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1. GENERAL REQUIREMENTS

A. An elevator machine room must be provided for each individual elevator or group of elevators. The elevator drive machine and elevator controller must be in the same code approved machine room.

B. The design of elevator systems (locations, equipment selection) for new facilities must be included in the A/E contract with specification sections prepared for each elevator system. Equipment selection must be the most life cycle cost effective system including maintenance, operations, and installation cost.

C. Elevators must be provided in all facilities having two (2) or more floors and must be designed for the traffic anticipated. Passenger and service elevators must be sized to accommodate transport equipment used by persons with special needs (wheelchairs, motorized scooters, walkers, etc.).

D. The latest editions of the publications listed constitute the minimum requirements for elevator transportation systems, including design, methods of construction, installation and testing:

1) American Society of Mechanical Engineers (ASME) Safety Codes for Elevators - A17.1, A17.2, A17.3, A17.4, A17.5, A17.6, A18.1

2) National Fire Protection Association (NFPA) - 13, 70, 72, 101, 252

3) International Building Code (IBC)

4) Standards for the Qualification of Elevator Inspectors – ANSI/ASME QEI-1

5) American Society of Safety Engineers (ASSE) – Personnel Hoists and Employee Elevators on Construction and Demolition Operations A10.4

6) VA Master Construction Specifications PG 18-1 Division 14 - Conveying Equipment

7) VA Barrier Free Design Standard - PG-18-13

8) VA Seismic Design Handbook - H-18-8

9) National Elevator Industry, Inc.
NEII-1 Building Transportation Standards and Guidelines

E. NFPA 101 primarily addresses life safety and fire protection features while the IBC addresses a wide range of considerations, including, but not limited to, structural strength, stability, sanitation, adequate light, ventilation, and energy conservation. VA buildings must meet the requirements of NFPA 101, and documents referenced by NFPA 101 in order to comply with the accreditation requirements of The Joint Commission. Therefore, designs must comply with the requirements of the latest edition of NFPA 101, and documents referenced therein. Design features not addressed by NFPA 101 or included references must comply with this manual or IBC. NFPA 101 and included references must take precedence over IBC.

F. Should a conflict exist between VA requirements and VA adopted nationally recognized codes and standards, the conflict must be brought to the attention of the VA. The resolution of conflict must be made by the VA Authority Having Jurisdiction (AHJ).

G. Where conflicts are found between this document and other VA publication this document must take precedence. The conflict must be brought immediately to the attention of the Project Manager and AHJ shall verify applicability to the project.

H. Refer to PG-18-3 Topic 18 for the qualification requirements for the designers/consultants for this work. All studies and designs are to be provided by independent, experienced, and qualified consultant that normally perform Vertical Transportation Studies and Design as a standard part of their services.

I. The VA Contracting Officer must obtain the services of a third-party ANSI/ASME Qualified Elevator Inspector (QEI-1) to oversee elevator acceptance testing. Within 2 weeks after the inspection, the QEI must prepare a formal inspection report, including all test results and deficiencies. The QEI must utilize an Elevator Acceptance Inspection Form to record the results of inspection and all testing and to identify safety code and contract deficiencies. Specific values must be provided for all tests required by ASME A17.1, ASME A17.2, and the contract documents. Upon successful completion of acceptance inspection and testing, the QEI must sign the Elevator Acceptance Inspection Form and provide a copy to the Contracting Officer. The signed Elevator Acceptance Inspection Form will serve as the certificate of compliance ASME and contract requirements.

2. ELEVATOR LOCATIONS AND TRAFFIC STUDY REQUIREMENTS

A. The size and number of elevators required for a building depends upon the function of the building, size, layout, and the physical location and grouping of elevators.

B. Locate elevators to serve all floors that require service, including the basement, and sub-basement. Elevators must not stop at interstitial floors as elevator access to the interstitial space is not allowed per VHA guidelines and the VA Fire Protection Design Manual. Avoid placing elevators or dumbwaiters over occupied spaces as this will require counterweight safeties and reinforced pits.

C. Where groups of elevators serving identical floors are required in two or more locations for the purpose of providing reasonable convenience of use, the elevators must provide a minimum carrying capacity of not less than 120 percent of the maximum traffic peak to allow for migration between the groups.

