, the Elevator Contractor shall be obligated to notify the Owner and to provide to the Owner continuing information regarding changes recommended or necessary to be performed to the equipment to comply with Code changes or Manufacturer recommended and/or authorized changes or repairs, modifications, adjustments, replacements, etc., to permit for the continued integrity and safe/reliable operation of the equipment provided under the elevator installation contract and this Contract/Specification. In addition, the Elevator Contractor shall provide field and technical assistance and instructions to the Owner or Owner's elevator maintenance company, upon the Owner's request, within a reasonable time following the Owner's request, for which the Elevator Contractor shall be compensated at the Elevator Contractor's direct cost plus a reasonable charge for profit and overhead for materials and labor. Labor charges shall not exceed the Elevator Contractor's standard elevator mechanic hourly billing rates. The Elevator Contractor shall also be obligated to perform any repairs and/or replacements of equipment components required by the component Manufacturer to be made to correct faulty design or manufacture.

PART 2 - PRODUCTS

A. CONTROL SYSTEMS:

1. Elevator Controls Inc. (ECI)
2. GALaxy
3. Motion Control Engineering (MCE)
4. Otis
5. Schindler Miconic
6. TKE – TAC 32

B. DOOR OPERATOR EQUIPMENT

1. Manufactures Standard Closed Loop. Door operator must deliver full closed loop by means of encoder that informs the operator of the exact position of the doors at all times of door travel. Closed loop operators that don't achieve this feature are technically not closed loop and shall not be permitted on this project.

2. GAL MOVFR

3. Wittur AMNDA 2.0

B. SIGNAL FIXTURES

1. Monitor
2. EPCO
3. Innovation
4. OEM Manufactures Standard
5. GAL

C. POWER UNITS

1. Boremax
2. Minnesota
3. Cemco
4. OEM Manufactures Standard

Hydraulic Elevators	Existing	After Modernization
Description:		
Quantity	3	3
Speed	150 FPM	150 FPM
Capacity	3,500 lbs.	3,500 lbs.
Stops	4 (1-4)	4 (1-4)
Openings	Cars 1-2 (1-4) Car 3 (1-4, 1R)	Cars 1-2 (1-4) Car 3 (1-4, 1R)
Travel:		Contractor to verify
Operation	Three Car Group	Three Car Group
Machine Room:		
Power Unit	Schindler	Replace with new submersible power unit.
Controller	Schindler MPH II	Provide new microprocessor controller w/ soft start.
Oil shut off valve	Yes	Retain.
Oil Cooler		Provide new.
Oil Line	Existing overhead	Retain.
Hoistway:		
Hydraulic Jack	Retain	Retain. Provide new packing.
Hoistway vents	Motorized Vent	Retain.
Hoistway door equip-ment	Schindler	Retain tracks and hangers at each floor. Replace door locks, closers and hanger rollers.
Hoistway limit switches		Provide all new.
Car Rails	T-Rails	Retain.
Wiring/Duct		Provide all new wiring and duct.
Car:		
Car-top-control		Provide new.
Car guides	Slide guides	Retain and refurbish with new liners. Provide alternate for new roller guides.
Car retainer plates	Existing	Retain.
Door Operator	Schindler QKS14	Provide new closed-looped door operators. (4 total)
Door Restrictor	Yes	Provide new cam type with angles.
Car Door Equipment	Schindler	Provide
Safety Edge	Electric Edge	Provide new 3D edge.
Cab Interior	Removable Panels.	Retain in base bid. Provide alternate price for new.
Car Apron	21”	Retain.
Cab Fan	Existing	Provide new.
Pit:		
Ladder	Existing	Provide handle extensions to 48”.
Stop Switch		Provide new in compliance with code.
Buffers	Existing	Retain.
Rupture Valve	Existing	Retain, test and repair as needed.
Signal Fixtures		
Car Fixtures	Existing	Provide new car operating panel – one per car.
Hall Call Fixtures	Existing	Provide all new hall fixtures at each floor.
Hall Position Indicator	None	Provide alternate price for Hall P/I at the 1st floor.
Car Lantern	Existing	Provide new with vandal fixture.
Jamb Braille	Existing	Retain and replace any missing.
Elevator Numbers	None	Provide 2” high numbers over each elevator entrance.

(1) Summary is just a brief outline to give general scope of work. If a discrepancy exists between the summary and body of the technical specifications, or if an item is not included in the summary, the body of the technical specifications should take precedence.

