SECTION 142400
MODERNIZATION - HYDRAULIC ELEVATORS

PART 1 - GENERAL

1.01 SUMMARY

A. Modernize one (1) existing hydraulic passenger elevator to full functionality and meet the current code requirements in the State of MN.

B. Owner: Crosby HRA

C. Owner's Representative/Consultant of Record:
   1. Discovery Vertical Solutions
      Jeff Akre – 651-295-3091; jeff.akre@discoveryverticalsolutions.com

D. Project Address: 400 3rd Ave. NE Crosby, MN 56441

E. **Scope of Work included in this document:**
   1. Project includes the upgrading of one (1) hydraulic passenger elevator (Passenger Elevator #1) in order replace the existing controller, fixtures, hardware, power units and door operators and related equipment (including all related trades' work) to meet the requirements of the current adopted ASME A17.1 requirements in enforcement.

   2. General Contractor Work - Water-Intrusion Remediation: Remediate water intrusion affecting the elevator equipment room and hoistway. Restore all affected spaces to like-new, code-compliant condition.
      Equipment-Room HVAC: Provide and install a complete mini-split HVAC system serving the elevator equipment room. Size the system for the total btu output of the new equipment and provide sufficient capacity to continuously maintain the room temperature between 50 and 90 degrees Fahrenheit.

   3. The project scope shall also include complete removal and replacement of the existing in-ground hydraulic jack assembly, including the cylinder, plunger, seals, packing, protective casing, hydraulic connections, drilling, temporary casing, groundwater control, oil handling, disposal, testing, restoration, and all associated work required for a complete and operational installation.

   4. Where the Contractor is required to design or select structural supports, attachments, equipment foundations, HVAC capacity, electrical modifications, or other engineered systems, design shall be performed by a design professional licensed in Minnesota and retained by the Contractor. Submit sealed calculations and drawings when required by law or the Contract Documents. Delegated design does not transfer responsibility for Owner-provided design criteria or existing-condition information not reasonably ascertainable by the Contractor.

F. **Elevator Contractor to act as General Contractor**: The execution of this project will be completed as a turn-key modernization project with the Elevator Contractor serving as General Contractor and responsible for all other trade's scope. This includes but is not limited to: general construction, electrical, mechanical, HVAC, plumbing and fire alarm.

1.02 DEFINITIONS

A. Definitions in A17.1/CSA B44 apply to work of this Section.

1.03 REFERENCE STANDARDS

A. AAMA 611 - Specification for Anodized Architectural Aluminum; 2024.

B. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.

C. AISC 360 - Specification for Structural Steel Buildings; 2022, with Errata (2025).

D. ASME A17.1 - Safety Code for Elevators and Escalators Includes Requirements for Elevators, Escalators, Dumbwaiters, Moving Walks, Material Lifts, and Dumbwaiters with Automatic Transfer Devices; 2022.

E. ASME A17.2 - Guide for Inspection of Elevators, Escalators, and Moving Walks Includes Inspection Procedures for Electric Traction and Winding Drum Elevators, Hydraulic Elevators, Inclined Elevators, Limited-Use/Limited-Application Elevators, Private Residence Elevators, Escalators, Moving Walks, Dumbwaiters, and Material Lifts; 2023.

F. ASME QEI-1 - Standard for the Qualification of Elevator Inspectors; 2024.

G. ASTM A666/A666M - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2024.

H. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.

I. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.

J. AWS D1.1/D1.1M - Structural Welding Code - Steel; 2025.

K. NEMA MG 00001 - Motors and Generators; 2024.

L. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

M. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025.

1.04 ADMINISTRATIVE REQUIREMENTS

A. **Coordination**:
   1. Coordinate work with other subcontractors/installers to provide conduits necessary for installation of wiring including but not limited to:
      a. Elevator equipment devices remote from elevator machine room or hoistway.
      b. Telephone service for machine room.
      c. Elevator pit for lighting, sump pump
   2. Coordinate closely with the Owner and Owner's Representative. Elevator contractor must keep all parties informed of the project schedule and progress.
      a. All subcontractor work must be scheduled in advance of the work taking place.
   3. Elevator contractor to submit proposed project schedule ahead of mobilization, as well as progress updates every week during the execution phase of the project.

B. Preinstallation Meeting: Convene meeting at least one week prior to start of this work.
   1. Review schedule of installation, proper procedures and conditions, and coordination with related work.

1.05 WORK HOURS AND SCHEDULING

A. The project shall be based upon performing the elevator modernization work using a schedule of five 10-hour work shifts per week, for a total planned work schedule of 50 hours per week.

B. Unless otherwise approved in writing by the Owner, the five 10-hour shifts shall be performed on five consecutive weekdays. Work shall not commence prior to 8:00am local time daily.

C. The Contractor shall include all labor costs, shift premiums, overtime premiums, supervision, project management, mobilization, tools, equipment, temporary facilities, subcontractor costs, and other expenses necessary to perform the Work according to the specified five-shift, 10-hour-per-shift schedule.

D. Staffing and Continuity
   1. Provide sufficient qualified mechanics, helpers, supervisors, drilling personnel, subcontractors, and other workers to maintain continuous and productive progress during each scheduled shift.

