

14 Conveying Equipment

NOTE: Significant revisions or additions to the previous standards are highlighted in italics. Some of the previous content has been re-organized but remains essentially unchanged.

GENERAL

Designers shall verify that all applicable portions of these standards are incorporated into the project's design, drawings, specifications and final construction. Requests for variances from these standards shall be submitted in writing to the FPD Project Manager, using the KU Standards Variance Request Form found in [Appendix A1.1](#), for review and written approval or rejection as indicated on the form.

RELATED DOCUMENTS AND REQUIREMENTS

Refer to the following for requirements that also apply to work of this section.

- ☐ Division 1 - General Requirements
- ☐ Division 10 - Signage: Includes signage related to elevators.
- ☐ Division 22 – Plumbing: Includes sump pumps in elevator pits.
- ☐ Division 28 – Digital, Addressable Fire Alarm System
- ☐ Appendix A14.1 - Elevator Telephones
- ☐ *Appendix A14.2 – Letter of Clarification on FA Devices – Shunt Trip with Diagram*

ELEVATORS - DESIGN GUIDELINES

General: Elevators and lifts shall meet current code, life safety and ADA requirements, shall provide adequate capacity, shall be aesthetically appropriate for the location and intended use, shall provide a safe and comfortable ride and shall be energy efficient. Elevators shall be sized to accommodate the anticipated occupant loads during periods of heavy use, with reasonable waiting times, and shall be provided with appropriately fast travel speeds.

- ☐ Elevators will be furnished in accordance with the Architectural Program and shall meet current codes and requirements of the Americans with Disabilities Act (ADA).
- ☐ *Any new elevators should include a 5-year warranty at minimum.*
- ☐ Elevators must utilize components, software, tools and equipment that can be procured by either KU or KU's elevator maintenance providers as needed for the ongoing testing, adjustments and maintenance of each elevator. Manufacturers who will not make the necessary maintenance items available shall not be approved for use on KU projects.
 - ☐ All passwords, equipment and training necessary to service the elevator shall be provided by the Elevator Contractor prior to acceptance.

- ☐ In situations where an elevator lobby is required but a full-sized, separate lobby is infeasible, it has been acceptable to OFPM and KSFMO to provide swing doors that are magnetically held-open and which close automatically upon fire alarm activation.

- ☐ *This amenability not applicable to new construction.*

- ☐ Provide a medical symbol on both jambs of each elevator entrance, for elevators sized to accommodate gurneys.

Elevator Types: Project Designers shall select the most appropriate type of elevator for each application and use.

- ☐ *Machine-room-less (MRL) elevators may be used if they meet the other requirements of these standards, particularly the use of components that can be procured by either KU or KU's elevator maintenance provider.*

- ☐ *All MRL elevators must receive written approval from Facilities Services.*

- ☐ Traction elevators shall be specified with steel cable hoist ropes. "Rubber band" style hoisting will not be allowed.
- ☐ Limited-Use, Limited-Application (LULA) elevators are discouraged and may only be used if a standard elevator is technically infeasible and as approved by FPD Director.
- ☐ Residential-grade elevators are not allowed.

Acceptable Manufacturers:

- ☐ **Elevators:** Otis, Minnesota Elevator/Dynatron, Kone.
- ☐ **Elevator Controllers:** Vertitron, Midwest Inc., Elevator Controls Corp., Motion Controls and Virginia Controls.
- ☐ **Door Operators:** GAL Manufacturing Corp or MAC Door Equipment.
- ☐ **Fixtures:** Monitor Controls Fixtures or Innovation Industries Inc.

Accessible Means of Egress / Exit Elevators: All new and replacement elevators in building three (3) stories or greater shall be provided with *accessible means of egress operation, intended for 'assisted rescue' exiting as defined by the ICC for persons with disabilities*, and shall be provided with back-up power from an emergency generator.

- ☐ Provide an accessible exit symbol on both jambs of each accessible egress elevator entrance.
- ☐ *In situations where elevators are not required to be connected backup power per code, a battery backup shall be provided to return the elevator to primary floor.*

Fire Alarm Exit Elevator Status Annunciator: All accessible exit elevators shall receive annunciators on each floor in accordance with NFPA 72, sections 21.6.2.1 and 2.2.

- ☐ Color of annunciator enclosure shall be verified with FPD PM on each project.

New Car Enclosures: Cars shall include wall studs for protective mats. Verify with users if mats are to be provided by the elevator supplier as part of the construction work, or if they shall be a future item KU will provide as needed.

- ☐ Install an ADA-compliant handrail at the rear of the car and bump rails on the sidewalls.

