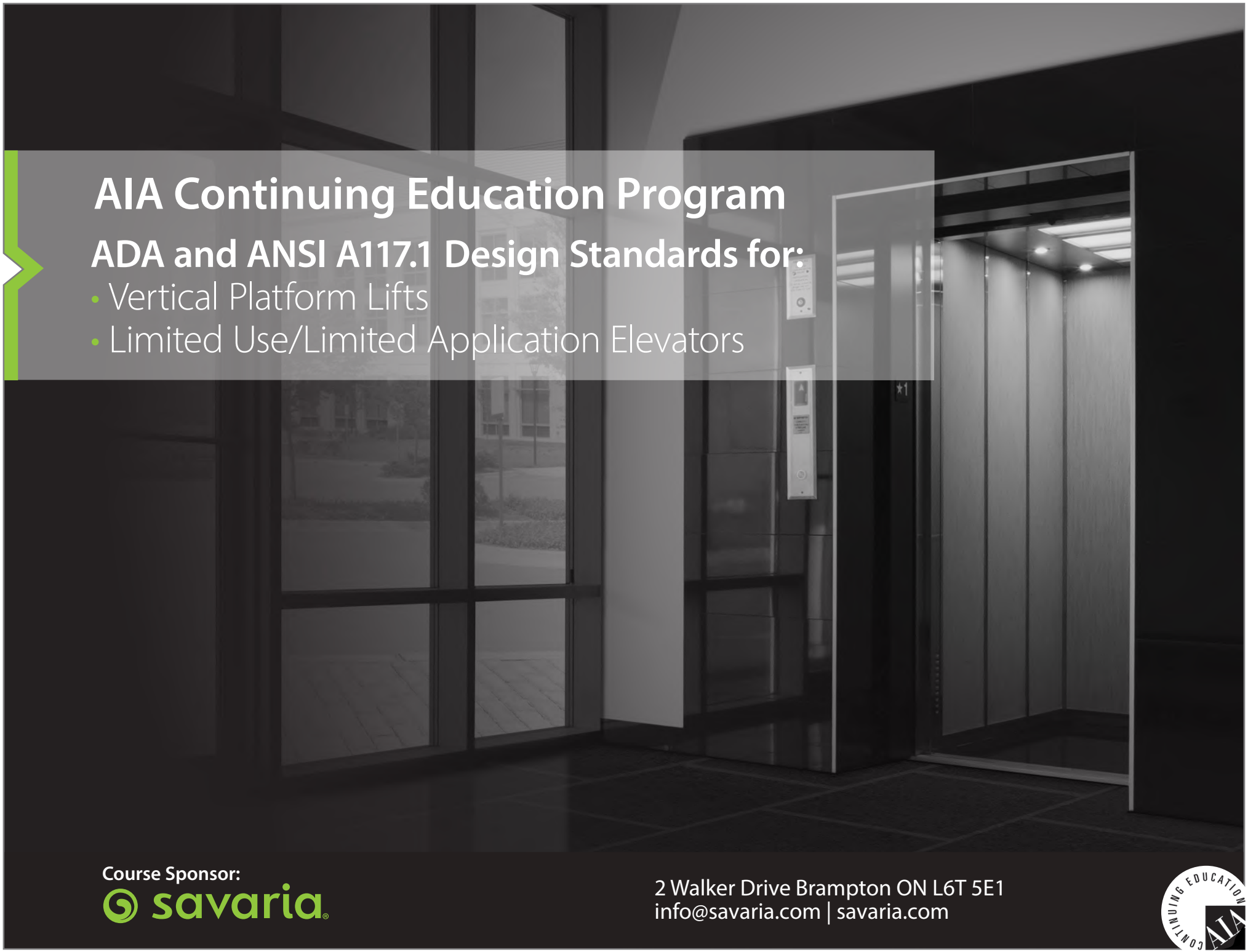


AIA Continuing Education Program

ADA and ANSI A117.1 Design Standards for:

- Vertical Platform Lifts
- Limited Use/Limited Application Elevators

Course Sponsor:

savaria®

2 Walker Drive Brampton ON L6T 5E1
info@savaria.com | savaria.com

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 limited use/limited application (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

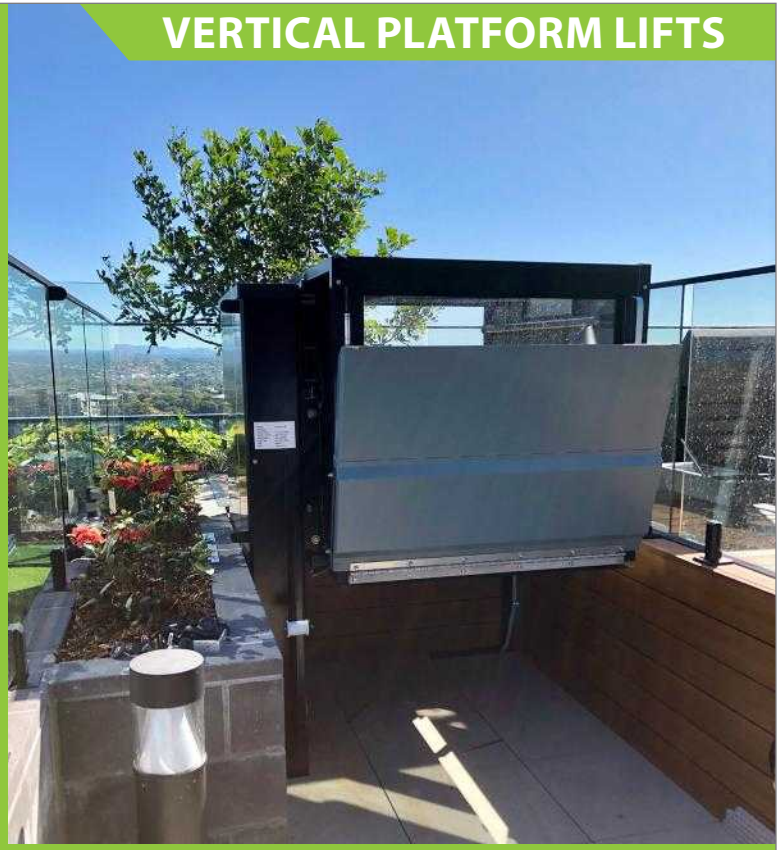
ADA and ANSI A117.1

- 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
CONTINUING EDUCATION
AIA

What is a vertical platform lift?

- Transports a passenger in a wheelchair or anyone who is mobility challenged from one landing to another
- Provides a code compliant access solution for lifting heights of up to 14'
- Suitable for both indoor or outdoor applications and are a good alternative to a fixed ramp

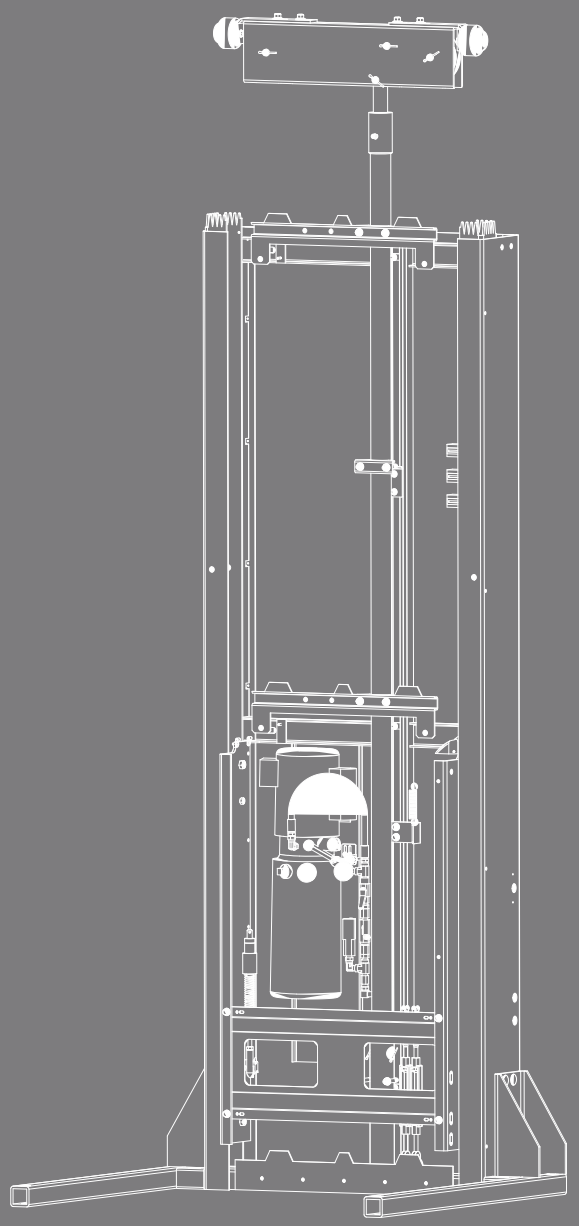


Technology

Two main drive technologies:

