

**DIVISION 14 – ELEVATORS, CHAIR LIFTS AND DUMBWAITERS  
IT IS RECOMMENDED THAT THE ELEVATOR SHOP OR CONSULTANT BE  
RETAINED TO ASSIST WITH ALL ELEVATOR, DUMBWAITER AND CHAIRLIFT  
SPECIFICATIONS AND DESIGNS.**

**HANDICAP REQUIREMENTS:**

Elevators and Chairlifts shall be handicapped barrier free in accordance with design standards of the National Elevator Industry, Inc. ANSI A- 117.1 and ADA Standards.

**ELEVATOR MANUFACTURER AND CONTRACTOR REQUIREMENTS AND  
QUALIFICATIONS:**

**ONLY NON-PROPRIETARY EQUIPMENT ALLOWED**

An approved manufacturer regularly engaged in manufacturing elevator equipment of the type required for this project.

The manufacturer or authorized agent of an elevator equipment manufacturer with not less than ten (10) years of satisfactory experience installing and servicing elevator equipment equal in character and performance to the project elevator. Any welding on the site must be performed by personnel who have successfully passed an American Welding Society authorized test and whose welding work has been judged by a natural person who is fully authorized to do so by the American Welding Society. The authorized person who evaluates the welding must sign the certificate signifying applicant has passed required tests. No substitutions will be permitted.

The Installation Contractor must submit catalogs and show evidence that all required parts are kept in inventory within ten (10) miles of the elevator installation. The Installation Contractor must certify that he/she has a Service Office with full time employees within ten (10) miles of the project site.

The Elevator Contractor must pay the expenses of a QEI Certified Elevator Inspector not employed by the installing Contractor to witness all testing of the equipment. A Copy of the testing report must be turned over to the Owner and to the Elevator Contract Administrator for the University. The cost of all elevator inspections and certificates are to be paid for by the Contractor.

**ELEVATOR MAINTENANCE:**

**Elevator maintenance and warranty on new and/or up-graded elevators shall be for a period of 24 months after acceptance.** The Certified Mechanic must spend a minimum of Three (3) hours per month per traction, one and half (1.5) hour per month per hydraulic, one (1) hour per month per dumbwaiter and/or one (1) hour per month per chairlift regularly and systematically cleaning, examining, adjusting lubricating per Manufactures Recommendations. The approved elevator maintenance Technicians must be certified with a Certificate of Competency from the State of Florida. The Contractor shall be responsible for providing additional maintenance, repairs, service, call-backs and other work on a 24 hour, 7 days per week basis as part of the installation or modernization contract. Response time for any problem calls must be within one (1) hour after notification of the problem.

## ELEVATOR PIT AND HOISTWAYS:

The elevator pit area, which includes the floor and walls up to the lowest landing threshold area must be water sealed and painted with two (2) coats of high gloss acrylic latex floor enamel.

Pit ladders are to be installed according to all codes enforced at time of installation. Location of ladder is to be determined by the Elevator Contractor and Designing Firm.

Sump holes to be installed in Pit, covered by grate. If Sump is to be used, installation of Sump Pump must be installed according to all codes enforced at time of installation.

Conduit and Lighting Fixtures in Pit are to be installed for WET conditions. All codes governing this type of lighting system at the time of installation must be followed.

All voids, holes, slots, etc., in the hoistway shall be grouted or pointed up to obtain fire rating. All nails, snap-ties, form straps and wood shall be removed from hoistway.

Where needed, grating shall be provided in shafts to permit safe lubrication of sheaves and equipment.

## ELEVATOR MECHANICAL ROOM:

The elevator machine room shall be sized for the equipment to be used. The room shall be heated and cooled with a thermostat located in the machine room. Machine room shall meet all applicable code requirements. The elevator machine room walls and ceiling must be primed and completely painted with two (2) coats of semi-gloss acrylic latex paint. The machine room floors shall be smooth and level. The elevator machine room floors must be painted with two (2) coats of highest quality oil based light gray color gloss floor and deck enamel.

