SECTION 14 24 00

HYDRAULIC ELEVATORS

PART 1 – GENERAL

Refer to SECTION 14 20 00
ELEVATORS

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Elevator Systems: One of the following manufacturers, or approved equal.

1. KONE Elevator Company
2. Mitsubishi Elevator Company
3. Otis Elevator Company
4. Schindler Elevator Company
5. ThyssenKrupp Elevator Company

B. Car Enclosures and Hoistway Entrances: As manufactured by the elevator manufacturer, one of the following, or approved equal.

1. Concept Elevator Group
2. Hauenstein and Burmeister, Inc.
3. Tyler Elevator Products, Inc.
4. Unique Elevator Interiors, Inc.

2.2 EQUIPMENT

A. Elevator Schedule: Refer to Drawings and Specifications; drawings take precedence over the following list, which is intended as a general description of the elevator characteristics.

B. Passenger Elevators:

1.	Quantity:	2
2.	Type:	Hydraulic
3.	Capacity:	2,600 Pounds
4.	Speed:	125 FPM
5.	Stops/Openings:	5/5, In Line
6.	Operation:	Duplex Selective Collective
7.	Special Operations:	Independent Service Auto-Return Fireman’s Emergency Card Reader Access Remote Monitoring

8. Hoistway Entrances: Center Opening
3’-6” Wide by 7’-0” High

2.2 MATERIALS

A. General: All wood products and fabricated wood materials to meet LEED requirements for Materials & Resources MR6.0 (certified wood) and Indoor Environmental Air Quality EQ4.4 (composite wood products) and EQ4.1 (adhesives and sealants).

B. Aluminum: Controlled alloy and temper best suited to produce specified finish.

C. Plywood Underlayment: Comply with PS-1 US Product Standard for Construction & Industrial Plywood (ANSI A199.1). APA Marine Grade B-B, fire treated per AWPA with a paintable, water soluble, fire-retardant formulation; UL FR-S fire hazard classification.

D. Steel Sheet: ASTM A366; uncoated, pickled, free from defects.

E. Sound Deadener: Rogers Corporation BOSCO BF-1000, or approved equal.

F. Stainless Steel: ASTM A167, Type 302 or 304.

G. Steel: ASTM A36.

2.3 FINISHES

A. Aluminum: Controlled alloy and temper best suited to produce specified finish; AA M12 non-specular gloss fabricated.

B. Machinery and Equipment: Degrease and shop paint; manufacturer's standard rust-inhibiting primer. Paint hoistway equipment black.

C. Steel Sheet:

1. Shop Prime: Clean of foreign substances. Apply baked on coat of mineral filler and primer; sand each coat smooth.

2. Finish Coat: Three coats low sheen baked enamel; sand each coat smooth; color as selected.

D. Stainless Steel: Plain: No. 4 satin finish, unless otherwise specified; provide with graining vertically.

E. Touch-Up; Painted Surfaces: Field touch-up abraded and damaged surfaces; use same paint as factory. No touch-up permitted; re-finish whole panel.

2.4 EQUIPMENT DISBURSEMENT AND CLEANUP

A. Removed Equipment: Remove from the site all existing elevator equipment, components and wiring materials that is replaced or unused. Equipment removed from the site becomes the property of the Elevator Contractor, unless directed otherwise by the Owner. Properly dispose of removed equipment according to environmentally sound practices.

B. Cleanup: Remove all rubbish, debris, and product packaging on a regular basis so as to not accumulate in the building. Keep the building and premises clean during the process of this Work, and leave all work areas at the completion in the same condition as is was when this Work was started.

2.5 CONTROL SYSTEMS

A. General: Provide a microcomputer based control system to perform functions of elevator motion, car operation, group supervisory and door control. Include sleep mode that turns car lights and fan off when there is no demand on a given elevator; provide adjustable time period between normal operation and activation of sleep mode. Include hardware required to connect, transfer, interrupt power, and protect motors against overloading. Properly shield each controller cabinet containing memory equipment from line pollution. Design system to accept reprogramming with minimum down time.

