

**HOSPITAL STANDARDS**

**203.401 BUILDING COMPONENTS, SERVICES, CONVEYING**

This document contains requirements for superstructure elements for a hospital building and is in alignment with the UniFormat II, Level 2 classification – D10. The document is subdivided into the following parts per the UniFormat II, Level 3 classifications.

UNIFORMAT II classification					MoP Document Number	
Level 1 Major Elements		Level 2 Group Elements		Level 3 Individual Elements		
D	Services	D10	Conveying	D1010	Elevator and Lifts	203.401
				D1020	Escalators and Moving Walks	
				D1030	Other Conveying Systems	

[ELEMENT D1010, ELEVATORS AND LIFTS](#). Includes general design requirements for finish surfaces on interior vertical surfaces. Specific items of note include:

1. Design requirements
2. Types of elevator operation
3. Types of elevator use
4. Cab finishes
5. Controls and signals
6. Warranty

**ELEMENT D1010, ELEVATORS AND LIFTS**

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**PART 1 - GENERAL****1.01 OVERVIEW**

- A. Document includes requirements for elevators within a hospital building.
- B. Refer to the Elevator Guideline in Chapter 1 for description of types of elevators, characteristics, procedural requirements, and design considerations.
  - 1. Holeless Hydraulic - Single Stage Cylinder
  - 2. Holeless Hydraulic - 2 Stage Cylinder
  - 3. Holeless Hydraulic - 3 Stage Cylinder
  - 4. Holed Hydraulic
  - 5. Rope Hydraulic
  - 6. Machine Room-Less Traction
  - 7. Geared Traction
  - 8. Gearless Traction
- C. Refer to the Elevator Guideline in Chapter 1 for description of the elevator categories by use. The following elevators are to be included in hospital buildings as dedicated use elevators.
  - 1. Passenger, General/Public Use.
  - 2. Passenger, Staff/Clinical Use.
  - 3. Service, Supply
  - 4. Service, Freight

**PART 2 - DESIGN CRITERIA****2.01 GENERAL**

- A. The selection of elevator types, function, location, capacity, speed, and many other factors influences the layout of a building. In addition, different manufacturers of the same or similar elevator type may have different dimensional requirements. In order to accurately develop the design around a specific elevator, it is important to determine the elevator system, its characteristics and ultimately the manufacturer before the design is complete. As a result, BJC will engage the services of an elevator consultant, unless otherwise directed, early in the design process to develop the basis-of-design elevator specifications and to secure the cost of the elevator components in a competitively bid environment.
- B. Coordinate elevator type and manufacturer with entity specific standards, existing conditions and project requirements. Each entity may have existing service and

maintenance agreements with a particular elevator manufacturer and those services need to be considered when specifying and selecting the basis-of-design system.

- C. Elevators in hospitals shall be dedicated use to improve operational efficiency and minimize infection risks.
- D. All elevator finishes shall be reviewed and approved by the BJC Design Project Manager and with the BJC Director of Design. Provide

## 2.02 PASSENGER, GENERAL/PUBLIC USE ELEVATOR

- A. The following requirements for General/Public Use Elevators in a hospital building apply. These elevators are intended for public use and are generally not restricted, however access to some floor levels may need to be controlled. These elevators should be located in high visibility locations near the entrance lobby and at main corridor intersections. Elevators should be located within a 200 foot walk in any direction on every floor within the building. Consider locating a stair near general/public use elevator core.
  - 1. Capacity: 3,500 pounds, minimum.
  - 2. Quantity: As determined by elevator consultant report but no less than 2 cars.
  - 3. Speed: 350 feet per minute, minimum for mid and high rise length of travel. 150 feet per minute for low rise length of travel, minimum.
  - 4. Operation: grouped operation.
  - 5. Opening size: 3'-6" x 7'-0" minimum.
  - 6. Opening: Centered in cab, center opening door (bi-parting).
  - 7. Cab control stations: dual car control station at each side of door.
  - 8. Button: Vandal resistant stainless steel with 100,000 hours life LED type indicators. Large button main level.
  - 9. Inside cab dimensions: 6'-8"w x 5'-5"d minimum.
  - 10. Cab construction: Rigidized stainless steel walls.
  - 11. Cab finishes: Coordinate with BJC Design Project Manager and BJC Director of Design.
  - 12. Cab features: Handrail 3 sides.
  - 13. Lanterns: Hall lanterns each lobby, hall position indicator at primary/main floor.