The elevator machine room shall not to be used for storage of any kind. No foreign piping, ductwork or conduit shall pass through hoistway and/or machine room.

All elevator machine room doors must be self-closing, self-locking, requiring a key to open. Door must also have a sign stating Danger Elevator Equipment. Machine Room Doors shall be not less than one and one-half hour fire rating B label, not less the 3' 4" in width and not less than 6' in height. Doors shall be provided with a spring type lock arranged for opening from the inside without a key. A key is required to open the door from the outside.

Elevator machinery rooms must be well lighted in order to provide a safe environment for the elevator technicians to work. Lighting must be at least 19 foot candles, measured at the floor, in all portions of the room. Lighting must have guards to protect lamps. Light switch shall be located on the lock-jamb side of the access door. Elevator machine rooms shall have a head room of not less than 7'0, (Head room is determined by measuring from the floor to overhead items such as wire duct, beams, lights, etc. Stairways for access to elevator machine rooms shall be of metal and shall Conform to the following: Maximum angle of sixty (60) degrees from the horizontal. Stair treads shall not be less the 28 inches in height.

Stair treads shall be level and not less the 6 inches in width with slip-resistive surface. The rise shall not be less than 8 inches or more the 10 inches. The headroom from the top any tread shall be not less than 7 foot vertical clearance, measured in line with the face of the riser.

There shall be no more than 14 feet in an unbroken vertical rise.

Stairway floor opening shall be guarded by a metal railing 42 inches in height with intermediate rail and toe board.

Open side of stairs shall be protected with a metal handrail not more the 34 inches in height from the upper surface of top rail to surface of tread in line with face of riser at forward edge of tread, and with intermediate rail. Access to elevator mechanical rooms across roof shall have steps or ramps with metal railing built over pipes or other obstructions.

All Electrical disconnects, fusing and receptacles shall be installed following all Codes enforced at time of installation.

All hoist way vents shall be installed following all Codes enforced at time of installation.

Elevator machine rooms shall not be located adjacent to classrooms and other noise sensitive spaces without thorough consideration to noise transmission to these spaces.

#### PAINTING OF EQUIPMENT:

Elevator equipment must be completely painted in the field, except for the stainless steel and for the polished machined surfaces of the hydraulic buffers, guide rails and/or hydraulic plungers.

**ELEVATOR SERIAL NUMBER SPECIFIC OPERATION, ADJUSTMENT & MAINTENANCE DATA; TOOLS OR COMPUTER DEVICES, FOR EACH ELEVATOR (OR FOR EACH MULTI-CAR GROUP ELEVATOR SYSTEM) ELEVATOR ELECTRICAL CONTROLLER AND DOOR OPERATOR CONTROL, IS TO BE PROVIDED TO OWNER:**

Elevator Contractor shall provide four (4) copies of typewritten or professionally printed, elevator serial number specific installation, adjustment and troubleshooting instructions, to be used in maintaining and repairing all new, up-graded or renovated elevators or group elevator systems. Elevator Contractor shall provide four (4) copies of the elevator serial number specific, as built, electrical wiring diagrams, designed with point to point wiring or circuit connections. Further, furnish a complete set black on white drawings, printed on high rag content paper for long life, to be used for reproduction of wiring diagrams, if needed in the future. Additionally, provide one (1) complete set of the same high quality wiring diagrams, laminated with heavy gauge clear plastic, and designed to be hung on sturdy wall bracket(s) in the elevator machine room(s). Drawings shall be designed to be easily removed from the rack for use by the elevator technicians. Elevator Contractor shall provide four (4) copies of all elevator serial number specific computer or handheld adjustment device passwords, legends, reference codes, key words, operational descriptions and related information so that a competent elevator technician can access the elevator electrical controller system(s), make adjustments to the equipment settings, determine the malfunction codes, troubleshoot the electrical system or verify correct operation of the elevator electrical controller or door operator equipment.

Elevator Contractor shall provide four (4) copies of an elevator serial number specific replacement parts list for each elevator or group of elevators, located in a new building, or that which is renovated or up-graded in an existing building.