B. Duplex Selective Collective:

1. General: Arrange for Duplex Selective Collective automatic operation. Provide a parking feature which returns car when there are no calls in system. Parking floor, main landing; Operate elevators from car and landing buttons. Single buttons mounted at terminal landings and UP and DOWN fixture at each intermediate landing.

2. Operation: Momentary pressure of one or more car or landing buttons, other than those for landing at which car is standing, starts car, and causes car to stop at first landing for which a call is registered corresponding to direction in which car is traveling. Stops made in order in which landings are reached, irrespective of sequence in which calls are registered.

   Operate as Free Car Duplex, park one car at main landing (home car); park other car (free car) at its last stop above main landing. An idle free car answers calls above or below it, except calls at main or basement landing. When free car travels to main landing in response to a car call, it becomes home car and former home car travels to a middle floor above main landing and becomes the free car. When free car is clearing calls, home car answers up calls below UP traveling free car or all up and down calls behind DOWN traveling free car. Only one car responds to a hall call.

3. Door Control: A car without registered car calls arriving at a floor where both up and down hall calls are registered responds to the call in the direction of car travel. If no car call is registered for further travel in that direction, lantern immediately indicates changed direction without closing and reopening doors. Direction lantern to remain illuminated until doors are fully closed.

C. Power Interruption: Where volatile memory is provided for such things as car position, car direction, and other data necessary for the operation of the elevator, provide means of preserving the data upon loss of normal power, or in the event of a brownout for a minimum of four (4) hours. Provide for automatic recovery upon restoration of normal power.

2.6 SPECIAL OPERATIONS

A. General: Provide a list of all features including their operation and a description of their function for review and approval by Owner prior to engineering the new controllers.

B. Independent Service: Provide system to operate elevator from car buttons only, independent of all other operations; activate operation through key switch in service cabinet. Doors remain open when car is at landing until car button for another landing is constantly pressed; if several car calls are registered, constant pressure on DOOR CLOSE button will affect closing of doors after each stop.

C. Inspection Operation: Provide new key access and top of car station to operate elevator at contract speed or 100 fpm, whichever is less; provide key switch in service cabinet to activate operation. Mount key access switches in hoistway entrance frame with new stainless steel faceplates.

D. Fireman's Emergency: Provide Fireman's Emergency Operation in accordance with code. Elevators to return to main floor via activation of lobby detectors and/or lobby recall switch. Include alternate fire floor operation.

E. Code Blue: Provide new key switch in hall and car operating panel. Functionality to match existing.

F. Door Hold: Provide push button in main car operating panel, which when activated holds doors in the open position for a predetermined period of time; include means to adjust time from 5 seconds to 4 minutes, in main controller. Time duration will cancel upon activation of door close button.

G. Card Reader Access: Install card reader to gain access to any and all levels as desired. Car calls to designated levels on security will not register without prior activation from coded card to enable activation of floor buttons. Feature can be overridden by INDEPENDENT or EMERGENCY SERVICE operation.

H. Remote Monitoring: Provide an integrated control system that continuously monitors all elevator system functions. Should the system detect a fault has occurred, the control system automatically transmits a signal via a built-in modem directly to the elevator service mechanic or local elevator service company office for an immediate response. System responses to faults including but not limited to alarm bell, door lock, door safety system, earthquake detector, limit switch, low oil, etc. Modem device to utilize the same phone line used for the emergency communication device inside the elevator. However, in the event the remote monitoring system is using the line and someone inside the elevator uses the emergency phone, the monitoring system is to disconnect and allow the emergency phone to make its required call.

2.3 MACHINE ROOM EQUIPMENT

A. General: Provide equipment to fit space and structural conditions shown. Permanently number equipment with numerals 4-inches high corresponding to elevator number.

B. Hydraulic Unit: Self-contained with dry mounted pump and motor, 1,800 rpm motor with class B insulation, single unit control valve, storage tank, and blowout proof muffler. Include thermostatically controlled tank heater to maintain oil temperature and elevator performance with minimum variation in operation, performance, and leveling.

