DIVISION 14

CONVEYING SYSTEMS

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PART 1 GENERAL

1.1 PROJECT DESCRIPTION

A. This specification is intended to describe, generally, the complete demolition of the existing elevator cab, and installation of a new **non-proprietary** elevator cab as described herein. All work shall be performed in a workmanlike manner and is to include all work, material, equipment and other associated items in accordance with this specifications and current code requirements. In all instances where a device or a part of the equipment is referred to in the singular number, it is intended that such reference shall apply to as many such devices as may be required to complete the installation.

B. The contractor is responsible to provide all work as required whether his own forces or by subcontractors including but not limited to demolition, masonry, electrical, fire alarm, etc…that is needed to perform the work for this project.

1.2 SUMMARY

A. Section Includes:
   1. Passenger cabs with doors and frames; hoistway entrance doors and frames.

B. Related Sections:
   1. Section 01200 – Price and Payment Procedures: Alternate.
   2. Section 09310 – Ceramic Tile: Floor material.
   3. Division 16 – Electrical.

C. **Non-Proprietary**
   1. The use of proprietary equipment is strictly prohibited. All materials provided shall be serviceable by any Journeyman elevator mechanic, and replacement parts for all equipment furnished shall be available on the open market. Equipment and controls must be totally non-proprietary, designed to be serviced by a journeyman elevator mechanic. Access to diagnostic/troubleshooting routines shall require no secret codes. Provide any / all manuals, schematics, wiring diagrams and service manuals that are available to the manufacturer's installers and service personnel. Any decaying circuits or devices requiring "factory re-charging" shall be considered a violations of this specification section; such equipment shall be removed and replaced with conforming equipment at no extra cost to the Owner, or Owner's agent for technical assistance as, needed for the life of the equipment. Controls must be of a type that does not require replacement of any other component (door operator, signal fixtures, etc…) in the event a controller replacement is necessary.

D. Existing conditions: The contractor shall confirm and verify existing conditions and provide and install new components to meet the new code requirements and provide needed modifications as required to the existing machine rom, shaft and elevator lobbies.
   1. The shaft way is existing masonry and will be maintained, provide a car sized to meet proper clearances within the existing shaft.
   2. Existing openings shall be used and modified as required to install doors and / or other equipment.

E. Demolition of Existing Elevator and Components: Demolition work shall include all work necessary to completely remove the existing elevator and for installation of the new elevator and components and shall include, but is not limited to the following: Remove the existing elevator cab, platform, etc…

F. New Work to be Performed
   1. Elevator contractor shall provide temporary enclosure or other protections from open hoist ways during the time the elevator is being installed. Contractor shall post signs noting the elevator is out of service and occupants must use the stairs.
   2. Cutting /patching of walls, floors etc… and removal of such obstructions as necessary for proper installation of elevator and accessory parts , such as signal fixture boxes, furnishing, installing and maintaining the required fire rating of elevator hoist way walls including penetration of hoist way walls by door frames, signal fixtures boxes, etc.
   3. Patch and repair walls where existing door frames are removed and new frames are installed including all damage due to this work, and grouting of sills etc.
   4. Suitable connections from power main to elevator controller, signal equipment feeders, car and pit lighting, including necessary wiring, conduit, circuit breakers and or fused mainline disconnects switch.
   5. All electrical services to be in accordance with the latest version of the NEC.
   6. Wiring to controller for car lighting, ventilation, phone, fire alarm tie-in etc.
   7. Any other governmental required safety provisions not directly involved in the elevator installation.
   8. Painting of all components as needed for a finished appearance.
   9. Provide new angle supports for hoist way door sills, replacing protection baffles.

G. Staging areas: a dry and protected area will be provided, as close to the work site as possible with minimally disruption to the daily routine, for the contractor to use without cost for storage of materials and tools. Any additional storage shall be provided by the contactor at their expense. Any materials being invoiced for must be on site or stored in a federally insured warehouse.

1.3 REFERENCES

A. American Institute of Steel Construction:
   1. AISC S335 - Specification for Structural Steel Buildings Allowable Stress Design, and Plastic Design.

B. American Society of Mechanical Engineers:
   1. ASME A17.1 - Safety Code for Elevators and Escalators, current edition.
   2. ASME A17.2.2 - Inspector's Manual for Hydraulic Elevators.