Elevator Contractor shall have the right to furnish either —on board mounted computers or hand held diagnostic devices, or similar portable computer or hand held devices that can be disconnected from the elevator electrical controller and door operator controller systems. Either design is acceptable so long as the required maintenance and adjustment information, diagnostic functions, equipment operation, equipment performance and troubleshooting activities can be performed without unnecessary delays, and the same performance results can be anticipated. Regardless of the type of computer or diagnostic equipment provided under the contract, the Elevator Contractor must provide the Owner with one (1) complete set of computer or handheld technical equipment devices that will operate each and every elevator covered by the new elevator or elevator up-grade contract. Provide a complete set of current, as built and installed, microprocessor software for each and every elevator covered by the contract.

The Elevator Contractor must provide a notarized letter with his bid that states that, if he receives the contract to perform the elevator work, the Elevator Contractor shall provide all of the required installation and adjustment information, computer devices or service tools, data, instructions, diagrams, parts lists and related information at the time the project is completed.

All required information, data, diagrams, instructions and related materials shall be provided in heavy duty, oversize type, three (3) ring binders, properly identified with the project name, locations, elevator serial numbers, building elevator numbers and related information.

#### REPLACEMENT PARTS:

All of the major parts utilized in new or up-graded elevators must be manufactured in North America, and the elevator manufacturer must have a documented quality assurance program.

Only new parts or components shall be accepted. The installer shall not use rebuilt, used or reconditioned equipment or parts on any new elevators or up-graded elevators. The only used equipment allowed are existing components that are specified to be reused during an elevator up-grade contract. None of the parts or equipment removed from the project can be used elsewhere on the Florida State University Campus.

The Elevator Contractor, and Elevator Manufacturer, if not the same company, must provide a notarized letter at the time the elevator work project is bid stating that all necessary replacement parts, supplies and related equipment, necessary to maintain, repair and service the elevator equipment will be promptly sold, without delays, directly to the Owner, or to the Elevator Contractor who maintains the elevator equipment on behalf of the Owner without the necessity of the replacement parts being initially purchased by the Owner. The letter must be signed by an executive officer of the Elevator Contractor.

#### FASTENERS:

All exposed screw is to be of the vandal (tamper-proof) type. Include countersunk, vandal resistant, 316 stainless steel screws for cover plates. Drive pins to attach any surface mounted Braille plates.

#### THRESHOLDS/SILLS:

Car and hoistway sills shall be Nickel Silver.

## DOOR OPERATORS:

Elevator Door Operators must be highest quality, heavy duty type, with—closed-loop, I type microprocessor digital control system. Door operator must have digital encoder.

Include the following features in door operator control system: Door position monitoring, door velocity monitoring, Door motor current monitoring, Door closing pressure monitoring. Doors must reopen when door pressure setting is reached in closing direction.

## LANDING STATIONS:

Push button stations located at each landing that includes mirror finished vandal resistant, stainless steel buttons with flush jewels in the center that indicates that the call has been registered. The call registered jewels shall light up brilliant red with the use of ultra-bright light emitting diodes. The cover plate shall be made of no. 4 satin finished no. 316 stainless steel, minimum of 1/8 inch thickness, approximately 7 inches wide and shall be of an overall size that will contain the following: a. Either single (terminal floors) or double buttons (intermediate floors) of the appropriate diameter to meet code for handicapped. b. Engraving and red epoxy filling of a sign to indicate — **IN FIRE EMERGENCY, DO NOT USE ELEVATOR – USE EXIT STAIRS.**” Use ½ inch high letters. Also, provide a flame Pictograph symbol of the appropriate size, utilizing a durable plastic insert mounted from the rear into a laser cut hole, or by engraving and filling the area with the required colors of epoxy material for long life service.