C. Piping: Provide piping run from machine to cylinder with a minimum number of connections and 90^0 fittings; use 45^0 fittings wherever possible. Provide Isolation couplings in-line at cylinder head and machine connection points, and isolate all connections and hangers. Include shut-off valve at cylinder head and at machine. When routing line from remote machine room to hoistway, provide threaded type fittings and connections between shaft and machine room; underground piping not permitted.

D. Controller: Wall or floor mount independent of main machine frame; ventilated cabinet with hinged doors for access. Provide solid-state reduced voltage starting. Provide required flow control of oil and bypass oil on initial start of pump, gradually increasing load to motor over a timed interval. Include permanently marked symbols or letters identical to those on wiring diagrams, adjacent to each component.

2.4 HOISTWAY EQUIPMENT

A. Guiderail: Provide of adequate size to suit conditions shown; minimum guiderail size 15 lb/ft.

B. Control Switches: Provide with noiseless operation.

C. Buffers/Cylinder: Provide required blocking, supports, and buffer inspection ladders and platforms as required.

D. Buffers/Cylinder: Provide required blocking and supports as required.

E. Platform:

1. General: Steel frame with steel or wood underfloor. Provide 3/4-inch plywood underlayment over underfloor; install underlayment after final assembly of car shell.

2. Stone Flooring: Recess underlayment 1.25-inch; assume weight of flooring is 400 pounds.

F. Guide Shoes: Roller type with 3 sound reducing rubber rollers per assembly; spring loaded. Minimum 4-inch diameter for passenger elevators.

G. Carframe, Safety, and Governor:

1. Carframe: Welded or bolted steel channel construction. Provide effective noise and vibration isolation at connection to plunger. Provide steel retainer plates at top and bottom of carframe designed to engage the entire machined surface of the guiderail, located between frame and base of roller guide assembly.
2. Safety: Type A.
3. Governor: Self-resetting type, centrifugal. Provide tension sheave assembly with non-metallic guides for noiseless operation. Rope, traction steel type; fasten with adjustable shackles.

H. Cylinder and Plunger: Equip cylinder head with nonadjustable packing gland having bronze bearings. Provide oil collector ring and automatic means to return oil leakage to storage tank. Plungers turned true and smooth with fine polished finish; single-stage construction. Use system incorporating two plungers, mounted on either side of platform. Isolate cylinders from pit floor with Mason Type W pads; pad sized for maximum loading of 50 psi.

2.5 WIRING

A. General: Use only copper conductors; run in metal conduit or galvanized duct. Provide 10% spare conductors in conduit, duct and wire runs. No splices in wiring; connect wiring directly to terminal blocks in control cabinets or junction boxes.

B. Traveling Cables: Provide lighting, communication and control wiring circuits in traveling cables, from machine room to car connection point. Include a minimum of ten (10) spare pairs of shielded communication wires. Provide means to prevent cables from rubbing or chafing against hoistway, structural beams, elevator equipment and the car.

C. Work Light and Plug Receptacle: Provide pendant-mounted work light on top of car with lamp guard and plug receptacle.

D. Conduit: Where provided use EMT type conduit. Include flexible conduit to sound isolated equipment and components.

E. Emergency Communication: Provide for emergency phone in each elevator. Run four (4) pairs of continuous unspliced shielded twisted wire from the emergency phone in the car operating panel to the elevator machine room junction box; junction box provided as part of this work.

F. Card Reader: Provide for card reader in each elevator. Run four (4) pairs of continuous unspliced shielded twisted wire from the elevator car operating panel to the elevator machine room interface panel; interface panel supplied by others. Provide necessary wiring between elevator control systems and interface panel, as directed.

G. Coaxial Circuit: Provide for closed circuit television camera in each elevator. Run continuous unspliced shielded cable (RG-59/U standard center coax cable), and two (2) 2-conductor 20 AWG (standard cable with an overall braided shield and drain wire) from the elevator car ceiling to the elevator machine room junction box.

H. Traveling Cable Protection: Hardware cloth wide may be installed from the hoistway suspension point downward to the elevator pit to prevent traveling cables from rubbing or chafing. Hardware cloth shall be securely fastened and tensioned to prevent buckling. Hardware cloth is not required when traveling cable is hung against a flat wall.