2. Maintain adequate staffing throughout the duration of the Work. Reduced staffing, unavailable personnel, subcontractor scheduling conflicts, material-handling delays, or failure to coordinate related trades shall not constitute justification for additional compensation or an extension of Contract Time.
3. Schedule demolition, cylinder removal, drilling, installation, wiring, adjustment, testing, restoration, and related trades to minimize interruptions between work activities.
4. Once an elevator is removed from service, prosecute the Work continuously and diligently until the elevator is completed, tested, accepted by the Authority Having Jurisdiction, and returned to authorized service.
5. Do not suspend or reduce scheduled work activities without prior written authorization from the Owner, except when necessary to address an immediate safety condition.

E. Occupied-Building Requirements
1. Assume that the building will remain occupied and operational throughout the Work unless otherwise indicated in the Contract Documents.
2. Coordinate noise-producing, vibration-producing, drilling, demolition, oil-transfer, material-delivery, and other disruptive activities with the Owner.
3. Comply with Owner-established restrictions regarding building access, resident or occupant notification, noise, dust, odors, parking, staging, security, and use of public areas.
4. Maintain safe access to occupied portions of the building and protect occupants, employees, visitors, finishes, utilities, and adjacent property throughout the Work.
5. The Contractor's shall provide reasonable coordination and sequencing necessary to comply with the Owner's operational requirements while maintaining the specified work schedule.
6. If the Owner establishes specific blackout periods or restricted hours before bids are received, incorporate those restrictions into the schedule.

F. Contractor's Project Schedule
1. Submit a detailed project schedule before mobilization showing performance of the Work using five 10-hour shifts per week.
2. At a minimum, identify:
   a. Mobilization and site protection.
   b. Elevator shutdown.
   c. Existing-equipment removal.
   d. Hydraulic-jack and cylinder removal.
   e. Drilling and bore preparation.
   f. New cylinder installation.
   g. Controller and power-unit installation.
   h. Door equipment and fixture installation.
   i. Cab, ceiling, and finish work.
   j. Related electrical, fire-alarm, communication, HVAC, plumbing, and general-construction work.
   k. Adjustment and pretesting.
   l. Authority Having Jurisdiction inspection and acceptance testing.
   m. Punch-list correction.
   n. Owner training.
   o. Final documentation and turnover.
3. Identify the anticipated number of workers assigned to each major activity and the planned duration of each activity.
4. Update the schedule when actual progress differs materially from the approved schedule or when requested by the Owner or Owner's Representative.
5. Schedule approval shall not relieve the Contractor of responsibility for completing the Work within the required Contract Time.

G. Changes to Work Hours
   1. Changes to the specified five-shift, 10-hour-per-shift schedule require prior written approval from the Owner.
   2. A Contractor-requested change to shorter shifts, fewer weekly shifts, different working days, or reduced staffing shall not entitle the Contractor to additional compensation or an extension of Contract Time.
   3. If the Owner directs a material change to the specified work schedule after award, the effect on Contract Sum or Contract Time, if any, shall be evaluated in accordance with the Contract modification procedures.
   4. Costs resulting from conditions within the Contractor's control, including staffing shortages, late material deliveries, inadequate coordination, incomplete submittals, failed inspections, defective work, or required corrective work, shall be borne by the Contractor.

1.06 SUBMITTALS

A. **Product Data:** Submit data on following items:
   1. Signal and operating fixtures, operating panels, and indicators.
   2. Car design, dimensions, layout, and components.
   3. Car and hoistway door and frame details.
   4. Electrical characteristics and connection requirements.
   5. Operation, control systems.
   6. Machine Room Layouts.
   7. Hydraulic cylinder replacement details.

B. **Shop Drawings**: Include appropriate plans, elevations, sections, diagrams, and details on following items:
   1. Elevator Equipment and Machines: Size and location of driving machines, power units, controllers, governors, and other components.
   2. Hoistway Components: Size and location of car guide rails, buffers, jack unit and other components.
   3. Rail bracket spacing; maximum loads imposed on guide rails requiring load transfer to building structural framing.
   4. Clearances and over-travel of car.
   5. Locations in hoistway and machine room of traveling cables and connections for car lighting, telephone, and any hardware needed for wireless phone service and/or 2-way video requirements.
   6. Location and sizes of hoistway and car doors and frames.
   7. Electrical characteristics and connection requirements.
   8. Indicate arrangement of elevator equipment and allow for clear passage of equipment through access openings.
   9. Provide electrical, structural, and mechanical data including BTU output.
   10. Any discrepancy with the sizes or dimensions of elevator platforms, hoistways or associated appurtenances must be identified and noted on Shop Drawings and resolved before proceeding.

C. Maintenance Manuals: Provide written information necessary for proper maintenance and adjustment of the equipment prior to final acceptance.
   1. Straight-line wiring diagram of as-installed elevator circuits with index of location and function of components. Provide three neatly bound final corrected sets within 30 days after job acceptance for the Owner's file. One copy to be left in the machine room displayed in a plastic holder, neatly bound.
   2. Lubricating instructions, including recommended grade of lubricants.
   3. Parts catalog for replaceable parts including ordering forms and instructions. Provide three bound copies.
   4. Three sets of instruction manuals and equipment catalogs.