## FIREMAN’S PHONE AND RECALL:

Fireman’s phone jack neatly incorporated. Do not provide an exposed nut on the front of the station. Shielded pair of wire to be run from each jack to junction box at a location outlined by the Owner. Verify location of Fireman’s recall switch and instructions with Fire department and Architect. Instructions should be engraved into plate and filled with red epoxy. Provide for Phase I and Phase II operation. Include suitable fireman’s insignia type jewel in station. The fireman’s jewel the designated floor station will flash in the event the smoke detector activation was in the machine room or hoist way. Switch shall be keyed to match the fire service key currently being used on the FSU Campus, key number G-1617X. If local codes call for a different type of Fireman’s Service Key, the G-1617X key must not be used. Engrave instructions in designated landing push button station and in cab front return panel.

## HYDRAULIC ELEVATORS:

**NOTE: ALL HYDRAULIC ELEVATORS MUST BE INSTALLED ACCORDING TO ALL CODES AT THE TIME OF INSTALLATION.**

A Hydraulic Elevator can only be used when total travel is less than fifty (50) feet. The Motor Starter for new or up-graded hydraulic elevators must be soft start type, adjusted to a maximum of three (3) times the full load running current. Elevators not on Emergency Generator System must be place on a Battery Lowering System. Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist. All door frames, headers, etc., shall be grouted solid to maintain fire rating. The hydraulic cylinder assembly shall include the following:

The hydraulic jack assembly (cylinder) shall be a complete new assembly of the highest quality available, and manufactured in strict accordance with ASME A17.1-1996, Safety Code for Elevators

and Escalators, including the latest published addenda as of the date of the written specifications. The total length of the cylinder must include the required over – travel at top and bottom landings Multiple sections on the plunger and cylinder, if necessary, to permit ingress into the building and Hoistway without damage to the building or the equipment.

The hydraulic cylinder must have external, threaded type couplings for multi-section cylinders. There shall be no materials at the coupling(s) that reduce the interior clearance of the hydraulic cylinder. The jack packing seal around the plunger must be of the molded type that does not require adjustment. The packing gland must be designed to accept the molded packing or seal that is clamped in place without the use of unusually high pressure on the attachment bolts. The top of the cylinder shall have a ring for collecting the oil that seeps past the jack packing and/or wiper ring.

Provide a new drip tube from the top of the cylinder to new five (5) gallon collection container that has a small entry hole for the drip line. Leakage of more than one 1/2 gallon per month will not be accepted.

The jack assembly shall be supported on a pair of new steel channels of adequate strength that are approximately as long as the distance between the elevator guide rails. Reinforce mounting brackets shall support the weight of the fully loaded elevator and cylinder on the pit channels. The pit channels must be at least 6' in height, and weighing at least 16.3 pounds per foot. The pit channels shall be capable of supporting the vertical reaction on the hydraulic cylinder and the full loaded car without deflection. The pit channels must receive a rust inhibitive primer and two (2) finish coats of paint before installation.

Additional Protection against Electrolysis: The entire hydraulic jack assembly shall be completely electrically isolated from the entire building, elevator car/platform, pumping unit, pit mounting channels and all other components of the elevator by using the following insulating techniques:

The jack plunger shall be isolated from the elevator car/platform assembly through the use of specifically designed rubber isolated platen plate that will not allow metal to metal contact and absorb pulsations from the hydraulic pump. The minimum thickness of the rubber under compression from a fully loaded car shall be at least 3/4 inch.

The hydraulic cylinder assembly must be isolated from the jack support channels and the pit floor. The material to be used between the cylinder mounting brackets and the top of the support channels is Micarta or any high quality high pressure plastic laminate material of at least 3/8 — thickness. The backs of the channels must be isolated from the top of the cylinder with a double wrapping of high quality rubber sheeting material, which is wrapped around the top area of the cylinder (behind the pit support channels) and secured with an oil resistant cement. The pit support channels must not make metal-to-metal contact with the cylinder. The bolts that attach the support brackets to the support channels must be positively insulated with high strength rubber. Micarta or schedule 40 PVC insulating material around the bolts, washers and nuts to prevent metal to metal contact between the cylinder and the cylinder support channels.