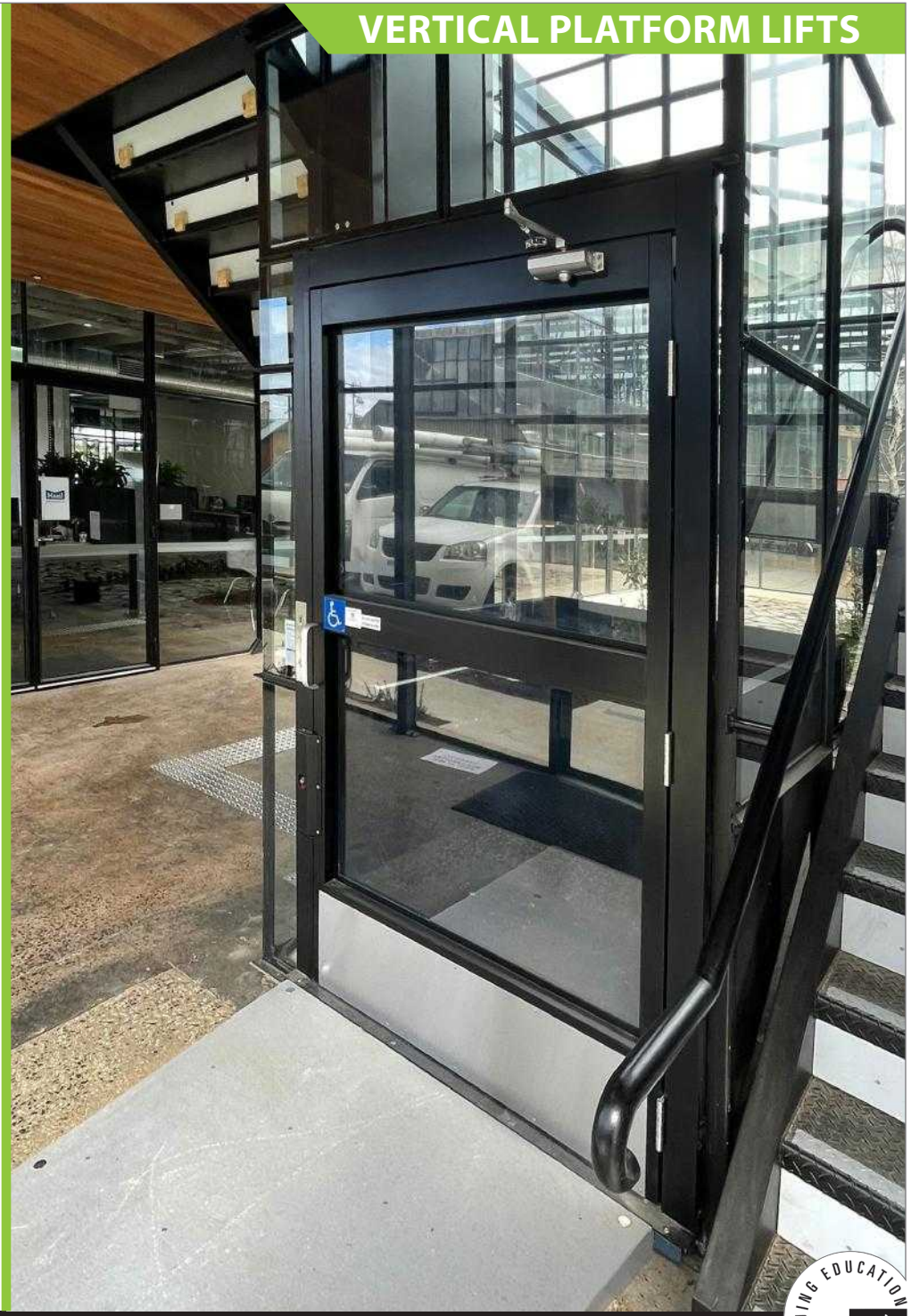
1. **Hydraulic**
   Advantages:
   - Typically faster travel
   - Longer service life
   - Easy emergency manual lowering capabilities

2. **Screw drive**
   Advantages:
   - Small cost advantage
   - Simple technology



Types of lifts

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



Types of lifts

Shaftway model (by general contractor)

What to know

- Limited to 14' rise by A18.1 2011 & beyond

Ideal application

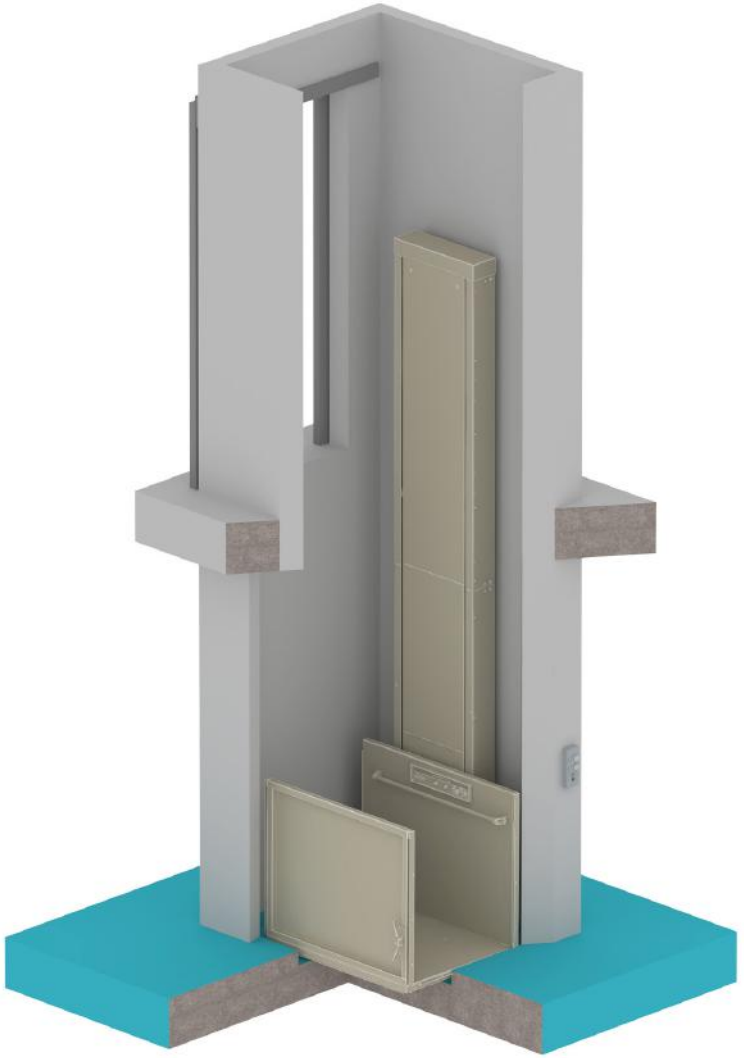
- Any application that requires vertical access penetrating a floor, with or without fire barrier

Biggest advantage

- Very durable as the lift is protected
- Hidden: 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 A18.1 2011 & beyond
- Can't be used to penetrate a floor as 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
- Outdoor application, especially when equipped with a domed roof

Biggest advantage

- Flexibility of design

Types of lifts

Enclosure model (by lift manufacturer)

Hurricane testing

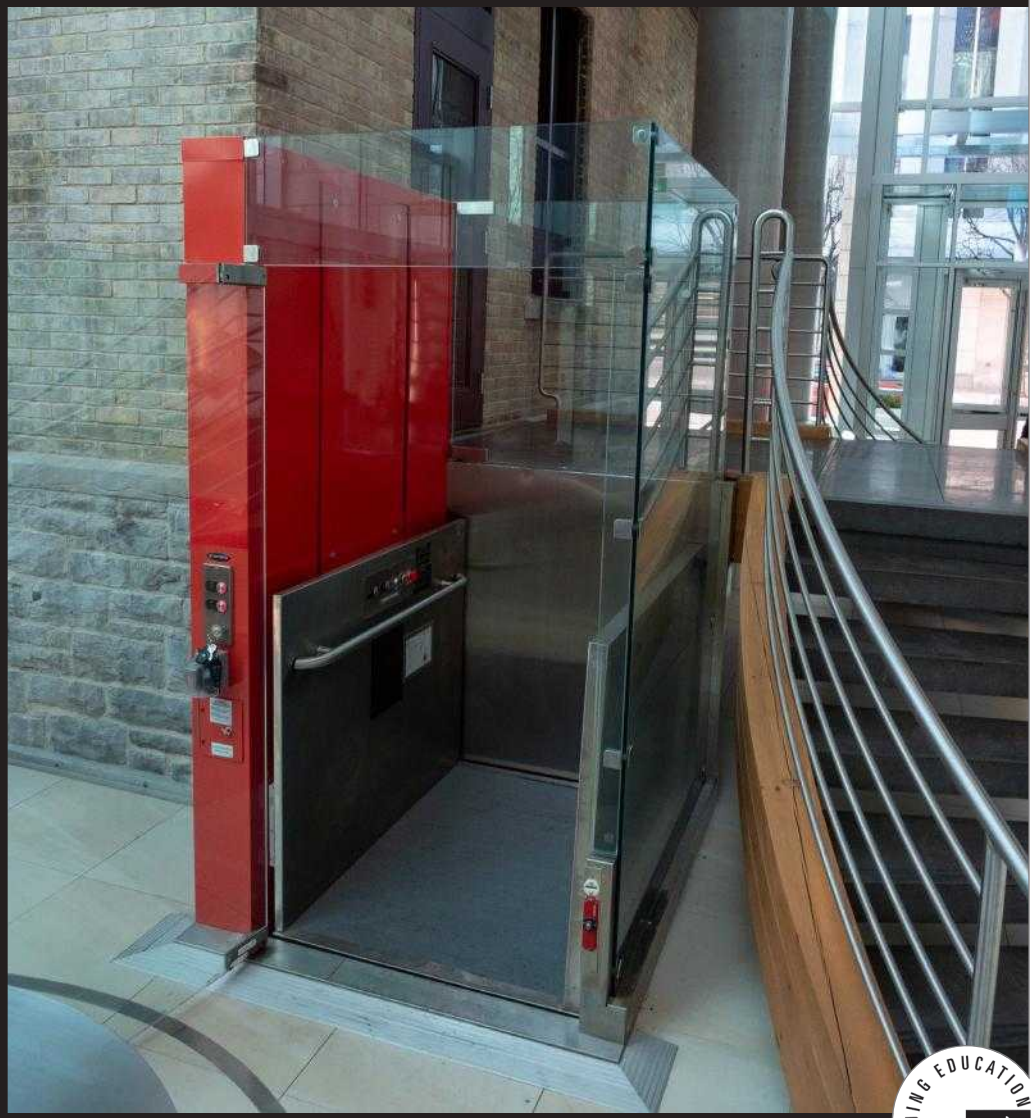
- Some states or counties may require outdoor enclosures to be certified
- Some manufacturers offer a lift with this certification and even offer removable hurricane-proof enclosure panels

Tip of the trade

- Custom colors, tempered glass and other finish options can make the wheelchair lift a design statement

Types of lifts

Special applications



Types of lifts

Enclosure applications

Types of lifts

Unenclosed open model

What to know

- Limited to 60" of travel under 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 points
- Lift will be equipped with a safety underpan sensor to detect any obstacle under the platform

