



HYDRAULIC ELEVATOR SPECIFICATIONS

- Section includes modernization of hydraulic elevators as follows:
 - # of hydraulic passenger elevator(s), Elevators #'s:
 - # of hydraulic service elevator(s), Elevator #'s:
 - # of hydraulic freight elevator(s), Elevator #'s:

- A. Subject to compliance with the requirements of the contract, provide products by one or more of the following Principal Manufacturers. Where specific product models are referenced, the standard components are approved:
 1. Controllers:
 - a. GAL Galaxy
 - b. Elevator Controls
 - c. Nexus™
 2. Power Units (Dry Mount and/or Submersible)
 - a. Bore Max
 3. Freight Vertical Bi-Parting Door:
 - a. Courion
 4. Passenger Elevator Door Equipment (Operators, Tracks, Hangers, and Closers):
 - a. GAL
 5. Elevator Car Enclosures:
 - a. Quick Cab
 6. Cylinders:
 - a. By others
 7. Two-Way Communication Device
 - a. MAD Fixtures

- B. Passenger Door Operation:
1. Automatically open doors when car arrives at a floor.
 2. Stop and reopen doors or hold doors in open position upon activation of “door open” button.
 3. At expiration of normal dwell time, or upon activation of “door close” button, close doors:
 - a. Prevent doors from closing and reverse doors at normal opening speed if door reopening device beams are obstructed while doors are closing, except during nudging operation.
 - b. In the event of door reopening device failure, provide for automatic shutdown of car at floor level with doors open.
 - c. Close cycle does not begin upon activation of “door close” button until normal door dwell time for a car or hall call has expired, except firefighters’ operation.
 4. Nudging Operation:
 - a. After beams of door reopening device are obstructed for a predetermined time interval (minimum 20.0-25.0 seconds), sound warning signal, and attempt to close doors with maximum of 2.5 foot-pounds kinetic energy.
 - b. The activation of the door open button overrides nudging operation and reopens doors.
 5. Interrupted Beam Time:
 - a. When beams are interrupted during initial door opening, hold door open a minimum of 3.0 seconds.
 - b. When beams are interrupted after the initial 3.0 second hold open time, reduce time doors remain open to an adjustable time of approximately 1.0-1.5 seconds after beams are reestablished.
 6. Differential Door Time:
 - a. Field adjustable time that doors remain open after stopping in response to calls.
 - b. Car Call: Hold open time adjustable between 3.0 and 5.0 seconds.
 - c. Hall Call:
 - 1) Hold open time adjustable between 5.0 and 8.0 seconds.
 - 2) Use hall call time when car responds to coincidental calls.
 - d. Reopen doors when car is designated for loading.
 - e. Car(s)..... Provide front or rear selective door operation.
- C. Bi-Parting Freight Doors and Gates – Power Operated Freight Door and Gate:
1. Door operation at landing initiated by operation of elevator call button for that floor.
 2. Obstruction of door reopening device beams during gate closing immediately stops and re-opens car gate and freight door.
 3. Door reopening device detects objects:
 - a. Immediately adjacent to landing and car sides of door.
 - b. Within path of door.
 - c. Objects on the floor in the path of the door.
 - d. Straddling bi-parting door.
 4. Adjustable timer holds doors open to 300 seconds.
 5. Door closing initiated upon:
 - a. expiration of a timer.
 - b. activation of door close button.
 - c. activation of a floor button within car.