D. If one elevator meets the traffic requirements, provide two (2) elevators in all buildings to ensure continuity of service where patient transportation is essential, including Parking Garages. If additional patient transport elevators are within approximately 100 feet and serve the same landings a second elevator may not be required.

E. All multi-level parking facilities, regardless of user, must include a minimum of two passenger elevators. Elevators and adjacent stairs must be located in the logical pedestrian path, between the parking area and the medical center entrance. Where

possible, stairs must be placed in a more prominent and visible location than elevators to encourage persons without disabilities to use stairs. Depending on the size of the parking facility and the presence of oversized vehicles within it, it is desirable to locate Handicap spaces, adjacent to the elevators. The number of elevators provided will depend on the travel patterns of the users of the parking facility, PARKING STRUCTURE DESIGN SECTION 7-15 Parking Design Manual rev 8/1/2014 April 2013. Parking structure elevator design and specifications must comply with VA Elevator Design Manual PG 18-10 and PG 18-01 Master Elevator Specifications. Note that this manual prohibits the specification of proprietary elevator equipment and tools. ADA/VA Barrier Free Design Standard PG 18-13 elevators must be provided in all installations. High-capacity elevators must be specified since these elevators will be located in an outdoor, exposed environment. Other design considerations include the following:

1) Provide traction elevators, with stops at all levels of parking structures. Overhead machine rooms must have HVAC, as required by the Elevator Code and Elevator Manufacturers.
2) Provide glass-backed cabs and hoist ways, where applicable. Provide HVAC in each elevator where required by code.
3) Provide stainless steel radius frames and doors at all lobbies. Interior finishes must include stainless steel walls, vandal-resistance lighting, and rubber flooring.
4) Door operators must be heavy duty closed loop.
5) Traveling cables must include wire for Telephone and CCTV (ASME A17.1 2019).
6) Coordinate call buttons with floor identification for parking levels.
7) If required, the fire alarm panel must be located in the first floor lobby.

F. Elevators shall be grouped in banks of adjacent elevators or banks of elevators facing each other. Do not exceed three (3) service elevators in-line, three (3) passenger elevators in-line and not more than six (6) cars in a group of three (3) facing three (3). The lobby width between two banks of passenger elevators must not be less than 3.66 m (12 ft). Service elevator lobbies shall not be less than 4.27 m (14 ft).

G. The maximum walking distance from patient/visitor elevators to the most distance check-in area or rest area with seating must not exceed 45.75 m (150 ft). Elevators for patient transport, hospital services and staff the maximum walking distance from elevators to the entry door of the most distant patient room must not exceed 76.25 m (250 ft). Paths of travel with inclines will reduce the total allowable travel distance. The Project Delivery and Design Support Teams, in coordination with the A/E team, must evaluate the proposed elevator placement to determine if proposed travel distances from elevators to healthcare delivery services and administrative areas are acceptable based upon the mission, population served and operational concepts. The placement of elevators serving Mental Health Inpatient Units must not be located within the confines of the unit for security and safety concerns. These factors must be weighed along with the advantages of locating elevators near the center of the building and the advantage

of elevator clustering. Decentralized elevators must be planned to include at least two (2) elevators and maintain an acceptable average interval approximately less than <50 seconds.

H. Estimating the number of elevators required:

1) The criteria recommended for service assumes an understanding of several elevator design terms and concepts. The adequacy of elevator service is related to the length of time passengers wait for service and the ability of the elevator system to handle people and equipment as they require service. Standards for the comparison and evaluation of these two basic measures of elevator service have been developed. They are termed AVERAGE INTERVAL and HANDLING CAPACITY.

2) Average interval is the “quality” measure and is defined as the elapsed time in seconds between elevator departures from a terminal floor, averaged over a specific time period. Average interval is not a direct measure of how long prospective passengers wait for service. However, it is a value that can be calculated and verified relatively easily. The accuracy of such calculations has been verified by countless tests. Such tests indicate that average passenger waiting time (APWT) for service at a typical intermediate floor approximates 65% to 80% of the average interval during heavy two-way traffic periods.