The oil pressure supply line must contain at least two (2) rubber isolated sound and vibration isolation couplings the effectively isolate the pumping unit from the cylinder. The blow- out proof isolation couplings must be installed in the machine room as required by ASME A17.1. The oil pressure supply line, from the point of the isolation couplings, must be completely isolated from the building structure, pit floor and any other material in a manner that is effectively isolated to prevent a grounding effect. The use of high quality rubber materials at least 3/8" thick when fully compressed will be acceptable as an isolation material for pipe supports or hangers.

Electrical isolation couplings without sound and vibration-absorbing properties are not acceptable.

The oil pressure supply line shall be insulated from the building structure, walls, supports and all other contact points. Where the piping penetrates a wall, the piping shall be insulated with rubber materials at least 3/8" thick when compression.

The complete isolation of the jack assembly must be checked during installation, and after the installation work has been completed to verify that there is no electrical path to ground. Elevator Contractor must use a meager and high quality ohmmeter to verify that his work complies with these work specifications, and the effectiveness of the isolation must be demonstrated in the presences of representatives of Florida State University. The Elevator Contractor will be required to remove or correct any work that does not fully comply with the isolation requirements.

**Hydraulic Oil Line: The oil line shall include the following:**

The oil line shall be schedule 80 thickness, with threaded forged steel fittings at all locations where the oil line must change directions or be coupled. Victaulic or similar brand clamp type fittings are not permitted except that one (1) Victaulic fitting may be utilized where the oil line connects to the hydraulic control valve at the pumping unit so long as it is correctly installed and not used to correct for alignment deficiencies in the oil line. All threaded fittings must be sealed with Expando brand thread sealer. Install a high quality ground joint union near the hydraulic cylinder. Flexible hoses shall not be used under pressure in this installation. Install the pipe rupture valve adjacent to the hydraulic cylinders. The valve must be adjusted to properly to stop the decent of the elevator car in the event of pipe or valve rupture; however, the passengers should not be burdened by unnecessary closure of the valve when no emergency exists.

Two (2) oil shut-off valves must be installed in the oil line. One (1) shut-off valve shall be installed adjacent to the pumping unit, and is to be provided for purpose of being used when the relief pressure is tested on an annual basis. One (1) line shut-off valve is to be installed near the hydraulic jack cylinder and is to be used only when the packing is replaced in the jack. Elevator Contractor shall attach a laminated plastic tag on the valve handle stating that the valve is to be used for packing replacement purposes only. The lettering on the tag shall be with 3/8 inch high letters stating the following: —Caution!! This valve is to be used when serving the cylinder only. Do not use for hydraulic system pressure tests. Tag lettering must be a contrasting color to the surface. The bursting strength of both valves shall comply with the requirements of ASME A17.1, Section 1302, Safety Code for Elevators.

Perform all the necessary cutting as may be required to run or install the oil supply line from the machine room to the hoist way, including the work necessary to completely isolate the oil line from the building or other building systems. Isolation of the oil supply line must be neatly installed, and be rubber at least 3/8 inch thick while under compression.

Hydraulic Muffler Device: The Oil line must be equipped with an effective muffler device that removes the hydraulic pump pulsations and noise before being transmitted to the hydraulic cylinder through the oil supply line. The muffler must have rubber absorbing materials that can be replaced on a regularly scheduled basis. The muffler device shall be held together with high strength bolts and designed to be serviceable without removal from the oil supply line. Connections must be threaded. Include a metal tag on the muffler to indicate the required service by replacing the rubber pads every two (2) years. Locate muffler device in the elevator machine room area in a manner that will not inhibit the service work.

**7. Hydraulic Oil:**

The hydraulic fluid for all new or up-graded hydraulic elevators must be grade VG-32, biodegradable type vegetable oil or approved equal.

Install a large data plate on the power unit identifying the oil that has been installed in the system.

#### Hydraulic Cylinder Installation:

**All hydraulic cylinder casing for new hydraulic elevators or replacement cylinders for existing elevators must be installed in a completely plumb condition with a variation of not more than 1/8-inch variation from absolute vertical plumb condition from bottom to top of the cylinder. The plumb condition must be demonstrated to representatives of Florida State University and/or his/hers designee prior to installation of the back fill sand, and prior to installation of the guide bearing and plunger assembly in the cylinder. A weighted “spider” shall be hung from a plumb line for checking the plumb condition at least every 12 inches from bottom to top of cylinder.**

#### **TRACTION ELEVATOR:**

NOTE: ALL TRACTION ELEVATORS MUST BE INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.