2.02 CONTROL SYSTEM:

A. The existing Schindler MPH II control systems shall be removed and a new microprocessor control with solid-state soft starter shall be furnished and installed. The new controller shall be microprocessor based and include all the necessary features for phase I and phase II fire service. Include battery lowering feature (Batteries to be included) and constant speed lowering. Controllers shall have soft start.

B. A position selector shall provide positive means of determining the position of the elevator in the hoistway at all times. A steel tape shall be provided in the hoistway extending the complete length of the hoistway. A detector unit mounted on the top of the car, through which the steel tape is guided, shall be capable of providing a signal as to the position of the car in the hoistway. Floor location for leveling shall be determined via magnetic strips affixed to the tape to define the floor-leveling zone. The position selector shall provide 1/8" resolution accuracy for the entire length of the hoistway. Tapeless position selectors may be used in lieu of a tape system.

C. The control system shall be designed to automatically bring the car to a floor landing. The stop shall be smooth without any sudden brake application. The floor approach shall be without any hesitation or delay in time. Floor sensing devices shall correct for overtravel and undertravel and shall maintain the car within a maximum of 1/4" of the floor line, regardless of rated capacity, load or direction of travel.

D. The controllers shall be enclosed in properly ventilated metal cabinets with sides and top, and with hinged access doors on the front and the back. Rubber mats shall be installed on the floor in front and behind each controller, starting panel and selector, as required, for electrical grounding protection of the equipment.

E. All controller printed circuit boards, discrete components, switches, and other items of control equipment shall be mounted on a common panel or individual panels which shall be made of an approved, moisture-resisting, noncombustible material which shall be securely mounted in a substantial, self-supporting steel frame with fastenings suitable for panel demounting. A vibration absorbing mounting shall be provided for the steel frame, if necessary, to eliminate perceptible vibration. Electro-mechanical switches and relays shall be used where heavy current is supplied and/or on safety circuits required by the governing Elevator Codes. Switches shall be of the direct current type, magnet operated with contacts of design and material to insure maximum conductivity, long life and reliable operation without overheating or excessive wear, and provide a wiping action to prevent sticking due to fusion. Switches carrying highly inductive currents shall be provided with arc deflectors or suppressers. All switches, printed circuit boards and discrete components shall be mounted in the front of panels together with any small electronic components. Large capacity resistors shall be mounted on the rear, sides or top of panels.

F. Wiring on the controller, whether factory or field wiring, shall be done in neat workmanlike order and all connections shall be made to studs and/or terminals by means of grommets, solderless lugs or similar connections. All wiring shall be copper.

G. Terminal blocks with identifying studs shall be provided on the controller for connection of board wiring or external wiring.

H. Identifying symbols or letters shall be permanently marked on or adjacent to each device on the controller and the marking shall be identical to marking used on the wiring diagrams. In addition to the identifying marks, the ampere rating shall be marked adjacent to all fuse holders.

I. All input-output devices shall be marked similarly to relays for easy reference to wiring diagrams.

J. The selector shall be part of the microprocessor. Position determination in the hoistway may be through fixed tape in the hoistway or by an encoder fitted to the governor. The features and electrical circuits shall be so designed to permit accurate control and rapid acceleration and retardation without discomfort.

K. The Elevator Contractor shall confirm which floor is to be the main dispatch floor, the Fireman Recall floor and the Alternate Fireman Recall floor, prior to fabrication of the control equipment. The control shall be programmable to enable the dispatch and recall floors to be changed in the field.

L. The Elevator Contractor shall provide all electrical information necessary for review by the Owner or Consultant at the time of submission of the elevator hoistway layout drawings.

M. A solid-state programmable Microprocessor dispatch controller shall be provided. The elevators shall operate without attendants. The elevators shall operate as a three (3) car group. The group controller shall be capable of balancing service and continuing operation with one or more cars removed from the system. The new control system shall utilize artificial intelligence or “fuzzy math” to anticipate the hall call traffic, learn the user patterns, and assign the cars appropriately.

N. The microprocessor shall continuously accept external data from passenger registration of hall and car calls and from each elevator indicating present operating condition. Data shall be analyzed and weighed based on elevator operating status, i.e., elevator in or out of service, direction of travel and position of each elevator, condition of car doors, i.e., open, closed, opening or closing, condition of each elevator, i.e., accelerating, full speed, decelerating, number of stops due to car calls, number of stops due to previously assigned hall calls, coincident car calls, system condition, and predictive car and hall call assignments. The microprocessor programming shall include velocity / distance formulae to calculate the time it will take for each elevator to respond to newly registered demands and compare response time for each car to the newly registered demand and assign the car which can respond to the demand in the shortest time period. The microprocessor program shall include the ability to continuously monitor elevator and demand status and change assignments when changing conditions warrant.

