SECTION 14 21 00 — MACHINE ROOM-LESS ELECTRIC TRACTION PASSENGER ELEVATORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes the installation of five (5) Hollister Whitney machine-room-less electric traction passenger elevators. The installation of all elevators will adhere to the IU Standards for Elevators.

1. Microprocessor controller from an approved provider
2. Overhead Machine: Hollister Whitney
3. GAL Manufacturing Corporation high speed door operator and equipment
4. Innovation Fixtures

B. Elevators B1, B2 & B3 will be arrange as a 3-car group operation, with elevators A & B4 arranged as simplex selective collective operation.

1.3 DEFINITIONS

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

B. Service Elevator: A passenger elevator that is also used to carry freight.

C. Substantial Completion: Refer to IU contract front end requirements for the complete definition of use of the elevator and definition of when the last elevator is substantially complete which begins the warranty period.

D. CPF: Capital Planning and Facilities

E. COP:Car Operating Panel

F. MCP: Maintenance Control Program – A requirement set forth in A17.1-2007

G. CDI: Car Direction Indicator

H. MCP: Maintenance Control Program

1.4 ACTION SUBMITTALS

A. Product Data: Include capacities, sizes, performances, operations, safety features, finishes, and similar information. Include Product Data for car enclosures, hoistway entrances, and operation, control, and signal systems.

Shop Drawings: Include plans, elevations, sections, and large-scale details indicating service at each landing, coordination with building structure, relationships with other construction, and locations of equipment.

1. Include large-scale layout of car-control station.

B. Indicate maximum dynamic and static loads imposed on building structure at points of support, and maximum and average power demands. Include plans for new removable cab panels and lobby fixtures.

C. Shop Drawing & Submittal Distribution: Provide the Architect of record a number of copies to be determined. In addition, when submitting shop drawings, no less than one (1) copy of each set of drawings are to be sent to the IU Project Architect at the CPF's Office located within the Service Building in Bloomington, one (1) copy to Stuard & Associates, Inc. to tony@elevatorinspection.com.

D. Samples for Initial Selection: For finishes involving color selection.

E. Samples for Verification: For exposed car, hoistway door and frame, and signal equipment finishes; 75-mm- (3-inch-) square Samples of sheet materials; and 100-mm (4-inch) lengths of running trim members.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Seismic Qualification Certificates: For elevator equipment, accessories, and components, from manufacturer.

C. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.

D. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.

E. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

F. Manufacturer/Installer Certificates: Signed by elevator manufacturer/installer certifying that hoistway, pit, and machine room layout and dimensions, as indicated on Drawings, and electrical service including standby power generator, as shown, and specified, are adequate for elevator system being provided.

G. Sample Warranty: For special warranty. Manufacturer/Installer agree to repair, restore, or replace elevator work that fails in materials or workmanship within specified warranty period.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For elevators to include in emergency, operation, and maintenance manuals.

B. Submit three (3) bound copies of the manufacturer's or Installer's standard operation and maintenance manual, according to ASME A17.1/CSA B44, including diagnostic and repair information available to manufacturer's and Installer's maintenance personnel.

C. Routing of Manual for Initial Approval: Send an electronic version of the initial Maintenance Manual to Tony Stuard, tony@eleavtorinspection.com, Stuard & Associates, Inc., 7500 N Blue Heron Dr., Unionville, IN 47468 for review and comment.

D. Include the following information in each maintenance manual:

1. Parts list.
2. Cut sheets and parts information on ALL major components.
3. Wiring diagrams.
4. Lubrication requirements.
5. Service procedures for all equipment.
6. Maintenance schedule for all equipment.
7. Trouble shooting, setup, and adjusting procedures.
8. Provide the manufacturer/installer Maintenance Control Program (MCP). Leave a single copy of the MCP in the machine room.
9. Keys and tools:
10. Furnish the Owner all on-board service tools, special keys, and tools required for the operation and maintenance of devices specified, including computer program keys or tools.
11. Inspection and Acceptance Certificates and Operating Permits: As required by authorities having jurisdiction for normal, unrestricted elevator use.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials, components, and equipment in manufacturer's protective packaging. Store materials, components, and equipment off ground, under cover, and in a dry location.

1.8 COORDINATION

A. Coordinate installation of inserts, sleeves, block outs, elevator equipment with integral anchors, and other items that are embedded in concrete or masonry for elevator equipment. Furnish templates, inserts, sleeves, elevator equipment with integral anchors, and installation instructions and deliver to Project site in time for installation.