2.6 FIREFIGHTERS' SERVICE

A. Provide fire service as per ASME A17.1, Section 2.27.

B. Smoke Detectors:

1. Smoke detection devices that are designated for actuation of Elevator Phase I "FIRE SERVICE" response in each elevator lobby, top of hoistway, and machine room, provided by Life Safety Contractor.

2. Elevator lobby smoke detectors shall activate only the elevators sharing the corresponding or common lobby.

3. Top of hoistway smoke detection to activate top of hoistway motorized louvered venting.

4. Elevator or group of elevators serving separate isolated areas of the same floor shall have an independent smoke detection system.

5. Machine room smoke detectors shall activate fire recall for each and every elevator with equipment located in that machine room.

6. Hoistway ventilation, provided by others, located at the top of hoistway for elevators that penetrate more than three floors and meets the requirements of ASME A17.1 Section 2.1.4 and IBC Section 3004. The vent shall stay closed under power. When the top of hoistway smoke detector is activated, the power is removed from the vent and the vent shall open. When the smoke detector is reset, the vent shall close by power.

2.7 SIGNALS AND FIXTURES

A. General: Provide signals and fixtures as specified and shown; arrangement of buttons and devices as directed by Architect. Unless otherwise specified provide manufacturer's standard circular buttons and devices with square edge buttons and LED illuminating (lighting white). Generate audible signals electronically and provide adjustable volume chimes for each device, unless specified otherwise. Mount faceplates and cabinet doors with hairline joints flush with adjacent surfaces.

B. Car Operating Panel:

1. General: Provide stainless steel pushbuttons with illuminating halos conforming to floors served. Button halo lights to show registration and extinguish when call is answered; include door open and door close buttons. Provide voice annunciation for floors served; voice and tone as directed by Architect. Provide fireman's phone jack and controls; mount in panel as directed by Architect.

2. Type A: Integral with swing front returns.

C. Car Position Indicator:

1. General: Provide indications to correspond to floor designations.

2. Type A: Vacuum fluorescent or LED type; minimum 2-inch high indications. Provide as integral part of car operating panel.

D. Communication Provisions:

1. General: Provide as an integral part of car operating panel.

2. Type A: Provide pattern of holes or slots as selected, with button and indicator in car operating panel to activate intercom system.

E. Service Cabinet: Provide for each elevator with lockable door. Provide as an integral part of car operating panel; location, design and arrangement as directed by Architect. Include the following devices:

1. Car light switch.
2. Blower key switch.
3. Utility receptacle.
4. Independent service key switch.
5. Inspection key switch.
6. Switch to test emergency lighting system.
7. Make provisions to mount operating permit behind flush window in door.

F. Hall Buttons:

1. General: Provide fully illuminating buttons; intermediate fixtures with two buttons and terminal fixtures with one button. Button lights to indicate hall call registration and extinguish when call is answered. Engrave fire exiting instructions on faceplates.

2. Type A: Manufacturer's standard design; 11-gauge stainless steel faceplate. Mount with tamper resistant fasteners.

G. Hall Lantern and Hall Position Indicator:

1. General: Provide combination hall lantern/position indicator with Vacuum fluorescent or LED type position indicators a minimum of 2-inches high. Provide white up and down waiting passenger lanterns at intermediate landings and up or down lanterns at terminal landings; indications to light white. Provide each fixture with a chime which sounds once for up direction and twice for down direction. Appropriate lantern illuminates and chime sounds approximately four seconds prior to car's arrival at the floor, indicating intended direction of travel.

2. Type A: Provide single faceplate fixture in 11-gauge stainless steel approximately 4-inches by 12-inches mounted with tamper resistant fasteners. Orientation of fixture as directed by Architect.

H. Fire Recall Switch: Incorporate fire recall switch into hall button fixture for each group of elevators; fixture assembly to include fire recall switch and call button(s). Fixture to be single faceplate design with operating instructions on faceplate. Size, configuration, arrangement and engraving of graphics on faceplate as directed by Architect.