C. ASTM International:
   1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
   2. ASTM A139 - Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over).
   3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   4. ASTM A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
   5. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
   6. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

D. American Welding Society:
   1. AWS D1.1 - Structural Welding Code - Steel.

E. Copper Development Association Inc.:
   1. CDA 113/5 - Standards Handbook 2. Alloy Data.

F. National Electrical Manufacturers Association:
   1. NEMA LD 3 - High Pressure Decorative Laminates.

G. National Fire Protection Association:
   1. NFPA 80 - Standard for Fire Doors, Fire Windows.

H. SSPC: The Society for Protective Coatings:
   1. SSPC - Steel Structures Painting Manual.

I. Underwriters Laboratories Inc.:
   1. UL 10B - Fire Tests of Door Assemblies.

1.4 CODE REQUIREMENTS

A. All work shall be performed in accordance with the latest revised editions (as on the date when bids are taken) of the Maryland Elevator Code, the American Society of Mechanical Engineers / American National Standards Safety Code for Elevators and Escalators (ASME / ANSI A17.1), the National Fire Protection Association (NFPA No. 80), the National Electrical Code (NEC), and the Requirements of the Americans with Disabilities Act (ADA) and (ADAAG), as well as any applicable local codes. Should, subsequent to the date bids are taken, changes be made in any contract enforceable code, the elevator contractor shall be paid, as an addition to the contract, for the work and materials necessary to make the installation comply with such changes.

B. Include all ADAAG mandated audible / visual / tactile requirements.

1.5 PERMITS, TAXES, LICENSES, & INSPECTIONS

A. All applicable sales and use taxes, permit fees and licensing fees imposed upon the contractor as of the date the bids are taken shall be included in the contract price. The contractor shall secure and pay for the elevator inspection and permit and any other permit required including electrical. The purchaser agrees to pay, as an addition to the contract price, the amount of any additional taxes, fees, or other charges exacted from the Purchaser of the company on account thereof, by any law enacted after the date of this proposal.

B. The contractor shall secure and pay for all third party inspections as required by the code officials or elevator inspections.

1.6 DEFINITIONS

A. All terms contained herein shall be as defined in Section 3, ASME / ANSI A17.1, latest edition.

B. Defective elevator work: operation or control system failures; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; the need of excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

1.7 SYSTEM DESCRIPTION

A. Hydraulic Elevator Systems: One unit; telescopic twin jack holeless hoistway cylinder in hoistway; with motor and pump adjacent approximately distant from hoistway.

B. Characteristics of elevator is as follows:
   1. Nominal Platform Size: confirm based on hoistway size
   2. Cab Ceiling Height: 96 inches.
   3. Hoistway and Cab Entrance Frame Opening Sizes: match existing.
   4. Door Type: Double panel.
   5. Door Operation: Side opening.
   6. Number of Stops: 4.
   7. Number of Openings: 4 Front.

C. Door Control Features:
   1. Program door control to open doors automatically when car arrives at floor.
   2. Render "Door Close" button inoperative when car is standing at dispatching terminal with doors open.
   3. When doors are prevented from closing for approximately twenty seconds because of obstruction, automatically disconnect door reopening devices, close doors more slowly until obstruction is cleared. Sound buzzer.
   4. Door Reversal System: Moveable, retractable safety edges, quiet in operation; equip with multi-beam infrared light curtain.

D. Interconnect elevator control system with building fire alarm, smoke alarm, and building management control system.

E. Temporary Elevator Use: Not permitted without prior consent in writing by the Owner. If use is required the using party shall sign a temporary use form with the elevator contractor and be bound by the conditions thereof, and the party shall pay for all repair costs including maintenance service during that use.

F. Seismic Design: In accordance with seismic risk zone code.

1.8 DESIGN REQUIREMENTS

A. Firefighter's Emergency Operation:
   1. Provide "Firefighter's Operation" in accordance with ASME A17.1.
   2. Designated Landing: first floor.
   3. Alternate Landing: second floor.

B. Independent Service:
   1. Provide key operated "Independent Service" on car operating panel. Key activation will remove that car from normal operation and cancel all pre-registered car calls.
   2. Car will respond to selected floor. Car will not respond to calls from hall call buttons. Car will only respond to calls placed on car operating panel. Doors will remain open at last landing requested. Doors will close with constant pressure on "DOOR CLOSE" button.
   3. Key activation to normal operation returns car to normal operation.

