SECTION 14 20 00
ELEVATORS

PART 1 GENERAL

1.1 PURPOSE

A. SCOPE OF STANDARD

1. This standard provides general guidance concerning the specific preferences of Denver Public Schools (DPS) for elevator, escalator, platform lift, and material lift basic requirements.

2. This document is intended to provide useful information to the General and Elevator Contractors to establish a basis of design. The responsibility of the engineer/architect is to apply the principles of this section and the ones that follow so that the DPS may achieve a level of quality and consistency in the design of their facilities.

3. DPS recognizes that project conditions and requirements vary, thus precluding the absolute adherence to the items identified herein in all cases. However, unless there is adequate written justification, it is expected that these criteria will govern the design and specifications for DPS projects.

1.01 CODES AND STANDARDS

A. International Code Council

B. American Society of Mechanical Engineers (ASME)
   1. A17.1 Safety Code for Elevators and Escalators
   2. A17.2 Guide for Inspection of Elevators, Escalators, and Moving Walks
   3. A17.3 Safety Code for Existing Elevators and Escalators
   4. A17.5 Elevator and Escalator Electrical Equipment
   5. A17.6 Standard for Elevator Suspension, Compensation, and Governor Systems
   6. A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts
   7. QE1-1 Standard for the Qualification of Elevator Inspectors

1.02 WARRANTY

A. The elevator contractor shall provide an 24-month warranty.

B. Warranty shall begin at the date the Substantial Completion date that has been signed by Denver Public Schools (DPS).

1.03 MAINTENANCE SERVICE

A. The elevator contractor shall be responsible and provide for all service and maintenance for the duration of the 24 month warranty period. Maintenance Service shall begin at the date the Substantial Completion date that has been approved and signed by DPS.

PART 2 ELEVATOR BASIC REQUIREMENTS

A. Elevators shall utilize non-proprietary controls for operational, motion, and motor controls; any ancillary equipment shall also be non-proprietary. The design of elevator systems shall give preference to parts that will minimize the cost of future replacement parts. Proprietary Controls shall be allowed for new installations when approved by DPS prior.

B. Each elevator shall be provided with one set of "as built" electrical wiring diagrams laminated on both sides of each sheet with heat applied clear plastic, and one electronic copy of the "as built" wiring diagrams.
C. Elevator motors shall have Class IE2 efficiency rating or higher.

D. Elevator motors shall:
   1. be rated for elevator duty;
   2. one hundred twenty (120) starts per hour;
   3. have class H or better insulation of the windings.

E. The traction elevator motor drive shall recover potential energy released during motion and return it to the power grid. (Regeneration).

F. Traction elevators shall use gearless machines. If a geared machine is used the transmission shall not reduce the efficiency of the combined motor/transmission below that shown for the gearless Class IE2 motor.

G. Hydraulic elevator machines shall:
   1. Power units shall be provided with secondary containment for the full capacity of the oil tank.
   2. Hydraulic elevators shall be limited to 125 FPM. (at 150 FPM valves are inconsistent when oil heats up)
   3. Provide an oil cooler and tank heater or means to maintain viscosity.

H. Passenger Elevators shall have a minimum capacity not less than 2000 pounds. Capacity shall not be less than 3,500 when required by Authority Having Jurisdiction (AHJ) for ambulance stretcher accommodation is required.

I. Service Elevator shall have a minimum capacity not less than 4000 pounds

J. All electrical wiring that passes through or over metal panels shall be protected from abrasion.

K. All light sources (LED) for elevator cab interior, machine/control rooms/spaces, pit, and hoistway shall have an efficacy greater than or equal to fifty (50) lumens/watt

L. New installations the cab ventilation shall have an efficacy greater than or equal to 3.0 CFM per watt (0.085 m³/min./watt).

M. Elevator controls shall be capable of automatically switching car lighting to standby mode during light traffic situations. The controls shall automatically turn off the car light and fan to save energy.

N. The elevator controller shall be compatible with the card reader access control system. Provide new PIN/PIN proximity keypad readers shall be located outside of the car adjacent to the jamb of the elevator door above or below the call button (do not exceed ADA height limitations). Controlled access via proximity reader or a security pin shall be required to select the car. There shall be no in-car controlled access for floor selection. Keypad reader shall be Owner approved prior to installation. Provide the ability to “lock-out” floor calls and scale the degree of security access to each elevators within the Elevator Control System. Interface new Elevator Control System with existing Building Security System.

O. The elevator controls shall be compatible with the emergency or standby power system when provided. Manual selector switches shall be provided in the fire control room and/or elevator lobby when required due to limited capacity of the emergency power system.