Ideal application

- Outdoors going to a deck — typically called "porch lifts"
- Ideal for stages and raised platforms

Biggest advantage

- Most economical option for short 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 travel distance 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 entry/ exit

Ideal application

- Stage area or raised platforms
- Small indoor applications

Biggest advantage

- Prevents any object or person from getting underneath the lift while having the least obstrusive 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/relocatable lifts

What to know

- Typical travel up to 48"
- All states that adopted the ASME A18.1 2017 and beyond follow a new guideline on how mobile lifts should be built. They are now inspected following this standard in affected states. States that follow the previous edition of the code may decide whether to adopt the new standard for inspection. Please consult your local dealer for more information.
- 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 or raised platform
- Any application where visibility of the lift can be a nuisance

Biggest advantage

- Portability

Tip of the trade

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

Platform configurations

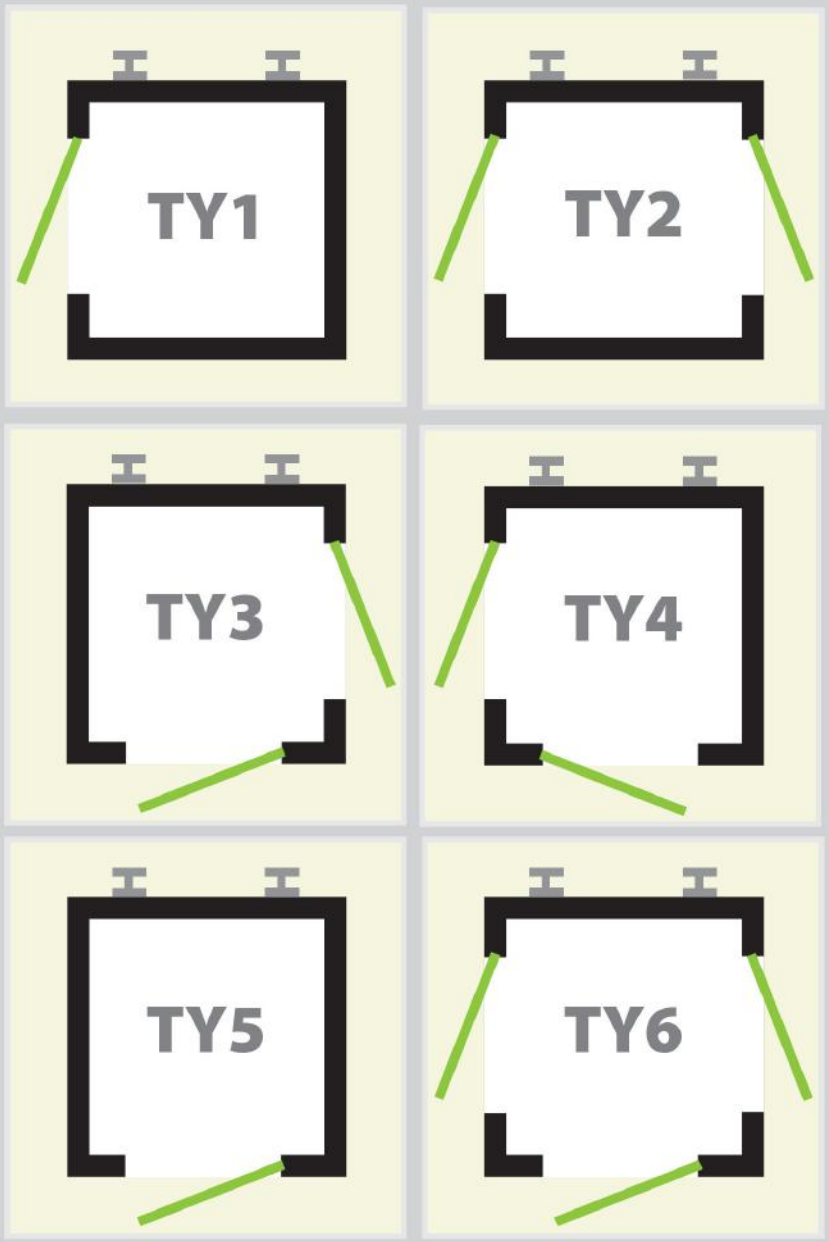
Common car sizes

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

There are 3 main types of cab configuration

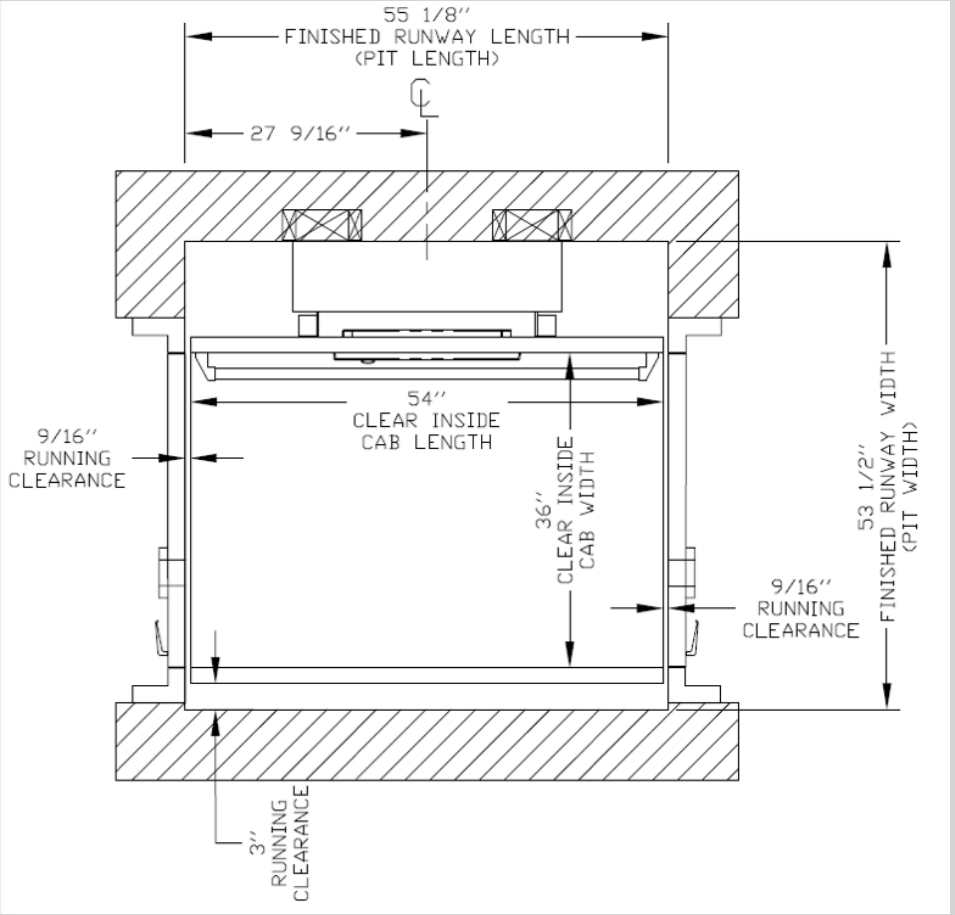
- Entry/exit same side (#1 or #5)
- 90-degree (#3 and #4)
- Straight-through (#2)
- Some manufacturers will even offer a 3-sided platform (#6)

