An AIA Continuing Education Program

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ADA and ANSI A117.1 Design Standards for Vertical Platform Lifts and Limited Use/ Limited Application Elevators

Course objectives

Understand:

- basic information on vertical platform lifts and their code limitations
- accessibility code requirements for platform lifts (ANSI A117.1 and ADAAG)
- basic information on commercial LU/LA elevators and their code limitations
- accessibility code requirements on LU/LA elevators

Brief overview of codes

ASME A18.1 and A17.1

- governed by the American Society of Mechanical Engineers
- dictate the design limitations of all elevators and accessibility lifts to ensure safe operation

ADA and ANSI A117.1

- 2 main standards that govern accessibility requirements
- ensure that lift or elevator can be used by someone with a physical limitation without any need for assistance

Vertical Platform Lifts

What is a vertical platform lift?

A vertical platform lift transports a passenger in a wheelchair or anyone who is mobility challenged from one landing to another.

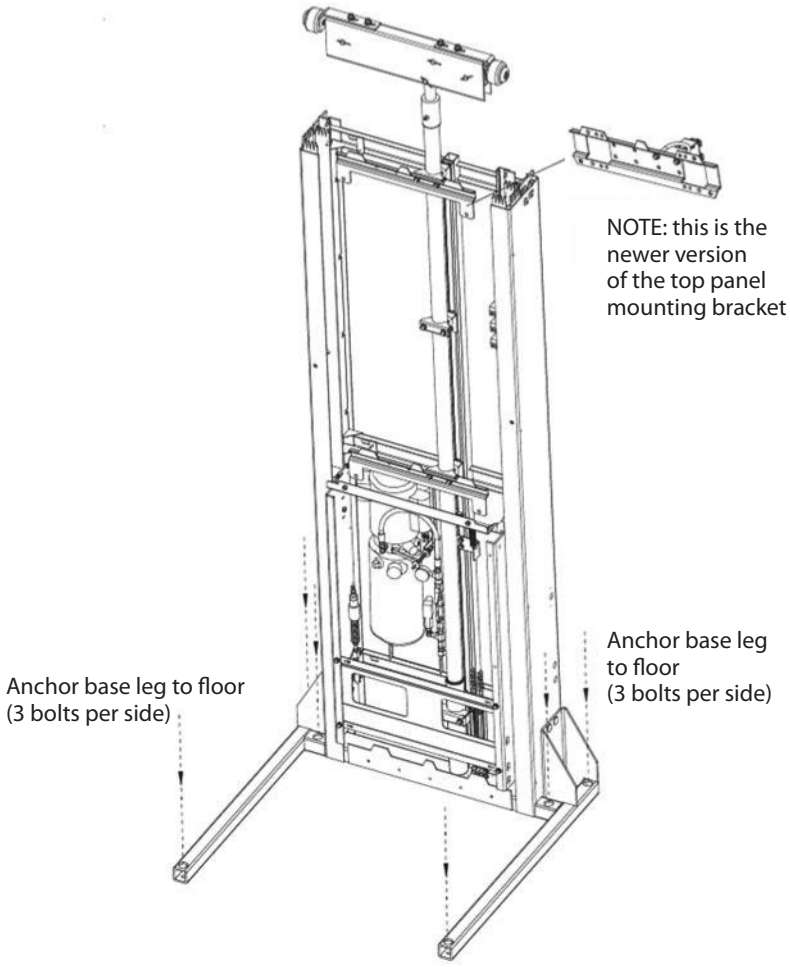
It provides a code compliant access solution for lifting heights of up to 14'.

Vertical platform lifts are suitable for both indoor or outdoor applications and are a good alternative to a fixed ramp.

Technology

Two main drive technologies:

1. **Hydraulic**
   Advantages:
   - Typically faster
   - Longevity
   - Robust
   - Easy emergency manual lowering capabilities
2. **Screw drive**
   Advantages:
   - Small cost advantage
   - Simple technology



Types of lifts

1. **Shaft way model**
   (enclosure made by general contractor)
2. **Enclosure model**
   (enclosure provided by lift manufacturer)
3. **Unenclosed open model**
4. **Semi enclosed 3 gate model**
5. **Mobile model**

Types of lifts

Shaft way model

What to know

- Limited to 14' rise by 2011 code
- Ideal when penetrating a floor that has a fire barrier

Ideal application

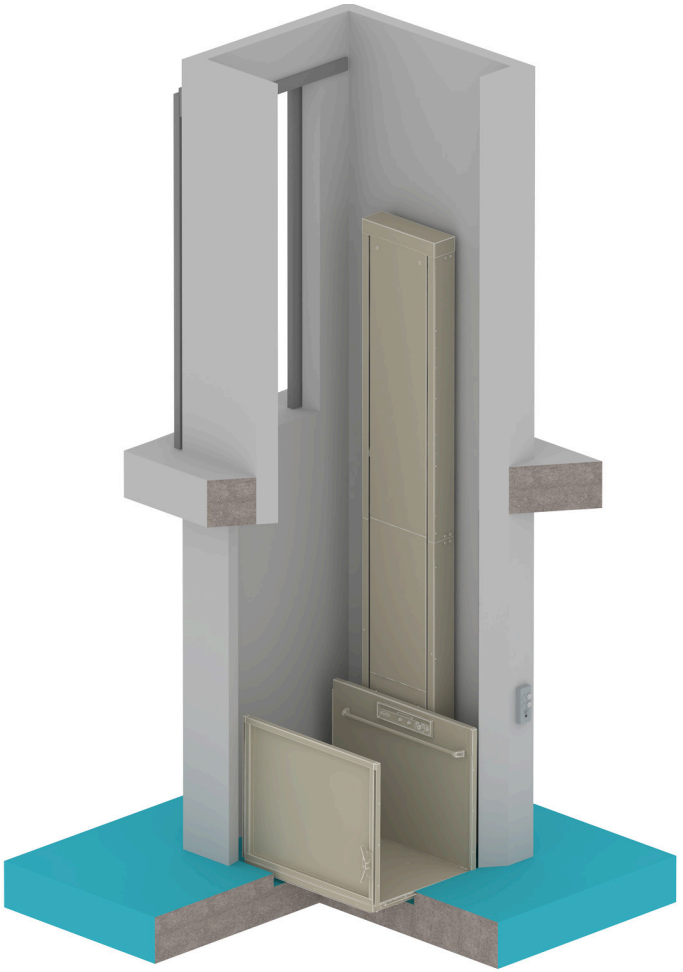
- Any commercial or residential application that requires vertical access penetrating a floor

Biggest advantage

- Very durable as the lift is protected
- Hidden. The hoistway walls and doors can be finished to look like others in the building