P. Elevators shall be equipped secondary or auxiliary power supply backup power when commercial power is lost, safely delivering the elevator car to a landing and maintaining door power so passengers can exit. Batteries shall have minimum of 5 years with backup run time of 8 minutes.

Q. Elevators shall be provided with an audible signaling device, operable from a switch marked "ALARM" which is located adjacent to the button to activate the phone.

R. Elevator Emergency Control buttons (Alarm and Phone) shall have their centerlines at thirty-five (35) inches minimum above the finished floor. The maximum height of the operable parts of the Emergency Control buttons shall be thirty-eight (38) inches above the finished floor (AFF).

S. Emergency Elevator communication system for the deaf, hard of hearing and speech impaired. All new elevators and modernization of existing elevators shall be equipped with a emergency elevator communication system that complies with ICC and ASME A17.1. The communication system shall be equipped with YES and NO buttons.
T. Elevator machine rooms or machine spaces that contain elevator equipment shall be provided with mechanical air-conditioning system as required by the manufacture and ICC. Machine room temperature shall be between 65 to 85 F non-condensing.

U. Fire Protection shall be in accordance with DPS Standards Division 21 and Division 28.

V. Elevator shunting when required shall be in accordance with DPS Standard Division 26

PART 3

3.01 MANUFACTURERS
A. KONE
B. Otis
C. Schindler
D. ThyssenKrupp
E. Minnestoa Elevator Inc. (MEI)

3.02 EQUIPMENT
A. Platform size:
   1. Platform size shall accommodate ADA requirements (minimum) according Accessible and Useable Buildings and Facilities A117.1 as adopted by the Authority Having Jurisdiction (AHJ)
   2. Larger platforms may be appropriate for when required by the AHJ
B. Type:
   1. Hydraulic (holeless) No inverted or telescopic cylinders.
   2. Traction
   3. Machine Room Less (MRL) are not allowed.
      Exception: MRL type of elevator shall be only allowed when approved in writing by DPS for new installation within existing buildings only.
C. Emergency Elevator communication system
   1. RATH Communication “SmartView” with Visual and Texting-base
D. Emergency telephone:
   1. Provide vandal-resistant telephone set with emergency pushbutton dialer, and “hands free” use for microphone/speaker concealed behind perforated panel-mounted.
E. CCTV
   1. Provide provisions for CCTV, two RG11 cables from labeled junction box on the car top to junction box in the machine room.
F. Fixtures
   1. All pushbuttons and lanterns shall be vandal resistant design.
   2. Provide hall or dual car lanterns
   3. Position indictors shall be LED segmented alpha numeric with a minimum of 2” high characters.
G. Keys:
   1. Provide three (3) sets of elevator keys to DPS, including
      a) Cab hall call key
      b) Hostway vent key
      c) Fire recall key
d) Custodial override (run/stop) key

e) Pit access key

2. Verify or provide keyed switch labeled “Hostway Vent” located adjacent to Fire Department switch at primary level when hoistway venting is existing.
   a) Keyed switch shall be rotating type only.

3.03 MATERIALS
A. Finishes:
   1. Doors and door frames:
      a) Satin finish No. 4 stainless steel in all passage elevators.
      b) Painted steel in all service elevators
   2. Cab floor:
      a) Vinyl composition tile (VCT) to match VCT elsewhere in building.
      b) Carpet flooring is prohibited in elevator cabs.
   3. Cab ceiling:
      a) 8 foot minimum ceiling height.
      b) Integral lighting: LED fixtures above ceiling panels.
      c) Ceiling panels: Lay-in translucent.
   4. Cab walls:
      a) Brushed stainless steel.
      b) Textured architectural metal as Rigidized 5 WL pattern or equivalent
      c) Plastic laminate panels are prohibited.
   6. Accessories: Pad hooks and protective wall pads.
B. Control & Call Station Trim: No 4 Satin finish stainless steel.

PART 4 EXECUTION
4.01 INSPECTION
A. Final inspection by the Elevator Inspector (State of Colorado and Denver Fire Department) shall be conducted in the presence of the A/E and DPS.

4.02 DEMONSTRATION
A. The elevator installer shall provide complete operation training for DPS staff.
B. Training shall include (but not necessarily be limited to)
   1. Enabling and disabling the elevator/
   2. Instruction in the operation of all safety devices/
   3. Instruction in the activating of all “reset” devices in any part of the elevator equipment/
   4. Instruction in the normal operating condition and inspection of equipment to determine if maintenance is needed/
   5. Instruction for reprogramming the keypad access system/
   6. Demonstration of all fire-alarm condition functions and the reset and clearing of these functions when alarm conditions are removed
END OF SECTION 14 20 00