5. MSDS sheets for the hydraulic oil and solvents inserted into a plastic insert mounted on the tank unit for quick reference.
6. One set of approved shop drawings shall be placed in the elevator machine room.
7. One complete construction manual of all drawings, literature of all equipment shall be provided and left in the machine room.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Elevator manufacturer or an experienced installer approved by elevator manufacturer who has completed elevator installations similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Regulatory Requirements:
1. ASME A 17.1, "Safety Code for Elevators and Escalators." Latest Adopted Version in the Jurisdiction.
2. NFPA 70 National Electrical Code.
3. NFPA 80 Fire Doors and Windows.
4. Other applicable regulatory requirements pertaining to elevators and escalators.
5. Accessibility Requirements: In addition to local governing regulations, comply with Section 4.10 in the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)."

C. Fire Rated Entrance Assemblies: Opening protective assemblies including frames, hardware and operation to comply with ASTM E 152, UL 10B and NFPA 80. Provide entrance assembly units bearing UL Class B labels.

D. Seismic Requirements (As Required)
1. Seismic Risk Zone: Project is located in Zone 0.
2. BOCA/SBC Seismic Performance Category ["B"], ["C"] and ["D"].
3. IBC Seismic Design Category ["C"], ["D"], ["E"] and ["F"].
4. Elevator System to withstand effects of earthquake motions determined according to ASCE/SEI 7.
5. Comply with elevator safety requirements for seismic risk Zone 2 or greater in ASME A17.1/CSA B44.
6. Provide Earthquake equipment required by ASME A17.1 /CSA B44

E. Inspection and Testing; Elevator Contractor to obtain and pay for all required inspections, tests, permits and fees for elevator installation.

F. Flood Plain Requirements (As Required): Elevator Installer to identify and comply with additional requirements when the project site is located in an established flood plain

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle materials, components, and equipment in manufacturer's packaging onsite at the project site. Location details to be provided by owner prior to project commencement.

B. Store materials, components, and equipment off of ground, under cover, and in a dry location located onsite at project address. Handle according to manufacturer's written recommendations to prevent damage, deterioration, or soiling.

C. The owner may require the material to be moved at least once so coordination is important to minimize relocation.

1.09 WARRANTY

A. Manufacturer Warranty: Provide 2-year manufacturer warranty for elevator operating equipment and devices. Complete forms in Owner's name and register with manufacturer.
   1. Warrant the complete modernization installation against defects in design furnished by the Contractor, materials, manufacture, installation, programming, adjustment, and workmanship.
   2. The warranty shall include all elevator equipment furnished or modified under this Contract and existing equipment damaged or adversely affected by the Contractor's work.
   3. Unless a longer period is specified for an individual component, the warranty period shall be 24 months beginning on the date of written Final Acceptance by the Owner.
   4. Jurisdictional approval, Substantial Completion, beneficial use, temporary operation, or return of the elevator to service shall not initiate or reduce the warranty period unless accepted in writing by the Owner.
   5. Warranty coverage shall include labor, materials, replacement parts, software, programming, diagnostic services, adjustment, testing, shipping, freight, travel, mileage, and other costs necessary to correct covered conditions.
   6. Correct warranty deficiencies promptly after notification. Repeated failure of the same component or system shall require investigation and correction of the underlying cause, not repeated temporary adjustment.
   7. Repair or replace defective components with new components meeting the requirements of the Contract Documents. Refurbished, rebuilt, or used replacement components shall not be installed without written approval from the Owner.
   8. Warranty repairs shall not limit or invalidate a manufacturer's standard warranty.
   9. Warranty exclusions shall be limited to documented vandalism, misuse, casualty, work performed by unauthorized persons, or failure of building systems outside the Contractor's scope. Ordinary wear, adjustment, software correction, premature component failure, and failure to perform the required maintenance shall not be considered Owner-caused exclusions.
   10. When a warranted component is repaired or replaced, provide an additional one-year warranty on that repair or replacement, or the unexpired portion of the original warranty, whichever is longer.

1.10 INTERIM AND WARRANTY MAINTENANCE

A. Interim Maintenance
   1. Provide interim maintenance beginning on the date established in the Notice to Proceed and continuing without interruption until written Final Acceptance of the completed modernization work by the Owner.
   2. If the Owner's existing elevator maintenance agreement remains in effect for any portion of this period, coordinate the transfer of maintenance responsibility with the Owner and the existing maintenance provider.
   3. The Contractor shall not assume control of or perform work on the existing elevator until the date authorized in writing by the Owner.
   4. Once the Contractor assumes control of the elevator or begins modernization work, the Contractor shall be responsible for interim maintenance through Final Acceptance unless otherwise stated in writing by the Owner.
   5. Modernization completion, Substantial Completion, beneficial use, jurisdictional inspection, or temporary operation shall not terminate the interim maintenance obligation.

B. Warranty Maintenance
   1. Provide complete warranty maintenance, per the specified preventative maintenance scope of work provided in bid documents, for the modernized elevator for 12 months from the date of written Final Acceptance by the Owner.
   2. Warranty maintenance shall be provided by the Elevator Contractor at no additional cost to the Owner.

3. Warranty maintenance shall continue without interruption throughout the specified period.
4. If Final Acceptance is delayed because of incomplete work, unresolved deficiencies, missing closeout documentation, failed testing, or other matters within the Contractor's control, interim maintenance shall continue at no additional cost until Final Acceptance is issued.