1.9 PERFORMANCE REQUIREMENTS

A. Conform to applicable code for manufacture and installation of elevator system.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters' Laboratories, Inc., or testing firm acceptable to authority having jurisdiction as suitable for purpose specified and indicated.

1.10 SUBMITTALS

A. Shop Drawings: Indicate the following information:
   1. Car, guide rails, buffers, and other components in hoistway.
   2. Location and sizes of access doors, doors, and frames.
   3. Interface with building security system.
   4. Electrical characteristics and connection requirements.

B. Product Data: Submit data on the following items:
   1. Signal and operating fixtures, operating panels, indicators.
   2. Cab design, dimensions, layout, and components.
   3. Cab and hoistway door and frame details.
   4. Electrical characteristics and connection requirements.

C. Samples: Submit two samples, 3x3 inch min. in size illustrating cab floor material, cab interior finishes, cab and hoistway door and frame finishes, and handrail material and finish.

1.11 CLOSEOUT SUBMITTALS

A. The contractor shall submit, to Owner two (2) bound manuals with operating and maintenance instructions, parts listings, emergency instructions, and demonstrate compliance with the following sections before Final payment is made.

B. Operation and Maintenance Data:
   1. Include parts catalog with complete list of equipment replacement parts; identify each entry with equipment description and identifying code.
   2. Include technical information for servicing operating equipment.

1.12 QUALITY ASSURANCE

A. Perform Work in accordance with ASME A17.1, AWS D1.1, AISC S335, and as supplemented in this section.

B. Fabricate and install door and frame assemblies in accordance with NFPA 80 and UL 10B.

1.13 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section and approved by elevator equipment manufacturer, who has completed elevator installations similar in design, material, and extent to that indicated for this project and with a record of successful in-service performance. Mechanics and helpers shall be trained and members of National Elevator Industry Education Program (NEIEP).

1.14 PRE-INSTALLATION MEETINGS

A. Convene minimum one week prior to commencing work of this section.

B. Require attendance of persons directly involved with Work of this section.

C. Review schedule of installation, installation procedures and conditions, and coordination with related Work.

D. Review temporary use of elevator for construction purposes, hours of use, scheduling of its use, cleanliness of cab, employment of operator, maintenance of system.

1.15 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.16 SCHEDULING & COORDINATION

A. Contractor is solely responsible to provide all coordination with the new installation of the cab into the existing hoistway, and shall be responsible to ensure the finished project is in compliance with the current codes and regulations.

1.17 WARRANTY

A. Furnish one (1) year manufacturer warranty for elevator equipment and devices for material and workmanship installed. The contractor shall install the work to be first class in every respect, and he will make good any defect not due to abuse, misuse, neglect, or any other cause beyond his

control, for a period of one year from the date the elevator installation is turned over to the Owner which shall commence when the final inspection and approval is given by the elevator inspector.

B. In the event of a claim, the Owner must give prompt notice and providing all payments due under the terms of this contract have been made in full, the elevator contractor shall, at his expense, correct any proven defects by repair or replacement. He will not under this guarantee reimburse the owner for cost of work done by others; nor shall he be responsible for equipment to which revisions, others have made by repairs, alterations, or additions. This guarantee is in lieu of any other liability for defects, and there is not warranty of merchantability and no warranties which extend beyond the description in this contract, nor are there any other warranties, expressed or implied, subject to limitations imposed by laws.

C. Like any piece of fine machinery, this equipment should be periodically inspected, lubricated and adjusted by competent personnel. This guarantee is not intended to supplant normal maintenance service and shall not be construed to mean that free service will be provided for periodical examination, lubrication and adjustment due to normal use beyond that included in the contract.

1.18 MAINTENANCE SERVICE

A. During 12-month maintenance period, the elevator contractor shall provide 24 hr per day repair service. Repair calls originating during normal working hours shall be provided at no expense to Owner, except those made necessary by vandalism, abuse, or misuse of elevator equipment. Elevator contractor shall absorb the straight time labor rate for repair calls originating after normal working hours, weekends and holidays; the Owner shall compensate the elevator contractor for the premium (1/2 time rate), except that the Owner shall be fully responsible for calls made necessary by vandalism, abuse, or misuse of the elevator equipment.

B. Maintain locally, near Place of the Work, adequate stock of parts for replacement or emergency purposes. Have personnel available to ensure fulfillment of this maintenance service, without unreasonable loss of time.

