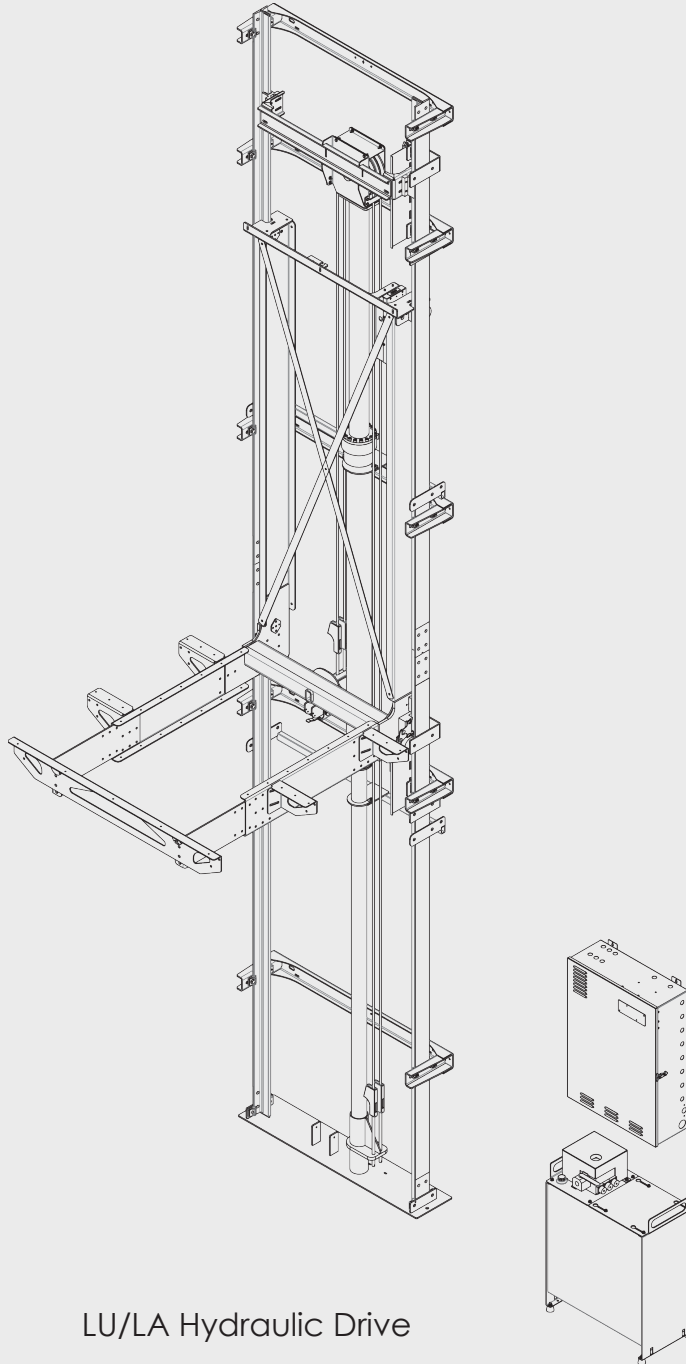


# Limited Use/Limited Application Elevator Design Guide

ASME A17.1, Part V, Section 5.2




LU/LA Hydraulic Drive

# Table of Contents

About Symmetry Elevating Solutions .....	2
Elevation-Limited Use/Limited Application Elevator .....	3
Component Identification .....	4
Common Specifications .....	5
Hoistway Configuration .....	6
Left-Hand Entrance Frame .....	7
Right-Hand Entrance Frame .....	8
Hydraulic Drive-Machine Rooms.....	9
Hoistway-Typical Rail Backing Construction.....	10
Hoistway-Construction Outline .....	11
Configurations-Single Opening .....	12
Configurations-Opposite Opening .....	13
Configurations-90 Degree Opening.....	14
Notes.....	15

## About Symmetry Elevating Solutions

Symmetry is a beautifully crafted, expertly engineered accessibility-related product line proudly **made in the U.S.A.** at the Bella Elevator LLC manufacturing plant. Promoted and sold by our  exclusive nationwide network of carefully selected Symmetry partners and associates, Symmetry offers residential elevators, vertical platform lifts and limited use/limited application (LU/LA) elevators.

