

SECTION 14 20 10 - FREIGHT & PARKING GARAGE ELEVATORS

PART I - GENERAL

1.1 SECTION INCLUDES

*[NOTE to AE: The following lists requirements that are specific to freight elevators. These requirements are in addition to requirements set forth in the General Guidelines and other Technical Sections of these Standards. **Depending on the type of elevator chosen for the application, all requirements of Section 14 24 00 – Single Acting Hydraulic Elevator or Section 14 21 00 – Electric Traction Elevators must be followed.]***

General requirements for hydraulic or traction elevators shall apply to freight elevators as appropriate. Examples of this are controller manufacturers, oil line piping, fixture manufacturers, and travel distance restrictions.

1.2 RELATED DOCUMENTS

- A. *Section 01 76 00 – Protecting Installed Construction*
- B. *Section 14 21 00 – Electric Traction Elevators*
- C. *Section 14 24 00 – Single Acting Hydraulic Elevator*
- D. *Drawing 14 20 00-1, Elevator Pit Plan View*
- E. *Drawing 14 20 00-2, Elevator Pit Sectional View*
- F. *Drawing 14 20 00-3, Elevator Pit Ladder Detail*
- G. *Drawing 14 20 00-4, Overhead Machinery Space Access - Variance*
- H. *Drawing 14 20 00-5, Overhead Machinery Space Requirements*

1.3 QUALITY ASSURANCE

- A. Code Compliance: All equipment shall be installed in full accordance with the following rules, regulations and referenced standards.
 - 1. ASME A17.1 “Safety Code For Elevators and Escalators”
 - 2. International Building Code
 - 3. NFPA 70 National Electric Code
 - 4. NFPA 101 Life Safety Code
 - 5. The Illinois Accessibility Code
 - 6. International Mechanical Code
 - 7. All parts and components shall be U. L. Listed as applicable with ASME A17.1
- B. Hydraulic elevators less than 30 feet of travel shall operate at 100 to 125 feet per min (fpm); and from 30 feet to 45 feet of travel shall operate at a minimum of 125fpm to a max of 150 fpm. Traction elevators less than 50 feet of travel shall operate at 200 fpm and more than 50 feet of travel shall operate at 350 fpm.

1.4 PERMITS

- A. The elevator contractor must obtain a permit for installation from the Office of the State Fire Marshal, Elevator Safety Division. The contractor shall be responsible for the permit application fee and the preparation and submission of all required plans, specifications and application forms related to the elevator installation permit.

- B. A copy of the elevator permit for installation shall be provided to the University of Illinois Elevator Shop and the Project Manager.

PART 2 - PRODUCTS

2.1 FREIGHT ELEVATOR REQUIREMENTS

- A. Compliance: Each freight elevator shall comply with applicable requirements A17.1 and U of I Facilities Standards.
- B. C3 Loading Design Requirements: Freight elevators shall meet the C3 Loading design requirements as defined in ASME A17.1
 - 1. Building Sill Supports: The associated hall sills (if used) shall be constructed to accommodate these same loading requirements. Sills shall be steel, cast iron.
 - 2. Hall and Car sills: Hall and car sills shall be constructed for freight elevators to accommodate single piece loads on 18" x 18" four wheeled dollies equal to the full capacity of the elevator
- C. Flooring: Elevators designed for freight use only shall be provided with cab floors designed with non-slip diamond plate steel to prevent damage from heavy load concentrations.
- D. Passengers / Freight Elevators: Freight elevators that are also intended to carry passengers shall conform to all parts of ASME A17.1 and all applicable requirements listed in this Section.
- E. Capacity Plates: Capacity plates and signage are required in all freight elevators.
- F. Car Gates: Freight elevator car gates shall be manual single-speed vertical design.
- G. Low-Speed Guides: Freight elevators with car speeds of 125 fpm or less may be equipped with sliding type guide shoes. All sliding type guide shoes shall be equipped with a replaceable nylon gib for dry rail operation and shall have a stainless steel pan installed underneath each guide rail.