C. Perform maintenance work using competent and qualified personnel under supervision and in direct employ of elevator manufacturer or original installer.

D. Do not assign or transfer maintenance service to agent or subcontractor without prior written consent of Owner.

1.19 EXTRA MATERIALS

A. Furnish three (3) extra keys.

PART 2 PRODUCTS

2.1 HYDRAULIC PASSENGER ELEVATORS

A. Manufacturers are subject to full compliance with non-proprietary requirements as noted throughout this specification shall offer products that may be incorporated into the work include but are not limited to the following:

B. Manufacturers:
1. Elevator Solutions
2. Landmark Elevators
3. Eastern Elevator
4. Substitutions in accordance with Section 01600.

C. Manufacturers of the equipment shall have a minimum of five (5) years' experience in fabrication of elevators similar to that specified herein.

2.2 CAB & CORRIDOR COMPONENTS

A. Materials:
1. Rolled Steel Sections, Shapes, and Rods: ASTM A36/A36M.
2. Casing: ASTM A139, Grade A steel.
3. Sheet Steel: ASTM A1008/A1008M, with matte finish.
4. Stainless Steel: ASTM A666 Type 304.
5. Aluminum: ASTM B221, extruded.
6. Plywood: Structural I, Grade C-D, sanded.
7. Plastic Laminate: NEMA LD-3, type, 1/8 inch thick; color/pattern, and matte surface finish as selected.
8. Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide.
9. Touch-Up Primer for Galvanized Surfaces: SSPC 20 Type I Inorganic zinc rich.
10. Primer for Wood Surfaces: Alkyd primer sealer.
11. Finish Paint for Metal Surfaces: Alkyd enamel, semi-gloss color as selected.

B. Car Fabrication:
1. Frame: Rigid and braced, rolled or formed steel sections, mounted on resilient isolators.
2. Platform: Suitable subfloor, ready to receive floor finish.

C. Cab Fabrication:
1. Canopy : Steel – Wood with laminate face, include ceiling exit and contact
2. Flooring: Ceramic Tile as specified in Section 09310.
3. Side and Rear Walls: Plastic laminate on plywood, exterior fireproofed.
4. Front Wall and Return Panel: #4 Stainless steel.
5. Base: #4 stainless steel 4 inches high.
6. Ceiling: suspended luminous panels in stainless steel frame, accommodate emergency access.
7. Light Fixtures: Fluorescent, downlights above the suspended panel ceiling.
8. Ventilation: Single speed fan in canopy, vent grille perforations in base.
9. Control Panel and Face Plate: #4 Stainless steel with illuminating call buttons.
10. Position Indicator: Above door or above control panel with illuminating position indicators.
11. Hand / Bumper Rail: #4 Stainless steel flat bar stock, 3/8” x 2”, spaced from wall 1”; placed at rear wall and side walls.
12. Pad Hooks: Stainless steel type, mounted at 7 foot high.
13. Protective Pads: One set, canvas cover, padded with cotton wadding fill material, sewn with piping edges; brass grommets spaced to match pad hook spacing in cab, covering side and rear walls and front return, except cut-out for control panel.
14. Certificate Frame and Glazing: stainless steel frame, clear plastic attached with tamper proof screws.

D. Cab Entrances:
1. Cab Doors: Stainless steel clad hollow metal door panel, insulated, flush design, rolled profiles, rigid construction. Doors to match front return panels.
2. Cab Door Frames: Stainless steel, bolted corner design with smooth invisible joints.
3. Thresholds: Extruded aluminum type, to align with frame return to allow reversing of cab floor finish.

E. Hoistway Entrances:
1. Hoistway Doors: Stainless steel 0.058 inch thick metal, welded corner with smooth invisible joints, flush design, rolled profiles, rigid construction.
2. Hoistway Door Frames: Stainless steel; 0.058 inch thick metal, of rolled profiles, welded corner with smooth invisible joints.
3. Door and Frame Construction: 1-1/2 hour fire rating; insulated sandwich panel door construction, 1-1/4 inch thick, minimum.

4. Sills: Extruded aluminum. Stainless steel
5. Side jambs of hoistway entrances shall bear ADA required tactile / braille notification tags approximately 4’0” above finished floor.