All elevator driving machines and elevator controller equipment must be Installed in a machinery room separate from the hoist way area. **All Equipment shall be non-proprietary.**

All new or up-graded geared traction driving machines must have full synthetic gear oil of the proper viscosity according to the machine manufacturer’s recommendation.

Traction elevators must have VVVF AC controllers with digitally controlled —closed-loop type vector controlled micro-processor systems such as Megnetek. The motor control system shall be quiet in operation with no objectionable air-borne or electrical noise. All traction elevators must be equipped with an ascending elevator-braking system. The system shall be or equal to a Hollister-Whitney rope gripper system, a counterweight safety device with over-speed governor or a bi-directional under-car safety device/over-speed governor. Provide access door leading to metal gratings that shall be provided in shafts, where required by code, to permit access for lubrication of sheaves and equipment. Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist. All door frames, headers, etc., shall be grouted solid to maintain fire rating.

#### **HOLE LESS EQUIPMENT:**

If Hole less type of equipment is to be installed, isolation from the building is a must. Place the piston that will be installed in the pit on Non-Conductive and Non-Compressive material. If guide shoes are used, the guide shoes must be of the Non-Metallic type. Isolation material must be used to ensure that all hydraulic piping does not come in contact with the building.

#### **CABS:**

**High cabs shall be provided unless noted.**

If applied Wall Panels are used, place the Wall Panels on the sides and/or rear of the Elevator Cab; the panels must be constructed of 3/4 thick quality A/B grade plywood. The panels shall be backed with plastic laminate material to reduce warping and moisture intrusion. The face of the new panels shall be stainless steel. No. 4 satin finished stainless steel angle edges on the panels with mitered and welded corners. The stainless steel panel binders shall be formed of 10 gauge angles with screw attachments on the rear of the panels. The distance between the panels shall be reduced to approximately 1” Attach the new panels in a manner that requires a workman on top of the car to remove fasteners to prevent easy removal by unauthorized personnel. Cover the area surrounding and between the panels, as well as the base area, with Type 316 L, 16 gauge satin finished stainless steel glued to the cab’s backing panel.



Over-lap the spaces by a least 2” on each side to prevent the stainless steel from becoming dislodged once the panels are in place. Use the highest quality industrial contact cement for attaching the stainless steel to the reveal areas.

Provide a complete set of protection pads and stainless steel protection pad buttons on each panel and on front return panel. Install the pad buttons to prevent easy removal.

Elevator Cab’s floor shall be of resilient floor tile or vinyl sheeting.

Carpeting shall not be used. Diamond plate of Stain-less steel material shall be used in special areas.

The Elevator Cab’s for new or up-graded elevators must have hinged, swing type front return panels to contain all of the operating devices, stainless steel vandal resistant buttons, indicators, standard size certificate holder, emergency phone (furnished by OTC), handicapped markings and other devices. **NO SEPARATE COVER PLATES FOR CAR OPERATING STATION WILL BE ALLOWED.**

All mounting must be from the rear to provide neat and vandal resistant panel. All information is to be engraved into panel. No plates or covers shall be attached from the front of the panel.

Front return panels must have heavy hinges, and vandal resistant locking devices.

The car operating panel shall contain all buttons and operating devices require by A17.1. Any other switches such as car lights, exhaust blower, Independent service, etc. shall be located in a separate cabinet with a locked, hinged door.

All stainless steel in elevator cabs for dormitories shall be 14 gauge, Type 316L stainless steel, except when heavier gauges are required for the application.

Cab ceilings for passenger elevators must contain LED lighting with vandal resistant security rings and electronic dimmers. Finish shall be stainless steel.