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

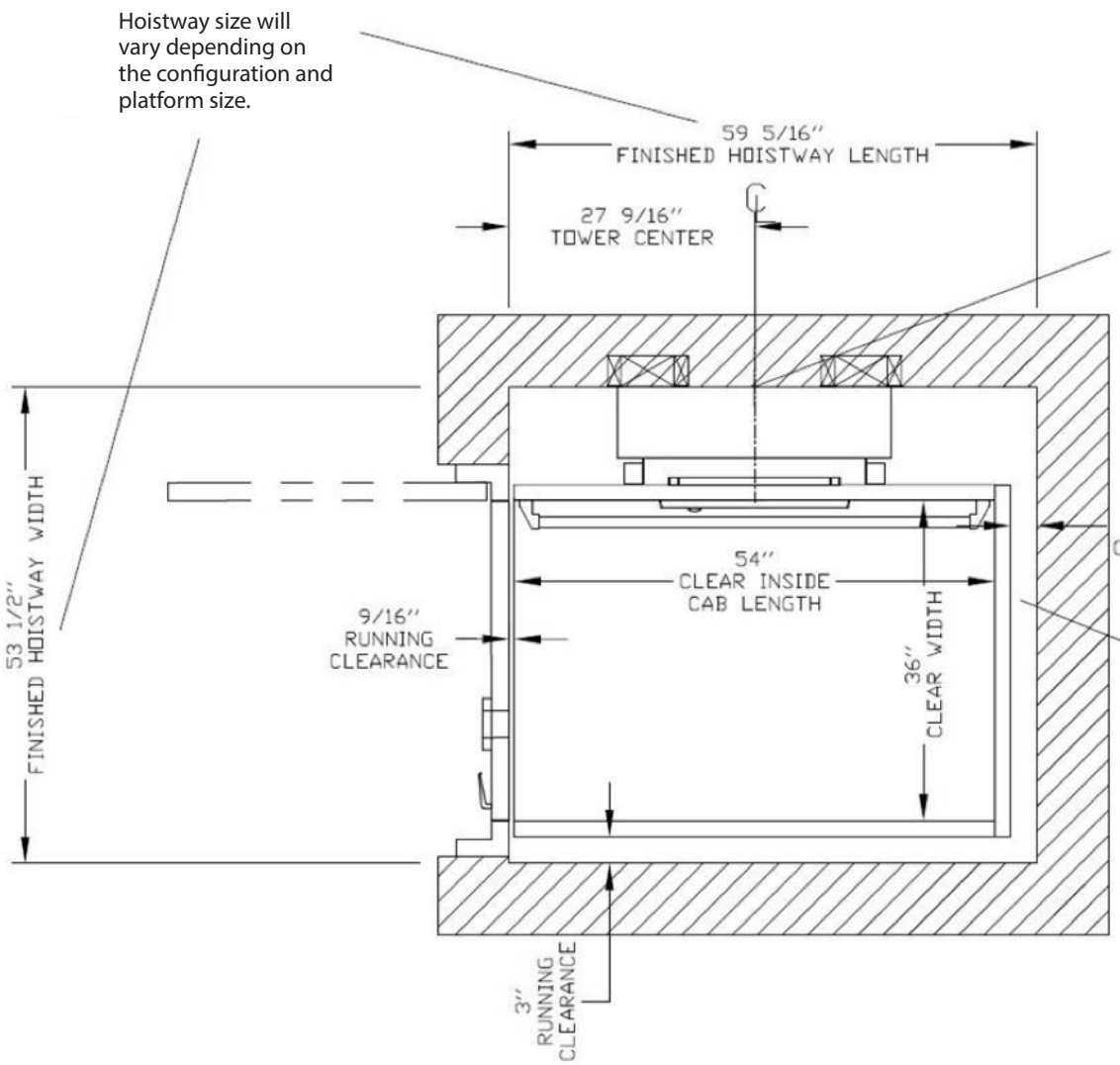


Space allocation

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

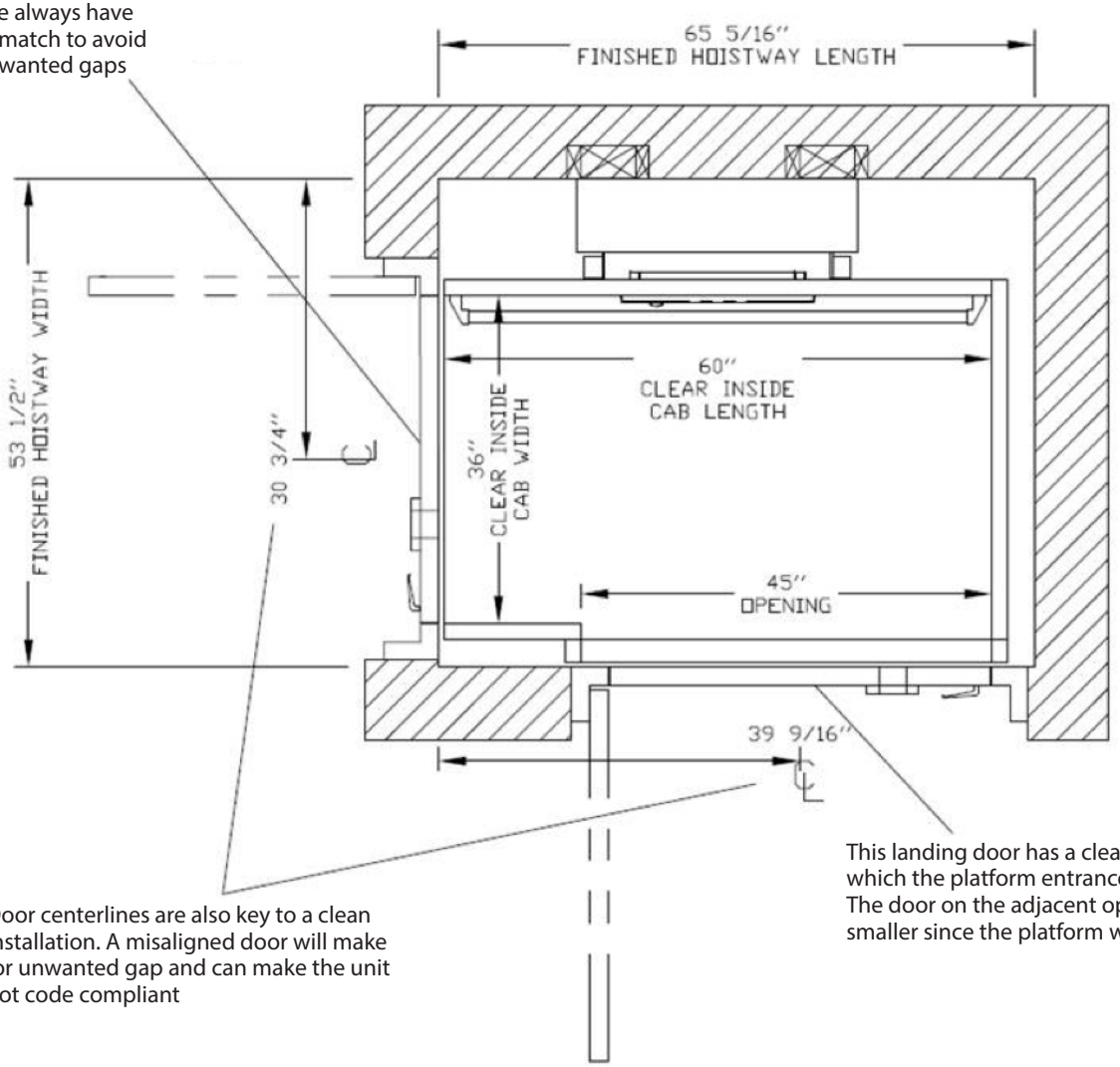


Drawings


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

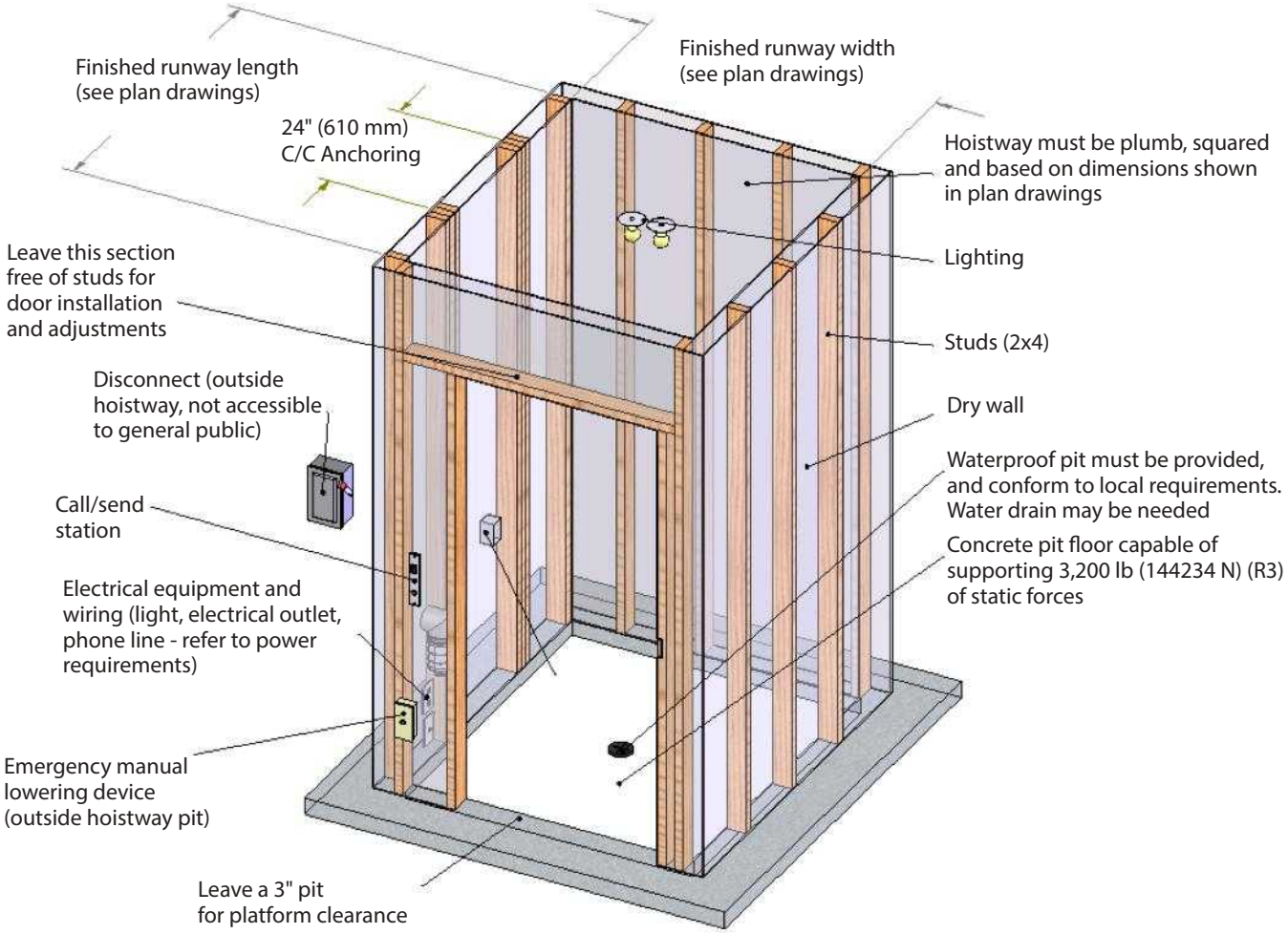


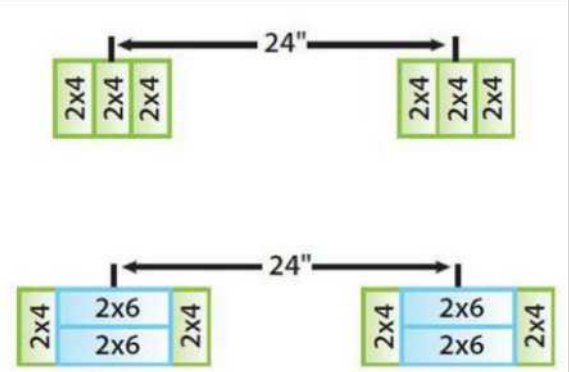
Door centerlines are also key to a clean installation. A misaligned door will make for unwanted gap and can make the unit not code compliant