O. The elevators shall operate from buttons located at each floor and in each car. Registration of calls by momentary pressure on buttons shall cause the cars to respond to passenger demand. Cars shall slow down and stop automatically at landings corresponding to calls registered on car or hall buttons. These stops shall be made in the natural order of floors for each direction of travel irrespective of the order in which the calls were registered, except that only one car shall stop in response to any particular hall call. The system shall continuously review and modify all hall call assignments to insure that the closest elevator in real time to a hall call is assigned

to that call. Simultaneous to the initiation of the slow down of a car for a hall call, that call shall be canceled. The call shall remain canceled and the hall button ineffective until the car doors begin to close after passenger traffic. Calls registered on car buttons shall cancel in the same manner.

D. The supervisory control system shall operate to meet the changing traffic conditions on the basis of demand. Provisions shall be included for handling traffic as follows:

1. Heavy Up Incoming Traffic Conditions: The control shall automatically recognize heavy incoming traffic in the morning and noon times as well as other times during the day by monitoring the changes in car passenger loads, the number of car calls registered and the frequency of cars departing the lobby. As the incoming traffic intensity increases, the number of cars assigned to the lobby shall increase.

2. Heavy Down Traffic Conditions: The control shall automatically recognize heavy outgoing or Down traffic conditions by monitoring the number of Down hall calls, their estimated time of arrival and the actual waiting time. During this mode, the Down hall calls shall be given preferential service to handle the exiting traffic. All cars assigned to the main dispatch floor shall be released and cars arriving at the main dispatch floor shall remain at that floor for the same length of time as for any other floor. All Down hall calls shall be assigned based on which car has the best potential arrival time. The Down Peak traffic mode shall have priority over Up peak.

3. Intermittent or Light Traffic: The control shall automatically keep the required number of cars in service based on the forecast waiting time. Cars shall remain parked at the last floor served.

4. Lobby Terminal Demand: The control shall provide for an adjustable number of cars at the dispatch floor during off peak conditions.

5. Coincident Calls: The control shall give priority in assignment of a hall call to a car with a corresponding car call. If this coincident hall call cannot be answered within the adjustable priority time, the car with the best potential arrival time shall be assigned to the hall call.

6. Fail Safe Dispatching Operation: Should the car selection or dispatching system fail, so that cars are not dispatched within the predetermined interval and in accordance with the conditions of the operating pattern in effect, the cars shall leave the dispatching terminals without regard to sequence of regular intervals and proceed to answer registered calls in the normal sequence and manner, unless fire return features have been activated, until dispatching malfunctions are corrected and normal service is restored. Optional power provisions shall be incorporated into the elevator control dispatch system to prevent loss of control memory, sequence of operation and/or other control functions due to fractional power interruptions, spikes or other interferences.

7. Delayed Car: A car delayed for a predetermined time shall be automatically disconnected from the system operation. When the delay is corrected, the car shall be reconnected into the system.

P. The elevator controller shall comply with ADA.

1. The controller shall have a self-leveling feature that shall automatically bring the car to floor landings within a tolerance of .25" or better under all loading conditions.

2. The controller shall have outputs to drive the visible and audible signals that are required to indicate which elevator car is answering a call. Audible signals shall sound once for up, twice for down.

3. The controller shall have a position indicator output to drive the required position indicators. An audible signal shall sound as the position indicator changes floors.

4. Door Dwell Times: Door dwell times shall be field adjustable with resolution to 0.1 seconds. The dwell time at the main dispatch floor shall be adjustable between 3 and 15 seconds. The dwell time for a car call stop at a typical floor shall be adjustable between 1 and 8 seconds and the dwell time for a hall call stop shall be adjustable between 1 and 8 seconds. The hall call timing shall predominate in the event of a coincidental car and hall call stop. Upon interruption of the car door photo electric eye beam, the door open time shall be reduced to an adjustable time of 0.5 to 3 seconds. The photo beam control door dwell time shall be separately adjustable for car and hall calls.

5. Nudging: In the event the doors are held open for a predetermined adjustable period of time, initially to be set at 20 seconds, after automatic door closing has been initiated, a buzzer shall sound and the doors shall be permitted to close at a reduced speed and in compliance with ANSI A17.1 Elevator Code.

Q. An out of service timer (T.O.S.) shall be provided to take the car out of service if the car is delayed in leaving the landing while there are calls existing in the system.

R. Door protection timers shall be provided for both the opening and closing directions, which will protect the door motor and will help prevent the car from getting stuck at a landing. If the doors are prevented from closing for longer than a predetermined time, door-nudging operation shall cause the doors to move a slow speed in the closed direction. A buzzer shall sound during the nudging operation.