Strictly following national code guidelines and adhering to local jurisdiction requirements and variances, Symmetry products are ADA and ASME compliant and manufactured to meet the end users' specific needs. Symmetry Elevating Solutions representatives possess a wealth of knowledge and experience and are committed to excellence for the life of the product-before, during and after project completion.

With dealer locations spanning North America, we are equipped to meet the accessibility needs of a wide spectrum of clients, from home and business owners, to schools, municipalities and other governmental entities.

**Please note that this guide is for planning purposes only, applies exclusively to national code and should not be used for construction.** Prior to construction, please contact your local Symmetry Elevating Solutions representative and request a job-specific set of elevator plans to ensure that you obtain the accurate dimensions and requirements for your project.

Your representative will also assist you to identify resources to ensure that your project plans will comply with the applicable state and local codes and the permitting authorities.

# Elevation

Limited Use/Limited Application elevator

## What is a Limited Use/Limited Application Elevator?

The LU/LA elevator is designed to meet the requirements of the Americans with Disabilities Act (ADA) and to provide access for low occupancy/low rise commercial buildings where a traditional passenger elevator is not feasible or required by code.

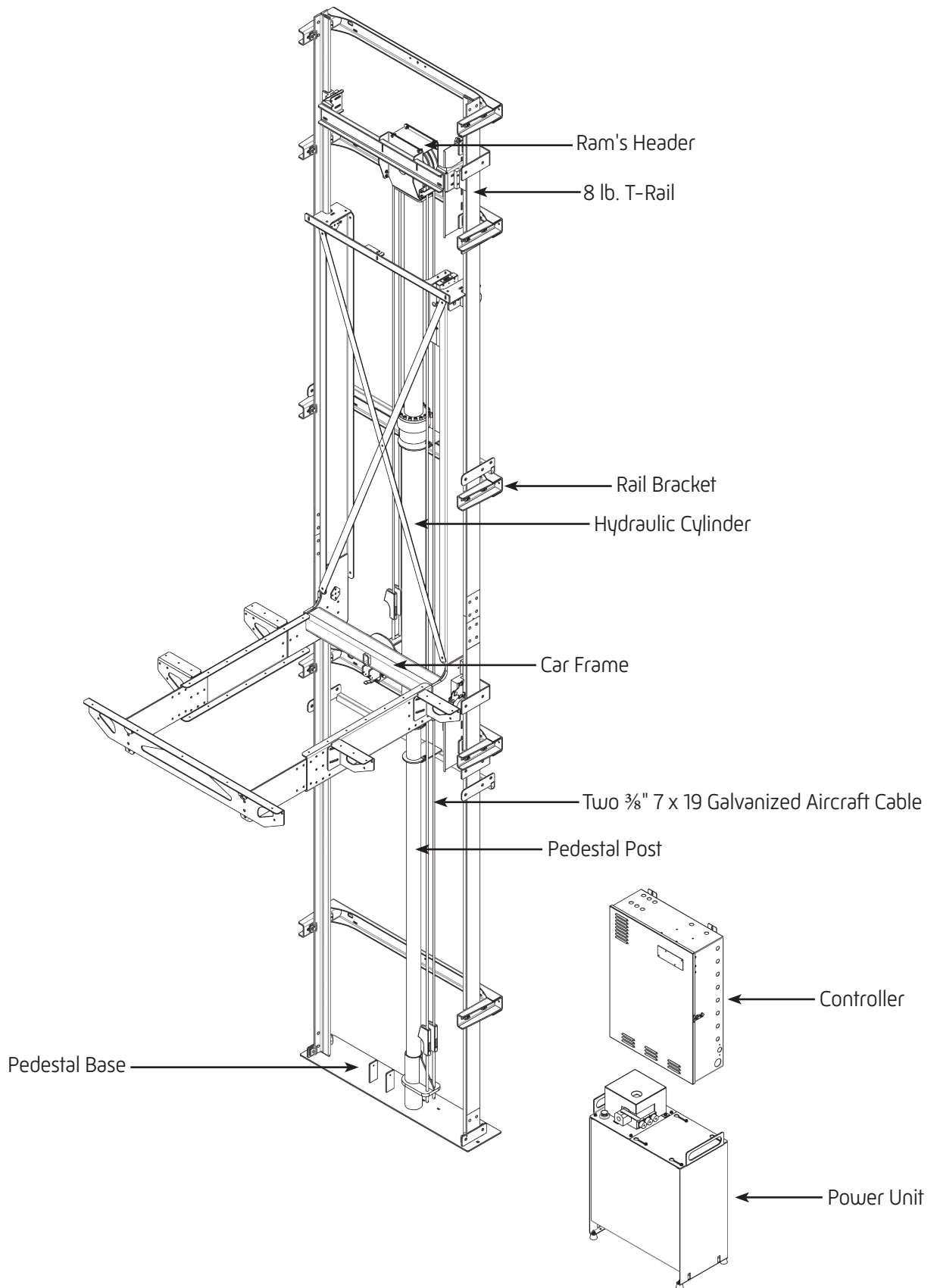
When only the highest level of safety is your standard, the Elevation LU/LA elevator is the optimal product for your project. Leading the industry in quality, style and design, Elevation by Symmetry is engineered and designed for limited commercial, as well as residential, use.