6. Synchronize door and gate operators as follows:
 - a. Door and gate accelerate and decelerate smoothly.
 - b. Car gate closes completely before the hoistway doors begin to close.
 - c. Car gate does not open until hoistway doors are completely open.
 7. Provide automatic closing of car doors after dwell time expires.
 - a. A loud audible signal and highly visible signal actuates not less than 5.0 seconds prior to initiation of door sequence.
 - b. Dwell time is easily adjustable between 20.0 and 300.0 second.
 - c. Pressing the Door Close button cancels dwell time.
 - d. Pressing the Door Open button restarts dwell time.
 - e. Dwell time is set at 60.0 seconds.
 8. Open door and gate automatically when car arrives at a floor.
 9. Provide passenger sequence operation:
 - a. After an adjustable time between, 30 to 300 seconds, provide audible and visible warning signal and automatically close door and gate.
 - b. Provide dual reversing safety device for car gates.
- D. Freight Manual Door Operation: Operator to open or close doors and car gate at floor when car is stopped in leveling zone.
1. Independent Service:
 - a. When feature is activated from within the car allow control of car only from buttons and controls inside the car.
 - b. Close doors by constant pressure on desired destination floor button or door close button.
 2. Load Weighing:
 - a. Provide cars with adjustable cable tension monitoring load weighing device.
 - b. Devices are to be self-calibrating for the time-dependent effects of compression in any resilient materials in the assemblies, transducers, etc.
 - c. Provide dispatching at main floor in advance of normal intervals when car fills to capacity.
 - d. Provide hall call by-pass when car is filled to a field adjustable (10%-100%) range of percentage of rated capacity and traveling in down direction.
 - e. Activate <>audible<>voice message and visual overload signaling device inside elevator cab activated when load weighing device senses carload has reached or exceeded a pre-determined percentage of capacity.
 - f. Elevator does not close doors or run when Overload signaling device is active.
- E. Single Automatic Operation, Freight Elevator(s) only
1. Operate car without attendant from pushbuttons in car and at each landing. When car is idle, automatically start car, and dispatch it to appropriate floor when call is registered by pressing car or hall pushbutton.
 2. Illuminate, "in use" lights in each hall pushbutton station when car is responding to registered car or hall call. Prevent registration of another call until trip is complete including time for passenger transfer and registration of car call if car is responding to a hall call. Extinguish "in use" light to indicate system is available to respond to next call.
- F. Selective Collective Operation – Single Car, Elevator #'s:
1. Elevators operate via momentary pressure buttons to:
 - a. Place hall call by selecting direction of travel at each hall landing (up and down

- f. Only one car responds to each hall call.
 - 5. If either car is removed from service, the other car responds to all registered hall calls and its own car calls.
 - 6. Car and Hall Lanterns:
 - a. Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
 - b. Visual signal remains active from commencement of door opening until doors are completely closed.
- H. Group Operation – Two-Button, Elevator #'s:
- 1. Elevators operate via momentary pressure buttons to
 - a. place hall call by selecting direction of travel at each hall landing (up and down buttons at each intermediate landing, single buttons at each terminal landing).
 - b. place car call by selecting destination floor from inside the car (individual buttons for each floor served).
 - 2. Operate cars as a group, capable of balancing service and providing continuity of group operation with one or more cars removed from the system.
 - 3. Group control and supervisory system determines traffic levels and peak traffic conditions by continuously monitoring:
 - a. Quantity, location, and duration of hall calls.
 - b. Weight of current load in the elevator.
 - c. Anticipated time to respond to previously assigned car and hall calls.
 - d. Car speed and direction of travel.
 - 4. Car assignments in response to hall calls are reviewed a minimum of ten times per second and revised while cars in the group are stationary or in motion to achieve the shortest possible:
 - a. Estimated time for a car to arrive at a floor in response to hall calls.
 - b. Estimated transit time for passengers inside each car in the group.
 - 5. During peak traffic conditions priority is given to minimizing car arrival time in response to hall calls in the following order of priority:
 - a. Main Landing Demands (of any type or duration).
 - b. Long wait Down calls.
 - c. Long wait Up calls.
 - d. Up calls.
 - e. Long wait calls are those that have been registered for over thirty seconds.
 - f. Dynamic assignment of cars to serve specific floor zones is allowed to achieve required performance.
 - 6. Car and Hall Lanterns:
 - a. Lanterns provide audio and visual signal upon each stop, regardless of responding to car or hall call.
 - b. Visual signal remains active from commencement of door opening until doors are completely closed.
 - c. Hall lantern visual signal activates as soon as a car is assigned to respond to a hall call and remains active until car doors are completely closed.
- I. New Pump Unit: Assembled unit consisting of positive displacement pump, induction motor, master-type control valves combining safety features, holding, direction, bypass, stopping, manual lowering functions, shut off valve, oil reservoir with protected vent opening, oil level gauge, outlet strainer, drip pan, muffler, all mounted

on isolating pads. Provide: oil thermal unit / oil cooling unit / or oil temperature thermostat to maintain oil at operating temperature. Enclose entire unit with removable sheet steel panels lined with sound-absorbing material. Provide SCR soft start with closed transition. Design unit for ??? upstarts/hour.