J. Fixture Schedule:

1.	Car Operating Panel:	Type A; Qty: Two per Elevator
2.	Car Position Indicator:	Type A; Qty: Two per Elevator
3.	Communication Provision:	Type A
4.	Hall Button Fixtures:	Type A at all floors
5.	Hall Lantern-Position Indicator:	Type A at All Floors

K. WIFI Repeater: Operate elevator for Owner installed and supplied components at the top of each shaft.

L. Elevator Management System:

1. General: Provide, install and coordinate with the Lift-Net elevator management system located at building 200 as directed by Owner.

2.8 DESIGNATIONS

A. General: Provide designations as manufactured by SCS Elevator Products, or approved equal.

B. Braille/Arabic Indications: Provide separate cast metal plates mounted as directed. Layout, arrangement, and configuration as directed by Architect.

1. Car Operating Panels: Provide Braille/Arabic plates adjacent to all buttons and devices; plate model CK1. Mount flush with fixture faceplate.

2. Hoistway Entrance Frames: Provide floor designations mounted directly to surface of jambs; plate model CJ7.

C. Caduceus Symbol: Where required, provide separate cast metal plates mounted directly to surface of jambs; plate model SVB80.

D. Elevator Designations: Provide separate cast metal plates with elevator designation, mounted directly to surface of jambs; plate model CJ8.

2.9 INTERCOMMUNICATION SYSTEM

A. General: Provide intercommunication system complete with talk back speakers, required auxiliary equipment and wiring. Include a preamplifier and associated equipment required to receive input from building. Ring Inc. or approved equal.

B. Master Station:

1. Lobby Control Station: Arrange to communicate with any other station, any group of stations or all stations simultaneously; include following devices.
   a. Combination speaker-microphone.
   b. Selector buttons for each station in system.
   c. A button for simultaneous conversation with all stations in system.
   d. Talk-listen button; press to talk, release to listen.
   e. IN USE light to indicate when any master station is in use.
   f. Reset button; to disconnect call, extinguish in use light, and reset selection buttons to free system for next call.
   g. Volume control.

2. Machine Room: Arrange to communicate with other master stations and each elevator car within its group. In addition to devices specified for Guard Control Station, provide a loud ringing bell to announce calls to this unit.

C. Remote Stations: Provide combination speaker/microphone in each elevator car. Mount in car operating panel as directed by Architect.

2.10 DOOR OPERATION AND CONTROL

A. Door Operator: Provide master high-speed closed loop door operator to open and close car and hoistway doors quietly and smoothly; mount operator independently of car enclosure or cab mount with adequate sound control to prevent noise transmission into elevator cab.

1. Speed: Opening; 2.5 fps. Closing; maximum allowable by code.

2. Operation: Provide separate and adjustable timers to establish minimum passenger transfer time for car stops and hall stops. Arrange to adjust transfer time at Dispatching Landing separately from typical floor landings.

B. Door Protection:

1. Safety Device: Provide manufacturer's standard electronic safety edge with minimum of forty (40) light beams. Edge to extend full height of opening. Locate to ensure device is not damaged when door edge is struck.

2. Operation: Protect door opening with multiple light beams covering the entire door opening; arrange to reopen doors when beam(s) are interrupted, reestablishing beam(s) permits doors to close. Doors remain open as long as light beam(s) is interrupted. Provide nudging feature to close doors at reduced speed and sound buzzer on car when doors are prevented from closing for fifteen seconds; time to be adjustable from five seconds to one minute. Provide adjustable passenger transfer door dwell times.

2.11 CAR ENCLOSURE

A. Fabrication:

B. General: Fabricate as shown and specified; make finished work smooth and free from warps, buckles, squeaks, and rattles, with joints light proof.

C. Design Criteria:

1. Lighting:
   a. Light Level: Provide minimum of 15 foot-candles, measured 4 feet above car floor.
   b. LED: Provide minimum 1500 watt dimmer.

2. Panel Deflection: Fabricate wall panel system (car shell and finished panels) to limit wall deflection to 3/16-inch when subject to a 200-pound load applied horizontally at any point on wall.