All elevators must have cab emergency lights and alarm System that is at least equal to Elevator Product Corporation —Flexilite— EFP1 system that will illuminate a portion of the normal cab lighting fixtures for at least four (4) hours. System must have four (4) gel cell six (6) volt batteries and a charger-inverter unit, all for mounting on the car top.

7. The passenger or service elevator door protection must be Janus Pana 40 Plus, with 3-Dimensional-protection feature.

1. Install a top emergency exit as required by ASME A17.1 Safety Code for all Elevators. Include electrical contact arrangement to prevent the elevator for being operated unless the top emergency exit is in the closed and locked position.

#### ELEVATOR PHONE:

A one (1) inch home-run conduit shall be provided from the elevator phone to the telephone equipment room.

Elevator Contractor shall provide and install phone that meets the requirements of the FSU Office of Telecommunications (OTC). The phone shall be rear mount in a swing type return panel; provide a punched or drilled grille work for the speaker and microphone. Each elevator shall have an emergency telephone. **Programming and Wiring connections shall be accomplished by OTC.**

**CAB DOORS:**

In Dorms, all Hoistway Door emergency release escutcheons shall be equipped with Barrel Key locks as manufactured by Tri-lock Mfg. And Maint. Corp. using Barrel Key #6950.

**FREIGHT ELEVATORS:**

**NOTE: ALL FREIGHT ELEVATORS MUST BE INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.**

Freight elevators shall be located in close proximity to docks and service area. They shall go to each floor and be of sufficient size to accommodate large equipment.

In the event a freight elevator is installed in a corrosive environment or installed in conditions that require sanitary environment, the equipment shall be fabricated from extremely corrosion resistant and/or materials that are easily sanitized.

If power assisted car gate(s) is used, provide electronic screen across gate opening.

Provide highly accurate electronic load weighting device, overload alarm and signal light. Alarm and signal light shall function if load exceeds design capacity. Elevator shall not function if overloaded conditions exist.

All door frames, headers, etc., shall be grouted solid to maintain fire rating.

**CHAIRLIFTS:**

**NOTE: ALL CHAIRLIFTS INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.**

Any chairlift being placed outside of building must be manufactured to withstand WET conditions and be placed in surroundings to protect from ALL weather conditions.

**DUMBWAITER:**

**NOTE: ALL DUMBWAITERS MUST BE INSTALLED ACCORDING ALL CODES AT THE TIME OF INSTALLATION.** The Dumbwaiter Car shall be constructed in Stainless Steel, including the Bi-parting car gate. Car shall have a least one (1) Stainless Steel Shelf. Hoistway Doors, Hoistway Frames and Door Seals shall be Stainless Steel.

### XXIII. APPROVED MANUFACTURERS

1. Approved Elevator Manufacturers:
  - a. ThyssenKrupp Elevator Corporation
  - b. Otis Elevator Company
  - c. Schindler Elevator Company
2. Closed-Loop Door Operator Equipment
  - a. MAC
  - b. ECI
  - c. Motion Control Engineering
  - d. Smartraq
3. Micro-Processor and Car/Group Control Equipment
  - a. Motion Control Engineering and Elevator Controls Corp.
  - b. Approved elevator manufacturers' non proprietary equipment
4. Motor Drive Systems for Elevator Machine Motors
  - a. Megnetek
  - b. Approved Equal
5. Hoisting Machine Motors Only
  - a. General Electric
  - b. Imperial Electric
  - c. Magnetek
  - d. Rueland Electric
  - e. Approved Equal
6. Elevator Hoisting Machines and Deflector Sheaves
  - a. Hollister – Whitney Elevator Corp.
  - b. Titan Machine Corp.
  - c. Approved Equal
7. Rope Gripper for Traction Machines
  - a. Hollister – Whitney Elevator Corp.
  - b. Approved Equal
8. Hydraulic Fluid