- J. New Muffler: Provide in discharge oil line near pump unit. Design shall dampen and absorb pulsation and noise in the flow of hydraulic fluid.

New Piping and Oil: Provide piping, connections, and oil for the system. Buried piping shall be secondarily contained with watertight Schedule 40 PVC sleeves between elevator machine room and pit. A minimum of two (2) sound isolation couplings shall be provided between the pump unit and oil line and the oil line and jack unit. Provide isolated pipe stands or hangers as required.

- K. New Shutoff Valve: Manual valve in line adjacent to pump unit. Option: Provide second valve in pit adjacent to jack unit.
- L. New Buffers, Elevator #'s: Spring type with blocking and support channels. Option: Provide buffer access ladder(s) and platform(s).

M. New Hydraulic Cylinders

1. Cylinder(s): Seamless steel pipe. Design head to receive unit-type packing and provide means to collect oil at cylinder head and return automatically to oil reservoir. Options: Provide secondary containment/cylinder protection / Provide head assembly access ladder(s) and platform(s) / Provide cylinder stabilizer bracketing between guide rail as required.
2. Plunger(s): Options – Single stage or Multistage. Polished seamless steel tubing or pipe. If plunger length exceeds 24 feet, provide two or more sections not exceeding 16 feet in length, or coordinate installation of longer unit at the jobsite. Join sections by internal threaded couplings. Multiple section jack units shall be factory polished while assembled and marked for proper future reassembly. Isolate plunger from car frame(s).

- N. New Jack Support and Fluid Shut-Off Valve(s): Provide steel pit channels to support jack assembly and transmit loads to building structure. Provide intermediate stabilizers as required. Provide manual on/off valve(s) in oil line(s) adjacent to pump unit and jack unit(s) in pit adjacent to jack unit(s).

O. Controller: UL/CSA labeled.

1. Compartment: Securely mount all assemblies, power supplies, chassis switches, relays, etc., on a substantial, self-supporting steel frame. Completely enclosed equipment with covers. Provide means to prevent overheating.
2. Relay Design: Magnet operated with contacts of design and material to insure maximum conductivity, long life, and reliable operation without overheating or excessive wear. Provide wiping action and means to prevent sticking due to fusion. Contacts carrying high inductive currents shall be provided with arc deflectors or suppressors.
3. Microprocessor-Related Hardware:
 - a. Provide built-in noise suppression devices providing a high level of noise immunity on all solid-state hardware and devices.
 - b. Provide power supplies with noise suppression devices.

- c. Isolate inputs from external devices (such as pushbuttons) with opto-isolation modules.
 - d. Design control circuits with one leg of power supply grounded.
 - e. Safety circuits are not to be affected by accidental grounding of any part of the system.
 - f. System automatically restarts when power is restored.
 - g. System memory is retained in the event of power failure or disturbance.
 - h. Equipment is provided with Electro Magnetic Interference (EMI) shielding within FCC guidelines.
4. Wiring: CSA labeled copper for factory wiring. Neatly route all wiring interconnections and securely attach wiring connections to studs or terminals.
 5. Permanently mark components (relays, fuses, PC boards, etc.) with symbols shown on wiring diagrams.
- P. New Buffers:
1. Car: Spring type with blocking and support channels.
 2. Acceptable buffer manufacturers:
 - a. Hollister-Whitney.
- Q. Passenger Horizontal Sliding Hoistway Entrance Equipment:
1. Door Hanger: New Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.
 2. Door Hanger Rollers: Replace.
 3. Door Track: Replace. Bar or formed, cold-drawn removable steel tracks with smooth roller contact surface.
 4. Door Interlocks: New Operable without retiring cam.
 5. Door Closers: New Spring-activated spirator. Jamb/strut-mounted or counterweight type. Install and adjust to insure smooth, quiet mechanical close of doors.
- R. New Hoistway Door Unlocking Device: Provide unlocking device including new escutcheon with locking escutcheon in door panel at all floors. <>Finish to match adjacent surface.
- S. Freight vertical bi-parting - Hoistway Entrance Equipment:
1. Door Guide Tracks: New Continuous steel angles or formed steel tracks fastened to hoistway door jamb.
 2. Door Guide Shoes: New Machined iron shoes. Four shoes per door panel, with not less than 2½" lateral contact per shoe.
 3. Door Interlocks: Operable without retiring cam.
- T. New Power Freight Door Operators:
1. Power door operator for each entrance.
 2. Provide means to open doors from inside of car in the event of power failure.
 3. Closing speed minimum of 0.8 fps; maximum of 1.0 fps.
- U. New Sight Guards: 14-gauge of same material and finish as hoistway entrance door panels. Construct without sharp edges.
- V. New Struts and Headers: Constructed for vertical support of entrances and related material. Provide door open bumpers on entrances equipped with vertical struts.
- W. New Vertical Bi-Parting Freight Door Panels:

1. 12 gauge formed steel plates welded into frame angles.
 2. Telescoping upper section or pass-type doors as required.
 3. Installation includes:
 - a. Safety astragals.
 - b. Vision panels.
 - c. Truckable sills.
 - d. Load transfer angles.
- X. New Platform:
1. Designed and constructed to accommodate load classification requirements:
 - a. Provide Class "A" construction for passenger elevators.
 - b. Provide Class construction for service elevators.
 - c. Provide Class construction for freight elevators.
 2. Construction:
 - a. Steel frame with steel stringers securely welded together.
 - b. Two layers of 3/4" marine grade plywood on top of sheet steel securely mounted on top of frame.
 3. Elastomer isolation pads between plywood and steel frame. Minimum 0.059" (1.5 mm) thick steel, or material of equivalent strength and stiffness.
 4. Reinforced and braced to car platform front and rear.
 5. Black enamel Contractor's standard finish.
- Y. New Guide Shoes: Roller type, with three or more spring dampened, sound-deadening rollers per shoe. Swivel type or Solid type or with renewable oilless inserts to accommodate freight loading classification.
1. leading and trailing edge of panel and return a minimum of 1/2" on rear side of leading edge of panel.
- Z. New Door Hangers: Two-point hanger roller with neoprene roller surface and suspension with eccentric upthrust roller adjustment.
- AA. New Door Track: Bar or formed, cold-drawn removable steel track with smooth roller contact surface.
- BB. New Door Header: Construct of minimum 12-gauge steel, shape with stiffening flanges.
- CC. New Car Door Electric Contact: Prohibit car operation unless car door is closed.
- DD. New Door Clutch:
1. Heavy-duty clutch, linkage arms, drive blocks and pickup rollers or cams to provide positive, smooth, quiet door operation.
 2. Design clutch so car doors can be closed, while hoistway doors remain open.
- EE. New Restricted Opening Device:
1. Restrict opening of car doors to Code required limit outside unlocking zone.
 2. Adjust for smooth and quiet operation with operating noise undetectable from inside any car or outside of the hoistway.
 3. Plunger type restrictors not acceptable.
 4. Utilize mechanical angle to prevent door opening.