3) The “quantity” measure of elevator service is called handling capacity. This is defined as the number of persons and equipment that can be transported by the elevator system in each length of time. Average interval and handling capacity must be measured or calculated for the same designated time period to be meaningful. Handling capacity measurements must always be based on the space taken by the various using population such as ambulatory people, wheelchairs, beds, carts, etc.

4) The building elevator population is the total number of persons and equipment that will require the use of automated vertical transport (elevators) during their stay in the building. Building occupants that use the stairs would not be included in the elevator population. Traffic studies must detail the calculations that arrive at the populations used.

5) The anticipated population figures must be provided by the Department of Veterans Affairs to assist in the system design. However, in all cases, the vertical transportation requirements must be planned for the total design occupancy population rather than a forecast of initial occupancy.

6) Maximum traffic peak is the maximum percentage of the total population on the floors served by the elevators that must be handled during the peak five (5) minute period. The maximum traffic peak will vary with the type of functional areas and special conditions applicable to the facility. In general, analysis should consider visitor arrival and departures, staff changes, patient transport/staff/service and material movement. The maximum traffic peak must be considered as being both 2-way and 1-way peaks based on elevator loading at the lower main terminal, or

terminals, local discharge of passengers on the up trip, inter-floor travel and local passenger pickup on the return trip and discharge at the lower main terminal.

7) Traffic studies must be based on the requirements in PG-18-3 topic 18 and must be accomplished individually for each elevator group except for specialty elevators that have obvious low traffic volumes such as an elevator that may be required in an industrial or storage area of a Central Utility Plant (CUP) used for moving occasional traffic required for servicing equipment or moving bulk storage.

8) Elevator Performance Tables, criteria for acceptable elevator performance must be based on the following:

PASSENGER ELEVATORS OVER THE PEAK 5 MINUTES

Building Type	Average Interval Required	Minimum Handling Capacity
Hospital - Medical Center	Under 35 seconds	15% of the calculated building elevator population for the zones serviced (plus 20% migration for multiple elevator groups).
Outpatient Clinic	Under 40 seconds	15% of the calculated building elevator population for the zones serviced (plus 10% migration for multiple elevator groups).
Office Buildings	Under 45 Seconds	12% of the calculated building population.
Parking Garage	Under 45 Seconds	110 % of the calculated elevator population of the zones serviced.

PATIENT and MATERIALS HANDLING SERVICE ELEVATORS OVER THE PEAK 5 MINUTES

Building Type	Average Interval Required	Handling Capacity
Hospital - Medical Center	Under 40 seconds	15% of the calculated elevator population for the zones serviced (plus migration).
Outpatient Clinic	Under 45 seconds	15% of the calculated elevator population for the zones serviced (plus migration).

PATIENT SERVICE and PATIENT EQUIPMENT ONLY SERVICE ELEVATORS OVER THE PEAK 5 MINUTES

Building Type	Average Interval Required	Handling Capacity
Hospital - Medical Center	Under 40 seconds	115% of the calculated traffic.

Building Type	Average Interval Required	Handling Capacity
Outpatient Clinic	Under 45 seconds	110% of the calculated traffic.

3. ELEVATOR TYPE, SIZE, AND CAPACITY

A. **Elevator size must be determined by the net platform area required for the intended use (e.g., trauma patient with support team and equipment) and by weight of load being transported where applicable.**

B. Passenger elevators (wider than deep) are used to transport hospital staff, ambulatory and mobility impaired visitors that may use a wheelchair, scooter, or walker, etc. Passenger elevators (deeper than wide) may better serve a higher volume of mobility impaired visitors**.**

C. Patient transport elevators (deeper than wide) must only be used for patient transport and be sized to accommodate a bariatric bed with attendants for patient care, life support equipment, and movement.

D. Hospital service elevators are used to transport staff, carts, and equipment. Maximum size and weight of electric powered equipment, carts, and X-ray equipment must be determined before selecting elevator size and capacity.

E. Elevators for limited special use are economically undesirable and must not be specified unless they can be fully justified. The use of slow speed elevators must be considered and separated from other traffic if required for mortuary use or the transport of animals.