1.11 PAYMENT AND RETAINAGE

A. Payment
   1. Submit applications for progress payment in a form acceptable to the Owner and in accordance with the Contract Documents.
   2. Each application shall be based on the approved Schedule of Values and shall identify:
      a. Work completed during the payment period.
      b. Materials and equipment properly stored for the Project.
      c. Previously approved amounts.
      d. Current payment requested.
      e. Approved changes in the Contract Sum.
      f. Retainage withheld.
      g. Balance remaining under the Contract.
   3. Progress payments shall not constitute acceptance of defective or nonconforming work, acceptance of incomplete work, or waiver of the Owner's rights under the Contract Documents.
   4. The Owner may withhold payment for defective or incomplete work, disputed work, failure to pay subcontractors or suppliers, failure to maintain the Project schedule, damage to the Owner's property, failure to provide required documentation, or other grounds permitted by the Contract Documents and applicable law.

B. Retainage:
   1. The Owner shall withhold retainage equal to five percent of each progress payment otherwise due to the Elevator Contractor.
   2. Retainage shall apply to labor, materials, equipment, approved stored materials, approved change orders, and other amounts incorporated into applications for payment.
   3. The Elevator Contractor shall identify retainage as a separate line item on each application for payment.
   4. The withholding of retainage shall not relieve the Elevator Contractor from completing the Work, correcting defective or nonconforming work, satisfying punch-list requirements, submitting closeout documentation, or fulfilling other obligations of the Contract.
   5. The Owner may reduce or eliminate retainage when permitted by applicable law and when, in the Owner's judgment, the Work is progressing satisfactorily. Any reduction or elimination of retainage shall not constitute acceptance of the Work or waiver of any Contract requirement.
   6. If the Owner reduces retainage, the Elevator Contractor shall reduce retainage withheld from its subcontractors at the same rate when required by applicable law.

C. Substantial Completion
   1. Substantial Completion shall not be achieved solely by completion of the jurisdictional elevator inspection or issuance of authorization to place the elevator into service.
   2. As conditions precedent to Substantial Completion, the Elevator Contractor shall:
      a. Complete the modernization work sufficiently for the elevator to be safely and continuously used for its intended purpose.
      b. Obtain required inspection approvals and operating authorization from the Authority Having Jurisdiction.
      c. Complete required testing and submit the associated reports and certificates.
      d. Complete Owner training and operational demonstrations.
      e. Submit warranties, maintenance information, emergency service information, and substantially complete closeout documentation.

f. Correct conditions that prevent safe, reliable, or code-compliant operation.
g. Submit a written request for inspection and certification of Substantial Completion.
h. Placement of the elevator into temporary service, beneficial use by the Owner, or occupancy of the building shall not, by itself, establish Substantial Completion or Final Acceptance.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers / Installers for Hydraulic Passenger Elevators:
   1. Schindler Elevator Corporation.
   2. ThyssenKrupp Elevator Company.
   3. Otis Elevator Company
   4. KONE
   5. Independent Vertical Transportation Installation Vendors may be considered in addition to the specified Elevator Contractors but are required to be pre-approved.

B. Acceptable Manufacturers for Controllers:
   1. Non-Proprietary Control Systems
      a. No – OEM Control systems allowed
      b. Basis for design: Motion Control Engineering - HMC 2000
         1) Approved equals acceptable

C. Acceptable Manufacturers for Pump Units:
   1. MEI
   2. Schumacher
   3. Canton
   4. Original Equipment Manufacturer (OEM), per specification compliance.
   5. Approved equals acceptable

D. Acceptable Manufacturers and products for Car and Hallway Fixtures:
   1. Innovation Industries
   2. Monitor
   3. MAD
   4. Approved equals acceptable

2.02 HYDRAULIC ELEVATORS – EXISTING EQUIPMENT SUMMARY

A. Hydraulic Passenger Elevator, (Elevator #1)
   1. Hydraulic Elevator Equipment:
      a. In-ground hydraulic cylinder
   2. Drive System: Hydraulic
   3. Operation Control Type: MCE Motion 1000
      a. Selective Collective Automatic Operation Control.
   4. Service Control Types:
      a. Standard service control.
      b. Independent service control.
   5. Interior Car Height: 96 inch (2438 mm).
   6. Electrical Power: 480 volts; alternating current (AC); three phase; 60 Hz.
   7. Rated Net Capacity: 3000 pounds
   8. Rated Speed: 100 feet per minute (0.5 m per second).
   9. Hoistway Size: Field Verify
   10. Interior Car Platform Size: Field Verify
   11. Elevator Pit Depth: 48 inch (1219 mm).

12. Overhead Clearance at Top Floor: Field Verify
13. Travel Distance: Field Verify
14. Number of Stops: Field Verify
15. Number of Openings: 3 Front; 1 Rear
16. Hydraulic Equipment Location: Machine Room located on Floor 1 Rear

2.03 COMPONENTS

A. General: Provide manufacturer's standard elevator systems except for specified components withing this specification.

B. Pump Units: Provide the following:
   1. Submersible pump unit is allowed up to and including 50hp motor. Dry pump unit required for anything over 50HP.
   2. Provide oil cooler with fan, thermostatically controlled.
   3. Provide motor with electronic line starter. Motor is required to handle a minimum of 80 starts per hour.