The Elevation is ideal for applications up to six stops and up to 50 feet of travel (with travel variance) and is designed for use in schools (and other educational settings), churches, multi-family housing units, libraries and more.



### Symmetry LU/LA elevators are available with:

- Shallowest pit depth required in the industry
  - 13 inch pit with elastomeric bumpers (ASME A17.1 year 2013 & prior)
  - 14 inch pit with buffer springs (ASME A17.1 year 2016)
- Shortest overhead required in the industry for existing buildings
  - 106 inches with alternate means
- All light sources are powered by energy-efficient LED technology
  - Including car operating panel (COP), car lights and directional indicators



## Standard Features

- Rated capacity: 1,400 lb. (635 kg)
- Lifting height: up to 25'0" standard
- Power supply: 208/230 VAC, 1 PH, 30 amp, 60 Hz
- Speed: 30 fpm (.15 M/S)
- Automatic self-leveling
- 2:1 roped hydraulic drive system
- Smooth start and stop
- Two-stop operation
- 36 inch doors, automatic horizontally sliding, two speed hoistway and car door; full-height light curtain
- Pit depth:
  - ASME A17.1 year 2013 & prior: standard 13 inches with elastomeric bumpers and alternative means (bottom car clearance device)
  - ASME A17.1 year 2016: standard 14 inches with buffer springs and alternative means (bottom car clearance device)
- Overhead: 11'0" standard or 8'10" (106 inches) with alternative means (top car clearance device)
- Selective Collective Programmable Logic Controller (PLC)
- Car-mounted directional indicator with audible signals
- 4 HP submersible pump and motor for quiet operation
- Two-speed control valve
- Low oil protection
- Single-stage hydraulic jack and two 3/8 inch aircraft cables using wedge sockets
- 8 lb. T-rail
- Heavy-duty rollers and guides
- Homing timer
- Digital position indicator
- ADA hands-free phone
- Passing chime
- Single opening
- Three-year limited parts warranty

## Safety Features

- Keyed in-car stop switch and alarm button
- Emergency lighting in car interior
- Uninterruptible Power Supply (UPS) for car lowering and operation of car and hoistway doors in the event of a power failure
- Emergency manual lowering
- Slack/broken cable safety brake device
- Overspeed valve
- ETL, UL or CSA certified components
- Tactile/braille characters
- Elastomeric bumpers (ASME A17.1 year 2013 & prior) or buffer springs (ASME A17.1 year 2016)