F. Passenger elevators with center opening doors must be Class “A” loading as a minimum requirement. Service elevators with center opening doors or side sliding doors must be Class “C3” loading as a minimum requirement. Freight elevators with vertical by-parting doors shall be Class “C1” loading.

G. Elevator capacity and platform design for non-healthcare facilities:

1) Parking Garages must be considered part of the Healthcare Facility and must have elevators a minimum 4,000 lb capacity, 42.2 net sq ft platform area, 48 inches wide x 84 inches high center opening doors.

2) Elevator sizes may vary for non-healthcare facilities. Minimum size must be 1125 kg (2500 lb) capacity, 29.1 net sq ft platform area, to meet the requirements of PG-18-13 with 42 inch wide x 84 inches high center opening doors.

H. Elevator capacity and platform design for healthcare facilities:

1) Passenger elevators, (wider than deep) with a minimum 48 inches wide X 84 inches high center opening doors, must be a minimum 4,000 lb (1818 kg) capacity with 42.2 sq ft (3.92 sq m) inside net platform area. Class “A” Loading.

2) Passenger elevators (deeper than wide), minimum 48 inches wide X 84 inches high two speed side opening or center opening doors, must be a minimum 4,000 lb (1818 kg) capacity with 42.2 sq ft (3.92 sq m) inside net platform area. Class “A” loading rated.

3) Patient Transport/Bariatric elevators, (deeper than wide) minimum 54 inches wide X 84 inches high center opening doors, must be a minimum 6,000 lb (2727kg) capacity with 57.7 sq ft (5.36 sq m) inside net platform area. Class “C3” loading rated. Elevator must be sized to accommodate a patient bed with attendants.

4) Material Handling elevators, (deeper than wide) minimum 54 inches wide X 84 inches high center opening doors, must be a minimum 5,000 lb (2250 kg) capacity, 50 sq ft (4.65 sq m) or 6,000 lb (2727kg) capacity, 57.7 sq ft (5.36 sq m) inside net platform area. Class “C3” loading rated.

5) Dedicated patient assist/trauma elevators when required are intended for patient transport from Critical Care Areas, Emergency Room (ER) trauma rooms to the Operating Rooms (OR). Hospitals requiring this service must have an elevator(s) with a minimum 8,000 lb (3600 kg) capacity 77.0 sq ft (6.93 sq m) and 72 inches wide X 84 inches high center opening doors capable of carrying and responding to the transport of Trauma patients. It must be conveniently placed for use between the Emergency Department, Heliport if provide and Surgical Suite. Adjacencies and department locations must provide for these transports to be completed within 90 seconds of horizontal transport. Special elevator controls must ensure that the time to call, load and ride to the Surgical floor does not exceed 75 seconds. Advanced hall calls from remote locations shall be used when needed to meet these times. Class “C3” loading rated.

6) Freight elevators with vertical by-parting doors are not for passengers, only freight and freight handlers, must be sized to handle the intended service: laundry, trash removal, dietary, etc. Class “C1” Loading.

7) Automated Guided Vehicles (AGV) Elevators must be 4,500 lb (2045 kg) capacity minimum with 46.2 sq ft (4.16 sq m) inside net platform area. Class “C1” Loading. Elevators must have front and rear center opening doors, minimum 48 inches wide X 84 inches high. Elevators must be equipped with inside car operating controls the same as a standard service elevator. If the AGV System fails transporter staff will be able to load carts manually with space inside for staff and carts.

I. Traction elevators:

1) Overhead geared or gearless traction machines for elevators in buildings with a minimum rise of 12.2 m (40 ft) or more. The placing of traction machines in basement machine rooms or in machine rooms adjacent to the hoistway must be limited to conditions that do not accommodate the installation of overhead machines.

2) Utilize minimum .50"x8x19 or .50"x8x25 preformed traction steel hoist ropes or metric equivalent.

3) All traction elevators must have a device, direct acting on the suspension means, to prevent ascending over speed and unintended motion away from the landing including loss of traction.