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

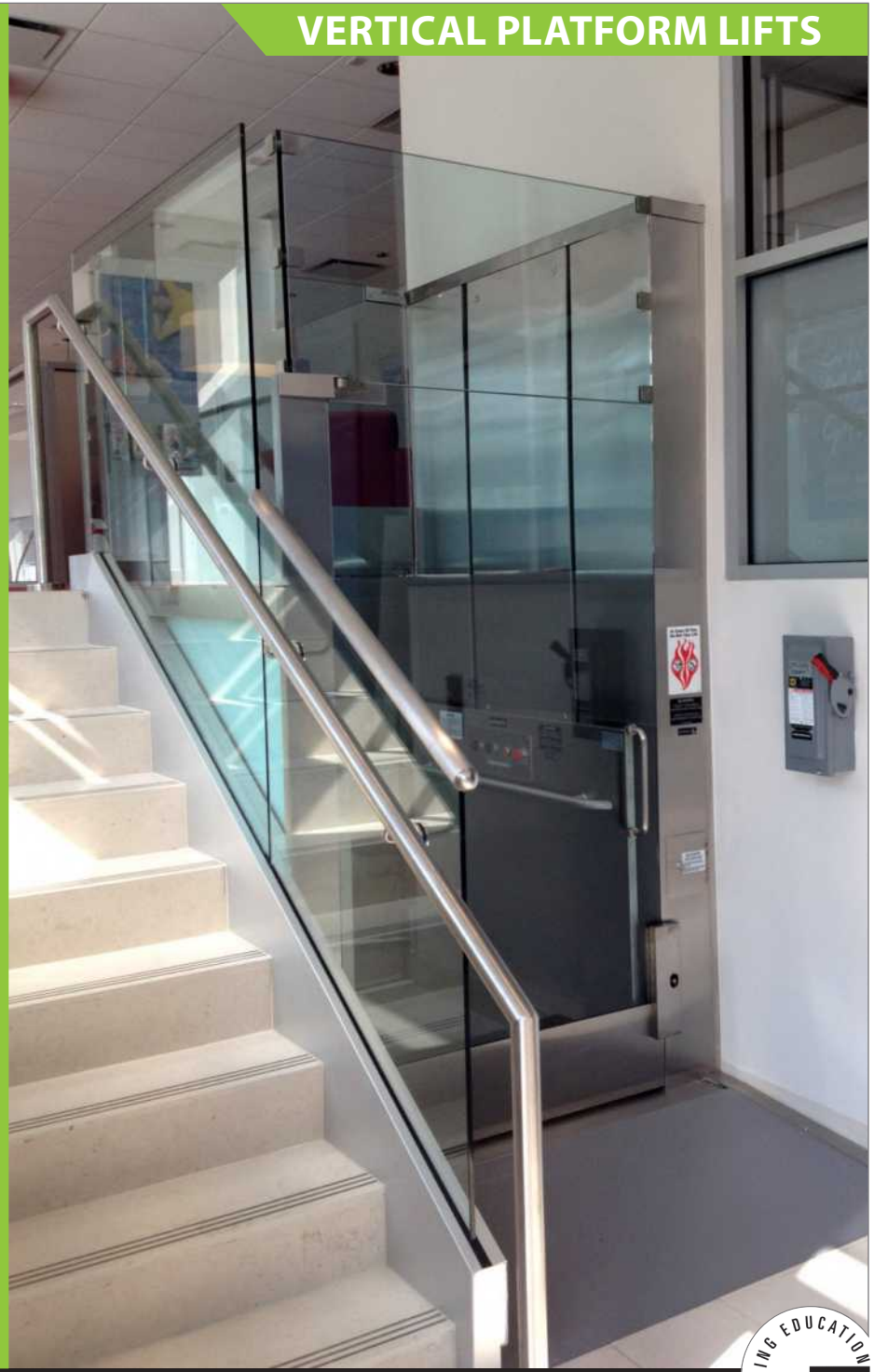
- Typically runs on 120v – 20amp dedicated line
- Must have a fused disconnect (see next page)
- Disconnect must have an auxiliary contact to cut off the battery circuit of the lift (see next page)
- GFI outlet will be required on any shaftway lift at the bottom of the shaft
- A light at the bottom of the shaft is required 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
- A pit is usually ideal but when it is not possible, a ramp may be used under the following guidelines:
  - In an existing application - 1:8 ramp ratio is acceptable (ADA)
  - In new construction - 1:12 ramp ratio is 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 make manual lowering easy 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
- A couple of drawbacks to this technology:
  1) Limited number of continuous cycles available until the battery needs to be charged
  2) In an outside application, cold temperature may a 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 in case of power failure
- This is the standard configuration for most hydraulic units

True battery back up:

- Unit runs 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 2010 requirements

Cab size

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

Automatic door

- Entry/exit same side: required
- 90-degree: required
- Straight-through: not required

Other scenarios requiring an automatic operator

- Entrance accessed with a ramp
- Application with more than 2 stops
- When doors do not have 18" of strike side clearance

A117.1 2017 requirements

Existing construction:

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
- 90 degree: required
- Straight through: not 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

New construction:

- Cab size length is adjusted to 52” for entry/exit same size and straight through
- 90-degree lifts must have a platform of 42”x60”
- All other requirements are the same

Accessibility codes

ADA 2010 requirements

Minimum landing door width

- Entry/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 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 vertical platform lifts

A117.1 2017 requirements

Minimum landing door width

- Entry/exit same-side: 32"
- Straight-through: 32"
- 90-degree: 36" 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 the user's chair is beyond the arc of the opening door

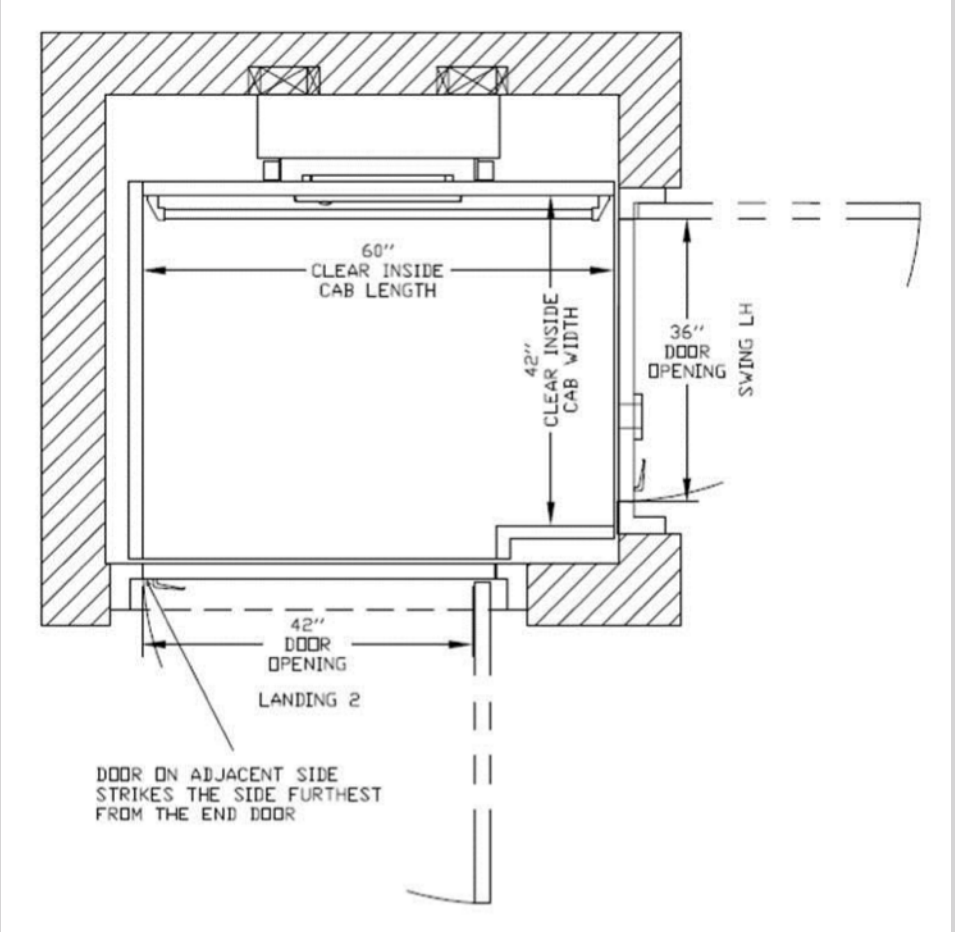
Phone

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

Exception to code

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

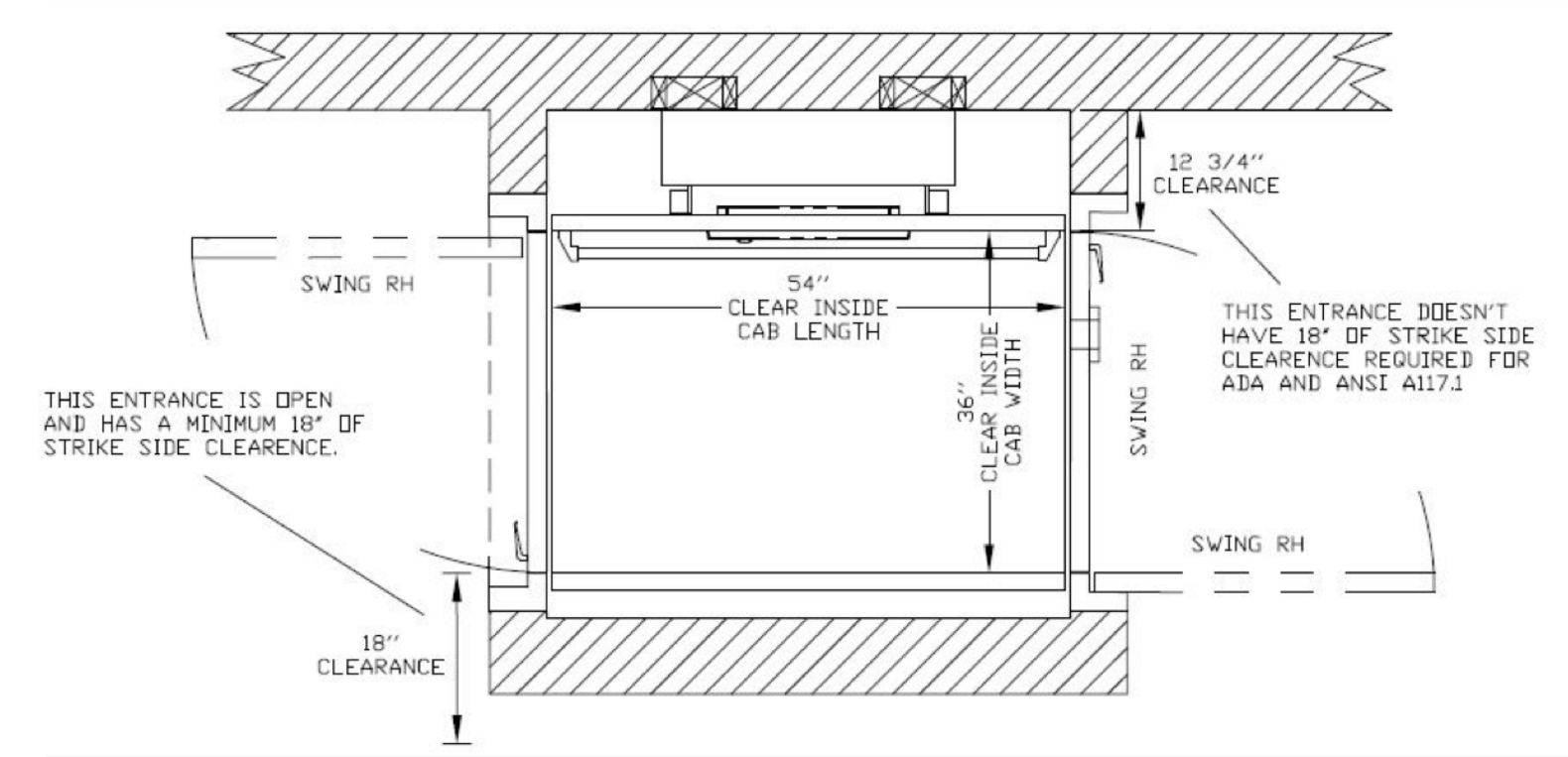
- ANSI A117.1 makes an exception stating that door operators are not required on a 90-degree (2 stop) configuration as long as the strike side of the adjacent door is furthest from the end door