## Car Features

- 7'0" interior car height
- Ivory powder coated painted steel or Unfinished Red Oak Flat Panel car walls with matching ceiling\*
- Brushed Stainless Steel car entrance on steel car (strike column, return column and transom)
- Matching entrance on wood car
- Ivory powder coat painted steel 3'0" x 6'8" Two Speed Doors
- Brushed Stainless Steel handrail
- Unfinished plywood floor with sill set for 1/4 inch (flooring by others)
- Four recessed LED lights with Black trim rings

## Optional Features

- Up to six stops
- Custom wood cars
- Stainless steel cars
- Laminate applied car panels
- Overspeed governor
- Speed: 40 fpm with variance
- 50'0" travel with variance and derated capacity
- Three-Phase motor and controller (208/230 VAC; 3 PH, 20 amp, 5 HP)
- Buffer springs (minimum 14 inch pit required)
- Landing position indicator
- Hoistway access
- Phase 1 and Phase 2 fire service
- Phone line monitoring system
- Green drive system by adding environmentally friendly hydraulic oil
- Ventilation system

## Platform Sizes

(Custom sizes and designs available)

- 48"W x 54"D standard
- 42"W x 54"D standard
- 42"W x 60"D optional
- 51"W x 51"D 90° optional

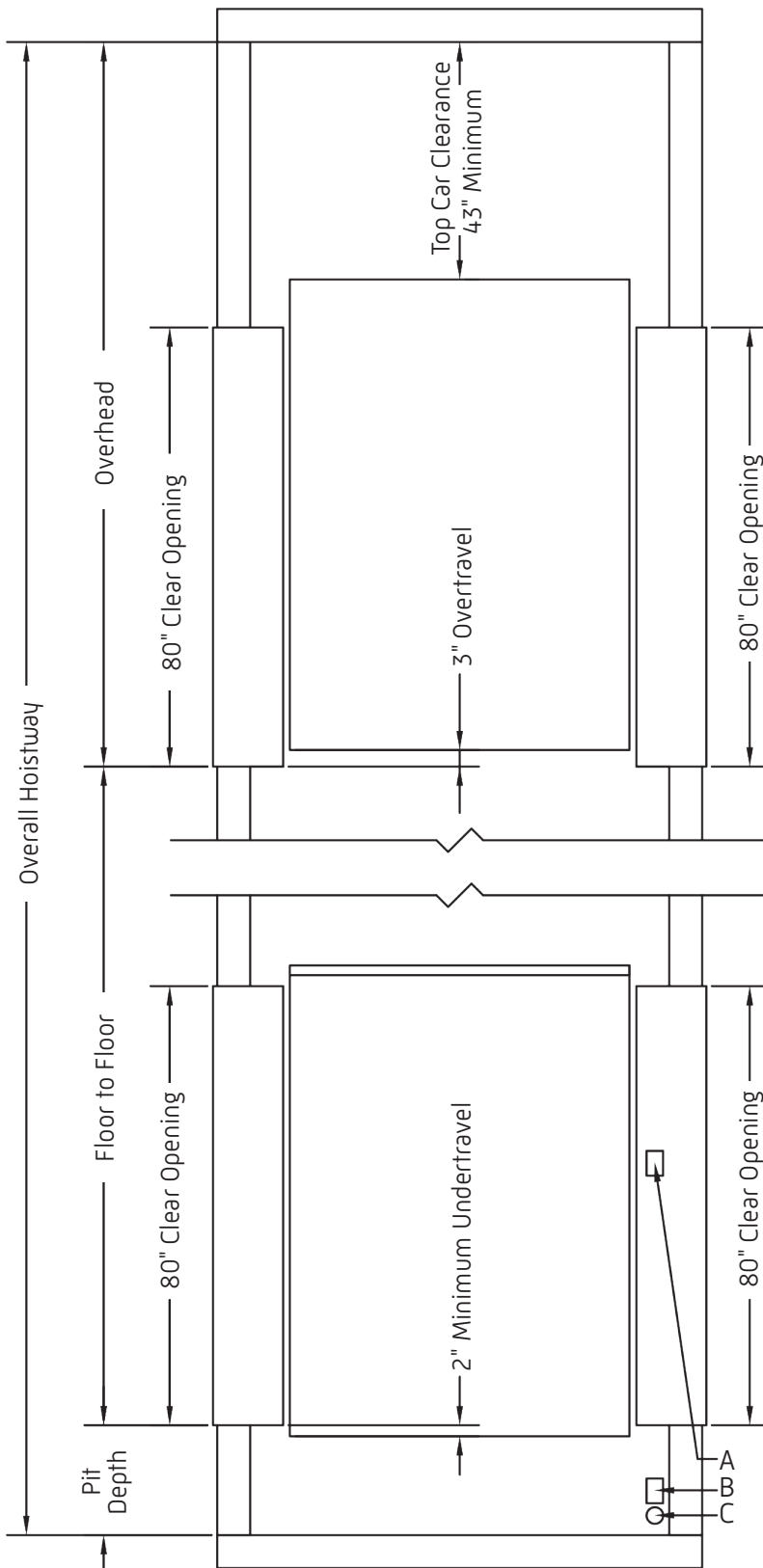
## Enter/Exit Configurations

- Enter/Exit same side standard
- 90° Adjacent optional
- Straight-Through optional

\* Wood cars require fire coat to be added in commercial settings

*Symmetry LU/LA elevators are designed to comply with ASME A17.1 Section 5.2 and the Americans with Disabilities Act (ADA).*

*All LU/LA elevators are limited by speed, travel and capacity in order to comply with applicable code.*