B. Coordinate locations and dimensions of work specified in other Sections that relates to electric traction elevators including pit ladders; sumps and floor drains in pits; entrance sub sills; electrical service; and electrical outlets, lights, and switches in hoistways and pits.

1.9 WARRANTY

A. Manufacturer/Installer Special Warranty: Manufacturer/Installer agrees to repair, restore, or replace elevator work that fails in materials or workmanship within specified warranty period.

B. Failures include, but are not limited to, operation or control system failure, including excessive malfunctions; performances below specified ratings; excessive wear; unusual deterioration or aging of materials or finishes; unsafe conditions; need for excessive maintenance; abnormal noise or vibration; and similar unusual, unexpected, and unsatisfactory conditions.

C. Warranty Period: TWO year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS/INSTALLER

A. The following is a list of Indiana University approved elevator contractors.

1. American Elevator Inc., 2067 East 600 South, Anderson, IN 46017 (765) 374-0429, www.americanelevator.net
2. DC Elevator Company Inc., 124 Venture Ct., Suite 1, Lexington, KY 40511 (859) 254-8224 www.dcelevator.com
3. KONE, Inc., 5201 Park Emerson Dr., Suite E, Indianapolis, IN 46203 (317) 788-0061 www.kone.com
4. Murphy Elevator Co., Inc., 128 East Main Street, Louisville, KY 40202, (800) 321-1527 www.murphyelevator.com
5. Oracle Elevator Company, 5534 W Raymond Street, Indianapolis, IN 46241, (317) 299-8204) www.oracleelevator.com
6. ThyssenKrupp Elevator Company, 7217 87th Street, Indianapolis, IN 46256, (317) 595-1125 www.thyssenkruppelevator.com
7. Otis Elevator Co., 6010 Corporate Way, Indianapolis, IN 46278, (317) 347-2015, www.otis.com.

B. Source Limitations: Obtain elevator from single manufacturer/installer.

1. Major elevator components, including driving machines, controllers, signal fixtures, door operators, car frames, cars, and entrances, shall be provided as specified. No substitutions.

2.2 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with ASME A17.1/CSA B44 latest edition adopted by the AHJ.

B. Accessibility Requirements: Comply with requirements for accessible elevators in the United States Access Board's ADA-ABA Accessibility Guidelines and with ICC A117.1.

C. Seismic Performance: Elevator system shall withstand the effects of earthquake motions determined according to ASCE/SEI 7 and shall comply with elevator seismic requirements in ASME A17.1/CSA B44.

1. The term "withstand" means "the system will remain in place without separation of any parts when subjected to the seismic forces specified and the system will be fully operational after the seismic event."
2. Project Seismic Design Category: As indicated on Structural Drawings.
3. Elevator Component Importance Factor: As indicated on Structural Drawings
4. Design earthquake spectral response acceleration short period (Sds) for Project is as indicated on Structural Drawings.
5. Provide earthquake equipment required by ASME A17.1/CSA B44.
6. Provide seismic switch required by ASCE/SEI 7.

2.3 ELEVATORS

A. Elevator Description: B1 & B2 – Tower Passenger Elevators

1. Drive Machine Type: Hollister Whitney gearless machine located at the top of the hoistway.
2. Rated Load: Each rated 3000 lb.
3. Rated Speed: Each rated 350 feet per minute
4. Operation System: Part of a three (3) car group selective-collective operation.
5. Openings: 10-In Line
6. Floors Serviced: B,1,2,3,5,6,7,8,9&10
7. Auxiliary Operations:

a. Emergency Power

1) Activated by a selection key switch in lobby panel.

b. Loaded car dispatch.
c. Nuisance-call cancel.

d. Loaded car bypass.
e. Automatic on/off operation of car lights and fan.
f. Lobby Panel

8. Security:

a. Card Reader will be added to the face of the car operating panel
b. Car to lobby function shall be activated by a key switch with the lobby panel

9. Car Enclosure:

a. Inside Width: 80 inches
b. Inside Depth: 57 inches
c. Inside Height: Not less than 96”
d. Front Walls (Return Panels): Satin stainless steel, No. 4 finish.
e. Car Fixtures: Satin stainless steel, No. 4 finish.
f. Side and Rear Wall Panels: TBD
g. Door Faces (Interior): Satin stainless steel, No. 4 finish.
h. Door Sills: Aluminum Sill.
i. Ceiling: Satin stainless steel, No. 4 finish, recessed strip LED light fixtures.
j. Handrails: Tubular with satin stainless steel, No. 4 finish, at sides and rear of car. A second set of matching rails shall be provided at a lower height of 7” on center from the finished floor. Each rail attachment point shall be through bolted for stability and strength.
k. Floor prepared to receive TBD

10. Hoistway Entrances:

a. Width: 42 inches.
b. Height: 84 inches.
c. Type: SSCO
d. Frames ALL floors: Satin stainless steel, No. 4 finish.
e. Doors and Transoms ALL floors: Satin stainless steel, No. 4 finish
f. Sills at ALL floors: Aluminum sills.