C. Hydraulic Silencers: Provide manufacturer hydraulic silencer. Mufflers with baffles are not allowed.

D. Hydraulic Jack Assembly:
   1. Provide a new complete, single-stage, in-ground hydraulic jack assembly specifically designed and manufactured for the existing travel, capacity, speed, and operating conditions of the elevator.
   2. The hydraulic jack assembly shall include, but not be limited to:
      a. New steel cylinder.
      b. New hydraulic plunger.
      c. New cylinder bottom assembly.
      d. New packing gland assembly.
      e. New seals and bearings.
      f. New PVC or HDPE cylinder protective casing.
      g. New cylinder cap and waterproofing provisions.
      h. New corrosion protection system.
      i. All supports, fittings, connectors required for a complete installation.
   3. Hydraulic cylinder shall comply with the requirements of ASME A17.1 and all applicable state and local codes.
   4. Cylinder and plunger materials shall be manufactured from seamless steel tubing specifically intended for hydraulic elevator applications.
   5. Provide factory testing and certification of all hydraulic jack components prior to shipment.

2.04 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with ASME A17.1, applicable local codes, authorities having jurisdiction (AHJ).

B. Accessibility Requirements: Comply with ADA Standards.

C. Perform structural steel design, fabrication, and installation in accordance with AISC 360.

D. Perform welding of steel in accordance with AWS D1.1/D1.1M.

E. Fabricate and install door and frame assemblies in accordance with NFPA 80 and in compliance with requirements of authorities having jurisdiction.

F. Perform electrical work in accordance with NFPA 70.

2.05 OPERATION SYSTEMS

A. A. Elevator Controllers: Provide Non-Proprietary control systems, specify manufacture and model. No OEM control systems allowed.

1. Basis for design: Motion Control Engineering HMC-2000
2. Comply with ADA Standards for elevator controls.

B. Interconnect elevator control system with building security, fire alarm, card access, smoke alarm, building management control, as applicable.

C. Elevator Operation:
1. Single Elevator: Provide ''Selective Collective Automatic Operation'' as defined in ASME A17.1.
2. Multiple-Cab Group: Provide ''Group Automatic Operation" as defined in ASME A17.1.

D. Auxilliary Operations:
1. Independent Service: Key Switch in cab control station allows it to respond only to cab call.
2. Firefighter's Service: Per ASME A 17.1 to operate and recall elevators to designated or alternate designated floors in fire or other emergency condition. Connect sensor signal wiring from hoistway or machine room connection point to controller terminals. Provide similar operation and fixtures on all elevators. Operate visual/audible signal until return is complete or automatic operation restored.
3. Standby Lighting and Alarm: Cab-mounted, battery unit with solid-state charger to operate fan, alarm bell and lighting per Code. Provide rechargeable battery with 5-year minimum-life expectancy.
4. Security Camera Capability: Provide RG59U coaxial cable in the main traveling cable. Coaxial cable to be terminated on top of car in junction box clearly identified and labeled. Opposite end to be terminated outside of the controller cabinet in a junction box clearly identified and labeled.
    a. Elevator contractor is responsible for terminating cables in the controller/junction boxes.
    b. Low Voltage contractor is responsible for mounting the security camera (Owner Provided) in the canopy of the elevator. Elevator contractor to provide access/assistance to low voltage contractor as needed for final connections.

2.06 CAB SIGNAL EQUIPMENT

A. Elevator Cab Control Station Components: Provide one. fully recessed, cab control station with applied metal faceplates. The faceplate must not extend to the floor but be terminated above the top bumper rail.
1. Pushbuttons: 1/8" raised, illuminated pushbuttons.
2. Alarm Button: Locate at code height of 35 inches to center or local AHJ requirement in the cab station to ring an alarm bell located on elevator. Actuation will illuminate button and sound distress signal.
3. Push Pull Stop Switch: with engraved markings to show "run" and "stop". Locate in main cab station faceplate. Actuation will illuminate alarm button and sound alarm.
4. Fireman's Service Key Switch: Provide one fireman's service key switch, call cancel button, and light jewel and other requirements per local AHJ interpretations.
5. Independent Service Switch: Surface mounted Independent service switch.
6. Firefighter's Operation Service Panel: Lockable flush cover plate in control station containing the following controls.
    a. Phase II key switch.
    b. Engraved instructions on inside of fire service cabinet.
    c. Door Open button.
    d. Door Close button.
    e. Emergency Stop switch.
    f. Call Cancel button.
    g. Indicator light: visual signal firefighter hat symbol.

h. Service Panel: Lockable flush cover plate in control station containing the following minimum controls,
i. Inspection key switch, conforming to the ANSI Code.
j. Light switch may be rocker switch, toggle or keyed.
k. Test button for emergency light.
l. Two-position exhaust blower switch may be rocker, toggle or keyed.
m. Duplex 120 volt. A C., GFCI electrical outlet.
n. Two spare toggle switches for future use.