S. Fire Phase I emergency recall operation, alternate level Phase I emergency recall operation and Phase II emergency in-car operation shall be provided according to applicable local codes.

T. Provide Phase Protection to detect Unbalanced Voltage, Phase Loss while Running, and Low Voltage Detection.

U. Provide features so a card reader can be interfaced with the controller.

V. Provide temporary cross cancellation so that when the 1st elevator modernized is turned over it will communicate with an existing car.

2.04 CONTROLLER DIAGNOSTICS

A. The controller shall be non-proprietary and include the ability to perform diagnostic analysis of the system capable of determining faults. When a fault occurs, the computer shall be able to provide a retrievable fault code message identifying the location of the elevator, the time of day of the occurrence, and the number of times the fault has occurred. The fault information for each car shall be identified on an LCD screen in the machine room, or be capable of sending the fault information to a video screen in a remote location.

2.05 STATISTICAL DATA STORAGE AND RETRIEVAL

A. The controller shall be capable of storing and retrieving statistical data to permit analysis and evaluation of the operating system response to traffic demand. Information to be stored shall include statistics relating to average waiting times for each floor serviced by the multiple car elevator bank, cars in service, frequency of car stops per car, activation of stop switches, etc. during a series of normal workdays, and other pertinent information which may be requested to be provided. Software necessary to retrieve and print the data shall be provided to the Owner. Statistical information shall be presented in a user-friendly format and not require special training to interpret the data.

2.06 FIREMAN/EMERGENCY OPERATION

A. Fireman Recall/Emergency Operation shall include Phase I and Phase II operation in accordance with ASME Elevator Code requirements and local governing Code requirements.

B. Fireman Recall/Emergency key switches shall be located in the main Fireman access floor elevator lobby and installed per the requirements of the Local Fire Department.

C. All floor access restrictions shall be overridden on Fire/Emergency operation.

D. The elevator control system shall be tied in with the Fire Alarm system and tested with the Fire Alarm system contractor.

E. Provide seismic upgrades per Zone 4 requirements as follows. Retain and adjust car retainer plates. Provide seismic tie downs for all new equipment installed in the machine rooms, pits and hoistways. Retain and test existing seismic rupture valves. Make any necessary repairs. Properly anchor existing oil lines were existing support does not comply with code.

2.07 EMERGENCY POWER OPERATION

A. In the event of a normal power supply failure, the elevator system shall be arranged to lower only from a built-in battery lowering kit. Battery shall be included with the controller.

2.08 INDEPENDENT SERVICE

A. Independent Service operation, activated from the Independent Service switch, shall permit any one or more elevators to be removed from the system and used for special service without interfering with the normal operation of the remainder of the elevators operating within the system.

B. When on Independent Service, the elevator shall be disconnected from the system and shall respond only to calls registered on the car buttons. Hall calls shall be automatically bypassed and hall lanterns and high call operation circuits shall be inoperative. The car doors shall close only when a car call button is pressed.

C. In the event an elevator is operating on Independent Service and Fireman/Emergency Operation recall becomes activated, following a period of approximately 60 seconds, the elevator shall automatically override Independent Service and engage Phase I Emergency recall. This operation shall be subject to acceptance by Code and Code enforcement authority.

2.09 AMERICANS WITH DISABILITIES ACT (ADA)

A. The elevator system operation shall comply with the requirements of the Americans with Disabilities Act. The new car lantern shall provide a visual and audible signal of arrival of an elevator at a floor. The car lantern audible signal shall sound once for an Up-direction elevator and twice for a Down direction elevator. The car lanterns shall signal as the doors are 50% open and stay lit until the doors are closed. Doors shall open and close automatically and car doors shall include a door-reopening device. The door-reopening device shall remain operative for a minimum of 20 seconds. Door dwell time shall comply with the T = D/1.5 formula. Doors shall remain open for a minimum of 5 seconds for a hall call and 3 seconds for a car call. The car position indicator in the car shall provide visual and audible indication of when the car passes or stops at a floor.

2.10 POWER UNIT

A. Completely remove the existing power unit for each elevator and furnish and install a new power unit complete with valve, pump, oil reservoir, muffler, and submersible motor. The new valve shall have constant speed lowering and all code required features. Provide all new oil. Dispose of all old oil properly. New tank shall have a glass site gauge that shows the oil level when the car is at the bottom floor. Retain oil line and manual shut off. Properly isolate new power unit from the floor to prevent vibration from going into the floor. Add oil line supports where needed.