11. Hall Fixtures: Satin Stainless steel, No. 4 finish.
12. Fixtures at ALL floors: Satin stainless steel, No. 4 finish.
13. Hoistway Access fixtures shall be provided at each terminal landing. Use ONLY Best Lock cylinder with a three position, momentary contact both left and right with the key removable in the off or neutral position only. The switch may be in the lobby pushbutton
14. Pads and hooks required for each elevator.

a. Provide two complete sets of pads for each elevator.

B. Elevator Description: B3 – Tower Service Elevator

1. Drive Machine Type: Hollister Whitney gearless machine located at the top of the hoistway.

2. Rated Load: Each rated 3500 lb.
3. Rated Speed: Each rated 350 feet per minute
4. Operation System: Part of a three (3) car group selective-collective operation.
5. Openings: 10-In Line
6. Floors Serviced: B,1,2,3,5,6,7,8,9&10
7. Auxiliary Operations:

    a. Emergency Power

        1) Activated by a selection key switch in lobby panel.

    b. Loaded car dispatch.
    c. Nuisance-call cancel.
    d. Loaded car bypass.
    e. Automatic on/off operation of car lights and fan.
    f. Medical Emergency Key switch.
    g. Lobby Panel – Refer to 2.8.H

8. Security:

    a. Card Reader will be added to the face of the car operating panel
    b. Car to lobby function shall be activated by a key switch with the lobby panel

9. Car Enclosure:

    a. Inside Width: 80 inches
    b. Inside Depth: 65 inches
    c. Inside Height: Not less than 96”
    d. Front Walls (Return Panels): Satin stainless steel, No. 4 finish.
    e. Car Fixtures: Satin stainless steel, No. 4 finish.
    f. Side and Rear Wall Panels: TBD
    g. Door Faces (Interior): Satin stainless steel, No. 4 finish.
    h. Door Sills: Aluminum Sill.
    i. Ceiling: Satin stainless steel, No. 4 finish, recessed strip LED light fixtures.
    j. Handrails: Tubular with satin stainless steel, No. 4 finish, at sides and rear of car. A second set of matching rails shall be provided at a lower height of 7” on center from the finished floor. Each rail attachment point shall be through bolted for stability and strength.
    k. Floor prepared to receive TBD

10. Hoistway Entrances:

    a. Width: 42 inches.
    b. Height: 84 inches.
    c. Type: SSCO
    d. Frames ALL floors: Satin stainless steel, No. 4 finish.
    e. Doors and Transoms ALL floors: Satin stainless steel, No. 4 finish
    f. Sills at ALL floors: Aluminum sills.

11. Hall Fixtures at ALL floors: Satin stainless steel, No. 4 finish.

    a. Supply a medical emergency key switch in all hall fixtures next to the B3 elevator. Key switch will recall B3 elevator ONLY.

12. Hoistway Access fixtures shall be provided at each terminal landing. Use ONLY Best Lock cylinder with a three position, momentary contact both left and right with the key removable in the off or neutral position only. The switch may be in the lobby pushbutton.
13. Pads and hooks required for each elevator.

    a. Provide two complete sets of pads for each elevator.

C. Elevator Description: B4 – Tower Research Service Elevator

1. Drive Machine Type: Hollister Whitney gearless machine located at the top of the hoistway.
2. Rated Load: Each rated 5000 lb.
3. Rated Speed: Each rated 350 feet per minute
4. Operation System: Simplex Selective Collective.
5. Openings: 6-In Line
6. Floors Serviced: B,4,8,9,10 & 11
7. Auxiliary Operations:

    a. Emergency Power
    b. Loaded car dispatch.
    c. Nuisance-call cancel.
    d. Loaded car bypass.
    e. Automatic on/off operation of car lights and fan.
    f. Medical Emergency Key switch.
    g. Lobby Panel– Refer to 2.8.H

8. Security:

    a. Card Reader will be added to the face of the car operating panel
    b. Car to lobby function shall be activated by a key switch with the lobby panel