7. Mark buttons and switches with manufacturer's standard identification for required use or function that complies with ASME A17.1/CSA B44.
8. The fire fighters Phase II service panel cabinet to be identified by engraved faceplate.
9. Mount controls at heights complying with the U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA), Accessibility Guidelines (ADAAG)."
10. Provide braille tactile on car operating panels.
11. Emergency Communication System: Provide system that complies with ASME A17.1/CSA B44 and the U.S Architectural & Transportation Barriers Compliance Board's "Americans with Disabilities Act (ADA). Accessibility Guidelines (ADAAG)". On activation, system dials pre-programmed number of monitoring station and identifies elevator location to monitoring station. System provides two-way voice communication without using a handset and provides visible signals that indicate when system has been activated and when monitoring station has responded. System to be flush mounted in control panel with the following components:
    a. Speaker Grille.
    b. Microphone.
    c. Activation Button. Programmed to the Elevator Contractor's 24 assistance number. There shall be no cost for this service
        1) (a) At Activation Button provide a 6.35 mm (1/4 inch) raised stainless steel collar surround, this collar projects beyond face of Activation Button and protects from inadvertent activation. Provide collar for either round or square Activation Buttons.
    d. Visible signal Light.
12. Cab Position Indicator: Provide 2 inch digital-display type, or segmented type with travel direction arrows. Provide voice annunciation as required by Jurisdiction.

2.07 HALL SIGNAL EQUIPMENT

A. Hall Pushbuttons: Provide a single riser for each elevator at all floors with flush-mounted faceplates constructed of satin stainless steel and flush mounted, vandal-resistant buttons. Each fixture to contain pushbuttons for each direction of travel which illuminate to indicate call registration Incorporate vandal- resistant, "in-use jewels, door open door close", and "reset buttons for control of doors with pushbutton fixture.
    1. Call Station Pictograph Signs: Provide signs matching hall push-button stations with text and graphics according to ASME A17.1/CSA B44. Appendix H.
    2. Fire Fighters Service Phase I instructions must be engraved in the main egress landing faceplate.
    3. Braille tactile on all hall stations

B. Hall Lanterns: Provide units with illuminated arrows.
    1. Provide units with flat stainless-steel faceplate for mounting with body of unit recessed in wall and with illuminated elements. Provide flush vandal resistant units. Place lanterns beside each hoistway entrance. Mount at 72 inches above finished floor. With each lantern, provide audible signals indicating cab arrival and direction of travel

C. Hoistway Access Switches: Mount in wall adjacent to entrance frame side jamb at all top terminals and bottom terminals. Provide stainless steel faceplate. The manufacturer must match the car operating panel.

2.08 DOOR OPERATION

A. Provide new G.A.L. MOVFRII operator, or equivalent.

2.09 RE-OPENING DEVICES

A. Passenger Elevators: Provide 3D scanner by Janus Elevator Products Inc., or equal. Sensitivity shall be field adjustable.

2.10 CAB ENCLOSURES

A. A. Cab Enclosures: Existing cab enclosures to be replaced with new.
   1. Front Return and Side Wall Panels: Existing front return panels to remain, clean and restore surfaces to a like-new condition. Side wall panels to be replaced with new.
      a. Side wall panels above handrail/bumper rails:
         1) Provide removable wall panels consisting of high-pressure decorative plastic laminate bonded to 12.7mm (1/2”) fire retardant-treated rigid panel substrate suitable for elevator cab service, complying with NEMA LD 3, and manufacturer’s standard protective edge trim. Panels to have a flame-spread rating of 25 or less, when tested according to ASTM E 84, E 162, and E662. Provide stainless steel reveals above, below and between equally spaced panels.
      b. Plastic Laminate:
         1) High-pressure decorative laminate, minimum 0.028-inch vertical grade, color and pattern as selected by Owner from manufacturer’s standard range.

      c. Side wall panels below the handrail/bumper rails:
         1) Provide removable wall panels consisting of 20ga. Stainless steel #4 patterned stainless steel (5WL pattern) adhesively applied to 12.7mm (1/2”) fire-retardant treated rigid panel substrate, complying with NEMA LD 3, and manufacturer’s standard protective edge trim. Panels to have a flame-spread rating of 25 or less, when tested according to ASTM E 84, E 162, and E662. Provide stainless steel reveals above, below and between equally spaced panels.
   2. Ceiling and Lighting: Existing aluminum T-frame ceiling structure shall remain and be reused. Existing translucent ceiling panels, fluorescent lamps, fluorescent ballasts, lamp holders, and associated lighting components shall be removed and replaced. Provide new frosted translucent elevator-grade acrylic or polycarbonate diffuser panels and a complete LED lighting system. Removal of fluorescent ballasts is mandatory. The completed installation shall provide not less than 10 foot-candles of illumination at the car floor, be fully compatible with elevator emergency lighting requirements, and include all wiring modifications, hardware, supports, and accessories necessary for a complete and code-compliant installation.
   3. Handrails: 1-1/2” x 3/8”, #4 stainless steel flat rail, mount 32” off finish floor, measured to top of handrail. Handrails should turn into wall at each end.
   4. Bumper rails: Double Rail, on walls without openings, 4”x 3/8”, #4 stainless steel bars with splayed ends. Mount bottom rail 4” off finish floor to bottom of rail, top rail 24” off finish floor to bottom of rail.

B. Flooring: include allowance for installation of owner provided flooring. Owner to provide: Shaw Contract *Respite* Style 4090V or approved equal, consisting of multilayer Stone Polymer Composite (SPC) construction with attached cork underlayment, 20-mil wear layer, ExoGuard® protective finish, and nominal dimensions of 7 inches x 48 inches; thickness of 0.197”.

2.11 ENTRANCES/DOORS

A. General: Existing hoistway and car doors to be replaced with new.

1. Car Doors: Remove existing car door panels and furnish new steel door panels matching the existing opening configuration. Exposed car-side surfaces shall be No. 4 satin-finish stainless steel.
   Provide new door gibs, retainers, reinforcing, attachment hardware, and other components required for connection to the modernized door operator and clutch.
   Adjust completed assemblies for smooth, quiet operation and required code clearances.