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): between 400 lb and 1050 lb
  - Any platform 15 square feet and more shall have a minimum load of 750 lb
- Operation: constant pressure controls
- Runway enclosure shall be at least 42" above top landing on all sides

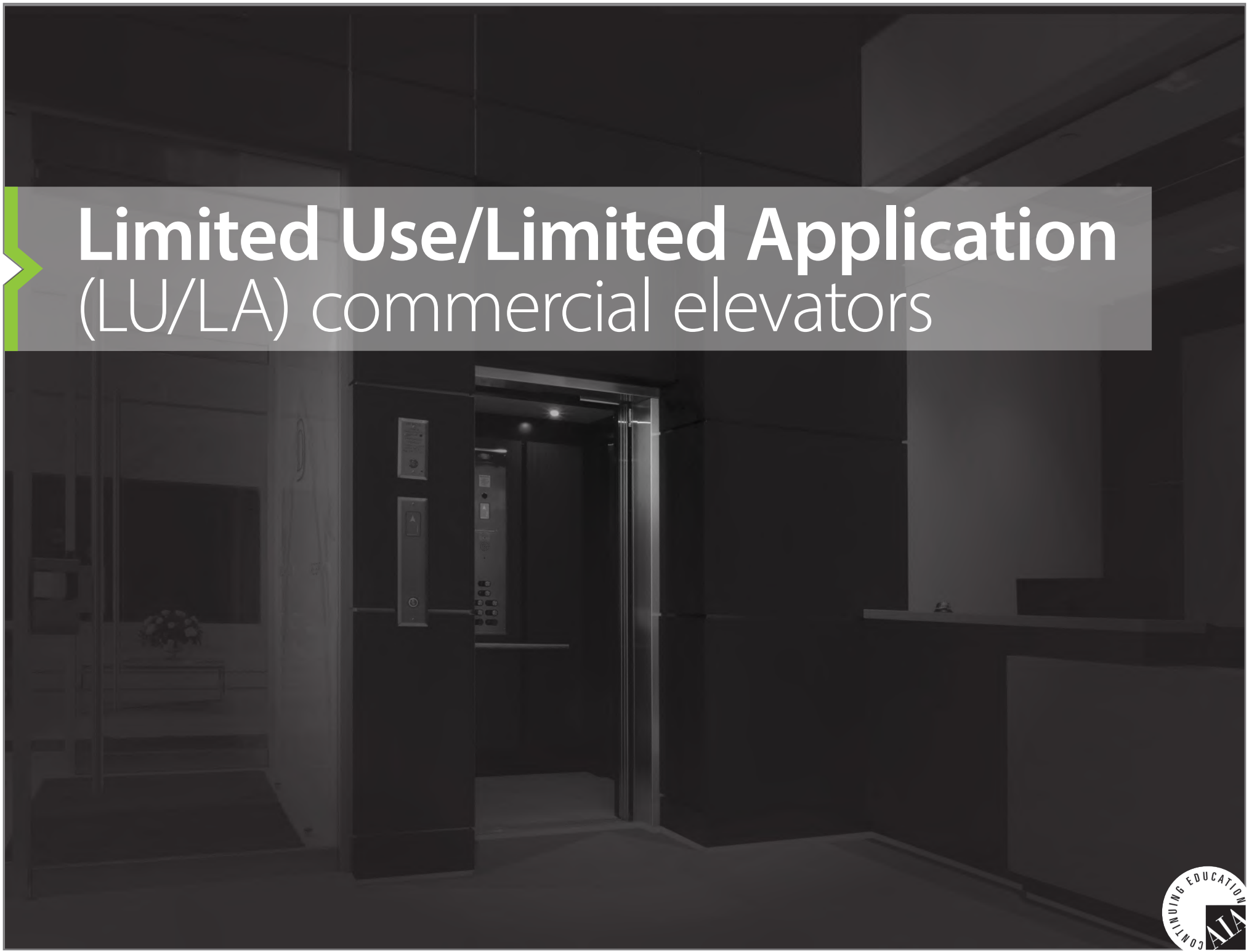
Accessible means of egress

- When a platform lift is permitted to be an integral part of an accessible route, the lift shall be provided with standby power per the IBC
- This can be done via:
  - Battery backup provided by the lift that allows for 5 up-and-down cycles at full load per A18.1 article 2.12
  - By the building power generator that meets the same cycle requirement

Understanding code

ASME A18.1
Key points for vertical platform lifts

- Landing doors need 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 code
- Overhead
  - 80" minimum overhead is required above the platform and at all landings
  - 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



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

What is a LU/LA elevator?

- Offers features you would typically see in a high-rise elevator but is designed for commercial low rise buildings
- Well suited for use in small commercial buildings with up to three stories
- Perfect retrofit for existing construction since it requires minimal overhead and pit depth
- A cost-effective solution for limited use ADA-compliant accessibility

Commercial elevators

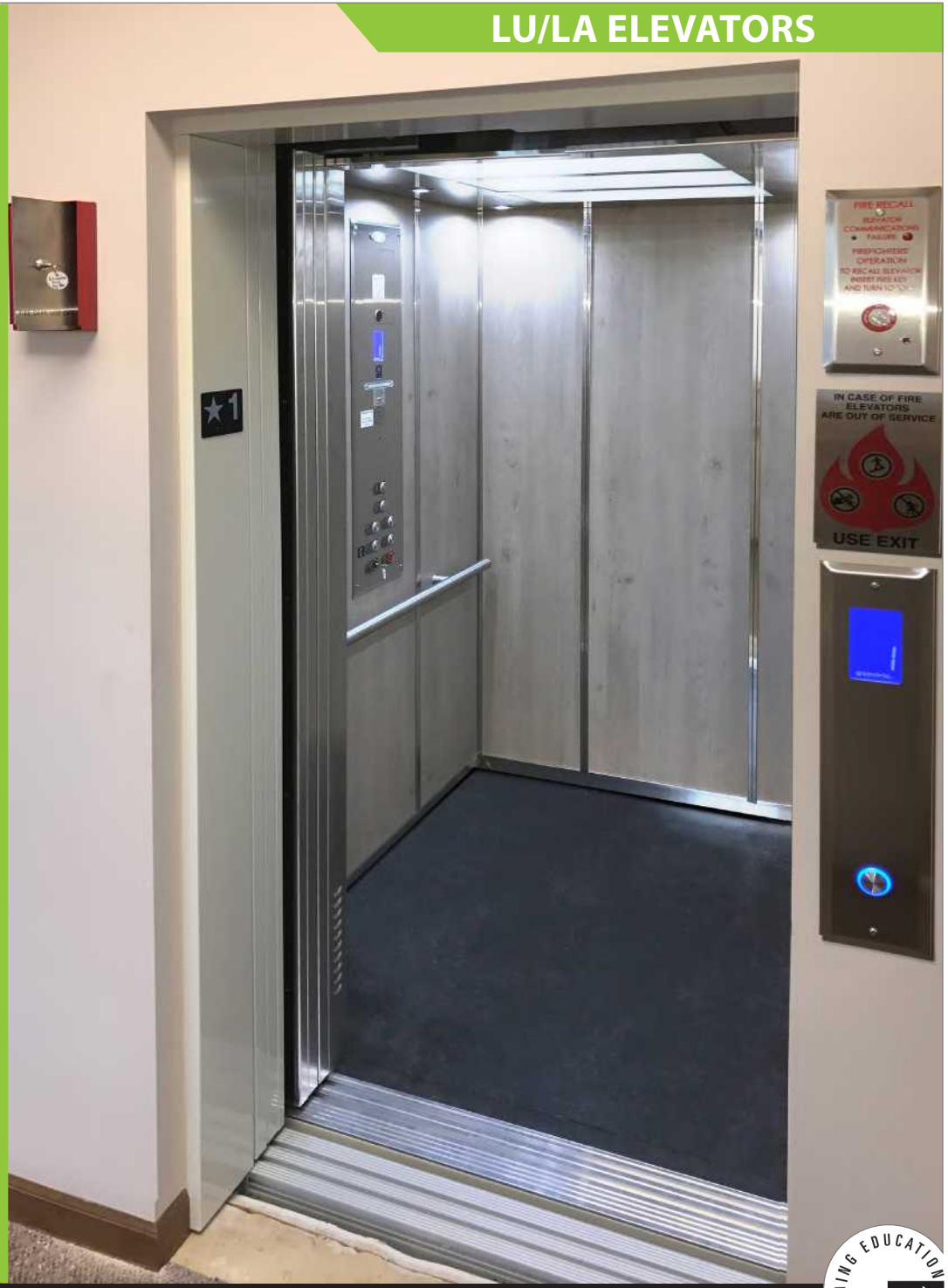
LU/LA

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 134" or so, relying on the manufacturer for the proper refuge space
- Available in 3 different cab configurations: same-side, straight-through or 90-degree
- Construction benefits (shallow pit and minimal overhead requirements) compare to its full size passenger counterpart
- Typical LU/LA maintenance schedule is quarterly versus monthly for most full size passenger elevators