## 2.03 PASSENGER, STAFF/CLINICAL USE ELEVATOR

- A. The following requirements for Staff/Clinical Use Elevators in a hospital building. These are intended for the movement of patients and medical equipment by clinical staff and as such must be readily available and must be able to accommodate the size and weight of items being transported. Location of these elevators shall support the clinical operations.
  - 1. Capacity: 5,000 pounds, minimum.
  - 2. Quantity: As determined by elevator consultant report but no less than 2 cars.

3. Speed: 350 feet per minute, minimum.
4. Operation: grouped operation (with hospital emergency service operation)
5. Opening size: 4'-6" x 7'-0" minimum.
6. Opening: Side of cab bias, two speed operation (telescoping).
7. Cab control station: single car control station
8. Button: Vandal resistant stainless steel with 100,000 hours life LED type indicators.
9. Inside cab dimensions: 5'-8"w x 8'-5"d minimum.
10. Cab construction: Rigidized stainless steel walls.
11. Cab finishes: Coordinate with BJC Design Project Manager and BJC Director of Design.
12. Cab features: Stainless steel bumper rails.
13. Lanterns: Hall lanterns and hall position indicator at all floors.

#### 2.04 SERVICE, SUPPLY ELEVATOR

- A. The following requirements for Supply Elevators in a hospital building. Supply types include elevators for transporting clean equipment and supplies to floors for use and for transporting dirty equipment and soiled materials for processing. Items are typically transported on carts. Supply Elevators are restricted access and a minimum of 2 elevators shall be provided, dedicated clean and dirty use.

1. Capacity: 3,500 pounds, minimum. Verify capacity with BJC Director of Design, BJC Clinical Asset Management, and Facility Engineering.
2. Quantity: As determined by elevator consultant report but no less than 2 cars.
3. Speed: 350 feet per minute, minimum.
4. Opening size: 3'-6" x 7'-0" minimum.
5. Opening: Side of cab bias, two speed operation (telescoping).
6. Cab control station: single car control station
7. Button: Vandal resistant stainless steel with 100,000 hours life LED type indicators.
8. Inside cab dimensions: 6'-8"w x 5'-5"d minimum.
9. Cab construction: Rigidized stainless steel walls.
10. Cab finishes: Coordinate with BJC Design Project Manager and BJC Director of Design.
11. Cab features: Stainless steel bumper rails.
12. Lanterns: Hall lanterns and hall position indicator at all floors.

#### 2.05 SERVICE, FREIGHT ELEVATOR

- A. The following requirements for Freight Elevators in a hospital building. Freight types include elevators for transporting large and heavy equipment and/or supplies. Depending on the arrangement of the facility, often these elevators will communicate between Kitchen and Material Management (loading dock). These elevators often do not include more than 2 stops.

Items are typically transported on pallets and pallet jacks. Freight Elevators are restricted access.

1. Capacity: 5,000 pounds, minimum. Verify capacity with BJC Director of Design, BJC Clinical Asset Management, and Facility Engineering.
2. Quantity: As determined by elevator consultant report.
3. Speed: 100 feet per minute, minimum.
4. Opening size: 7'-8" x 8'-0" minimum.
5. Button: Vandal resistant stainless steel with 100,000 hours life LED type indicators.
6. Cab construction: Rigidized stainless steel walls.
7. Cab finishes: Coordinate with BJC Design Project Manager and BJC Director of Design.
8. Cab features: Stainless steel bumper rails. Provide stainless steel protective pad hooks and one (1) set of quilted fire-retardant pads.

## 2.06 MISCELANEOUS ELEVATOR CRITERIA

### A. Elevator Cab

1. All elevators shall have stainless steel doors and frames, ASTM A 666 stainless steel panels, #4 satin finish unless otherwise directed.
2. The car roof hatch shall be removable by thumb screws from the top of the car only.
3. Provide a cartop-operating device including service light and switch, and a mobile control for inspection and servicing, as well as one (1) 120-volt, 20-amp A/C duplex receptacle.

### B. Communications and Security

1. Provide and install a two-way communication system to comply with ANSI ASME A17.1 section 2.27.
2. Contractor to coordinate installation of coax cables as required.
3. Provide necessary conductors to accommodate in-cab card readers.
4. Coordinate requirements with the security contractor and engineer of record. If specific entity requires cameras in cabs, blocking shall be provided for cameras to be corner-mounted in each car. Provide one (1) GFI outlet on top of the car for the camera; coordinate location with Owner and with elevator supplier.
5. All cars shall have the capability to be monitored from a remote location via data connection by Contractor.
6. Elevator access to mechanical rooms shall be key-controlled or card access controlled.