9. Car Enclosure:

    a. Inside Width: 80 inches
    b. Inside Depth: 65 inches
    c. Inside Height: Not less than 108”
    d. Front Walls (Return Panels): Satin stainless steel, No. 4 finish.
    e. Car Fixtures: Satin stainless steel, No. 4 finish.
    f. Side and Rear Wall Panels: TBD
    g. Door Faces (Interior): Satin stainless steel, No. 4 finish.
    h. Door Sills: Aluminum Sill.
    i. Ceiling: Satin stainless steel, No. 4 finish, recessed strip LED light fixtures.

j. Handrails: Tubular with satin stainless steel, No. 4 finish, at sides and rear of car. A second set of matching rails shall be provided at a lower height of 7" on center from the finished floor. Each rail attachment point shall be through bolted for stability and strength.
k. Floor prepared to receive TBD

10. Hoistway Entrances:

a. Width: 42 inches.
b. Height: 96 inches.
c. Type: SSCO
d. Frames ALL floors: Satin stainless steel, No. 4 finish.
e. Doors and Transoms ALL floors: Satin stainless steel, No. 4 finish
f. Sills at ALL floors: Aluminum sills.

11. Hall Fixtures at ALL floors: Satin stainless steel, No. 4 finish.

a. Supply a medical emergency key switch in all hall fixtures

12. Hoistway Access fixtures shall be provided at each terminal landing. Use ONLY Best Lock cylinder with a three position, momentary contact both left and right with the key removable in the off or neutral position only. The switch may be in the lobby pushbutton.
13. Pads and hooks required for each elevator.

a. Provide a complete set of pads for each elevator.

D. Elevator Description: A – North Service Elevator

1. Drive Machine Type: Hollister Whitney gearless machine located at the top of the hoistway.
2. Rated Load: Each rated 5000 lb.
3. Rated Speed: Each rated 350 feet per minute
4. Operation System: Simplex Selective Collective.
5. Openings: 4-In Line, 1-Rear
6. Floors Serviced: BR, B,1,2 & 4
7. Auxiliary Operations:

a. Emergency Power
b. Loaded car dispatch.
c. Nuisance-call cancel.
d. Loaded car bypass.
e. Automatic on/off operation of car lights and fan.
f. Medical Emergency Key switch.
g. Lobby Panel– Refer to 2.8.H

8. Security:

a. Card Reader will be added to the face of the car operating panel

b. Car to lobby function shall be activated by a key switch with the lobby panel

9. Car Enclosure:

a. Inside Width: 80 inches
b. Inside Depth: 65 inches
c. Inside Height: Not less than 108”
d. Front Walls (Return Panels): Satin stainless steel, No. 4 finish.
e. Car Fixtures: Satin stainless steel, No. 4 finish.
f. Side and Rear Wall Panels: TBD
g. Door Faces (Interior): Satin stainless steel, No. 4 finish.
h. Door Sills: Aluminum Sill.
i. Ceiling: Satin stainless steel, No. 4 finish, recessed strip LED light fixtures.
j. Handrails: Tubular with satin stainless steel, No. 4 finish, at sides and rear of car. A second set of matching rails shall be provided at a lower height of 7” on center from the finished floor. Each rail attachment point shall be through bolted for stability and strength.
k. Floor prepared to receive TBD

10. Hoistway Entrances:

a. Width: 42 inches.
b. Height: 96 inches.
c. Type: SSCO
d. Frames ALL floors: Satin stainless steel, No. 4 finish.
e. Doors and Transoms ALL floors: Satin stainless steel, No. 4 finish
f. Sills at ALL floors: Aluminum sills.

11. Hall Fixtures at ALL floors: Satin stainless steel, No. 4 finish.

a. Supply a medical emergency key switch in all hall fixtures

12. Hoistway Access fixtures shall be provided at each terminal landing. Use ONLY Best Lock cylinder with a three position, momentary contact both left and right with the key removable in the off or neutral position only. The switch may be in the lobby pushbutton.
13. Pads and hooks required for each elevator.

a. Provide a complete set of pads for each elevator.

2.4 TRACTION SYSTEMS

A. Elevator Machine:

1. Variable-voltage, variable-frequency, AC-type gearless hoisting machine and all necessary solid-state power converters.

a. Provide nonregenerative drive system.

b. Limit total harmonic distortion of regenerated power to 5 percent per IEEE 519.
c. Provide line filters or chokes to prevent electrical peaks or spikes feeding back into building power systems.
d. Provide AC motor sized for speed and capacity of the specified systems.
e. Provide unintended movement and ascending car overspeed device.
f. Use Hollister Whitney Equipment “ONLY”.