2. Hoistway Doors: Remove existing hoistway door panels and furnish new steel door panels matching the existing entrance configuration. Exposed landing-side surfaces shall have a factory-applied baked-enamel finish, color selected by Owner/Architect from manufacturer's standard colors. Existing entrance frames, jambs, headers, and sills shall remain unless otherwise indicated. Protect retained components during the Work.New hoistway door panels shall be compatible with the retained entrance assemblies and shall maintain the required fire-resistance rating, listing, and labeling of the entrance.

   Provide new door gibs and retainers. Provide or replace hangers, rollers, relating means, pickup assemblies, and other entrance hardware as required for proper operation and compatibility with the modernized door system.

   Coordinate new doors with hoistway door interlocks, closed-position detection means, unlocking devices, door operator equipment, and door-lock monitoring system.

3. Door Gibs: Fast speed doors provide “Enforcer" door gibs by SEES, or equal. For slow or single speed doors provide nylon door gibs. Provide two per door.

B. Fascia and Toe Guards: 14 gauge furniture steel with flat black enamel finish. Paint fire floor identifying numbers per Code. The toe guard shall have the complex unit stenciled on it.

2.12 MATERIALS

A. Stainless Steel Sheet: ASTM A666/A666M, Type 304; No. 4 Brushed finish unless otherwise indicated.

B. Extruded Aluminum: ASTM B221 (ASTM B221M), natural anodized finish unless otherwise indicated.

C. Resilient Flooring: Vinyl tile flooring and Resilient base, or alternate selected/provided by owner.

2.13 FINISHES

A. Powder Coat on Steel: Clean and degrease metal surface; apply one coat of primer; two coats of powder coat.

B. Finish Paint for Metal Surfaces: Alkyd enamel, semi-gloss, color as selected, complying with VOC limitations of authorities having jurisdiction (AHJ).

C. Clear Anodized Finish: Class I, AAMA 611 AA-M12C22A41, clear anodic coating with electrolytically deposited organic seal; not less than 0.7 mil, 0.0007 inch (0.018 mm) thick.

D. Color Anodized Finish: Class I, AAMA 611 AA-M12C22A44, electrolytically deposited colored anodic coating not less than 0.7 mil, 0.0007 inch (0.018 mm) thick.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting this work.

B. Verify that hoistway, pit, machine room, and building spaces are ready for work of this section.

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

D. Verify location and size of machine foundation and position of machine foundation bolts.

E. Verify that electrical power is available and of correct characteristics.

3.02 CUTTING AND PATCHING

A. WORK INCLUDED

1. Refer to the General and Special Conditions of the Agreement for special requirements, protection, constraints, timing of work, scheduling of work, enclosures and similar requirements, if any, related to this Section.
2. This Section covers cutting, demolition, removal work, patching and restoration of work as necessary accomplish and complete all work under the Agreement.

B. TURN-KEY REQUIRMENTS

1. The elevator contractor must coordinate all work of this Section with all subcontractors so the work will progress without interruption and minimum delays. The elevator contractor must coordinate and schedule the work with the Owner where possible disturbance may occur and where relocations or other potential disruptions of the Owner's functions and services may occur. All work affecting the Owner’s functions and services must be performed at times acceptable to the Owner.

3.03 DEMOLITION

A. Demolish and remove existing construction as indicated or required.

B. Thoroughly clean demolition areas to existing condition and remove debris, waste and rubbish from the building at the conclusion of each day’s work.

3.04 EXISTING HYDRAULIC CYLINDER REMOVAL

A. Remove the existing hydraulic jack assembly, including the cylinder, plunger, packing gland, associated piping connections, and all components required to facilitate replacement.

B. Contractor shall be responsible for all excavation, demolition, cutting, drilling, pumping, shoring, bracing, environmental protection measures, and restoration required to complete the work.

C. Existing cylinder shall be removed in accordance with applicable environmental regulations and local jurisdictional requirements.

D. Contractor shall properly collect, contain, transport, and dispose of all hydraulic oil, contaminated materials, spoils, and debris generated by the work.

E. Existing jack bore hole shall not be abandoned for reuse without written approval from the Consultant and Owner.

3.05 DRILLING AND CYLINDER BOREHOLE

A. Perform all drilling operations necessary to install a new in-ground hydraulic cylinder.

B. Contractor shall engage a drilling subcontractor experienced in hydraulic elevator cylinder installations.

C. Bore hole diameter, depth, and construction shall be suitable for the proposed jack assembly and soil conditions encountered.

D. Contractor shall verify required drilling depth based upon actual elevator travel, plunger length, and manufacturer requirements.

E. Contractor shall be responsible for subsurface investigation necessary to determine proper drilling methods and installation procedures. The Contractor shall include subsurface investigation reasonably obtainable through site inspection, available records, customary preconstruction inquiry, and ordinary drilling, temporary casing, dewatering, stabilization, oil handling, spoil management, and restoration reasonably anticipated for an in-ground hydraulic elevator cylinder replacement. If the Contractor encounters latent subsurface conditions materially differing from those indicated in the contract documents, or unusual physical conditions materially differing from those ordinarily encountered in work of this character, the

Contractor shall stop affected work, protect the site, and provide notice in strict accordance with the Differing Site Conditions clause of HUD-5370. Nothing in this Section waives or modifies that clause.