Ideal application

- Existing construction where space is hard to come by. The small pit and low overhead are easier to accommodate than the ones of a full size passenger elevator
- Any small commercial building 3 stories or less, as dictated by IBC and A117.1



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 enhanced durability

Technology

Main Drive Systems Available

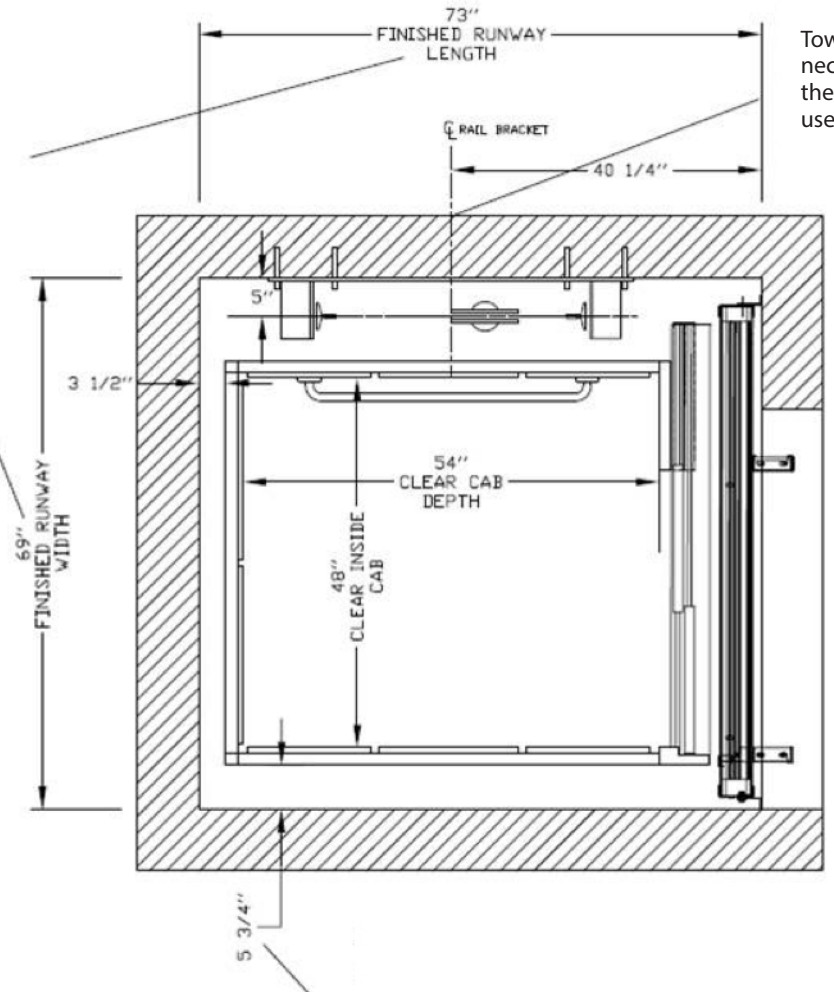
Hydraulic

- Most cost effective
- Effortless manual lowering
- Proven elevator drive system

Geared Traction

- Better suited for high traffic areas
- Quiet operation (varies by manufacturer)
- Optional door buck controller for true MRL configuration
- Environmentally-friendly: reduced power consumption, no oil

Drawings

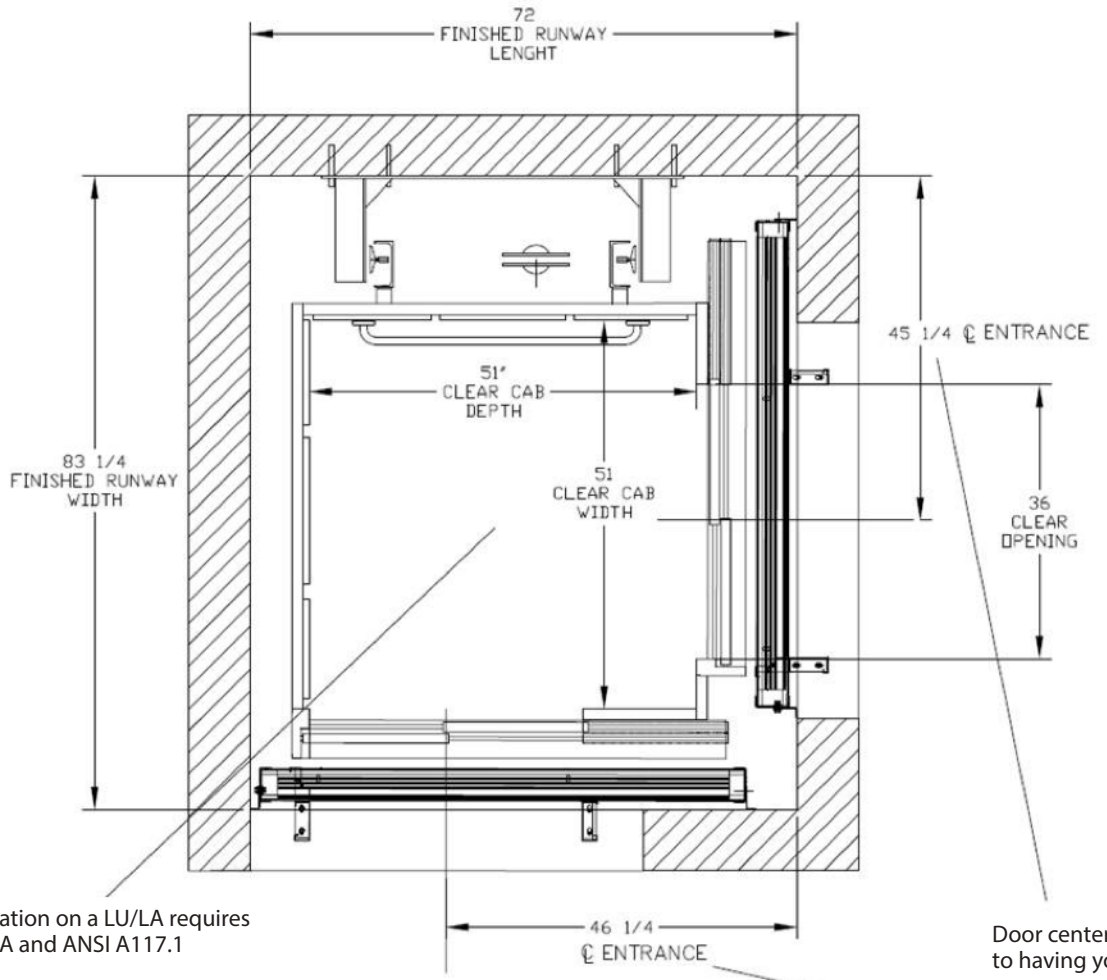


Hoistway size will vary depending on the configuration and platform size.

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

Running clearance is dictated by the lift code. Normal 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 key to having your elevator operate correctly and be code compliant

Accessibility codes

ADA, IBC & A117.1 requirements

Cab size requirement

- Entry/exit same side: 42"x54"
- Straight-through: 42"x54"
- 90-degree: 51"x51"
- Building size: IBC does not dictate any square footage limitations
- If your project is governed by ADA, there are no limitations for existing construction and new construction if the building has 3000 square feet or less per floor, and a maximum of 3 stories

Machine room

Electrical requirements

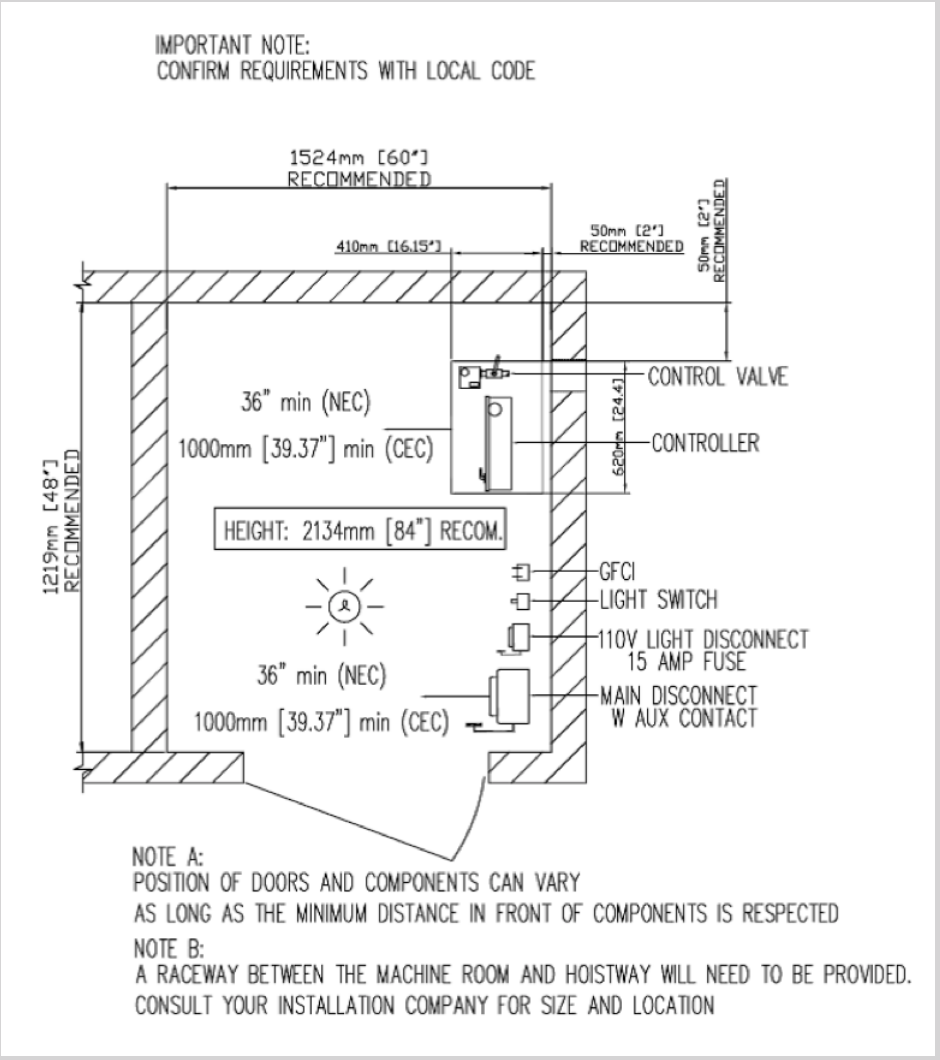
- Both drive systems have same electrical requirements
- Power circuit:
  - Typical single-phase requirement: 240 – 40 amp
  - Typical 3-phase requirement: 208 – 30 amp
- Lighting circuit:
  - 120 – 15 amps