B. Suspension Means:

1. Provide hoist cables and wedge shackles as required by the machine manufacturer.

C. Speed Governor:

1. Provide a speed governor located at the top of the hoistway. Provide a cable and tail sheave with tension. The governor shall have an electric switch that when opened shall prevent the elevator motor from running. The governor and switch shall be capable of remote activation and reset.

D. Car Safety:

1. A car safety device shall be attached to the underside of the elevator car sling. When active the device shall stop the elevator level in the hoistway and within code tolerance. The device shall be equipped with a safety switch that prevents the motor from running when in the open position.

E. Inserts:

1. Furnish required concrete and masonry inserts and similar anchorage devices for installing guide rails, machinery, and other components of elevator work. Device installation is specified in another Section.

F. Machine Beams:

1. Provide steel framing to support elevator hoisting machine and deflector sheaves from the building structure. Comply with Section 05 50 00 "Metal Fabrications" for materials and fabrication.

G. Guide Rails:

1. Use only “T” shaped rails.

H. Car Frame and Platform:

1. Bolted or welded steel units.

I. Buffers:

1. Oil as required by Code.

J. Guides:

1. Provide properly sized roller guides at top and bottom of car and counterweight frames. Car guides shall be a minimum of 6” in diameter.

a. Use Elsco Equipment.

2.5 OPERATION SYSTEMS

A. General:

1. Provide one of the following manufacturer's standard microprocessor operation systems as required to provide type of operation indicated.

a. Smartrise—Universal AC Traction Controller
b. Elevator Controls—Sacramento CA
c. MCE Motion Control Engineering

B. Auxiliary Operations

1. Emergency Power

a. Single-Car Standby Power Operation:

1) On activation of standby power, the elevator shall resume operation as soon as emergency power has been fully provided. The controller, after having received a signal from the generator indicating normal power will be restored within a predetermined time in measure in seconds, shall cause the car to stop at the nearest floor if in flight, or stay parked at a floor until such time that normal power has been restored. The car shall resume, without intervention, normal operation once power has been restored.

b. Group Standby Power Operation:

1) Each of four elevators shall be capable of operating under emergency generator power conditions as follows:

a) On activation of standby power, two elevators shall be lowered to the Designated Landing via sequence operation, only one at a time. Multiple car operation during emergency power operation SHALL NOT be permitted and controlled through controller software and key switches in the Lobby Panel.
b) See section 2.8.H for Lobby Panel for keyed switches and other requirements.

c) When emergency power has been provided to the elevator system, two elevators shall be lowered to the Designated Landing in sequence, with the third elevator remaining for normal use. The default elevator shall be determined at random by the controller if more than one emergency power key switch located in the lobby panel is turned to the ON position.

d) As each of the first two elevators return, the doors shall open and remain open if emergency power conditions exists. During this time, position indicators shall show these two elevators as OUT OF SERVICE.

e) Once the second elevator has reached the Designated Landing and the doors have opened, the elevator selected for use during emergency power shall automatically begin normal operation without recall to the Designated Landing.

f) The only way to allow other elevators to operate under emergency power is for the operational elevator to be removed from service via controller software due to detecting an operational or out of service failure OR the elevator has returned to the Designated Level at which time the key position shall be changed to the OFF position, thus allowing a different elevator's key switch to be placed to the ON position.

g) Should firefighter's service be activated during an emergency power condition, the elevator operating under emergency power shall recall to the Designated Level or Alternate Floor and operate routinely as required by Phase II procedures.

2. Independent Service:

   a. Provide a rocker switch in the Service Compartment that removes the car from group operation and allows it to respond only to car calls. When in independent service, doors close only in response to door close button.

3. Hoistway Access:

   a. By use of a Hoistway Enable switch located within a Service Cabinet located in each COP, provide Hoistway Access. Seven pin Best Lock interchangeable systems shall be required at all terminal landings. Utilize a separate fixture located adjacent to the lobby entrance.

4. Top-Of-Car Operation:
   a. Provide a new top of car operating station for each of three elevators. Included all the normal code required operating features. The operating device shall be secured to a flexible cord that allows the unit to be safely stored near the door operator and accessible from the lobby entrance. The cable shall be long enough to allow usage at the rear of the elevator from a standing position.

5. Automatic Dispatching of Loaded Car:

a. When carload exceeds 80 percent of rated capacity, doors begin closing.

6. Nuisance-Call Cancel:

a. When car calls exceed a preset number while carload is less than a predetermined weight, all car calls are canceled. Preset number of calls and predetermined weight can be adjusted.