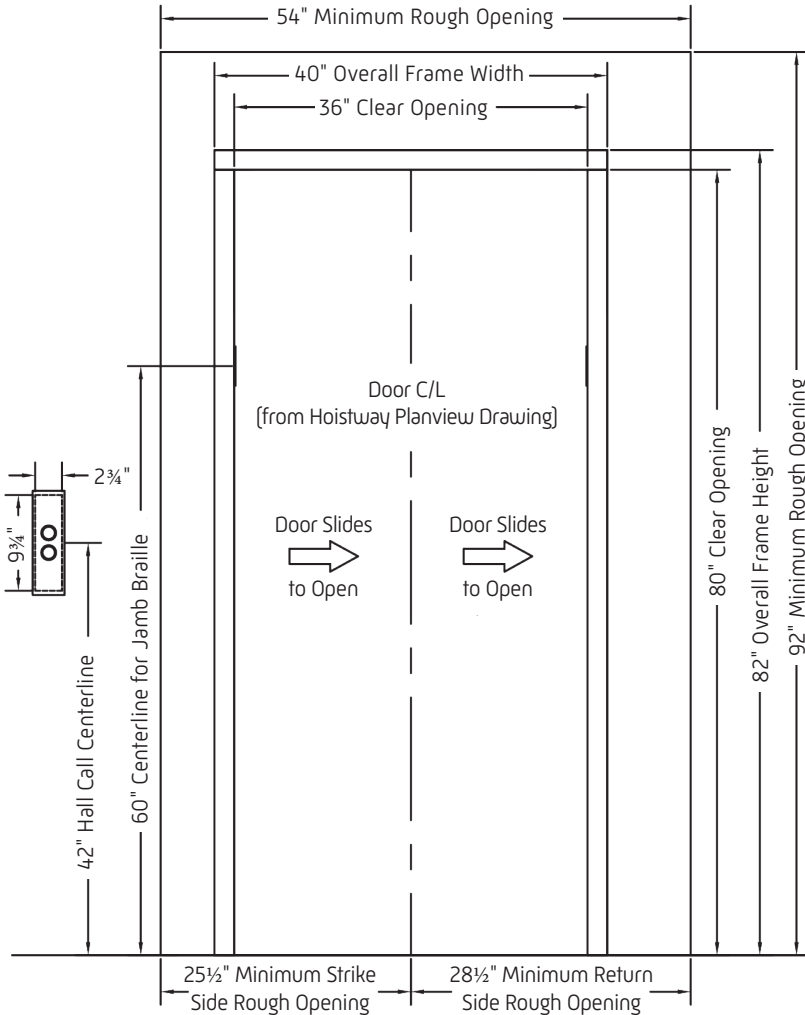


### Notes:

- 1) Hoistway must be free of any obstructions unrelated to the elevator operation (i.e. pipes, ducts, etc.).
- 2) The minimum floor-to-floor travel between any two entrances on the same wall is 98½ inches (8'2½").
- 3) The minimum floor-to-floor travel between straight-through or 90° sides is 26 inches.
- 4) The minimum floor-to-floor travel between any two landings is 16 inches.
- 5) The minimum pit depth is 13 inches (14 inches if buffer springs are required).
- 6) The minimum overhead is 8'10" for existing construction or 11'0" for new construction.

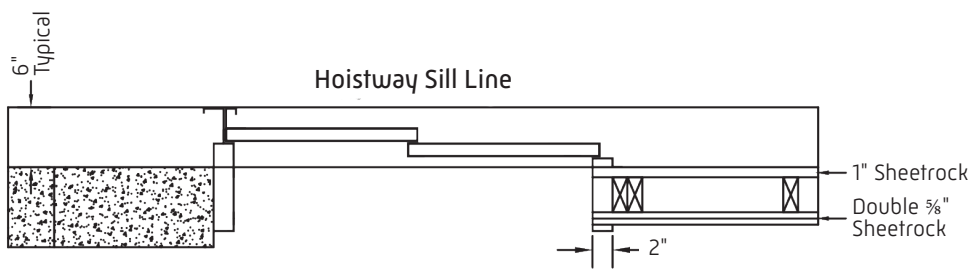
### Work by General Contractor:

- A) Pit Light Switch installed 4'0" above the lower finished floor
- B) Pit G.F.I. Duplex Receptacle
- C) Pit Light

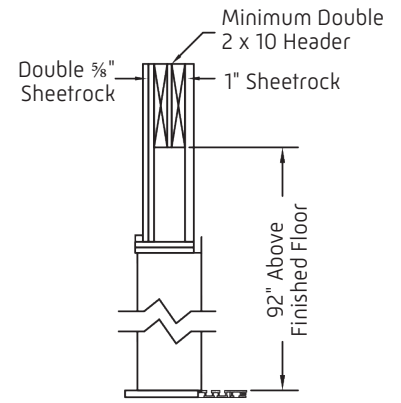


### Notes:

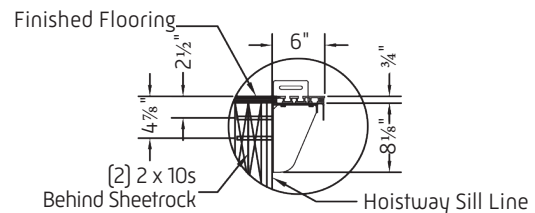
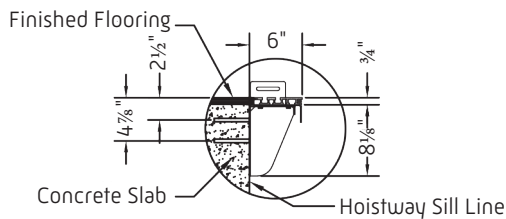
- 1) Hoistway entrances are manufactured in accordance with 1 1/2 hour fire-rated construction.
- 2) Hoistway walls to have a fire endurance rating not less than required by Section 110 (1996) or Section 2.1 (2000+) ASME A17.1 Elevator Safety Code.
- 3) Furnishing, installing and maintaining the required fire rating of elevator hoistway walls, including the penetration of the fire wall by elevator fixture boxes, is not the responsibility of the elevator contractor or manufacturer.
- 4) The interface of the hoistway wall with the hoistway entrance shall be in strict compliance with the entrance manufacturer's requirements in order to retain fire rating and label validity of the elevator hoistway doors and frame.
- 5) Hoistway walls at entrances should be left open for the full width of the shaft until after door sills and frames are set in place. If this is not feasible, leave a 54"W x 92"H rough opening.
- 6) Filling and grouting by General Contractor.