- a. Hydro Safe Oil Division, Inc., Grade ISO VG-32
- b. Approved Equal
- 9. Pump Motor
  - a. General Electric
  - b. Imperial Electric
  - c. Magnetek
  - d. Ziehl-Abegg
  - e. Thyssen/Krupp
  - f. Approved Equal
- 10. Hydraulic Pump
  - a. IMO
  - b. Allweiler AG
  - c. Approved Equal
- 11. Oil Control Valves
  - a. Beringer
  - b. Maxton
  - c. EECO
  - d. Thyssen/Krupp
  - e. Approved Equal
- 12. Hydraulic Cylinders
  - a. EECO
  - b. United
  - c. CEMCO
  - d. Approved Equal
- 13. Pipe Rupture Valves
  - a. EECO
  - b. Thyssen/Krupp
  - c. Approved Equal
- 14. 3D Door Detector Devices
  - a. Janus Elevator Products
  - b. Approved Equal
- 15. Car Emergency Lighting System
  - a. Elevator Products Corp.
  - b. Approved Equal
- 16. Vandal Resistant Signal Fixtures

- a. Innovation Industries
  - b. GAL
  - c. EPCO
  - d. Thyssen/Krupp
  - e. Schindler
  - f. Otis
  - g. Approved Equal
17. Battery Powered Automatic Lowering System
- a. Reynolds and Reynolds Electronic
  - b. GAL
  - c. Schindler
  - d. Otis
  - e. Approved Equal
18. Elevator Cab Materials
- a. Gunderlin, Ltd.
  - b. Tyler Elevator Products, Inc.
  - c. H&B Elevators
  - d. Elevator Cabs, Inc.
  - e. Approved Equal
19. Elevator Hoistway Entrances and/or Hoistway Door Panels
- a. Gunderlin, Ltd.
  - b. Tyler Elevator Products, Inc.
  - c. H&B Elevators
  - d. Elevator Doors Inc.
  - e. Approved Equal
20. Guide Shoes and Roller Guides
- a. ElSCO
  - b. Thyssen/Krupp
  - c. Otis
  - d. Approved Equal
21. Paint & Coatings
- a. Pratt & Lambert
  - b. Sherwin-Williams
  - c. Martin Senour
  - d. Approved Equal
22. Chairlift Manufacturers
- a. National – Wheel – O – Vator Inc.
  - b. Porch Lift
  - c. Approved Equal

- 23. Dumbwaiter Manufacturers
  - a. Atlas Elevator Company
  - b. Matot Corp.
  - c. Approved Equal
- 24. Door Hanger and Interlock Equipment
  - a. GAL Manufacturing
  - b. Approved Equal
- 25. Mobil Computer Security Cabinet
  - a. EDSAL #CSC6726
  - b. Approved Equal

**APPROVED SUBSTITUTIONS:**

Substitutions must, in the opinion of the Owner, Architect and Elevator Consultant, equal to, or exceed, the quality of the specified product.

Where noted above, products manufactured by the list of Approved Elevator Manufacturers will be acceptable subject to complete compliance with the technical specifications written based on these guidelines.

Elevator Contractor may only substitute other manufacturers of Elevators Cabs and Elevator Hoistway entrance materials, subject to the following:

The Elevator Contractor must agree to an inspection by the Owner's Representative(s), Architect and Elevator Consultant (if used on project) of the Elevator Cabs and/or Elevator Hoistway Entrance materials at the factory after shop assembly, but prior to shipment to the project site.

Any deficiencies found after assembly at the factory shop must be corrected prior to shipment to the installation site. The Elevator Contractor shall schedule the shop inspection at least 20 days in advance of the physical inspection date to allow suitable arrangements to be made for inspection of the materials.

The substitution(s) must fully comply with the specifications contained herein, including design, quality of fabrication and fit, quality of materials and every other aspect of the specified products. The Elevator Contractor shall be responsible for all costs associated with correcting any deficiencies, or deviations from the specifications, caused by substitutions of material that is specified herein. Further, the Elevator Contractor shall be responsible for arranging for all travel time and costs of Architect and Elevator Consultant (if used on project) associated with visiting, or revisiting, the manufactures facilities to examine the work of any firm not on the approved bidders list. No extension of time in the completion schedule for the work will be granted as a result of the need to correct defects or deficiencies associated with the use of material substitutions.