7. Loaded-Car Bypass:

a. When carload exceeds 80 percent of rated capacity, car responds only to car calls, not to hall calls.

8. Independent Service:

a. Rocker switch located within a Service Compartment removes car from group operation and allows it to respond only to car calls. Key cannot be removed from key switch when car is in independent service. When in independent service, doors close only in response to door close button.

9. Emergency Firefighter's Service:

a. When a smoke detector located in the machine space, control space, or elevator lobby is activated the elevator shall automatically return to the designated or alternate floor level and park with the doors open until such time that Phase II is activated, or the fire alarm panel and firefighter's key switch has been reset.

10. Hoistway Access:

a. Buy use of Best Lock cylinders located in separate fixture OR contained within the lobby pushbutton at each terminal floor landing. Access shall be possible by activation of an enable rocker switch to be located within the Service Cabinet located in the COP.

11. Automatic Operation of Lights and Fan:

a. When elevator is stopped and unoccupied with doors closed, lighting, ventilation fan, and cab displays are de-energized after and adjustable time of between five and 20 minutes and are re-energized before car doors open. Such system shall not have any effect on car top lighting.

2.6 SECURITY

A. Provide the following security features. Security features shall not interfere with firefighter's service operational features.

1. Cars-to-Lobby Feature:

    a. The device required in this section shall be in the Lobby Panel addressed in section 2.8.H.
    b. Provide a keyed switch which upon activation will cause all elevators to return immediately to the Designated Lobby and park with the doors open doors for inspection. Cars traveling in the up direction shall safely stop at the nearest floor, doors shall remain closed, and the car shall then return to the designated level.
    c. Cars running in the down direction shall proceed immediately to the designed level without responding to any other car or lobby demands for service. On deactivation by key switch, calls registered prior to the key switch activation shall then be answered and normal operation shall resume.
    d. Use only seven pin Best Lock interchangeable systems. The switch shall be two positions with the key removable in the OFF position only. The cover shall be marked as “Emergency Inspection”. The OFF position shall be the normal operating mode and ON position shall be the car return mode.
    e. The Owner shall provide the core for this device.
    f. This feature shall be inoperative when the elevators are under emergency power conditions.

2. Card Reader:

    a. Supply wiring and attach a car reader device to the face of each car operating panel.

        1) Owner to supply all devices.

2.7 WIRING

A. General:

1. Furnish and install all wiring, conduit, traveling cables and hardware necessary to complete the Work as specified.
2. All traveling cables shall have low voltage wiring for in-car communications and future card reader access. There shall be no less than 5 shielded pairs within the traveling cable.
3. Traveling cables shall maintain a minimum of 5% spare wires.
4. All mechanical space requires Rigid conduit according to University Standards.
5. Where appropriate, existing conduit and duct “may” be reused provided they meet or exceed NEC standards and requirements as published in the latest edition.
6. NONE of existing elevator control wiring including traveling cables is to be reused.
7. Coordinate the wiring of smoke detectors and card readers. Provide information to other disciplines as to required signal needs of the elevator controller.

8. The General Contractor shall be responsible for all wiring runs from the elevator control closets to the lobby panel and from the emergency power switch gear to the lobby panel

2.8 SIGNAL EQUIPMENT

A. Provide vandal-resistant car and hall buttons and lighted elements illuminated with LEDs. Use ONLY equipment manufactured by Innovation Industries Inc.

1. Car-Control Stations:

a. Provide a standard recessed car-control station. Mount in return panel adjacent to car door unless otherwise indicated.

1) Mark buttons and switches for required use or function. Use both tactile symbols and Braille.
2) Service Compartment shall contain the following.

a) Compartment lock to be Best Lock cylinder. The Owner shall provide the core.
b) GFIC work outlet.
c) Emergency lighting test button.
d) Hoistway Access enable rocker switch.
e) Emergency Stop switch.
f) Independent Service rocker switch.
g) Two-speed fan switch.
h) Cab light switch.

B. Emergency Communication System:

1. Provide a communication system that fully complies with the requirements set forth in ASME A17.1—2007, 2.27.1.1.4 (over 60’ rise) and the U.S. Architectural & Transportation Barrier Compliance Board’s “American with Disabilities Act (ADA), Accessibility Guidelines for Buildings and Facilities (ADAAG)” to be located behind the COP. The device shall be manufactured by Talk-A-Phone, Model ETP-103V. It shall consist of a single pushbutton, automatic dialer with appropriate indicator lights, pre-recorded message, and all other essential features necessary to comply with all codes and rules. Two-way voice communication system, with visible signal, which dials preprogrammed number of monitoring station and does not require handset use. System shall be self-contained and located behind the COP cover with identification, instructions for use, and battery backup power supply.