F. Car Operating Panel:
1. Provide one flush mounted operating panel in each car with integral and front return face plate; with front return panels containing illuminated call buttons corresponding to floors served, in car alarm button, and door open, door close buttons.
2. Include service cabinet, with hinged door and lock in each car containing:
   a. Independent service switch.
   b. Inspection switch.
   c. Fan or blower switch.
   d. Light switch test switch.
   e. Emergency light.
   f. Keyed emergency stop.
   g. Additional operating switches for special features specified.
3. Furnish 110 V, 15 A convenience receptacle in service cabinet.
4. Car Position Indicators: Illuminating white, illuminate when call is registered and is extinguished when call is answered.
5. Telephone Cabinet: Furnish telephone to comply with ADA requirements that a deaf person can communicate to the call center. Provide phone line to connect to buildings phone panel.
6. Provide required tactile / braille tags immediately to left of the controls, as specified by ADA.
7. Mount operable equipment in accordance with ADA with regard to height of control buttons.

G. Landing & Signal Controls:
1. Landing Buttons: Stainless steel, Illuminating type, one for originating UP and one for originating DOWN calls, one button only at terminating landings; marked with arrows.
2. Landing Position Indicators: Illuminating white, illuminate when call is registered and are extinguished when call is answered.
3. Car Direction Indicators: Illuminating white, provide in jamb of door opening, visible from the all call station; and shall include the required audible / visual notification required by ADA.
4. Provide tactile / braille tags with in each hall operating panel.

H. Car / Hall Position Indicator
1. A multi-lite position indicator shall be provided within the car, centered over the door opening or above the Car Operating Panel, and outside the hoistway, at the main floor lobby. As the car travels through the hoistway, its position shall be indicated by illumination of the indicator corresponding to the floor it is stopped at, or passing. In conjunction with the in-car position indicator, include an audible signal to indicate that the car is stopping at or passing a floor, as required by ADA.

2.3 CONTROLS

A. Automatic Two Way Leveling: automatic two way leveling at reduced speed shall be provided, designed to level the car to the floor, to tolerances required Code, and to maintain the car approximately level with the floor regardless of load or direction of travel. The car shall be maintained approximately level with the floor during all conditions of loading and unloading.

B. Door Operation:
1. A heavy duty gearless door operator with direct current motor shall be provided, arranged to open and close the car and hoistway doors simultaneously. Approved interlocks shall be provided on each hoistway door designed to prevent the operation of

the elevator unless all doors are closed and locked. An electric contact on the car door shall prevent operation of the elevator unless the car door is closed.

2. Doors shall open automatically when the car is leveling at a landing and close after a predetermined, adjustable time, or immediately upon registering a car call or pressing the 'door close' button in the car operating panel.

C. Door Edge Protective Device – Infrared Curtain: the car door shall include a retractable protective device on the leading edge of the door. Should this device engage an obstruction while the doors are closing, it shall automatically reverse the car and hoistway doors. Doors shall remain open until the expiration of an adjustable time interval, and then close automatically.

D. Inspector's Operating Station: Provide an Inspector's Operating Station on top of the elevator to allow use of the elevator independent of the normal operating system. Include 'up /down' and safe constant pressure buttons, emergency stop switch, 'run/inspect' switch, fire service light/buzzer, lamp with guard and On/Off switch, and GFI duplex receptacle, and any other Code mandated requirements..

E. Alarm Bell: an electric signal bell shall be located as required to comply with Code. The alarm bell shall be connected to the 'Alarm' button and 'Emergency Stop' switch in the car operating panel and shall be powered by the battery pack of the emergency light.

F. Controller / Selector:

1. The controller shall be a totally non-proprietary microprocessor type, designed to control starting and stopping and to protect the motor form overload or excess current. All components shall be neatly contained within a NEMA 1 cabinet, power unit mounted, free standing or wall mounted, as space dictates. Provide electronic soft start starting with mainline potential relay.
2. Wiring within the cabinet shall be contained within PVC duct, and shall terminate at screw terminal strips that have box lugs. Terminal strips shall have indelible identifying markings.
3. The controller shall be designed for operation at 32˚C, ambient, and shall contain locking doors, vents, etc…, as required to provide access to, and protection for, all components contained therein.
4. The selector shall be designed to provide the service specified herein.

G. Protective control Devices:

1. The electrical control circuit shall be designed to protect against the following possible conditions:
   a. If the system is low on hydraulic fluid, or, if the car fails to reach an upper floor within a predetermined time, the car will automatically return to the lowest floor and the doors will open to permit passengers egress. The doors will then close, and all control buttons except the door open button will remain inoperative.
   b. Protection against phase failure and /or phase reversal shall be provided.