### C. Elevator Components and Mechanisms

1. All hoist ropes shall be steel.
2. Hydraulic elevators shall be equipped with viscosity control and oil coolers.
3. Guide rails shall span floor-to-floor without intermediate supports. If intermediate brackets and related support structure must be provided, the

elevator shaft and surrounding wall shall be designed and sized to allow continuation of the fire resistance rated shaft wall construction without interruption by support structure.

D. Electrical

1. 110v standby power is needed to feed alarm bell.
2. Shunt trip breakers are required if sprinklers are present in shaft or machine room.
3. Each elevator shall meet the requirements required under the most current ASME A17.1.

E. Machine Room

1. The elevator machine room shall be adequately ventilated and accessed by means of an outwardly swung fire-rated door measuring at least 3'0" x 7'0". The door must be outfitted with a spring closer and lockable handset. Ambient room temperature to be maintained between 60 and 100 degrees Fahrenheit.
2. Non-elevator related equipment or piping may not be run through this room.
3. The elevator mainline electrical disconnect and the machine room light switch must be located adjacent to the machine room door and arranged so they may be accessed without entering the room. Electrical main disconnect and 110v disconnect must both be fused.
4. Clearance shall be provided for all control panels and equipment cabinet doors to open at least 90degrees, and at least three (3) feet free of obstructions shall be provided on all sides of machinery or as required by governing codes and by manufacturer's requirements.
5. The machine room must be equipped with a minimum of one (1) wall-mounted fire extinguisher.

F. Signalization, Controls and Signage

1. All elevator indicator illumination and signalization shall be LED type.
2. All Braille pieces shall be mechanically fastened.
3. All instructions shall be engraved.
4. All hall and car control stations shall comply with the latest regulations of federal ADA law and most current ASME A17.1 provisions for the handicapped. Install 'Best' key switches for each floor button for floor cutouts and independent service.
5. All car operating panels shall contain, at a minimum, the following:
  - a. A call button for each floor served.
  - b. "Door Open" and "Door Close" buttons.
  - c. Three (3) position key switches/locks, all floors, except the main landing. The positions shall be lock on, lock off, spring-loaded "call" switch position which automatically returns to "lock off".
  - d. "Alarm" button, connected to a normal and separate emergency circuit.
  - e. "Elevator Stop" key switch.
  - f. Car position indicator.

- g. Hands-free two-way in-car communications system.
  - h. Three (3) position firefighter key-operated switch, all cancel button, and illuminated/visual/audible signal system.
  - i. A locked service cabinet containing the key switches required to operate and maintain the elevator.
6. Hall call stations shall provide a single button at each terminal floor and two (2) button units at all intermediate floors. Faceplates should be engraved, "In case of fire, Do not use elevator." Mounted with tamper-proof screws. Install a firefighter key switch at the main egress floor station. Engrave Phase I firefighter's service operating procedures directly to call station faceplates. Coordinate signage with BJC Sign Shop.
- G. Elevator Pit and Hoistway
- 1. The pit ladders, pit light switch and emergency stop button shall be so arranged so that all can be reached before entering the shaft. All devices shall be higher than 24 inches above finished floor. An additional stop switch, accessible from the pit floor, may need installed in the pit if the bottom floor accessible stop switch cannot be reached from the pit floor.
  - 2. Provide a sump pit, within the elevator pit, covered with a steel plate flush with the floor.
  - 3. GFI convenience outlet shall be installed in the pit, higher than 24 inches above finished floor.
  - 4. Provide a dedicated 20A normal circuit for GFI receptacle(s) and required lighting fixtures. Provide two (2) 2-lamp 48 inch shallow depth lensed T8, T5, or LED luminaires in the pit and one at each landing above the pit. Mount luminaires vertically in a corner, except pit luminaires may be horizontal. Mount all devices higher than 24 inches AFF in the pit.