B. Provide oil coolers for each elevator.

2.11 CAB SHELL/INTERIORS

A. Retain cab interior panels and ceilings in base bid. Remove any scratches from the front returns, headers and columns. Retain stainless steel car doors. Provide new LED light fixtures in existing ceilings.

B. Provide alternate price for new cab interior panels on the back and side walls. Panels shall match existing design and be faced in plastic laminate color as selected by Owner. Plastic laminate panels shall be edged in stainless steel. Provide stainless steel reveals between each panel and remount existing handrails to the side and back walls. Provide stainless steel base with concealed vents.

2.12 SIGNAL FIXTURES AND ACCESSORIES

A. Remove the existing car operating panel (COP) on the front return. Furnish and install a new car-operating panel in the same location as the existing COP. The new panel shall contain the devices required for the specified operation and shall comply with the ASME A117.1 Barrier Free Code, and A.D.A. code requirements. The existing panel shall be removed and replaced with new custom panel to fit the size of the old panel and meet ADA. The new panel shall have hinges and swing open for ease of maintenance access.

B. The panel shall include illuminated pushbuttons marked to correspond to the landings served, a keyed "emergency stop" switch, a "door open" button, and "door close" button. The floor pushbutton shall be illuminated when a call has been registered and shall remain illuminated until the car reaches the indicated floor. Finish of the new plate to be (STAINLESS STEEL) and provided with concealed fastenings. A service cabinet shall be provided and contain a key operated car light, fan switch, Independent Service key switch, inspection switch, emergency light test switch, and two grounded outlets. In the upper portion of the panel the following shall

be engraved: “Elevator No. “ and “Capacity _,____#”. Phase II emergency fire key switch with on, off and hold shall be installed behind a locked fire service door. On the back side of the door, the code required instructions for phase II shall be engraved. A fire service indicator light and fire phone jack (provide stainless steel blank for future use) shall be provided. On the exterior of the door engrave “Fire Operation”. In the lower portion of the panel furnish and install a flush mounted telephone with video screen for voiceless and text communication. All finishes to be Stainless Steel #4. Provide Plexiglas window for future card reader.

C. An electrical digital car position indicator (CPI) shall be provided and so arranged that as the car travels through the hoistway its position shall be indicated by illumination of a numeral corresponding to the landing at which the car is stopped or passing. The digital position indicator shall be mounted in the upper portion of the new car operating panel.

D. An audible signal shall be provided to indicate to a passenger on the elevator car that the car is stopping or passing a floor. In addition, a voice announcement shall be provided that will announce the floor. The Owner shall have the ability to switch between floor passing chime or voice announcement by a key switch in the service cabinet.

E. A battery-operated emergency car light device shall be installed which will automatically turn on and operate immediately after normal car lighting power fails. The lighting device shall be so installed in the car enclosure to provide an intensity of illumination 4' above the car floor and approximately l' in front of the car operating device of not less than 0.2 foot candles. The battery power shall be capable of maintaining the above referenced illumination for a period of not less than four (4) hours.

F. An emergency alarm bell shall be connected to a plainly marked pushbutton in the car-operating panel and to the battery-operated emergency car light device.

G. Remove existing hall call push button stations and furnish and install new landing pushbutton stations. Each intermediate station shall consist of two illuminated pushbuttons, one for the up direction and the other for the down direction. Each terminal station shall contain an illuminated pushbutton. The buttons shall be illuminated to indicate that a call has been registered at that floor for the indicated direction. Stations shall be installed to comply with the ASME A117.1 Barrier Free and ADA Code requirements. Faceplates shall be (STAINLESS STEEL), shall be flush mounted and include tamper resistant fastenings. The new buttons shall be in position to meet ADA. Fixtures shall be flush mounted. All cutting and patching including trim work shall be by Elevator Contractor. In the upper portion of the faceplates provide fire exiting instructions per A17.1 and hall position indicator. Face plates shall be 5” wide. At the first floor provide a separate plate with Phase I fire recall, intercom and phone monitoring signals.

H. Provide new car lantern and gong in each car door jamb. The lanterns shall have a single gong for travel in the “UP” direction and a double gong for travel in the “DOWN” directions. Mount so it is visible when standing in front of the hall call station. The lanterns shall light and the gongs shall sound as the doors are ¾ open.

I. Provide a new car top inspection station with an "emergency stop" switch, constant pressure "up-down" direction buttons, light and light switch shall make the normal operating devices inoperative and give the inspector complete control of the elevator.

J. Provide alternate price for new digital hall position indicators (HPI) with directional arrows at the main first floor lobby of each car above the hoistway door frames.