Tip of the trade

- A lift with an enclosed cab can emulate an elevator feel



Types of lifts

Enclosure model by lift manufacturer

What to know

- Limited to 14' rise by code
- Can't be used to penetrate a floor since the enclosure isn't fire rated
- Can be used as a 3-sided enclosure system which would butt up and penetrate a building's exterior wall (see slide #11 for photo)
- Available in all colors and some special finishes

Ideal application

- Any accessibility requirement which does not penetrate a floor
- Ideal for an outdoor application especially when equipped with a domed roof

Biggest advantage

- Flexibility of the design

Types of lifts

Enclosure model by lift manufacturer (continued)

Hurricane testing

- Some states or counties may require outdoor enclosures to be certified. Some manufacturers offer a lift with this certification and even offer removable hurricane proof enclosure panels

Tip of the trade

- Custom colors, tempered glass and other finish options can make the wheelchair lift a design statement, instead of looking like a necessity

Types of lifts

Special applications

Types of lifts

Enclosure applications

photo courtesy of Access Lifts and Service

Types of lifts

Unenclosed open model

What to know

- Limited to 60" of travel under the national ASME A18.1 code
- Must have platform gate at lower landing to protect a standing user
- Must have a top landing gate with fascia under the door to prevent any pinch point
- Lift will be equipped with a safety underpan sensor to detect any obstacle under the platform

Ideal application

- Outdoors going to a deck, are typically called “porch lifts”
- Ideal for a stage application

Biggest advantage

- Most economical option to accommodate small travel applications
- Takes up less space than a ramp

Tip of the trade

- Small upgrade like acrylic inserts in gates can drastically improve the look for low cost

Types of lifts

Semi enclosed 3-gate model

What to know

- Usually limited to low travel of 48". Unit has two gates at the bottom with a partial enclosure to avoid anything from getting under the lift
- Unit has a top gate to protect user from falling at the upper level
- Mostly limited in configuration to straight through only

Ideal application

- Stage area
- Small indoor application

Biggest advantage

- Prevents any object or person from getting underneath the lift while having the smallest visual impact

Tip of the trade

- Product is best used indoors since this model does not offer the option of a fully enclosed roof

Types of lifts

Mobile

What to know

- Typical travel: up to 48"
- The national ASME A18.1 lift code does not apply to mobile lifts as they aren't considered a permanent installation
- Top landing gate travels with the unit to accommodate different travel heights
- Usually a small bridge is provided at the top to ease the transition to the 2nd landing

Ideal application

- Stage
- Any application where visibility of the lift can be a nuisance

Biggest advantage

- It is portable

Tip of the trade

- Typically will only fit through double doors so this needs to be considered for storage and transporting the unit for use

Platform configurations

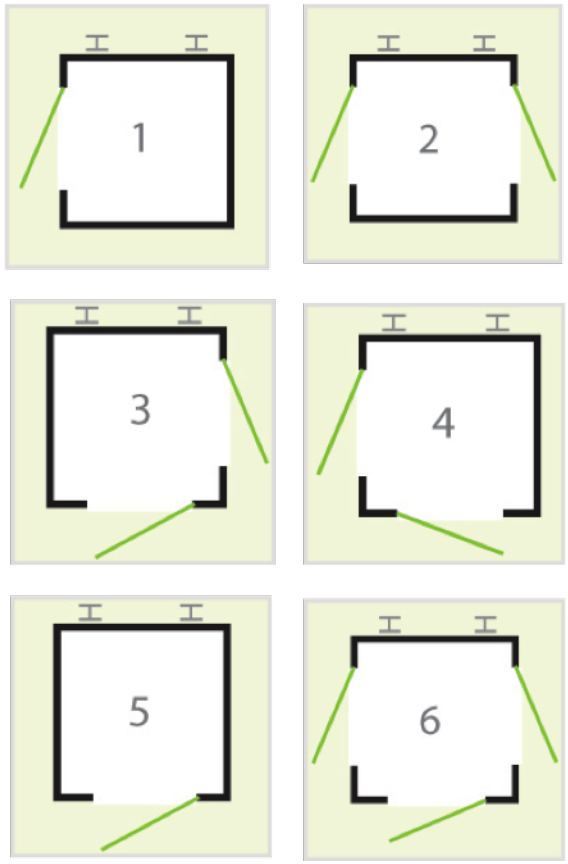
Common car sizes

- 36"x48"
- 36"x54"
- 36"x60"
- Or 42"x48", 54" or 60"

There are 3 main types of cab configuration

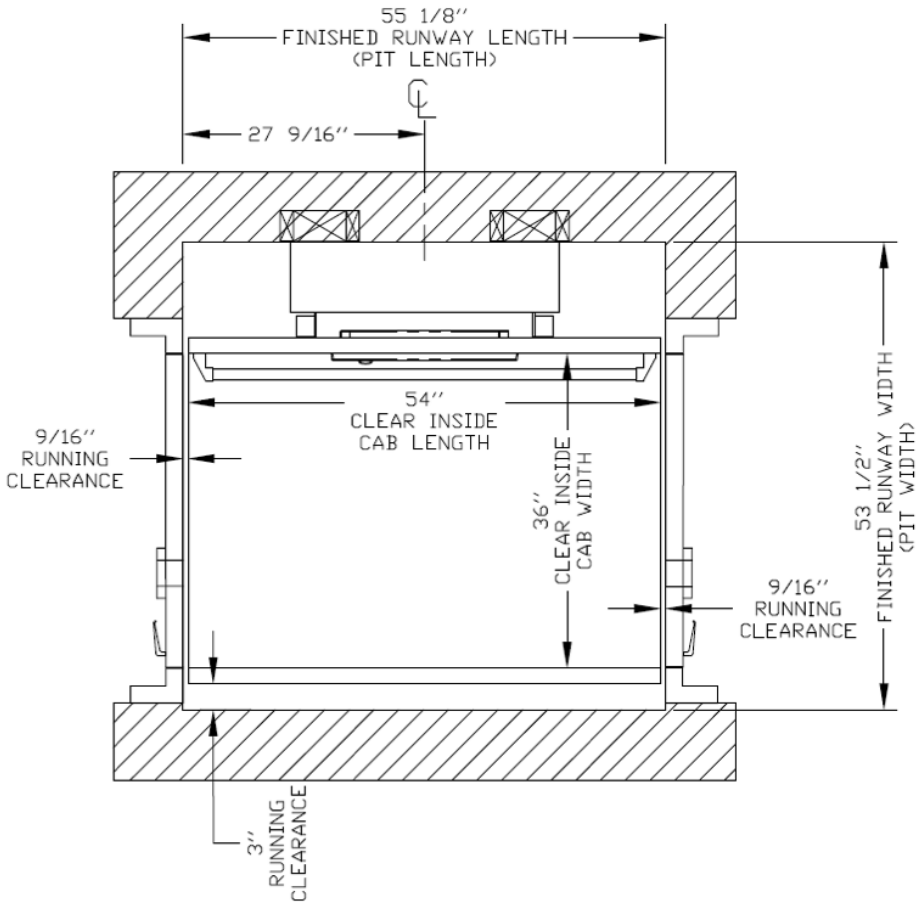
- Enter/exit same side (#1 or #5)
- 90 degree (#3 and #4)
- Straight through (#2)
- Some manufacturers will even offer a 3 sided platform (#6)