2.2 PARKING GARAGE ELEVATORS

- A. Car Sling & Frame: Car sling/frame shall be made of structural steel shaped components. No formed bent shaped components may be used for the car sling including but not limited to the stiles, crosshead, and safety plank.
 - 1. Paint: All components of car sling shall be primed and painted with rust inhibiting primer and Paint specifically designed for application in wet environments. Pre-job submittals shall include type of paint and primer used for car sling. Color as specified and approved by AE firm.
- B. Platform Construction: All code requirements shall be met for platform construction and the following items.
 - 1. Structural Steel Shapes: Steel Framework that makes up the perimeter of the platform shall be constructed of structural shaped steel with no bent shaped steel components. All components of Car platform shall be primed and painted with rust inhibiting primer and Paint specifically designed for application in wet environments. Pre-job submittals shall include type of paint and primer used for car platform. Color as specified and approved by AE firm.
 - 2. Stainless Steel Floor: Platform floor shall have a full continuous piece of 304 - 2B finish, 1/4" Stainless Steel with no open or un-welded joints.
 - 3. Platform Finished Flooring: Finished flooring shall be a commercial sheet vinyl minimum of 6' wide equal to Mannington "Assurance" brand. Vinyl shall be installed flush with the top of the car sill and following manufacturer's suggested installation instructions for metal surfaces using an Epoxy adhesive. All joints of the vinyl shall be joined by weld rod or similar process to provide a "seamless" installation to prevent leakage as much as possible. Sides of the cab floor area shall be provided with proper

means to bevel where the cab walls attach to the cab floor to prevent a shadowing effect of the sheet vinyl.

- C. Car Sill: Sill shall be made from stainless steel, bronze or nickel alloy and set above the platform to accommodate installing the finished flooring flush with the top of the sill without a filler material under the vinyl.
1. No Ferrous metals shall be used for shimming under car sill. Only stainless steel shims and mounting hardware may be used.
 2. Sill mounting bolts and any hardware used for mounting the car sill such as nuts, washers, etc. shall be stainless steel.
- D. Cab Enclosure: The cab(s) shall be constructed from all new materials with quality workmanship insuring all portions of the cab are level, true and square. All components shall be adequately and properly fastened as required for long life. All metal cab components shall be stainless steel of a minimum grade of 304 and galvanized as specified herein.
1. Stainless Steel bolts and shims: All Hardware used for the cab enclosure such as nuts, bolts, washers, etc. shall be stainless steel. All shims shall be stainless steel. All bolts anchoring cab walls to the floor shall be stainless steel.
 2. Walls: Cab walls shall be 20ga stainless steel with a "textured" #4 finish as provided by Rigidized Metals Corp [Note to AE: Include 2 additional Owner-approved manufacturers] laminated to 14 gauge galvanized metal. Reinforcements shall be provided as required to insure minimum deflection of the walls. Provide mastic sound deadening to shell exterior.
 3. Return Panels: Shall be minimum 20ga. stainless steel with the "textured grain" finish as provided by Rigidized Metals Corp Inc [Note to AE: Include 2 additional Owner-approved manufacturers] with a #4 satin finish laminated to 14 ga galvanized sheet metal from finished floor to transom. Adequate cutouts and reinforcements for car fixtures to be provided.
 4. Transom: Same stainless steel and galvanized sheet metal requirements as Return Panels.
 5. Canopy: Shall be constructed of 12ga minimum stainless steel #4 satin finish and located 96 inches above finished floor. An emergency exit shall be provided which may not be opened from within the cab.
 6. Lighting: Shall be via electronic ballast double tube fluorescent fixtures mounted within 14ga stainless steel light troughs that are located at the sidewalls of the cab. A perforated stainless steel protective guard shall be secured above each light trough with tamper proof stainless steel screws and of adequate size for maintenance. (Similar in design to G & R Elevator model 14222). Submit shop drawings prior to fabrication for Owner's approval.
 7. Car Doors: Car doors shall be minimum 20 gauge textured stainless steel with a #4 satin finish laminated to 14 gauge galvanized sheet metal and suitably reinforced and sound deadened.
 8. Ventilation: A fan shall be mounted on the cab top. Airflow shall be through a pattern of 3/8 inch holes punched into canopy of adequate number to allow proper airflow for fan. Submit shop drawings of canopy for approval prior to fabrication.
 9. Handrails: 3/8-inch by 2-inch stainless steel #4 satin handrail with ends returned toward the cab wall shall be provided at side and rear walls. Handrails shall be bolted through the wall and shall have stainless steel brackets that hold it off the wall no less than 1-1/2 inches. Handrails shall be attached to the wall with a 3/8-inch minimum mounting bolts.
- E. Hall Doors: Hall doors shall be provided in 20 gauge textured stainless steel with #4 finish adhered to 20 gauge galvanized sheet metal.
- F. Hall door frames: Hall door frames shall be provided in 20 gauge textured stainless steel with #4 finish adhered to 20 gauge galvanized sheet metal.