- ❑ Indicators: Locate the car digital position indicator over the transom or within the car operating panel. Place the car direction indicators in the car door frame, where they will be visible from the immediate vicinity of the hall pushbutton.
- ❑ Removable ceilings are recommended for ease of maintenance.

Existing Car Enclosures: In buildings to be totally renovated or where elevators are to be upgraded to meet the ADA Standards *and/or code requirements*, existing elevator cars shall be increased in size to meet the ADA Standards, unless technically infeasible due to shaft size limitations.

- ❑ When technically infeasible to completely comply with the ADA Standards for elevator cab size, elevator cars shall be increased in size to the largest possible size within the existing shaft limitations, subject to the approval of the authority having code jurisdiction.
- ❑ The University has found that the minimum interior car size can be more closely met when existing control panels are moved from the front wall to the side wall adjacent to the entry door, so the front wall can be moved out.

Controls: Braille shall be integrally cast into new number plates, and if retrofit to existing controls, shall be mechanically attached or epoxied onto existing controls; double-stick tape is not acceptable.

- ❑ **Key controls** are required for access to floors or roofs with non-public or restricted access. Key controls must incorporate KU's standard Medeco key cylinders and must be keyed per KU's directions to fit within the KU master-keying system, with the exception of fire service keys.
 - *End users can also consider access control to restricted floors or roofs upon approval of FPD.*
- ❑ **Fire Service Key:** The only acceptable key is the FEO-K1 key per the Lawrence Fire Department.

Elevator Controllers: Provide new, solid state, variable-frequency controllers. All controllers must be non-proprietary programmable and have on-board diagnostics.

- ❑ If special tools are required to work on the elevator controller or any other elevator components, the requisite tool(s) must be provided and shall become the property of KU, and will not be removed from the campus at the completion of the installation work.
- ❑ The elevator contractor must supply complete adjusting and diagnostic information which may be necessary to adjust or correct any problem within the solid-state system. These diagnostic programming and adjustment tools and information must be non-expiring and upgrades for these diagnostic tools are to be included in Elevator Contractor's proposal.

Elevator Equipment Room: Integrate the elevator penthouse into the overall building architectural design to create a unified and compatible appearance from the exterior. Provide approved stairs for access to elevator equipment rooms. Ship's ladders and alternating tread stairs are prohibited. Equipment unrelated to the elevator is prohibited in the elevator equipment room.

- ❑ **Climate Control:** Maintain temperature as recommended by manufacturer.
- ❑ **Data/Communications:** Elevator Contractor to reference [Appendix A14.1](#) for required work.

- ❑ **Sound Control:** If elevator equipment room is adjacent to an occupied space, provide drop seal and sound gaskets on doors, with sound insulation in walls. The A/E is responsible for determining if additional sound absorbing materials are needed inside of the elevator equipment room to meet program requirements.

Emergency Communication System: Provide hands-free audio two-way emergency communication between each car and the KU 24-hour monitoring service. System shall automatically dial pre-programmed number of KU's monitoring service, which shall be provided by the KU Public Safety Office. No pre-recorded announcement shall be included, since it is unnecessary within the University's voice system and is contrary to KU Public Safety Office protocols. System is to be contained in flush-mounted cabinet complete with identification and instructions for use.

- ❑ **Elevator Emergency Phone:** (Furnished and installed by Contractor) Model VRT-1500 flush-mount, vandal-resistant unit with visual signal and push-to-talk button (no handset), as manufactured by Lincoln Land Enterprises, (708) 371-2477, Fax (708) 371-2449.
 - ❑ Provide unit with voice box (VR-44) to communicate with monitoring service. No substitutions are acceptable.
 - ❑ Designers shall show on the construction documents a 1" conduit with a single-gang box at each end, extending from the closest available KU-IT closet to the elevator equipment room adjacent to the elevator control panel, for provision by the Contractor.
- ❑ The Elevator Contractor shall be required to connect the KU-IT-furnished station/patch cable to the elevator telephone via the elevator control panel and plug this cable into the voice outlet. The Elevator Contractor shall then program the elevator telephone and test its operation, in the presence of KU-FPD reps, until it has been verified as operational.
- ❑ **Appendix A14.1 - Elevator Telephones:** Refer to this appendix for a detailed graphic explanation of the coordination requirements of the work to be provided by KU-IT, the Elevator Contractor and the Electrical Contractor.
- ❑ **Elevator Cameras:** *Contractor will be required to provide camera network pathway and cable via dedicated Cat 6a cable. Owner will spec and provide physical camera for elevator, so it is compatible with owner CCTV system.*

Finishes: Materials in passenger and freight elevators shall be designed for hard usage in terms of hours and wear-and-tear.