Most manufacturers will offer custom sizes to fit within an existing shaft or special application

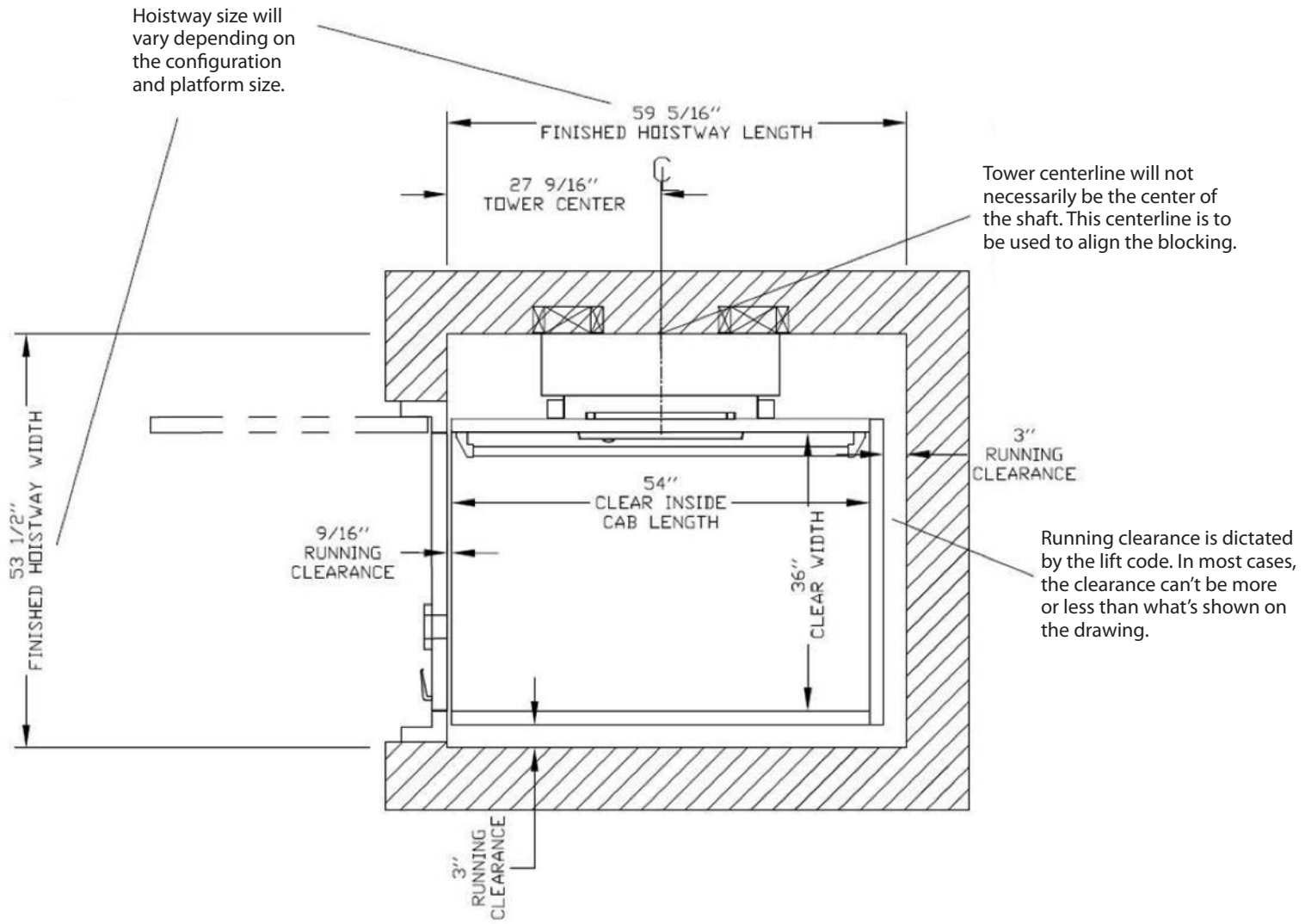


Space allocation

- The required space differs for each platform configuration but generally a 5'x5' footprint is adequate to fit the lift
- Nearly all manufacturers will have a planning guide showing the exact dimension for each lift configuration