- G. Hall Sills: *[Note to AE: This is a frequently missed item.]* Surface of hall sills shall be set slightly higher than the lobby floor area to assist with preventing water from running down elevator hoistway.
- H. Struts Headers: Provide galvanized or painted Struts and headers: Non-galvanized struts must be painted with rust inhibiting primer and paint specifically designed for wet environments. Provide paint and primer specifications with bid proposal.
- I. Facia: Provide code compliant Galvanized or 304 stainless steel facia for hoistway fronts.
- J. Hall and Car Fixtures:
 - 1. Tamper Proof Fixtures: Provide all new required flush mounted Car and hall fixtures including car station, hall push buttons, car position indicator, and car riding direction arrows. All fixtures shall be of a tamper/vandal proof design.

PART 3 - EXECUTION

3.1 FINAL TESTING AND ACCEPTANCE

- A. The elevator contractor shall conduct preliminary functional testing to ensure that the elevator installation is complete and ready for acceptance testing. The elevator contractor shall then schedule an acceptance inspection of the installation with the third-party elevator inspector selected by the project and the University of Illinois Elevator Shop. Advance notice of the planned date of inspection shall be sent to the inspector and the Elevator Shop at least five (5) working days prior to the date requested.
- B. The elevator contractor will be required to complete the contractor's portion of the State of Illinois Conveyance Registration Form once the elevator equipment has arrived at the job site and the equipment serial numbers are available. The elevator contractor shall forward the form with the required information included, to the Project Manager for filing with the Elevator Safety Division of the Office of the State Fire Marshal. The registration of the new equipment will be handled by the University of Illinois.
- C. The elevator contractor and the other project contractors associated with the elevator installation shall provide assistance as required to demonstrate to the Elevator Inspector and the University of Illinois Elevator Shop that the elevator installation is in compliance with all of the requirements of the State of Illinois Elevator Safety and Regulation Act and the standards referenced herein. Upon completion of the inspection and a finding of no outstanding compliance issues, the elevator contractor shall provide the required statement of testing to the Project Manager for filing. The application for the Certificate of Operation will be processed and filed by the University of Illinois.
 - 1. The elevator contractor shall be responsible for any re-inspection fees required on the project that is caused by their omissions or errors.
 - 2. The elevator contractor is required to notify the Project Manager of any impingements upon the elevator installation by other contracting trades.
- D. Testing: Elevator contractor shall provide testing of load, speed, endurance, and operation in accordance with ASME A17.1 and II State elevator safety code requirements.
- E. Inspection and Acceptance: The U of I Elevator Shop shall witness final acceptance tests.

3.2 TRAINING

- A. Formal Training: Formal classroom training from the manufacturer shall be provided if Owner personnel have not previously received formal training on a proposed piece of equipment.
 - 1. Training: Elevator manufacturer shall provide training personnel to the University of Illinois Campus for the purpose of teaching and instructing an adjuster level training program to the U of I Elevator Shop personnel. At the Owner's option, 3 U of I Elevator Shop personnel may travel to the Contractor's Training Center. Contractor shall be responsible for the cost of the program. Owner shall be responsible for travel expenses. All training shall be made available prior to the end of the warranty period with reasonable and

adequate notice of a minimum of 90 days so that accommodations and scheduling can be accomplished.

2. On-Site Training: Contractor shall provide one 8-hour session of training at new installation locations on the complete operation, adjusting, and troubleshooting of the elevator system. Training shall include complete instruction on the use of any service or adjusting tools.

3.3 PAINTING & CLEANING NEW INSTALLATIONS

- A. Machine Finish, Cleaning and Painting of Equipment: All new installations, including modernization projects, shall be “touch up” painted and left in a clean condition and meet the following requirements.
 1. “Touch Up” Paint: All factory painted surfaces of machine, motors, governors, car slings, controllers, etc. that have been scratched, welded on, rusted, etc, shall be “touched up” with manufacturer’s standard color paint. Spray paint is not acceptable for touch up painting.
 2. Paint (no spray paint): All accessories such as unfinished machinery iron work, metal fittings, welded areas, guide rails, oil lines and fittings (except items such as conduit and wire ropes) that are exposed in the hoistways, pits, and machine rooms, shall be cleaned and painted with one coat of the manufacturer’s standard color enamel acceptable to the Owner. Gloss black paint may be used instead of manufacturer’s standard color on items such as guide rails, oil line, oil line fittings, and pit channels at manufacturer’s discretion. Factory painted surfaces of guide rails, oil line and oil line fittings, shall be considered an unfinished surface, and shall require cleaning and painting.
 3. Cleaning: All debris, dirt, mud, and dust from all surfaces inside hoistway, machine room, controller, elevator car frame, sill and other equipment shall be removed and left in a like-new clean condition.

END OF SECTION 14 20 10

This section of the *U of I Facilities Standards* establishes minimum requirements only. It should not be used as a complete specification.