J. Hydraulic elevator:

1) Specify oil hydraulic direct plunger elevators for up to four stops, 12.2 m (40 ft) with a rated speed of 0.63 m/s (125 fpm). Holeless plungers, maximum two (2) stages, will be considered for difficult site conditions. Buildings that have basements or penthouses with limited access (no patients or public) that are more than four (4) stops, may use hydraulic elevators as a cost saving instead of using traction elevators.

2) Electronic Motor Starter shall be used on hydraulic elevators. Do not use Wye-Delta or Across the Line starters.

3) Locate down overspeed shut-off valve next to the cylinder head.

4) Manual shut-off valves in the oil line must be provided in the pit and machine room.

5) Locate oil return scavenger pump in the elevator pit.

4. ELEVATOR ENCLOSURE

A. Elevator car enclosures shall be front or front and rear opening and detailed on the architectural drawings.

B. Enclosure shall have a minimum canopy height inside the cab of 8ft (2.44 m).

C. Canopy constructed of not less than 12-gauge steel. Walls shall be not less than 14-gauge steel.

D. Front return panel(s), entrance columns, entrance transom must be 14-gauge stainless steel full height of car.

E. Service elevators: Side and rear walls of service elevators, up to the center line of the top handrail, must be covered with stainless steel. Side and rear walls to the ceiling may be covered with high pressure plastic laminate, stainless steel applied directly to the cab walls or raised panels.

F. Passenger elevators: Side and rear wall may use raised panels cover in materials suitable for use in elevators.

G. Car door(s) must be reinforced two panels steel construction covered with stainless steel on the inside surface wrapped around the leading edge.

5. DOORS AND ENTRANCES

A. Provide power door operation for all elevators.

1) Passenger and Service doors must be capable of opening doors at the rate of 0.75 m/s (2.5 fps), with actual speed being adjusted to meet requirements of the specific installation. Freight doors shall open at 0.3m/s (1 fps).

2) Closing speed for all elevator doors must be 0.3 m/s (1 fps). All power operated doors must be equipped with an automatic reopening device for passenger protection. In healthcare facilities do not activate door nudging. Use audio voice announcement “please stand clear of the doors” and activate the nudging buzzer.

B. Entrances for Passenger, Service and Freight Elevators:

1) Doors must be center opening for passenger elevators and center or side opening for service elevators in healthcare facilities. Hoistway doors must be reinforced, two panel construction, with stainless steel on the outside surface, wrapped around the leading edge. Use only center opening doors for elevators that require three (3) or more attendants and possibly equipment to accompany patient transport.

2) Curved hoistway entrance side jambs must be 3.5” radius for passenger and service elevators in healthcare facilities.

C. Freight elevator vertical sliding hoistway bi-parting doors and car gate must have automatic power operation. Opening size determined by facilities function.

D. Solid grouting of all types of entrance jambs, headers and sills is required.

6. OPERATING FIXTURES

A. All terminology and tactile symbols on the faceplate shall be on square or rectangular plates recessed into the faceplate with its surface flush with the surface of the faceplate. Use 6 mm (.25 in.) letters to identify all devices in the faceplate. The tactile symbols with contrasting background shall be 0.5 in. high raised .030 inch on the plate. Surface mounted plates are not acceptable. Vandal Resistant buttons must illuminate upon registration of a call and shall extinguish when that call is answered.

B. Round Vandal Resistant car buttons, hall call push buttons, and indicator lights minimum diameter of 1 in., and LED illuminated. Car call and Hall call buttons must be legibly and indelibly identified by an illuminated floor number, letter or arrow not less than .50 inches high in the face of the call button.

C. Main Car Operating Panel must be a one-piece front faceplate with edges beveled minimum of 15 degrees, swing return, or tilt panel must have the firefighter’s service panel recessed into the upper section and the service operation panel recessed into the lower section. Doors must have concealed hinges, be in the same front plane as the faceplate and fitted with cylinder type key operated locks. Secure the faceplate with stainless steel tamperproof screws.

D. Auxiliary Car Operating Panel in healthcare facilities must be in the front return panel opposite the main car operating panel, rear return panel (front and rear doors), or side wall of the elevator between the handrails immediately adjacent to the front entrance column strike jamb. The auxiliary car operating panel must contain only those controls essential to passenger (public) operation. The auxiliary car operating panel faceplate must match the main car operating panel faceplate in material and general design. Secure the faceplate with stainless steel tamperproof screws.