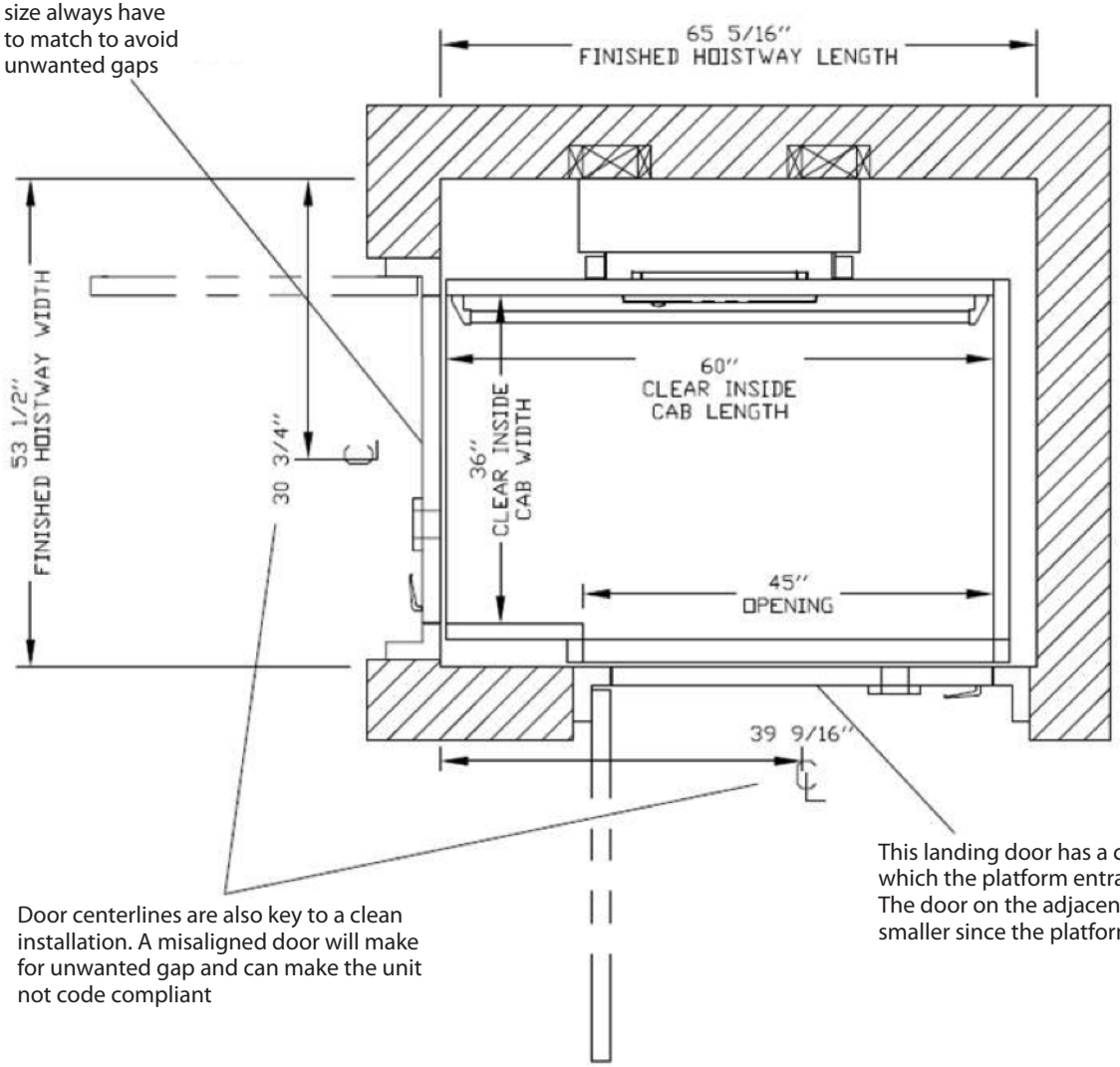


Drawings


Hoistway size will vary depending on the configuration and platform size.
59 5/16"
FINISHED HOISTWAY LENGTH
27 9/16"
TOWER CENTER
Tower centerline will not necessarily be the center of the shaft. This centerline is to be used to align the blocking.
53 1/2"
FINISHED HOISTWAY WIDTH
3"
RUNNING
CLEARANCE
54"
CLEAR INSIDE
CAB LENGTH
9/16"
RUNNING
CLEARANCE
36"
CLEAR WIDTH
Running clearance is dictated by the lift code. In most cases, the clearance can't be more or less than what's shown on the drawing.
3"
RUNNING
CLEARANCE

Drawings

Door and platform size always have to match to avoid unwanted gaps

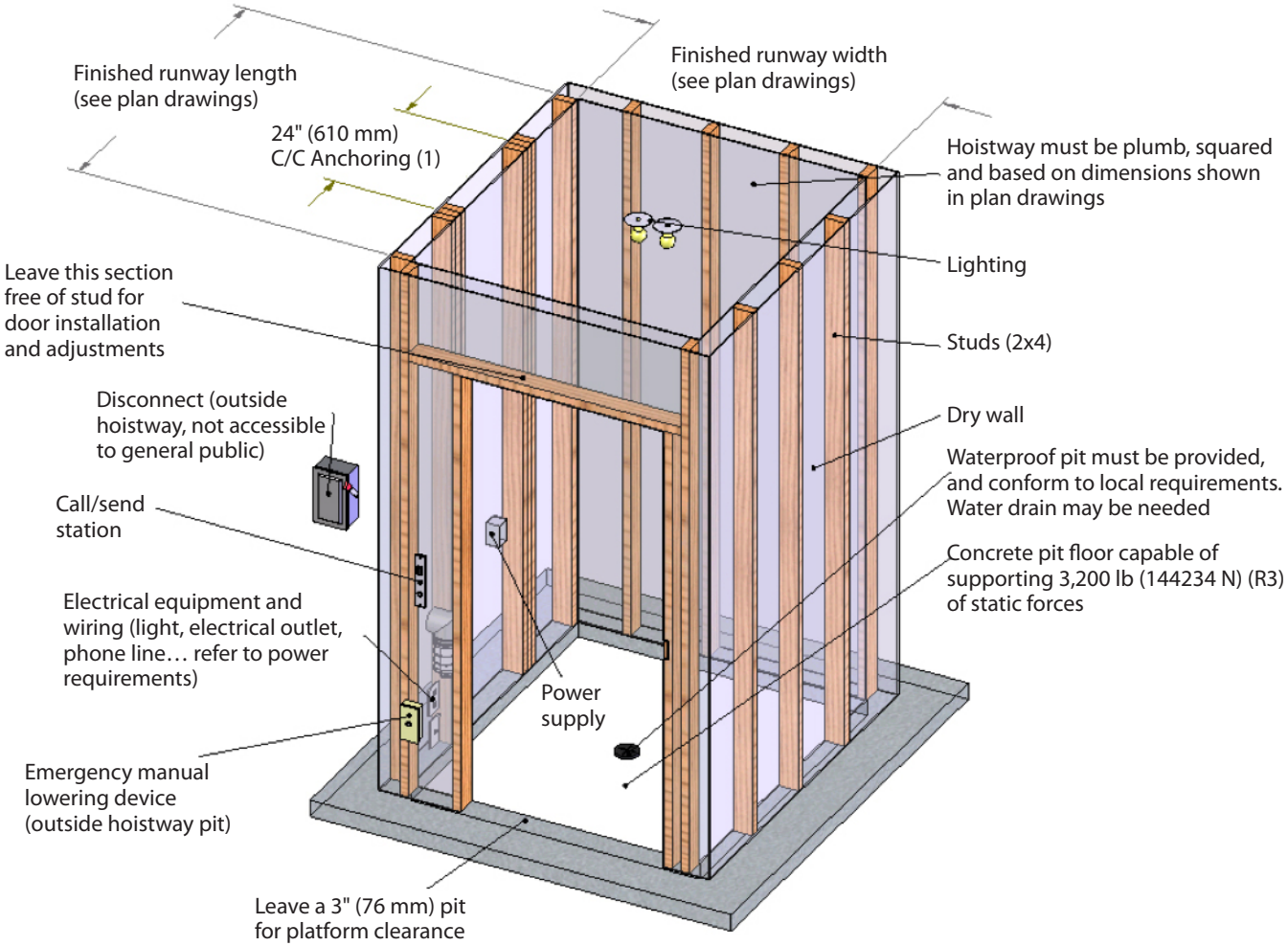


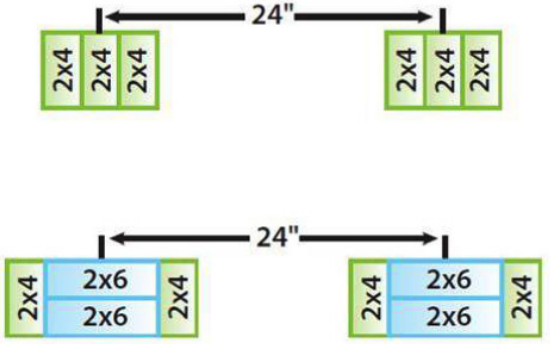
Door centerlines are also key to a clean installation. A misaligned door will make for unwanted gap and can make the unit not code compliant