2.13 DOOR OPERATING EQUIPMENT

A. Remove existing Schindler door operators. Furnish and install new direct current motor driven heavy-duty door operators (4 total). The door operators shall be designed to operate the car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel. Doors shall automatically open when the car arrives at a landing and shall automatically close after an adjustable time interval or when the car is dispatched to another landing. The door operator shall be fully closed loop providing direct current feedback and continuously monitor the position of the door throughout the door travel. The door operator shall be capable of applying more torque for heavy lobby doors and to handle varying hoistway wind conditions. The door operators shall be capable of opening the doors at the fastest setting while closing the doors are various speeds as determined by Owner. Include new door operators for all front and rear entrances.

B. A new solid-state electronic 3 D door detector designed to operate as described below and to meet A17.1-2019 shall be provided at the entrance of each elevator car. The edge shall operate as follows:

1. After a stop is made, the doors shall remain open for an adjustable time interval. Closing may be initiated instantaneously by registration of a car call, operation of load weighing device or signal from the service demand integrator. The doors will remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door movement is obstructed for a predetermined time, a buzzer will sound and the doors will close at reduced speed. If a passenger or object is detected during normal closing operation, the doors will immediately stop and reopen. Closing will be initiated one-half second after the passenger or object has been removed from the opening. The doors shall remain open for an adjustable time for a stop in response to a car call and a second variable time for a stop in response to a hall call. If the beams of the electronic detector are interrupted and reestablished, door open time for a car stop and for a hall stop shall be reduced.

C. Furnish and install all new car door equipment including a new door clutch, new car door tracks, hangers and gate lock.

D. Furnish and install new cam type door restrictor with brackets at each floor that limit the door open when the car is out of the door zone.

2.14 CAR EQUIPMENT

A. The existing car sling shall be cleaned and reused. The cab isolation pads and cab steadiers shall be replaced to ensure smooth and quite isolation from the sling/platform to the car.

B. Retain existing 21” car aprons and replace any missing supports as needed.

C. Install car top handrails in all locations where the space exceeds 12”.

2.15 HOISTWAY EQUIPMENT

A. The existing slide guide assemblies for the car shall be retained and refurbished in the base bid. Provide new nylon inserts. Retain existing seismic retainers. Provide alternate price for new roller guides.

B. New electric limit switches shall be placed in the hatchway near the terminal landings and be designed to cut off the electric current and stop the car should it run beyond either terminal landing.

2.16 HOISTWAY ENTRANCES

A. Each hoistway entrance of all elevators shall be equipped with a new approved type interlock tested as required by Code. The interlock shall be designed to prevent operation of the car away from the landing until the doors are locked in the closed position as defined by Code and shall prevent opening the doors at any landing from the corridor side unless the car is at rest at that landing or is in the leveling zone and stopping at that landing. Interlocks shall bear Underwriter's Laboratories "B" label. All new fire rated wiring shall be installed for the interlocks. Provide door lock monitoring.

B. At each hoistway door opening, retain door tracks and hanger roller assemblies. Replace hanger rollers and upthrusts with new as needed, to provide smooth, quiet, and dependable door operation. Replace all spirators with new. Clean and adjust existing doors for smooth and quiet operation.

C. Retain fascia and ensure a flat even surface throughout. Check to make sure each piece is securely fastened to hanger housings and sill above. Replace any missing.

D. Retain toe guards replace any damaged guards.

E. Existing cover plates shall be retained. They shall be arranged to assure hanger accessibility from within the car.

F. Entrances shall include hoistway door unlocking devices and service keys to meet local code requirements. Provide new holes at existing that do not have them. Include escutcheon tubes. Existing drop key locations can be retained. If new holes are required the old holes shall be plugged with stainless steel caps that are flush.

G. Furnish and install new door gibs. One at the leading edge and one at the trailing edge of each door panel. Door gibs shall be SEES Enforcer or equal.

H. Retain jamb braille at each floor. Replace any missing or damaged on an as needed basis.

I. Provide floor numbers, not less than 4" in height on the hoistway side of the hoistway doors at intervals per code.

J. Retain existing hoistway doors and frames.

2.17 PIT EQUIPMENT

A. Retain car buffers and pit channels. Clean, inspect and test for proper operation.

B. Retain pit ladders. Provide handrail extensions so the handles are at 48" above the finished floor.

C. One emergency stop switch shall be provided in the elevator pit. A stop switch shall be installed at 18" above the finished floor. The switch shall be designed to cut off power to the elevator motor, close the valve and bring the car to rest independent of the regular operating devices. Move switch location so it is adjacent to pit ladder.