E. Communication:

1) Provide a complete, ADA compliant, auto dial communication system that is compatible with the VAMC's telephone system. Two-way communication device must be in full compliance with ASME A17.1 Rule 2.27.1.1 (2019) or later editions. Conduit and wire must be provided by the VA from the elevator machine room to a 24-hour monitoring location.

2) Provide digitized audio voice system. Audio voice must announce floor designations, direction of travel, and other announcements as required. The voice announcement system must comply with ADA requirements for audible car position indicators. The voice announcer must have two separate volume controls, one for the floor designations and direction of travel and another for special announcements. The voice announcer must have a full range loudspeaker located on top of the cab. The audio voice unit must contain the number of ports necessary to accommodate the number of floors, direction messages and special announcements. Install voice announcer per manufacturer's recommendations and instructions. The voice system must be the product of a manufacturer of established reputation. Provide manufacturer literature and list of voice messages.

F. Corridor Operating Devices:

1) Fabricate faceplates for elevator operating and signal devices from not less than 3 mm (.125 in.) thick flat stainless steel with all edges beveled minimum of 15 degrees.

2) Corridor push button faceplates must be sized to accommodate corridor pictograph on faceplate. The centerline of the landing push buttons shall be 42 in. above the corridor floor. Elevator Corridor Call Station Pictograph must be engraved in the faceplate.

3) Round "Vandal Resistant" hall call push buttons, minimum diameter of 1 in., must be legibly and indelibly identified by an LED illuminated arrow not less than .50 inches high in the face of the call button.

3) The direction of each button must be legibly and indelibly identified by arrows not less than .50 in. high in the face of each button. Provide a corresponding Braille plate on the left side of each button.

4) Provide emergency power indicator light, medical emergency key switch and indicator light, fire service recall key switch, indicator light, and fire recall instruction,

communication failure light, audible enunciator, and reset key switch in a fixture at the designated main floor.

G. Digital Combination Corridor Arrival Lantern/Position Indicator:

1) Provide alpha-numeric digital position indicators between arrival lanterns at all floors in healthcare buildings. Numerals must be not less than 2.5 in. high with direction arrows. Cover plates shall be removable for re-lamping. The appropriate direction arrow must be illuminated during entire travel of car in corresponding direction.

2) Provide alpha-numeric digital position indicators between arrival lanterns only at the main and alternate fire recall floors in non-healthcare buildings.

3) Provide each terminal landing with "UP" or "DOWN", minimum 2.5 in. high digital arrow lanterns and each intermediate landing with "UP" and "DOWN" digital arrow lanterns. Each lens shall be LED illuminated of proper intensity, so shielded to illuminate individual lens only. The lenses in each lantern must be illuminated green to indicate "UP" travel and red to indicate "DOWN" travel. Lanterns shall signal in advance of car arrival at the landing indicating the direction of travel. Corridor lanterns must not be illuminated when a car passes a floor without stopping. Each lantern must be equipped with an audible electronic chime which must sound once for "UPWARD" bound car and twice for "DOWNWARD" bound car. Audible signal must not sound when a car passes the floor without stopping. Provide adjustable sound level on audible signal. **Car riding lanterns are not acceptable.**

7. CONTROL SYSTEMS

A. Provide a microprocessor system with absolute position/speed feedback to control dispatching, signal functions, door operation, and hoist/pump motor control. Complete details of the components and printed circuit boards, together with a complete operational description, must be submitted for approval. Add Regenerative Drive when determined to be life cycle cost effective for the VA facility.

B. Controller manufacturer must provide factory training, engineering, and technical support, including all manuals, wiring diagrams, and tools necessary for adjusting, maintaining, repairing, and testing of equipment for use by the VA's designated Elevator Maintenance Service Provider. The materials provided become the property of the VA.

C. Microprocessor dispatching system must evaluate building traffic demand including number of elevators in service, hall calls, car calls, elevator position, direction of travel, load in elevator, door status and select an elevator to answer hall calls for least possible passenger wait times.