This landing door has a clear opening of 42" which the platform entrance accommodates. The door on the adjacent opening needs to be smaller since the platform width is only 36"

Construction

Support wall and shaft way construction





Support Wall

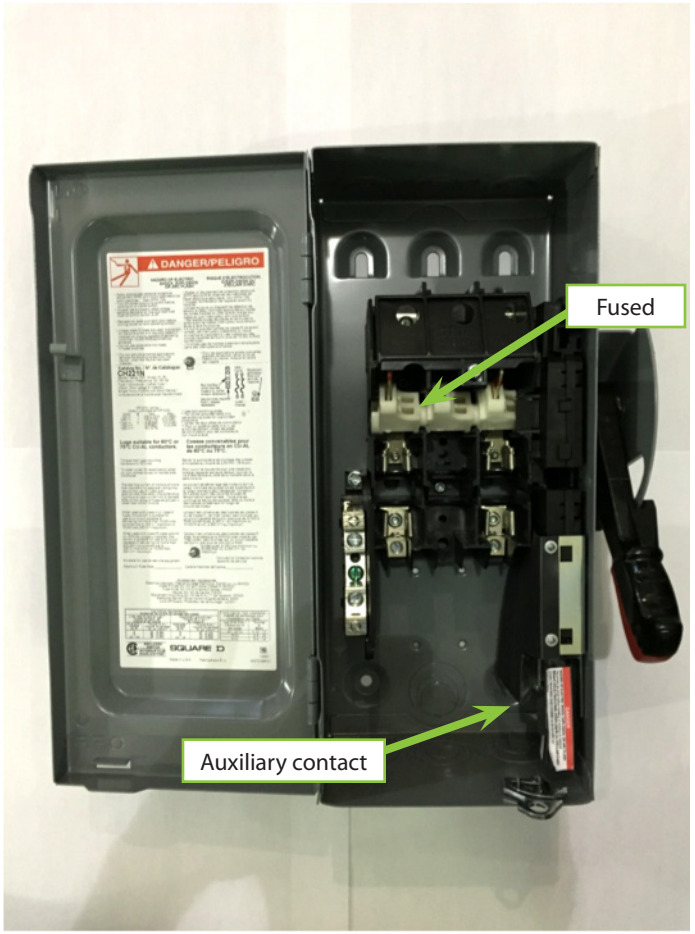
The lift must be secured to a support wall comprised of 2"x4" or 2"x6" framing.
(Subject to local building codes)

Electrical requirements

- Typically runs on 120v – 20amp dedicated line
- Must have a fused disconnect (see next page)
- Disconnect must have an auxiliary contact to cut off the battery circuit of the lift (see next page)
- GFI outlet will be required on any shaft way lift at the bottom of the shaft
- A light at the bottom of the shaft is required as per NEC 620.24(A)
- Low voltage automatic door operators and ventilation will not require a separate disconnect
- 36" clearance will be required in front of the disconnect

Electrical requirements

Fused disconnect with auxiliary contact



Pit and ramp

- Typically a pit for a wheelchair lift will be 3" deep. Some models with a higher capacity may require more
- Having a pit is usually ideal but when it is not possible, a ramp may be used under the following guidelines:

  Ramp ratio:
  - In an existing application: A 1:8 ratio is acceptable (ADA)
  - In new construction: A 1:12 ratio in required (ADA)
- In an application that necessitates a ramp, an automatic door operator shall be installed at that landing

Call station location

Options:

- In frame
  - Ideal for manual doors
- Flush remote
  - Ideal for automatic doors
  - Cleaner install for interior applications since the station is recessed in the wall like a standard light fixture
- Surface mount remote
  - Ideal for outdoor or existing applications where running wires inside the wall is not possible

ADA/A117.1 location:

- Height: In between 15" to 48"
- The clear floor space adjacent to the call station must be beyond the arc of the door

Surface mount remote

Flush mount remote

Emergency power

Manual lowering or raising in case of emergency power failure:

- By code all lifts must be provided with a way to manually raise or lower the lift in the event of a power failure
- Hydraulic lifts have the advantage to make manual lowering easy as this can be done by pulling on a handle from outside the shaft

In case of power failure:

- Battery operated only
  - Unit always runs off the batteries and is constantly charging. This system allows the lift to run when a power failure occurs. However, there are a couple of draw backs to this technology:
    1) Limited number of continuous cycles available until the battery requires to be charged
    2) In an outside application the cold temperature can also have an effect and limit performance
- 110 volt operation only (typically offered on screw drive)
  - Unit will run on main power but in the event of a power failure, the lift will need to be mechanically lowered or raised

Emergency power

110 volt with battery operation in down direction only:

- Unit will run up on main power but will use a small battery to be able to lower the unit incase of power failure
- This is the standard configuration for most hydraulic units

True battery back up:

- Unit would always run on the main power of the building but will switch automatically to a battery operated mode when a power failure occurs.
- This mode allows the lift to be used at a high frequency when the main power is available while having the flexibility of the backup when the power goes out.
- Typically a lift will be able to do a minimum of 5 complete up and down cycles with no power

Accessibility codes

ADA requirements

Cab size required

- Enter exit same side: 36"x48"
- Straight through: 36"x48"
- 90 degree: 36"x60"

Automatic door requirement

- Enter exit same side: required
- Straight through: not required
- 90 degree: required

Other scenarios requiring an automatic operator

- An entrance accessed with a ramp: required
- An application with more than 2 stops: required
- When doors do not have 18" of strike side clearance

A117.1 requirements:

Cab size required

- Enter exit same side: 36"x48"
- Straight through: 36"x48"
- 90 degree: 42"x60"

Automatic door requirement

- Enter exit same side: required
- Straight through: not required
- 90 degree: required

Other scenarios requiring an automatic operator

- Entrance accessed with a ramp: required
- An application with more than 2 stops: required
- When doors do not have 18" of strike side clearance
- Exception for 2 stop 90 degree application, see slide #29

Accessibility codes

ADA requirements

Minimum landing door width

- Enter exit same side: 32"
- Straight through: 32"
- 90 degree: 32" on the narrow door and 42" on the adjacent 90 degree side

Landing call station

- Manual doors: In door frame or remote
- Automatic doors: Remote only. On an automatic door the call station should be mounted remotely so that the user's chair is beyond the arc of the opening door

Phone

- A good rule of thumb is to always include an ADA hands free phone on all lifts

A117.1 requirements:

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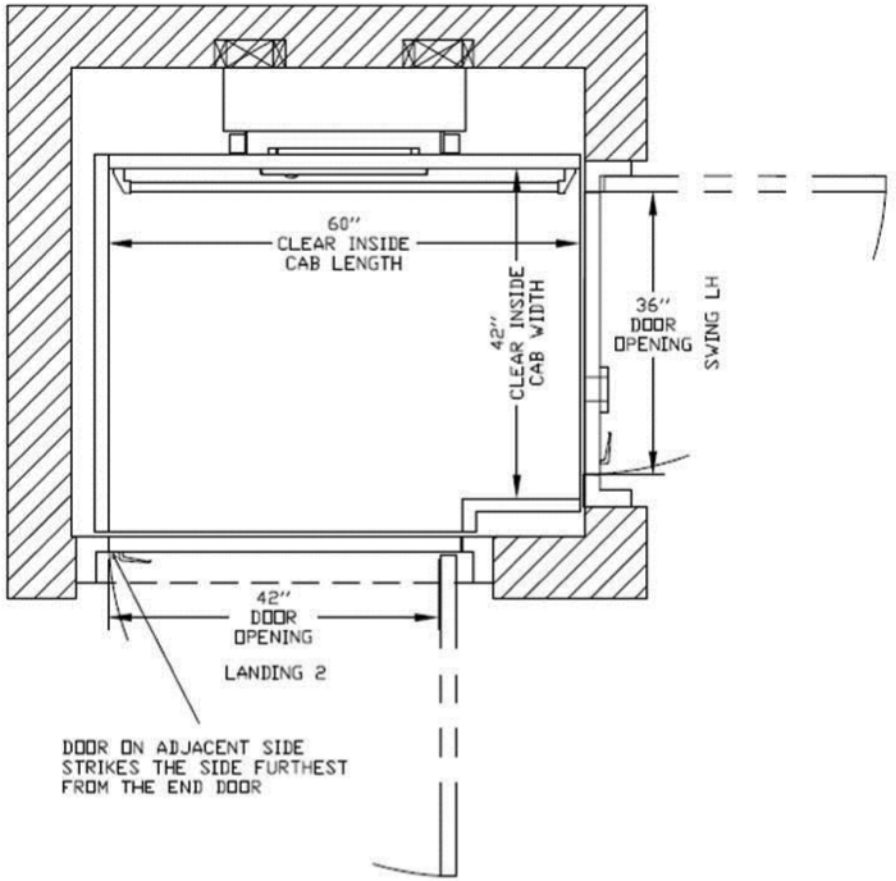
Exception to code

A117.1 Special 90 degree configuration where door operators are not required

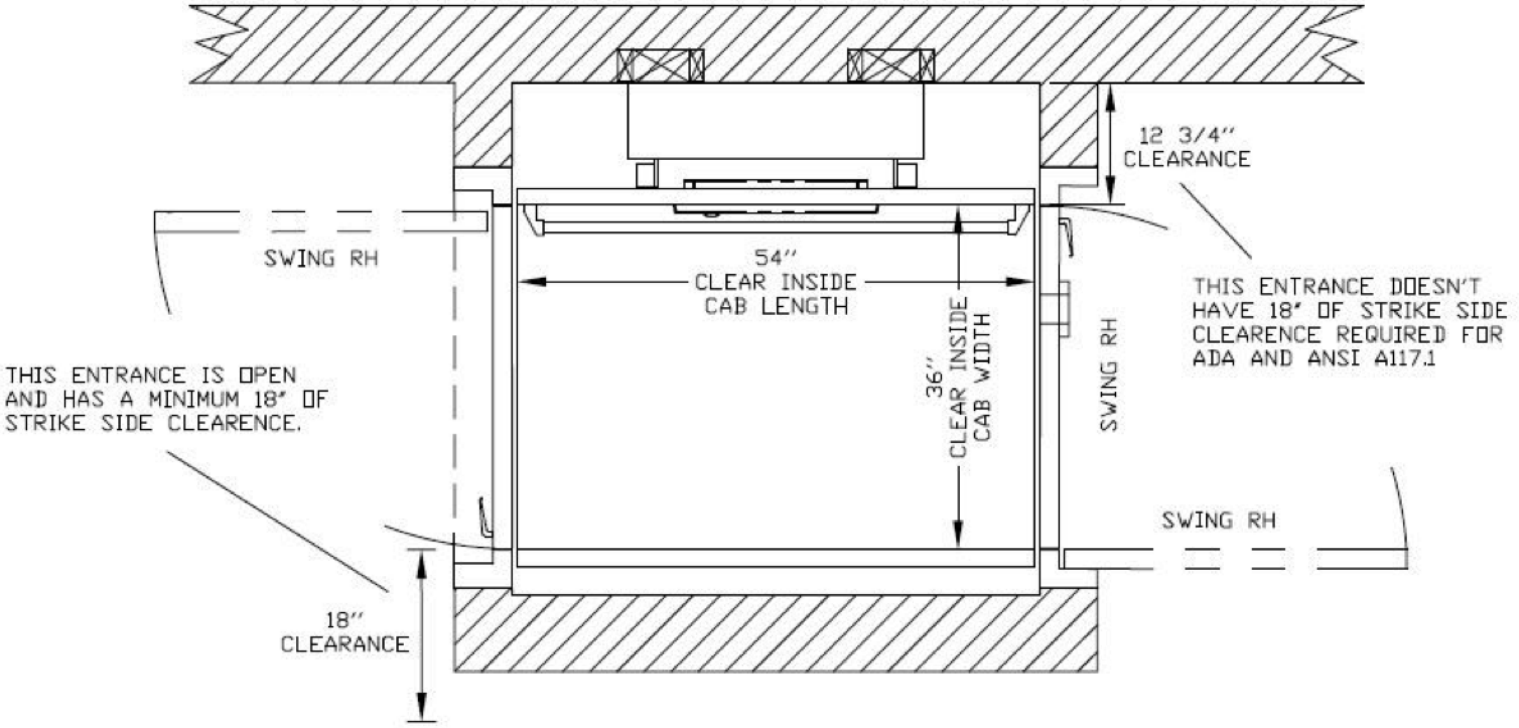
- ANSI A117.1 makes an exception stating that door operators are not required on a 90 degree (2 stop configuration) as long as the strike side of the adjacent door is furthest from the end door



Strike side clearance

18" Strike side clearance

- Doors that do not have 18" of strike side clearance should be automatic since the user isn't able to efficiently approach and open the door



Understanding code

ASME A18.1
Key points for vertical platform lifts

- Maximum travel
  - Open type lift: 60"
  - Enclosed: 14' (2008 code and later)
- Speed: not greater than 30 feet per minute
- Maximum platform size: 18 square feet
- Capacity (2011 code and later)
  - Range between 400 lb to 1050 lb
  - Any platform with 15 square feet and more shall have a minimum load of 750 lb
- Operation: the operation shall be done by means of constant pressure controls
- Runway enclosure shall be at least 42" above top landing on all sides

Understanding code

ASME A18.1
Key points for vertical platform lifts

- Landing doors needs to be flush with their frame and inside of hoistway
- On all lifts required to meet 2011 code or later, the door locks shall be tested and certified to comply with the elevator A17.1 elevator code or the B355 Canadian lift code
  - Electric strikes and magnetic locks are not acceptable locking devices under the latest codes
- Overhead
  - 80" minimum overhead is required above the platform and at all landings. However additional clearance will be required for any lifts with a top landing door and for a cab with a ceiling
  - Lighting: 50 lx is required at each landing and over the platform floor at all points of travel. As a rule of thumb you should aim for 100 lx

Understanding code

Accessible means of egress

- When a platform lift is permitted to be an integral part of an accessible route, the lift shall be provided with standby power
- This can be done via:
  - Battery backup provided by the lift that allows for 5 cycles in the up and down direction
  - By the building power generator that would need to meet the same cycle requirements

Limited-Use/Limited-Application (LU/LA) commercial elevators

What is a LU/LA elevator?