- ❑ Satin stainless steel is recommended for use on front wall, reveals, door faces and integral door frames, and handrails for maximum durability.
- ❑ Textured stainless steel is recommended on side and rear wall panels for maximum durability and low maintenance.
- ❑ Floor finishes are to be provided by the General Contractor, and shall match those in adjacent lobbies, unless approved otherwise by FPD Project Manager.
 - ❑ A/E shall list this on the Finish Schedule, or note it in the construction documents.

Elevator Shaft: Items that are not directly related to the elevator are prohibited in the hoistway shaft, including conduit or ductwork that crosses through it.

- ❑ Shaft walls shall be inspected and confirmed during construction to be fully fire-stopped to adjacent structural and roof components.

Elevator Pit: Items unrelated to the elevator are prohibited in the elevator pit.

- ☐ Designer shall include a sump pump in all elevator pits at the University. This is required by code on all elevators with Fire Service features.
- ☐ Hydraulic elevator sump pumps shall include an integral oil sensor so the pump will not operate if hydraulic fluid is contaminating the water, and which will also sound an alarm at a location designated by KU.
- ☐ All sump pumps shall be *extended to drain*, in a manner approved by the code authority having jurisdiction.

Field Quality Control: Prior to placing the elevator into service, the Contractor will schedule an inspection of the equipment. The final inspection will include representatives of the Elevator Contractor, A/E, FPD, OFPM, KSFMO, *FPD Code Compliance Coordinator*, and FS Instrumentation.

- ☐ The Contractor shall provide a copy of the test report for weight loading as a part of the acceptance tests required by ANSI 17.1, and shall include a copy of this report in the O&M manuals.
- ☐ Before acceptance, elevator contractor shall provide four (4) sets of keys for door, firemen's service, control cabinets and maintenance bypass.
- ☐ All elevators and related equipment shall be accepted by the University only after it is approved by the AHJ Inspector and the University Fire Marshal.
- ☐ *Contractor shall familiarize themselves with the State of Kansas Elevator Safety Program and shall provide applicable information to owner in order to comply.*

Temporary Construction Use: Contractors who wish to use the elevator during the construction period shall make satisfactory arrangements with the Elevator Contractor, who shall remain responsible for its use and maintenance during the construction period.

- ☐ Usage by contractors or suppliers shall not void or alter the warranty or guarantee provisions for the elevator. Contractors shall arrange for extended warranties at their own expense, if necessary to reinstate the Owner's specified warranty periods.

Submittals: The Contractor shall provide a certified statement that the elevator manufacturer will provide all detailed electrical schematics for maintenance and service of equipment. Shop drawings are not to be approved until after this information is provided.

- ☐ All special tools normally required for programming and service shall be included. This shall include all connection wiring diagrams and circuit board diagrams, including all normal voltages, component ratings, wave forms and similar information required for full service/repair of all parts.
- ☐ The Director of Facilities Services will provide a proprietary nondisclosure statement if required by the manufacturer.

Elevator Extended Warranty / Maintenance Agreement: The Elevator Contractor shall provide a special extended project warranty and maintenance agreement that includes complete maintenance and call-back servicing of the equipment for a period of **five (5) years**, twenty-four hours per day, seven days per week, after the established Date of Substantial Completion of the Work.

- ☐ A copy of this five year warranty and maintenance agreement shall be submitted to KU for review and approval, prior to the A/E's approval of the shop drawing submittals.
- ☐ It shall include all necessary adjustments, greasing, oiling, cleaning, supplies and parts to keep the equipment in good operation, except such parts made necessary by misuse, accidents or negligence not caused by the Contractor.
- ☐ Elevator service personnel must advise *FS Work Management* (785-864-4770, or facilities@ku.edu) of their presence on campus prior to servicing equipment. Failure to do so is sufficient grounds for the University to deny any claims for additional compensation, if applicable.
- ☐ The Elevator Contractor shall provide monthly service inspections during the warranty/maintenance period, and shall perform monthly testing of the Fire Service, alarm bell and emergency communication devices.
 - ☐ Copies of the monthly inspection results shall be issued to Work Management.
- ☐ The Elevator Contractor shall notify *FS Work Management* in writing 60 days prior to expiration of the maintenance agreement / warranty.
- ☐ During the 11th month warranty inspections, an inspection of the elevator equipment shall be conducted to verify that all major component parts are operating as designed. Any deficiencies found shall be corrected *immediately by the Elevator Contractor*.

CHAIRLIFTS - SECTION 144119

- ☐ General: Vertical wheelchair lifts are discouraged and shall be used only when allowed by code, and with the approval of FPD and the authorities having jurisdiction.
 - ☐ Stair-glide lifts shall not be used, due to constant operating and maintenance problems for KU.
- ☐ Key Controls are recommended, with signs posted at each stop advising users where keys can be located at a departmental office reception area or other full-time post.

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