D. Retain seismic rupture valves, test functionally make all necessary repairs.

E. Retain oil line and shut off valves in the pit and machine rooms.

2.18 WIRING

A. All wiring shall be new to ensure proper operation as set forth in this Contract/Specification. Some hoistway duct may be reused upon prior Consultant's approval.

B. Provide one (1) Co-Axial Cables and two (2) sets of shielded cable in Traveling Cables, to be terminated at the top of the car junction box and at a point inside the machine room or first floor landing or as directed by owner. Provide 10% spare for other wires. Provide sufficient wires for card readers and closed-circuit camera.

C. Provide new internet cable to machine room and to each elevator cab for video and text feature.

PART 3 – EXECUTION

3.01 PERFORMANCE

A. The elevator system shall be required to meet the following performance criteria.

1. OPERATING TIME

a. Adjust the equipment so that the elapsed time to travel one typical 12'-0" foot floor does not exceed the time parameters as follows:

	Cars 1-3
Door Open	1.7
Door Close	2.7
Flight Time	13.0
Contract Speed +- 5%	150 FPM

b. The following are criteria to be used when measuring the time durations:

Flight Time: Start to measure this time when the fully opened doors begin to close and continue to measure the time until the car is stopped level with the next floor and the car and hall doors are open to ¾ of their fully open position for center opening doors or ½ open for side opening doors. A typical floor shall be 12'-0"Floor level is considered to be within 1/4 inch of level. The time is

measured with full load in the car and in both directions of travel. The power door operation for the hall and car doors conforms to the elevator Code requirements.

c. Adjust the equipment so that the operating speed in both directions of travel under load and no-load conditions does not vary more than five (5%) percent.

d. Adjust the equipment so that the operating time as set out above is compatible with dependable, consistent operation without undue wear on the equipment, can be maintained without excessive maintenance and so that the operating time can be readily maintained over the life of the elevator installation.

e. Adjust the equipment so that, with the control adjusted to give the required time, the elevator operates under smooth acceleration and retardation and provides a comfortable and agreeable ride to the passengers.

2. LEVELING

a. Cause the car to stop automatically at the floor level without overshooting, regardless of the load or direction of travel, so that the car sill is within 1/8 inch of level with respect to the hoistway sill.

b. Correct for overtravel or undertravel or rope stretch by returning the car imperceptibly to the floor, Releveling shall not commence within the 1/8 inch floor landing zone, above or below, with the doors in the open position. Releveling sequence of operation within this zone shall be initiated with the car doors in the closed position only.

3. DOOR TIME; DOOR OPERATION

a. Arrange the doors to close with an average horizontal speed of no more than 1.0 FPS.

b. Arrange that the time necessary for the doors to operate as per the following:

1. Opening: Start to measure when door starts to open and stop when fully open.

2. Closing: Start to measure when door starts to close and stop when door is fully closed.

3. Car & Hall Door Dwell Time: 3 seconds after stopping for a car call. Timer to be adjustable from 1 to 8 seconds, 5 seconds after stopping for a hall call. Adjust the hall call time as per ADA formula requirements.

4. Reduced Short Door Time: Initially adjusted to 1 second after interruption of the electric edge to be adjustable from 0 to 10 seconds.

5. Lobby Door Time: Initially set per ADA code requirements. Timer to be adjustable to between 5 and 15 seconds.

6. Arrange that the door closing force, as measured when a door panel is stalled in the act of closing, does not exceed 30 lbs.

7. Arrange the equipment so that the increase in noise level over the ambient noise level as measured within the cab, does not exceed four decibels at any time during a full door open, door close and door reversal cycle.

8. Initiate the door reversal by interruption of the proximity detector or photo ray beam.

4. RIDE QUALITY

a. Provide smooth ride quality with minimal left to right and front to back movement.

3.02 MISCELLANEOUS WORK AND SCHEDULE

A. This Specification covers all work as specifically set forth to bring the elevator system up to acceptable standards. Any additional work deemed necessary shall be brought to the Owner's attention with submission of bid.

B. All work shall be performed during regular working hours of regular working days as is customary in the elevator industry.

C. Prior to commencing work, a work schedule shall be submitted to the Owner for approval.

D. The Elevator Contractor shall confirm power, floor designation, emergency recall floors and dispatch floor locations, etc., prior to fabricating equipment.

E. All material for all elevators must be onsite or in stored in a local warehouse. Owner or owners' representative will inventory material prior to start of job. No exceptions to this item will be granted.

F. The Elevator Contractor shall provide all information, including necessary architectural and engineering information, required by the Owner to coordinate the design and interface work of other trades impacting the elevator work.