A LU/LA Elevator offers features you would typically see in a high-rise elevator but is designed for commercial low rise buildings.

A LU/LA is well suited for use in small commercial buildings with up to three stories. It is also perfect for existing construction since it requires minimal overhead and pit depth.

A LU/LA is a cost-effective solution for limited use ADA-compliant accessibility.

Commercial elevators

LU/LA

What to know

- Limited by code to 25 feet of travel
- Requires only a 14" pit.
- Overhead as little as 108" in some existing construction applications. All new construction must have about 134"
- Available in 3 different cab configurations: same side, straight through or 90 degree
- Can be more economical than a typical passenger elevator due to construction benefits and lower maintenance schedule

Ideal application

- Existing construction: smaller footprints and minimal clearance required by code makes this product unique
- Any small 3 story or less commercial building

Commercial elevators

LU/LA

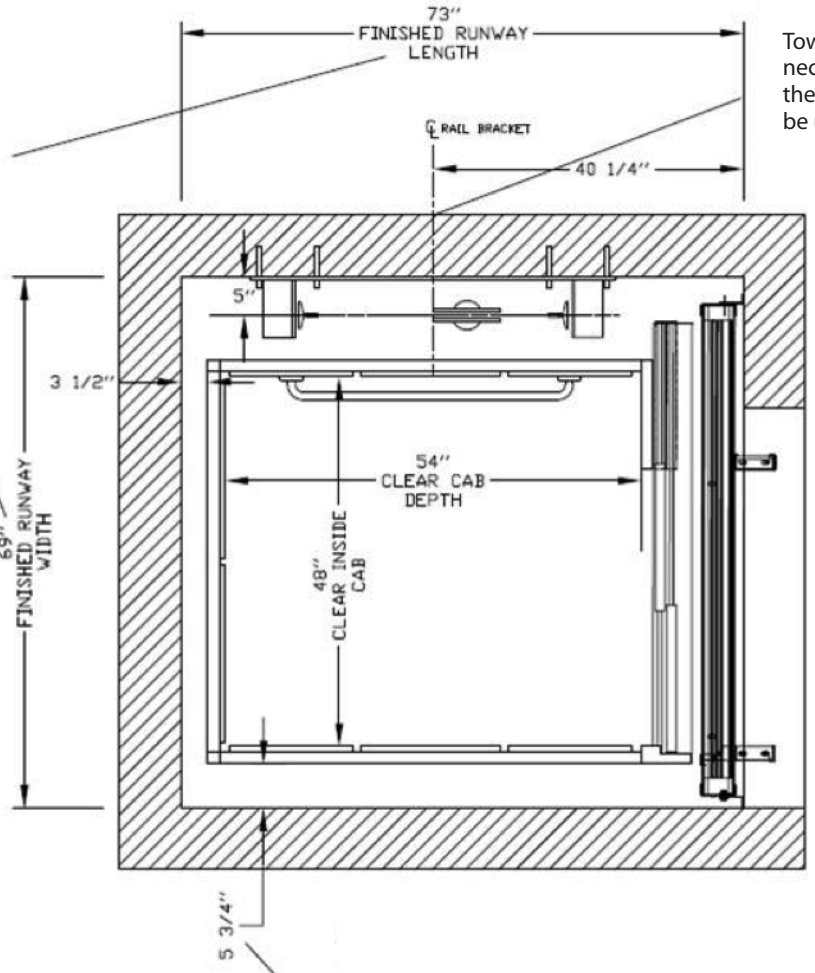
Biggest advantage

- Looks and feels like a commercial elevator

Tip of the trade

- Stainless steel cab options make for a touch of modern design and is very durable