D. Car lights and fan in the elevator may shut off when elevator is idle. Provide power thru a failsafe relay that is energized to turn off lights and fan. Power to the lights and outlets on top and bottom of elevator shall not be interrupted.

8. ELEVATOR MACHINE ROOMS

A. Elevator machine rooms must be sized to accommodate the elevator machine, controller, and other related equipment. It shall be possible to remove major equipment components of each elevator for repair without dismantling components of an adjacent elevator.

9. ELEVATOR HOISTWAYS

A. The interior face of the hoistway walls must have a smooth, flush, and non-dust producing surface. Exposed spray-on fire proofing must not be used in the elevator hoistway.

10. ELEVATOR PITS

A. Provide two stop switches in the pit, 48 in. above the bottom landing at the top of the pit ladder and 48 in. above the pit floor adjacent to the pit ladder.

11. FUTURE VERTICAL EXPANSION OF ELEVATORS AND MATERIAL TRANSPORT SYSTEMS

A. Locate elevators, dumbwaiters, and transport systems, requiring future vertical and horizontal expansion, to serve functions and activities in original building and proposed future expansion.

B. Select types of vertical and horizontal transport designs on the basis of the kind and volume of original and projected future traffic.

C. Analyze traffic during preliminary design stage to determine the economic feasibility of originally installing vertical and horizontal transport systems having future additional capacity. If that is not feasible, provide spaces for future hoistways. Provide future hoistway space with knockout floor slabs to allow that floor space be utilized until the future expansion takes place.

D. When the designed equipment is overhead traction type, design the machine room area and the machine beams to be removable. This facilitates machine room relocation and extension of the hoistway. For future expansion from Hydraulic to Traction elevator, Basement Traction would allow the use of the same Machine Room attached to Hoistway.

E. When the original designed equipment is hydraulic and the building is designed for future vertical expansion, structure the hoistway for future overhead or basement electric traction elevator. Pit depth for a hydraulic elevator is 48”, minimum pit depth for a traction elevator is 69” for 200 fpm. Verify required depth.

12. ELECTRICAL REQUIREMENTS

A. Each elevator must be provided with a separate disconnect and surge suppressor in the respective machine room located adjacent to the entry. The supply must terminate at the respective elevator controller. The elevator power supply must be a dedicated main feeder utilizing the shortest practical run and continuous ground conductor.

B. Emergency power supply must have the capacity to operate a minimum of one elevator per group in healthcare facilities. (Electrical Design Manual 4.6.1.1 Life Safety Branch)

   1) If emergency generator is not available, traction elevators must be provided with an emergency power system that will run the elevator to the nearest floor and open the doors.

   2) If emergency generator is not available hydraulic elevators must be provided with an emergency lowering system to lower the elevator to the bottom floor and open the doors.

C. Fire Alarm Initiating Devices, Heat Detectors, and Sprinklers must be installed as required by ASME A17.1, IBC, NFPA 13, NFPA 70, NFPA 72, and NFPA 101.

D. Provide a circuit breaker panel or disconnect switches lockable in the off position in each machine room for emergency power circuit for car lights, fan and alarm, circuit for the machine room GFCI receptacles, circuit for the hoistway lights, circuit for hoistway GFCI receptacles, and circuit for the scavenger pump in the pit for hydraulic elevator.

   1) Hoistway lights must be stacked vertically in the rear of the hoistway near the corner for a single elevator or on the back wall between the divider beams of a duplex or triplex installation. The extreme top and bottom fixtures must be mounted to illuminate the pit area when the car is at the bottom landing and the car top when the car is at the top landing. Provide three-way light switches at the top of the pit ladder and five feet above the top terminal landing at the inside front wall near the hall button box.

13. DRAWINGS

A. Separate architectural drawings must be prepared for the transport systems. Elevator drawings shall show electrical services, materials, sizes, details, space conditions, etc., of hoistway enclosures, pits, cabs, entrances, machine rooms and other features. The elevator drawings must be coordinated with the other architectural, structural, mechanical and electrical drawings to ensure that proper space conditions and other requirements have been provided.

B. The spaces must be designed to accommodate the elevator equipment specified.

C. Architectural drawings must show reactions at point of elevator machine beams and buffer supports. Indicate impact loads.