G. The following schedule shall be followed:

Schedule	
Phase I	**Duration**
▪ Shop Drawings	4 weeks
▪ Shop Drawing Approval	1 weeks
▪ Manufacturing	16 weeks
▪ Deliver Material/Prep Work	1 week
▪ Total Duration Phase I	**22 weeks**
Phase II – On Site	
▪ Car 3 Modernization	7 Weeks
▪ Car 2 Modernization	6 Weeks
▪ Car 1 Modernization	5 Weeks
▪ Punch List	1 Week
▪ Total Duration Phase II	**19 weeks**
Total Project Duration:	**41 weeks**

H. Liquidated Damages:
   1. For each day the Elevator Contractor is late during phase I of the project the contract price shall be reduced by $100.00 per day.
   2. For each day the Elevator Contractor is late during phase II of the project the contract price shall be reduced by $500 per day.

3.03 TESTS

A. Perform Phase I and Phase II Fire Service tests to conform to ASME A17.1, Part 8.

B. Perform acceptance tests to conform to ASME A17.1, Part 8.

C. Perform acceptance tests to conform to ASME A17.1, Section Part 8.

D. Completed copies of test reports shall be provided to the Owner.

3.04 EXECUTION

A. The Elevator Contractor shall perform the following as part of the execution of the work of the Elevator Contract:

   1. Comply with all requirements of the local Fire Codes that are applicable to this work.

   2. Be sensitive to the needs and entitlements of the occupants of the building while performing the work. All noisy work shall be performed between 4:00 PM and 7:30 AM on weekdays or on weekends.

   3. Confirm that the Specification and contract documents are complete with regard to the work required to provide for a complete, legal and Code compliant installation.

   4. Confirm that the elevator equipment to be provided will fit within the space available. Survey the job site and verify by measurement all dimensions affecting the work to be performed as part of the Contract. Advise the Owner of any deficiencies which may be

in conflict with design tolerances of the equipment to be installed, prior to fabrication of the equipment affected.

5. Provide information as required for coordination of work to be performed by other trades which will affect scheduling of the elevator work and information required for coordination in scheduling the elevator work which will affect the scheduling of other trade contractor work.

6. Permit only skilled workmen to perform the work of the Elevator Contract.

7. Install all equipment in accordance with the Elevator Contract, the Specification and the final approved shop drawings.

8. Comply with all applicable Codes, manufacturer's instructions and installation procedures.

9. Keep all means of access and egress to and from the building, stairwells and lobbies free and clear of materials, tools and equipment at all times.

10. Broom sweep the work areas, remove all hazardous materials from the site on a daily basis and keep all areas clean of all dirt and grease resulting from the work.

11. Protect all finished surfaces during installation through to the final acceptance of the elevators. Upon acceptance of the elevators, remove all protective coverings and thoroughly clean finished surfaces of paint, wrappings, mastic, etc. Repair any damage, including scratches, dents, discoloration, etc. which may have occurred to the finished surfaces with the exception of any obvious vandalism, misuse or abuse of the equipment by others.

12. When multiple hoistways exist provide safety screening between cars so that one elevator can be worked on while the other elevators operate.

13. **All Hands on Deck:** During the time period when one of the elevators has been removed from service to perform the modernization work, all other elevators shall remain fully operational. If one of the operational elevators in the same bank shuts down, for any reason, the Elevator Contractor shall have “all hands on deck” to immediately restore the shutdown elevator in that bank to service. The on-site modernization crews shall cease work on the modernization and immediately begin to correct work on the down elevator until the regular serviceperson or repair crew arrives to complete the work. In the event a repair is needed on the down car, the modernization crews shall commence work on the down car or cars until all elevators are operational. Work shall continue round the clock at no additional cost to Owner until all cars are fully operational.

14. **Cars in Operation:** During the entire modernization project and at all other times at least two elevators, shall remain operational at all times. Any work requiring two or more elevators to be shut down, whether testing for the modernization or for any other reason shall be scheduled two weeks in advance with the Owner and performed after normal hours at no additional cost to Owner. Inspections and testing will be conducted during regular business hours. Full load drop tests shall be performed before 7:00 am.

3.05 CLEAN UP AND INSPECTION

A. Remove all debris resulting from work on this contract. Remove from project site all equipment and unused or removed materials and restore building and premises to neat, clean appearance.

D. All materials and workmanship shall be subject to inspection or testing. The Owner shall have the right to reject defective or inferior material or workmanship and require correction of such without additional cost the Owner.

END OF SECTION 14 24 23