H. Automatic Two Way Leveling: Automatic two-way leveling at reduced speed shall be provided, designed to level the car to the floor, to tolerances required by Code, and, to maintain the car approximately level with the floor regardless of the load or direction of travel. The car shall be maintained approximately level with the floor during all conditions of loading and unloading.

2.4 FACTORY FINISHING

A. Structural Metal Surfaces: Clean surfaces of rust, oil or grease; wipe clean with solvent; prime two coats.

B. Machine Room Components: Clean and degrease; prime one coat, finish with two coats of enamel.

C. Galvanized Surfaces: Clean with neutralizing solvent; prime two coats.

D. Aluminum: Mill finish.

E. Wood Surfaces not exposed to Public View: One coat primer; two coats enamel.

F. Baked Enamel on Steel: Clean and degrease metal surface; apply one coat of primer sprayed and baked; two coats of enamel sprayed and baked; color as selected.

G. Stainless Steel: #4 Satin Polished.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing hoistway, pit, and machine room are ready for work of this section.

B. Verify hoistway shaft and openings are of correct size and within tolerance.

C. Verify electrical power is available and of correct characteristics.

3.2 PREPARATION

A. Arrange for temporary electrical power for installation work and testing of elevator components.

B. Sound Isolation: Mount rotating or vibrating equipment on vibration-isolating mounts designed to effectively prevent transmission of vibrations to structure and thereby eliminate sources of structure-borne noise from elevator system.

C. Confirm existing Fire Alarm system has contactors / relays ready to accept new installation. If not provide wiring and contacts back to fire alarm panel and make connections via appropriate contractor.

3.3 INSTALLATION

A. Install in accordance with ASME A17.1.

B. Install system components. Connect equipment to building utilities.

C. Install conduit, boxes, wiring, and accessories.

D. Accommodate equipment in space indicated.

E. Field Welds: Chip and clean away oxidation and residue, wire brush; spot prime with two coats.

F. Coordinate installation of hoistway wall construction.

G. Install hoistway door sills, frames, and headers in hoistway walls. Set entrances in vertical alignment with car openings and aligned with plumb hoistway lines. Fill space under the sills solidly with non-shrink, non-metallic grout.

H. Fill hoistway door frames solid with grout and grout sills.

I. Adjust equipment for smooth and quiet operation. Lubricate operating parts of the system as recommended by the manufacturer.

3.4 ERECTION TOLERANCES

A. Cab Movement on Aligned Guide Rails: Smooth movement, with no objectionable lateral or oscillating movement or vibration.

3.5 FIELD QUALITY CONTROL

A. Perform tests required by ASME A17.2.2.

B. Provide two weeks written notice of date and time of tests.

C. Supply instruments and execute specific tests.

D. Perform following tests in presence of Owner: Make final check of each elevator operation to determine that operations, devices, and system is functioning properly.

1. Test elevator system by transporting at least ten persons up from main floor during five minute period.
2. At an agreed time during contract warranty period, and with building normally occupied using normal building traffic, conduct tests to verify performance. Furnish event recording of hall call registrations, time initiated, and response time throughout entire normal working day.
3. Time elevator travel between typical floors at not more than 20 seconds. Measure time from moment doors start to close until car has stopped level at next floor and doors are opening.

E. Provide demonstration to Owner.

1. Instruct Owner’s personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be flowed at time of operational failure and other building emergencies. Train Owner’s personnel in procedures to follow in identifying sources of operational failures or malfunctions. Confer with Owner on requirements for a complete elevator maintenance program.

3.6 MANUFACTURER'S FIELD SERVICES

A. Obtain required permits to perform tests. Perform tests required by regulatory agencies.

B. Schedule tests with agencies and Owner and Contractor present.

C. Furnish test and approval certificates issued by jurisdictional authorities.

3.7 ADJUSTING &CLEANING

A. Adjust for smooth acceleration and deceleration of car so not to cause passenger discomfort.

B. Adjust automatic floor leveling feature at each floor to provide stopping zone of 1/4 inch.

C. Remove protective coverings from finished surfaces.

D. Clean surfaces and components in accordance with manufacturer’s recommendations, ready for inspection.

3.8 PROTECTION OF INSTALLED CONSTRUCTION

A. Do not permit construction traffic within cab after cleaning.

END OF SECTION