F. Provide temporary casing, dewatering, stabilization, and groundwater control measures as required to complete the installation safely and properly.

G. Contractor shall bear responsibility for protection of adjacent structures, foundations, pavements, utilities, underground improvements, and building components impacted by the drilling operation.

H. Repair all damage resulting from drilling operations at no additional cost to the Owner.

3.06 INSTALLATION

A. General:
   1. Install each equipment item in accordance with accepted Manufacturer's procedures, referenced codes, and specifications.
   2. install machine room equipment with clearances in accordance with referenced codes and specifications.
   3. Install items so they may be easily removed for maintenance and repair.

B. Welded Construction: Provide welded connections for installing elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn parts.
   1. Comply with AWS standards for workmanship and for qualifications of welding operators.

C. Sound Isolation: Db levels not to exceed 55 dba at any point in the hoistway with cab fan off.

D. Isolate the piping through the hoistway.

E. Install piping above floor, where possible. Where not possible, install underground piping in Schedule 40 PVC pipe casing assembled with solvent-cement fittings.

F. All hydraulic pipelines must be identified at 10 foot intervals to comply with ASME A17.1.

G. Provide floor and wall supports to make sure the victaulic fittings, piping is secure and does not flex during the operation of the elevator.

H. Lubricate operating parts of systems as recommended by manufacturers.

I. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cabs. Where possible, delay installation of sills and frames until cab is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

J. Leveling Tolerance: 1 /4 inch, up or down, regardless of load and direction of travel.

K. Set hoistway door stops so door is flush with finished floor surface at landing.

L. Performance Criteria Passenger Elevator.
   1. Door open time 3.2 seconds.
   2. Door Close lime 3.8 seconds.
   3. Door open dwell lime on a car call 5.5 seconds.
   4. Door open dwell time on a hall call 6.5 seconds.
   5. Activ ation of door close button must cancel dwell lime.
   6. Floor to floor times. Agreement speed with leveling zone of 6 to 10 inches maximum either direction.

3.07 NEW HYDRAULIC CYLINDER INSTALLATION

A. Install new hydraulic jack assembly plumb and centered beneath the elevator car in accordance with the manufacturer's written instructions.

B. Install new protective cylinder casing extending from the cylinder bottom to a point above finished floor elevation.

C. Seal annular spaces and provide waterproofing measures necessary to prevent groundwater infiltration.

D. Provide isolation from dissimilar metals to prevent galvanic corrosion.

E. Connect new cylinder to the hydraulic power unit utilizing new piping, fittings, supports, and accessories as required for a complete installation.

F. Hydraulic piping located below grade shall be replaced with new materials suitable for underground hydraulic elevator service.

G. Following installation, perform all alignment adjustments necessary to ensure smooth elevator operation throughout the full travel.

3.08 FIELD QUALITY CONTROL

A. Testing and inspection performed at discretion of regulatory agencies certified in accordance with ASME QEI 1.
   1. Schedule tests with agencies and notify Owner and Architect.
   2. Obtain permits as required to perform tests.
   3. Document regulatory agency tests and inspections in accordance with requirements.
   4. Perform tests required by regulatory agencies.
   5. Furnish test and approval certificates issued by authorities having jurisdiction.

B. Perform testing and inspection in accordance with requirements.
   1. Inspectors shall be certified in accordance with ASME QEI-1.
   2. Perform tests as required by ASME A17.2.
   3. Provide at least two weeks written notice of date and time of tests and inspections.
   4. Supply instruments and execute specific tests.

3.09 ADJUSTING

A. Adjust for smooth acceleration and deceleration of car to minimize passenger discomfort.

B. Adjust with automatic floor leveling feature at each floor landing to reach 1/4 inch (6.4 mm) maximum from flush with sill.

3.10 CLEANING

A. Remove protective coverings from finished surfaces.

B. Clean surfaces and components in accordance with manufacturer’s written instructions.

3.11 CLOSEOUT ACTIVITIES

A. Provide all close out document’s to Owner/Owner’s representative as well as final acceptance form to be authorized by Owner.

3.12 OWNER TRAINING

A. Provide a minimum of two hours of on-site training for the Owner’s designated operations, facilities, maintenance, security, and emergency-response personnel.

B. Training shall be included at no additional cost to the Owner.

C. Conduct training after the elevator modernization is complete, the elevator is fully operational, and required acceptance testing has been successfully completed, but before written Final Acceptance.

D. Coordinate the training date and time with the Owner and Owner’s Representative. Provide not less than 10 business days’ advance written notice of the proposed training session.

E. Conduct training during the Owner’s normal business hours unless otherwise approved in writing by the Owner.

F. Training shall be conducted by a qualified instructor who is thoroughly familiar with the installed elevator equipment, controller, hydraulic system, door equipment, fixtures, emergency communication system, and operating features.

G. The two-hour training requirement shall represent actual instructional time and shall not include instructor setup, travel, breaks, equipment troubleshooting, correction of incomplete work, or performance of unrelated Contract work.

3.13 PROTECTION

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

B. Protect installed products until Date of Substantial Completion.

C. Touch-up, repair, or replace damaged products and materials prior to Date of Substantial Completion.

END OF SECTION