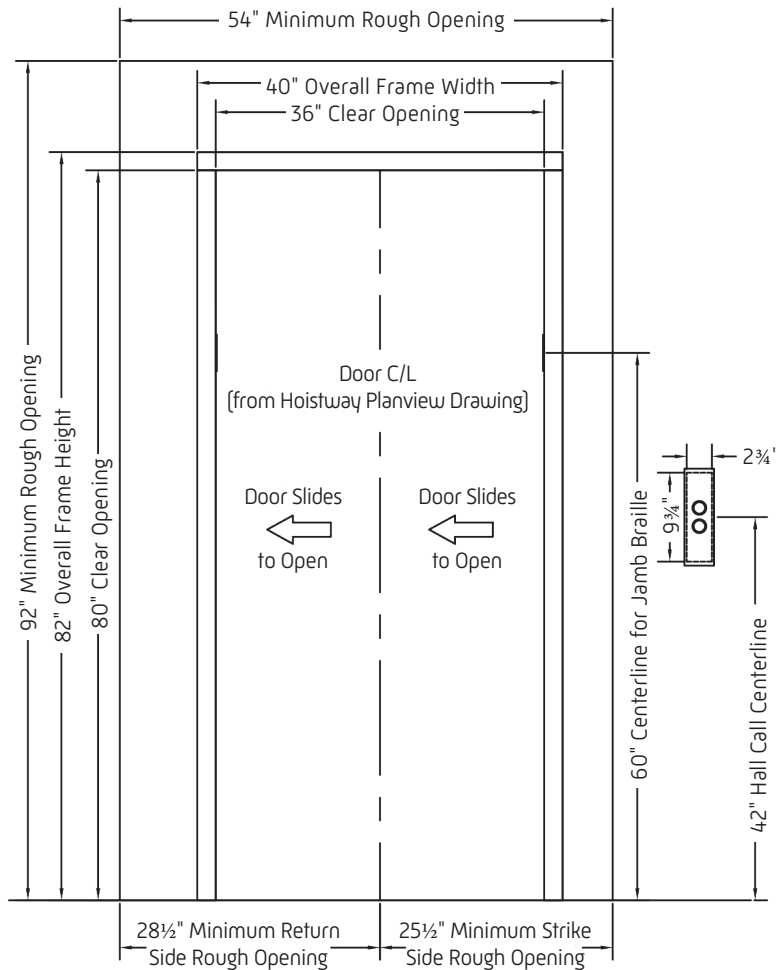


**Masonry Construction Sill Anchors**  
 (6) 3/8" x 3"  
 Wedge Concrete Anchors



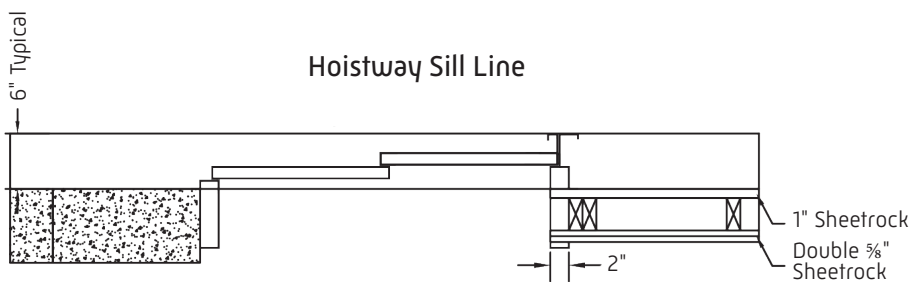
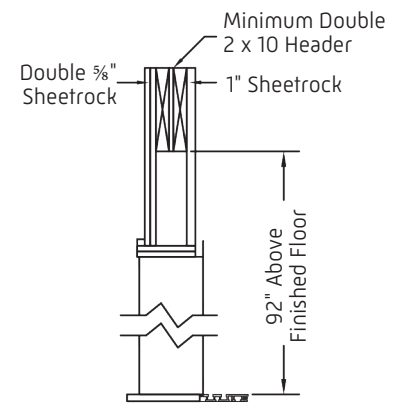
**Wood/Drywall Construction Sill Anchors**  
 (6) 3/8" x 4"  
 Lag Bolts, Zinc



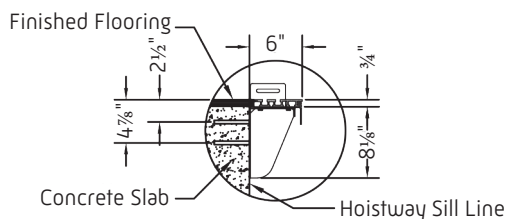


### Notes:

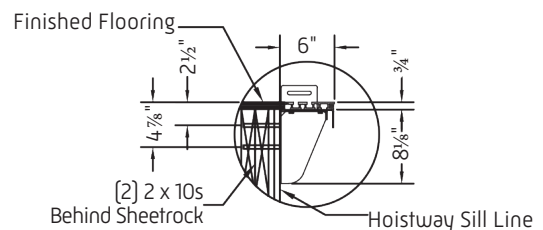