Other requirements

- Light switch
- GFI electrical outlet

Clearances

- The national electrical code will dictate the required clearances in front of the disconnect and controller
- Consult your local installer for more information

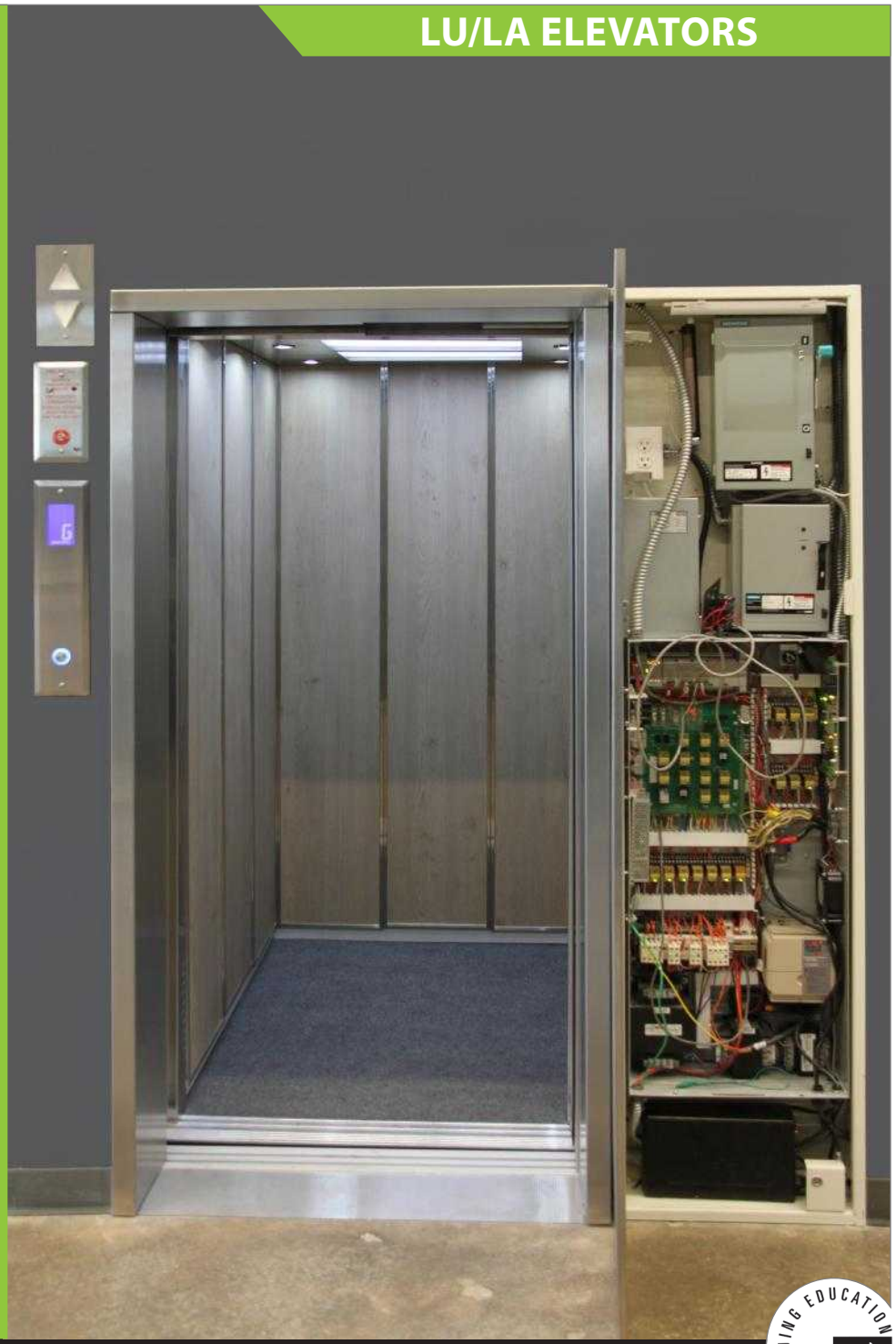


Machine room-less

Spec a LU/LA with "MRL" configuration for projects with limited space

- "Door Buck Controller" contains elevator controller, power disconnects, GFI electrical outlet and manual lowering device
- Usually placed next to landing door

Please consult with your local elevator company before specifying a true MRL Unit.



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 installer
- On mezzanine application, local authority will often give variance to remove code fire requirements for glass unit
- Safeties: will be equipped with safety break and either an over speed governor or overspeed valve

Understanding codes and standards

Local codes

- More and more jurisdictions are adding rules to the national code requirements
- Always check local code requirements with a local installer
- Verify any special needs during the design stage to avoid costly changes
- A good local representative should be an expert on these extra requirements

Interpretation

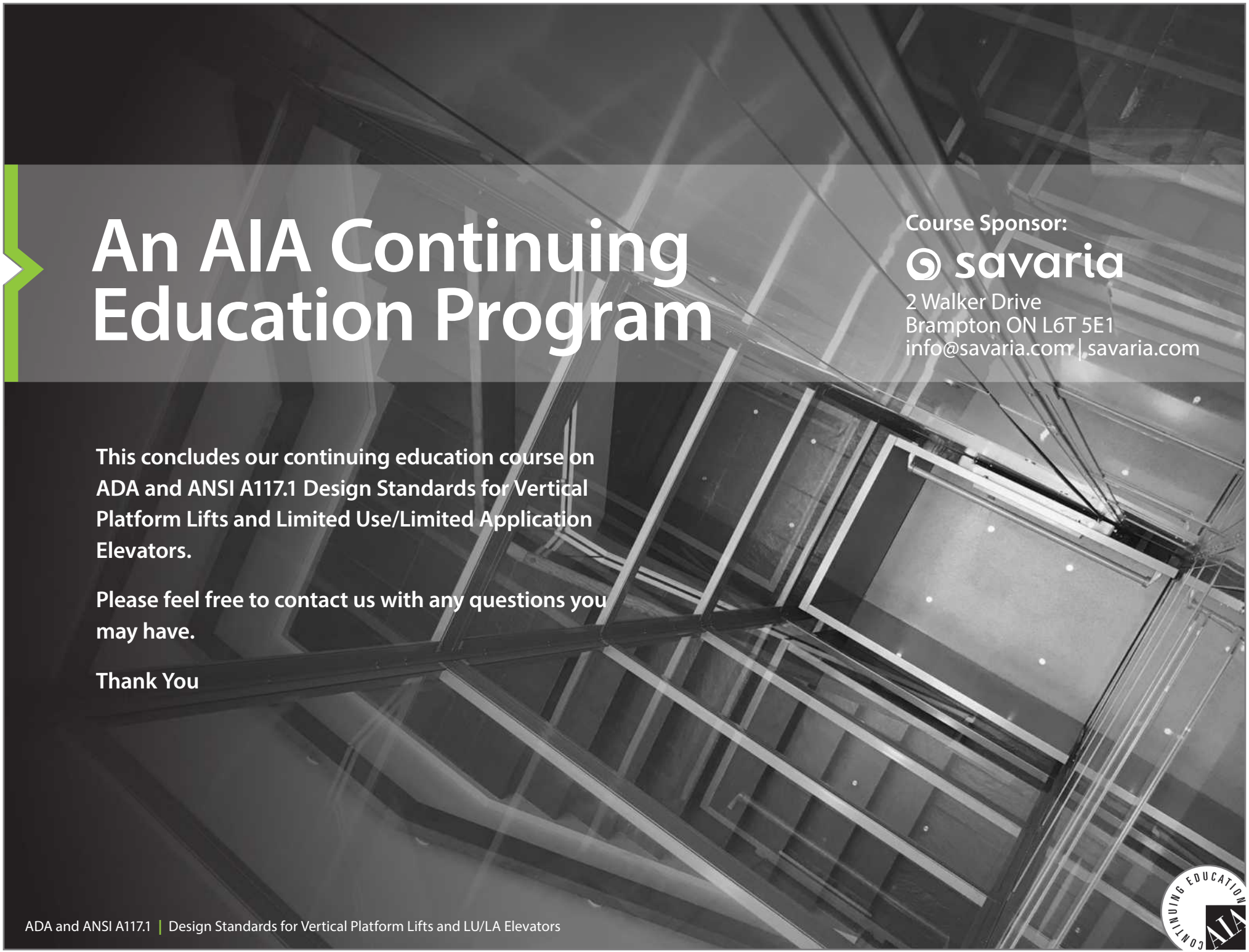
- This presentation contains many code interpretations that may be viewed differently by some local jurisdictions
- These interpretations are based on our many years of experience in the industry and are provided as guidelines only to assist on your project

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



An AIA Continuing Education Program

Course Sponsor:

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Brampton ON L6T 5E1
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This concludes our continuing education course on ADA and ANSI A117.1 Design Standards for Vertical Platform Lifts and Limited Use/Limited Application Elevators.

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

Thank You