3. Handrail: Fabricate and support to car walls to limit deflection of handrail to 3/16-inch when subject to a 200-pound load applied vertically at midpoint between handrail supports. Refer to spec section 14 27 00 Elevator cab interior finishes & fixtures.

D. Car Body: Material as specified. Fabricate shell panels in one-piece from floor to canopy. Walls; 14-gauge steel sheet, design to accept removable panels. Minimum clear height under canopy; 9'- 0".

E. Canopy: 12-gauge steel sheet or composite construction painted white. Provide with light tight baffles.

F. Ceiling: Refer to spec section 14 27 00 Elevator cab interior finishes & fixtures. Fabricate as shown. Provide hinged or removable portion with concealed latch at side for access to emergency exit.

G. Flooring: Refer to spec section 14 27 00 Elevator cab interior finishes & fixtures.

H. Car Doors: Flush type hollow metal, sound deadened, horizontal sliding; provide 2 gibs per door panel. Fabrication and cladding minimum 16-gauge material. Make provisions to prevent doors from rattling. Face with stainless steel.

I. Sound Deadener: Spray-on or tool-apply to back of cab shell walls; 1/8-inch minimum thickness.

J. Ventilation:

1. Passive Vent Slots: Provide at bottom and top of cab shell; locate out of public view.

2. Powered Ventilation: Provide ceiling mounted exhaust blower(s); sound isolate and mount to exhaust blower plenum on canopy and properly guard to prevent damage to unit from cartop access. Panasonic model FV-11VQ5 WhisperCeiling 110CFM.

K. Emergency Lighting: Provide system incorporating a self-contained battery system on car top with charger to maintain battery power; system to be capable of operating lights for a minimum of four hours. System illuminates normal car fixtures or locates separate light fixture out of public view above car ceiling.

L. Pads and Hooks: Provide 1 set of pads to cover walls. Include wall panel pad hooks.

M. Front Returns: Full swing type as specified; 14-gauge stainless steel, with operating buttons mounted integrally. Latch access holes at top and bottom of panel only; maximum 1/8-inch hole.

N. Transom: Fixed type; same material and finish as front returns.

O. Sills: Align edge of sill with face of front returns. Milled stainless steel.

2.12 HOISTWAY ENTRANCES

A. General: Provide stainless steel entrance assemblies bearing 1½ hour UL label. Paint all elements of the entrance assembly that is exposed when the elevator doors are in the open position flat black.

B. Doors Tracks and Hangers: New. Same manufacturer as door operator.

C. Door Closers: New; SmarTork, Inc. or sash weight.

D. Door Locks: New. Same manufacturer as door operator.

E. Hoistway Door Unlocking Device: Install in every door.

F. Unit Frames: Fabricate from 14-gauge material to form one-piece unit frame; bolted construction with head and jamb flush. Apply effective sound deadening on inside of frame. Construct side and head jambs in one-piece.

G. Doors: Flush type door panels without visible astragal or retainer, with doors in closed position. Hollow metal type construction; minimum 16-gauge steel sheet construction with 2 removable gibs per door panel. Provide sight guards of same material and finish as door panels. Provide stainless steel facing applied to door panel, provide minimum 16-gauge thickness; return end around door edge 1½".

H. Struts and Headers: Provide to support entrances and related hardware. Struts to be full height or supported off elevator guide rails, using building structure as shown.

I. Fascia, Toe Guards, Dust and Hanger Covers: Minimum 14-gauge steel sheet. Hanger covers to extend full width of door track; section above door opening removable from within car.

J. Sills: Provide full width of hoistway; extruded to provide grooves for door gibs. Design of car and hoistway sills of similar pattern. Milled stainless steel.

K. Sill Angles: Provide steel angles and fastenings to adequately support sills to building structure.

2.13 HOISTWAY ALTERATIONS

A. General: Elevator contractor is responsible for any pit depth increase to accommodate elevator equipment and any other hoistway alterations to accommodate elevator equipment. Owner is responsible for hoistway alterations of raising the overhead and moving the front wall.

PART 3 – EXECUTION

Refer to SECTION 14 20 00
ELEVATORS

END OF SECTION