## PART 3 - SPECIAL CONTRACT DOCUMENT REQUIREMENTS

### 3.01 GENERAL

- A. In addition to incorporating all applicable life safety and building code requirements, provisions described within this document shall be included within the contract documents.
- B. Design team to develop an elevator study to confirm quantity, capacity, size, and speed of elevators. Provide a copy of the elevator study to the PD&C project manager. Study should include the number of elevators and how they are grouped; their sizes, speeds, types, and finishes; and similar requirements. Some of these decisions may be determined by an elevator optimization analysis or by a comparison of initial costs with energy and maintenance costs, and some may be determined by weighing costs versus service quality (occupant satisfaction). For information on elevator traffic analysis, see the *Architect's Handbook of Formulas, Tables, & Mathematical Calculations*, by David Ballast, or *The Vertical Transportation Handbook*, edited by George R. Strakosch. For initial, energy, and

maintenance cost information, consult manufacturers, building management firms, elevator consultants, or cost consultants.

- C. Cab lighting shall comply with requirements of ANSI/ASHRAE/IESNA 90.1.
- D. Where custom cab finishes occur, provide interior elevator cab plans and elevations to identify materials.

### 3.02 PERMITS AND INSPECTIONS

- A. Contractor shall file necessary drawings for approval of all authorities having jurisdiction, obtain and pay all required fees for permits and inspections, etc., which may be required for the execution of this work. Copies of all permits shall be forwarded to the Owner.
- B. Contractor shall furnish all test instruments and materials required at the time of final inspection. The inspection outlines in the ASME A17.2 Inspector's Manual (latest edition) will be followed.

### 3.03 MAINTENANCE AND INSTRUCTION MATERIAL

- A. BJC must receive 3 (three) complete sets of all electrical schematics, including printed circuit boards, mechanical drawings, service manuals, and diagnostic/service tools that are available to elevator manufacturer's installers and service personnel. These shall include all control wiring, shall show all solid-state circuits, and shall identify all electric and electronic components as originally installed including all field adjuster notes. The name of the manufacturer and the manufacturer's catalog number shall be provided for all components not manufactured by the elevator installer.
- B. A complete parts list, recommended lubricants and a recommended spare parts list shall also be provided to the Owner.
- C. BJC must receive all required drawings, manuals and parts lists before final payment is made to the Contractor. The fact that a drawing, manual or maintenance tool may contain proprietary information is not considered by BJC to be sufficient reason for refusing to furnish any drawing or manual.
- D. Furnish one (1) complete set of all diagnostic tools, equipment, and documentation required for the complete maintenance of all aspects of the control and dispatch, including a "mechanic's" service tool. Any diagnostic system shall be an integral part of the controller and provide user-friendly interaction between the serviceman and the controls. The Documentation shall include a description of component function, a hard copy of all as-built schematics, a hard copy set of source codes utilized in developing any control software, and an electronic copy of all source codes utilized. Any and all such systems shall be free from secret codes and decaying circuits that must be periodically reprogrammed by the manufacturer.
- E. Drawings are to be laminated both sides for protection. Prints to be hole punched and bound with metal two metal rings in flip chart fashion. Contractor shall furnish



and install a metal cabinet to store the as built drawings in the elevator machine room.

## PART 4 - PRODUCTS

### 4.01 GENERAL

- A. Coordinate with entity specific standards regarding acceptable manufacturers and products.
- B. Subject to compliance with requirements, provide elevators by one of the following:
  - 1. Kone Inc.
  - 2. Otis Elevator Company
  - 3. Schindler Elevator Corporation
  - 4. ThyssenKrupp Elevator

End of D1010 – Elevators and Lifts

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**RESPONSIBILITY MATRIX**

The following matrix identifies those individuals, roles or departments responsible for maintaining the accuracy of the information and those responsible for providing input. Refer to Preface for detailed explanation.

	BJC HealthCare													Hospital/Entity				
	PD&C						Clinical Asset Management (CAM)	Risk Management	Real Estate	Ergonomics	Infection Prevention (IP)	Info Systems, Data, Telecom (IS)	Other:	Standards Review Committee	Facilities Engineering	Housekeeping	Security	Other:
	Corporate Architect	Corporate Engineer	Director of Planning	Director of Design	Director of Construction	Other:												
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**DOCUMENT REVISION HISTORY**

The following table indicates the date the document originated and any subsequent revisions.

203.401 –Services, Conveying		
Issue	Description of Issue	Prepared by
2012 v1	Original Issue	G. Zipfel
2012 v2	Miscellaneous Review/Clarifications	G. Zipfel/B. Temple
2016 v1	reissued	G. Zipfel
2018 v1	Renamed as 203.401	G. Zipfel