C. Car Position Indicator:

1. Car Position Indicator: Provide digital-type car position indicator, located above car door or above car-control station. Also, provide audible signal to indicate to passengers that car is either stopping at or passing each of the floors served. Include travel direction arrows if not provided in car-control station.

D. Hall Push-Button Stations:

1. Provide one hall push-button station at landing on each floor where elevator stops.

    a. Provide units with flat faceplate for mounting with body of unit recessed in wall.
    b. Equip units with buttons for calling elevator and for indicating desired direction of travel.
    c. Equip units with buttons for calling elevator and for indicating direction of travel or destination as required by system.
    d. Provide the designated floor lobby push button with a Firefighter's Service FEO-K1 key switch. Provide proper fire service instructions at each key switch location.

E. Car Direction Indicator:

1. Vandal resistant unit with illuminated arrows and audible signals announcing the direction of travel.

    a. The unit shall be located within the car enclosure entrance frame to be visible when standing at the lobby pushbutton location.

F. Hall Position Indicators:

1. Provide digital-display-type position indicators, located above the Designated Floor entrances only. Provide units with flat faceplate and with body of unit recessed in wall.

G. Standby Power Elevator Selector Switches:

1. Provide switches, as required by ASME A17.1/CSA B44, where indicated. Adjacent to switches, provide illuminated signal that indicates when normal power supply has failed. For each elevator, provide illuminated signals that indicate when they are operational and when they are at the designated emergency return level with doors open.

H. Lobby Panel:

1. A new lobby panel shall be provided at the Designated Landing. The location shall be readily available location between two elevator entrances with a final determination to be made during the submittal phase.
2. Provide a car position indicator for each elevator.
3. Locate the firefighter's key switch within lobby panel.

4. Provide a separate key switch for each elevator to be marked EMERGENCY POWER, ON and OFF. The key shall be removable in either position.
5. Provide lighted jewels of two different colors adjacent to each emergency power key switch to indicate the presence of “normal power” which shall be green and the presence of “emergency power” which shall be red.
6. Provide a special security key switch as noted in 2.6.A.1
7. The General Contractor shall be required to provide the wiring from the EP source to the elevator machine room.

I. Emergency Pictorial Signs:

1. Signs to be provided by Section 104000 “Panel Signage”.

2.9 HOISTWAY ENTRANCES

A. Entrance Assemblies:

1. Manufacturer/Installer standard horizontal-sliding, door-and-frame hoistway entrances complete with track systems, hardware, sills, and accessories. Frame size and profile shall accommodate hoistway wall construction. Stainless Steel Satin Finish

B. Fire-Rated Entrance:

1. Door and frame assemblies shall comply with NFPA 80 and be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, based on testing at as close-to-neutral pressure as possible.

C. Materials and Fabrication:

1. Manufacturer/Installer’s standard, but not less than the following:

a. Stainless-Steel Frames:

1) Formed from stainless-steel sheet.

b. Star of Life Symbol:

1) Identify Designated Landing with star of life symbol, not less than 76 mm (3 inches) high, on both jambs of hoistway door frames.

c. Stainless-Steel Doors and Transoms:

1) Flush, hollow-metal construction; fabricated from stainless-steel sheet. Use only satin #4 finish.

d. Sight Guards:

1) Provide sight guards on doors matching door edges and finish.

e. Sills:

1) Aluminum at all entrances, with grooved surface, 1/4 inch thick.
2) Non-shrink, Nonmetallic Grout: Factory-packaged, non-staining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M.

2.10 DOOR OPERATOR EQUIPMENT

A. Use ONLY GAL door operator equipment as follows:

1. MOVFR solid state door operators with header, linkage, drive arms, gate switch, door restrictor, hanger tracks, hanger rollers, relating cables, clutch, wiring, hardware, and all necessary and related equipment.
2. At each elevator entrance furnish and install headers, hanger tracks, hanger rollers, relating cables, spirator type closures, interlocks, pickup devices, door guides, and top and bottom door retainers.

2.11 DOOR REOPENING DEVICE

A. Infrared Array:

1. Door reopening device shall provide a uniform array of 36 or more microprocessor-controlled, infrared light beams projecting across car entrance. Interruption of one or more light beams shall cause doors to stop and reopen.