- FF. New Door Operator:
1. High-speed, linear drive, heavy-duty door operator capable of opening doors at no less than 2.5 fps.
 2. Accomplish reversal in no more than 2½" of door movement.
 3. Solid-state door control with closed loop circuitry to constantly monitor and automatically adjust door operation based upon velocity, position, and motor current.
 4. Maintain consistent, smooth, and quiet car door operation at all floors, regardless of door weight or varying air pressure.
- GG. New Door Reopening Device:
1. Black fully enclosed infrared device with full screen infrared matrix or multiple beams extending vertically along leading edge of each door panel to minimum height of 7'-0" above finished floor. <>3D beam device to detect approach from elevator lobby.
 2. <>Provide <>extension of housing and lens <>additional beams full height of door panels.
- HH. New Bi-Parting Freight Doors and Gates - Power Freight Gate Operator: Power gate operation. Provide means to open gate from inside of car in the event of power failure. Closing Speed: Minimum of 1.6 fps; maximum of 2.0 fps.
- II. New Bi-Parting Freight Doors and Gates - Door and Gate Reopening Device:
1. Black, fully enclosed door reopening device with full screen infrared matrix or multiple beams extending vertically inside or along edge of each car gate guide track <>to a minimum height of 7'-0" above finished floor <>to a height of 10'-0" above finished floor {maximum 10'-0" available} full height of opening.
 2. Synchronized to stop and reverse car gate and hoistway door panels.
- JJ. New Bi-Parting Freight Doors and Gates - Car Gate: Power-operated, vertical rise, single or double-section minimum 6'-0" high, constructed of 12-gauge welded wire mesh welded into frame angles. Mount car gate lift chains on hoistway side of car gate.
- KK. COMMUNICATION
- LL. Car Communication System:
1. Hands-Free Phone System:
 - a. Two-way communication instrument in car with automatic dialing, tracking, and recall features, with shielded wiring to car controller in machine room equipment space.
 - b. Provide dialer with automatic rollover capability with minimum two numbers:
 - 1) Actuate two-way communication via "Help" button.
 - 2) Adjacent light jewel shall illuminate and flash when call is acknowledged.
 - 3) Button shall match car operating panel pushbutton design.
 - 4) Provide "Help" button tactile symbol, engraved signage, and Tactile marking adjacent to button mounted integral with car front return panel.
 2. Emergency Personnel Communication:
 - a. Communication system shall be provided allowing emergency personnel to establish communications with each elevator individually.
 - b. Emergency Personnel Communication shall override any existing connection outside of the building.
 - c. Adjacent light jewel shall illuminate and flash when call is acknowledged.

- d. Provide operating instructions.
- e. On the same car operating panel as the phone push button, provide capability to communicate with and obtain responses from passengers.
- f. Provide display video capability for entrapment assessment.

MM. New Freight Elevator Enclosure: Car weight to be verified prior to removal of interior cab finishes/cab enclosure. Remove existing interior finishes and enclosure components, weigh, and document. Provide complete as specified herein. New cab weight including all new finishes to be verified following completion of modernization. Post modernization weight does not exceed code allowable limits. Provide the following features:

1. Enclosure Walls: Reinforced 10-gauge furniture steel formed panels no more than 20" wide with light-proof joints.
 - a. Baked enamel finish as selected.
 - b. Clad panels with stainless steel textured finish as specified herein.
 - c. Reinforce and brace panels to provide rigid structure and securely fasten to car sling and platform.
 - d. Provide recess in car side wall for recessed mounting of car operating panel.
2. Enclosure Canopy:
 - a. Reinforced 12-gauge furniture steel formed panels no more than 20" wide with light-proof joints and Hinged emergency exit.
 - b. Interior finish white reflective baked enamel.
 - c. Lighting: Recessed 4-tube fluorescent fixtures with on/off switch in car operating panel. Recessed LED down lights with on/off switch in car operating panel. Recess mount fixture flush with inside surface of car top. Provide steel guard on car top over fixture.
 - d. Bumper Rails: Two rows of 2" x 12" oak or maple bumpers mounted on both sides and rear of the car.
 - 1) Locate bottom rail at floor level and top rail at 36" above the car floor.
 - 2) Bolt rails through car walls with bolt and captive nuts on exterior of wall panel sections on 18" centers.
 - 3) Finish both upper and lower top edges with a 45-degree chamfered edge to eliminate collection of trash.
 - 4) {Side Opening} Finish ends of upper and lower bumpers on side wall adjacent to strike jamb to 45-degree chamfer to eliminate carts and people from hitting blunt ends.
 - 5) {Vertical Bi-Parting} Finish ends of upper and lower bumpers on side walls to 45° chamfer to eliminate carts and people from hitting blunt ends.

NN. ELEVATOR MANAGEMENT SYSTEM

OO. Provide a permanent system that includes reporting, monitoring, and elevator feature control options for all elevators for use by the Purchaser and/or Building Management.

PP. System shall allow user interface from within the building via one Contractor provided dedicated CPUs with minimum 17" LCD screens and keyboards with required software installed using Contractor provided hardware and software on dedicated computer. At client discretion, a laptop may be utilized with a minimum 15" screen.

1. Reporting:
 - a. Provide reports in both tabular and graphical format, both on-screen and in