Drawings

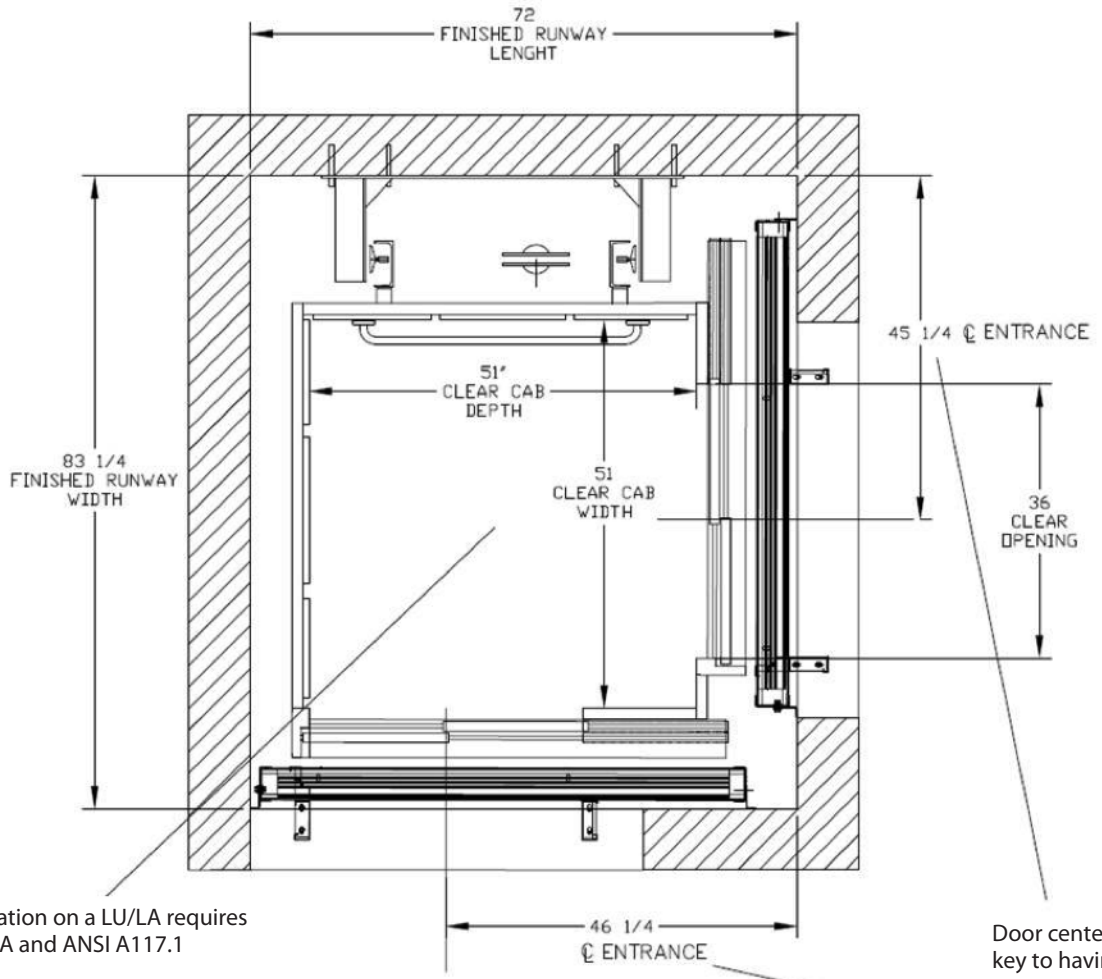


Hoistway size will vary depending on the configuration and platform size.

Tower centerline will not necessarily be the center of the shaft. This centerline is to be used to align the blocking.

Running clearance is dictated by the lift code. On a commercial normally running clearance can't exceed 12" without special provisions.

Drawings



A 90 degree cab configuration on a LU/LA requires a 51"x51" cab to meet ADA and ANSI A117.1

Door centerlines are also key to having your elevator operate correctly and be code compliant

Machine room

Electrical requirements

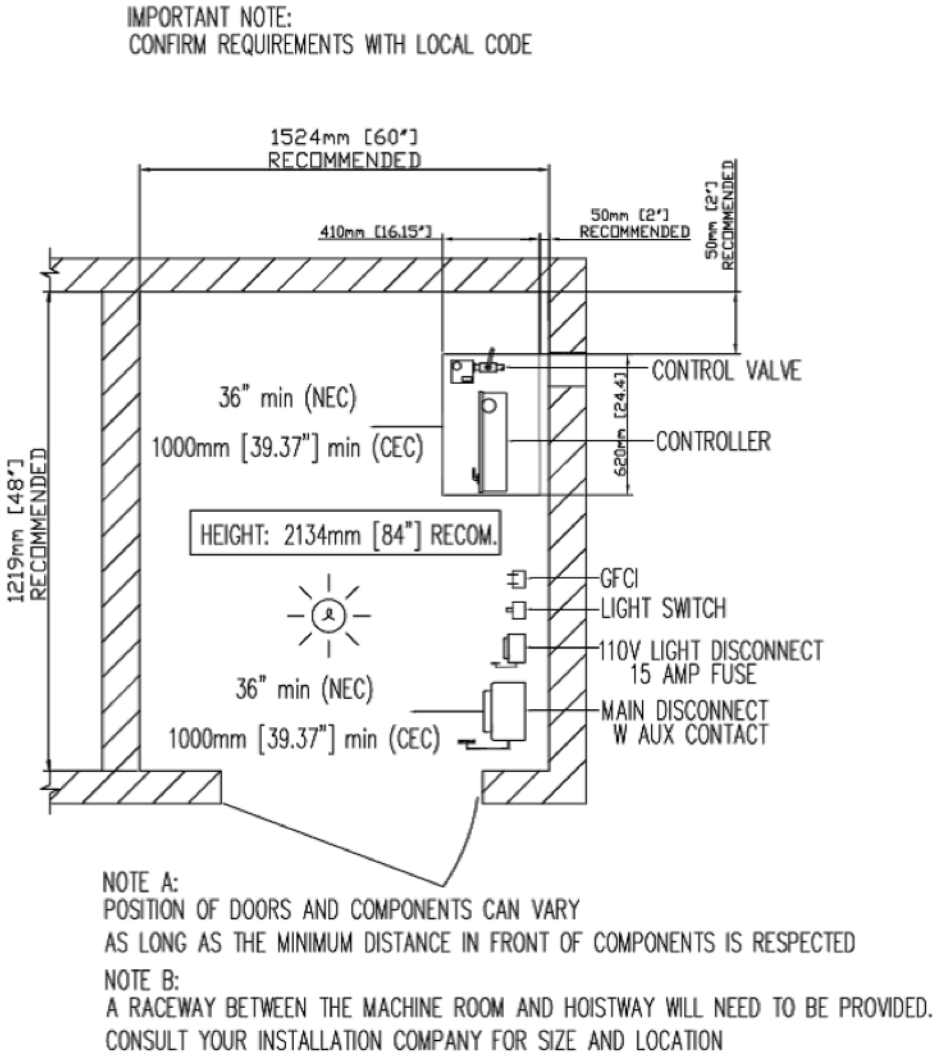
- Power circuit:
  - Typical single phase requirement: 240 – 40 amp
  - Typical 3 phase requirement: 208 – 30 amp
- Lighting circuit:
  - 120 – 15 amps

Other requirements

- Light switch
- GFI electrical outlet

Clearances

- The national electrical code will dictate the required clearances in front of the disconnect and controller. Please make sure to consult your local dealer for more information



Accessibility codes

ADA requirements & ANSI A117.1 requirements

Cab size requirement

- Enter/exit same side: 42"x54"
- Straight through: 42"x54"
- 90 degree: 51"x51"

Understanding code

ASME A17.1
Key Points for LU/LA

- Maximum travel: 25'
- Speed: no greater than 30 feet per minute
- Maximum platform size: 18 square feet
- Load: Max 1400 lb
- Operation: automatic
- Runway: fully enclosed fire rated shaft necessary
- 2010 code and later, fire service phase I only
  - If your state follows an earlier version of the code please consult with your local dealer
- Safeties: will be equipped with safety break and either an over speed governor or over speed valve
- Building size: per IBC, a LU/LA elevator can be installed in a building of 3000 square feet per floor or less and has a maximum of 3 stories. Always check the building classification to make sure this applies

Understanding codes and standards

Local codes

- As a reminder you should always check local code requirements with a local dealer. More and more jurisdictions are adding rules to the national code requirements.
- It is always important to verify any special need during the design stage to avoid costly changes. A good local representative should be an expert on those extra requirements

Understanding codes and standards

Interpretation

- This presentation contains many code interpretations that may be viewed differently by some local jurisdictions. Those interpretations are based upon our many years of experience in the industry and are provided as guidelines only to assist on your project

Presentation availability

For a copy of this presentation please contact Savaria at:
1.855.savaria (1.855.728.2742)

When questions arise during the design stage, please consult the local dealer or manufacturer. Being in contact with an elevator specialist will ensure that all the essential details of your project are worked out at the design stage

Questions

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This concludes our continuing education course on ADA and ANSI A117.1 Design Standards for Platform Lifts and Limited Use/Limited Application Elevators.

Please feel free to contact us with any questions you may have.

Thank You