B. Nudging Feature:

1. After car doors are prevented from closing for predetermined adjustable time, through activating door reopening device, a loud buzzer shall sound, and doors shall begin to close at reduced kinetic energy.

2.12 CAR ENCLOSURE

A. General:

1. Provide enameled or powder-coated steel car enclosures to receive removable wall panels, with car roof, access doors, power door operators, and ventilation.

B. Provide standard railings complying with ASME A17.1/CSA B44 on car tops where required by ASME A17.1/CSA B44.

C. Materials and Finishes:
1. Manufacturer's standards, but not less than the following:

a. Subfloor:
   1) Exterior, underlayment grade plywood, not less than 5/8-inch (15.9-mm) nominal thickness.

b. Floor Finish:

   1) TBD

c. Wall Panels:
   1) Flush, formed-metal construction.

d. Fabricate car with recesses and cutouts for signal equipment.
e. Fabricate car door frame integrally with front wall of car.
f. Stainless-Steel Doors:

   1) Flush, hollow-metal construction; fabricated from stainless-steel sheet.

g. Sight Guards:

   1) Provide sight guards on car doors.

h. Sills:

   1) Extruded or machined aluminum, with grooved surface, 1/4 inch (6.4 mm) thick.

2. Metal Ceiling:

   1) Flush panels, with two recessed strip LED light fixtures. Align ceiling panel joints with joints between wall panels.

3. Light Fixture Efficiency: Not less than 35 lumens/W.
4. Ventilation Fan Efficiency: Not less than 3.0 cfm/W.

2.13 FINISH MATERIALS

Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, commercial steel, Type B, exposed, matte finish.

A. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, commercial steel, Type B, pickled.

B. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304.

Stainless-Steel Bars: ASTM A 276, Type 304.

C. Stainless-Steel Tubing: ASTM A 554, Grade MT 304.

D. Aluminum Extrusions: ASTM B 221, Alloy 6063.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine elevator areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work. Examine hoistways, hoistway openings, and pits as constructed; verify critical dimensions; and examine supporting structure and other conditions under which elevator work is to be installed.

B. Prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Comply with manufacturer's/installer’s written instructions.

B. Welded Construction:

1. 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. Comply with AWS standards for workmanship and for qualifications of welding operators.

C. Sound Isolation:

1. Mount rotating and vibrating equipment on vibration-isolating mounts to minimize vibration transmission to structure and structure-borne noise due to elevator system.

D. Lubricate operating parts of systems, including ropes, as recommended by manufacturers.

E. Alignment:

1. Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with car. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum, safe, workable dimension at each landing.

F. Leveling Tolerance: 1/8 inch, up or down, regardless of load and travel direction.

G. Set sills flush with finished floor surface at landing. Fill space under sill solidly with non-shrink, nonmetallic grout.

H. Locate hall signal equipment for elevators as follows unless otherwise indicated:

I. For groups of elevators, locate hall push-button stations between two elevators at center of group or at location most convenient for approaching passengers.

1. Place hall lanterns either above or beside each hoistway entrance.
2. Mount hall lanterns at a minimum of 72 inches above finished floor.

3.3 PROTECTION

A. Temporary Use:
1. Temporary use of elevators is at the sole discretion of the Owner. Contractor shall submit request for use to Owner not less than four full weeks prior to proposed start of use. In the event the Owner does not allow temporary use of elevators for construction, any costs associated with provision of temporary hoisting through to date of Substantial Completion. Limit temporary use for construction purposes to one elevator for each building. Comply with the following requirements for each elevator used for construction purposes:

a. Provide car with temporary enclosure, either within finished car or in place of finished car, to protect finishes from damage.
b. Provide strippable protective film on entrance and car doors and frames.
c. Provide padded wood bumpers on entrance door frames covering jambs and frame faces.
d. Provide other protective coverings, barriers, devices, signs, and procedures as needed to protect elevator and elevator equipment.
e. Do not load elevators beyond their rated weight capacity.
f. Engage elevator Installer to provide full maintenance service. Include preventive maintenance, repair, or replacement of worn or defective components, lubrication, cleanup, and adjustment as necessary for proper elevator operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.
g. Engage elevator Installer to restore damaged work, if any, so no evidence remains of correction. Return items that cannot be refinished in the field to the shop, make required repairs and refinish entire unit, or provide new units as required.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to operate, adjust, and maintain elevator(s) prior to date of Substantial Completion.

B. Check operation of each elevator with Owner's personnel present before date of Substantial Completion and again not more than one month before end of warranty period. Determine that operation systems and devices are functioning properly.

END OF SECTION 142100