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- 6) Filling and grouting by General Contractor.



**Masonry Construction Sill Anchors**  
[6] 3/8" x 3"  
Wedge Concrete Anchors

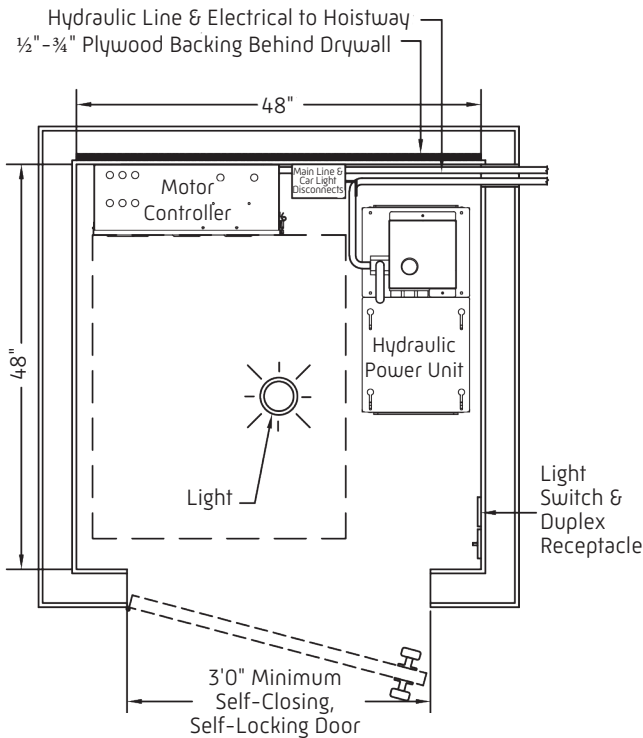


**Wood/Drywall Construction Sill Anchors**  
[6] 3/8" x 4"  
Lag Bolts, Zinc

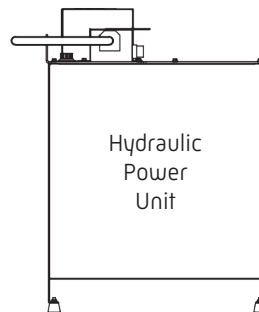
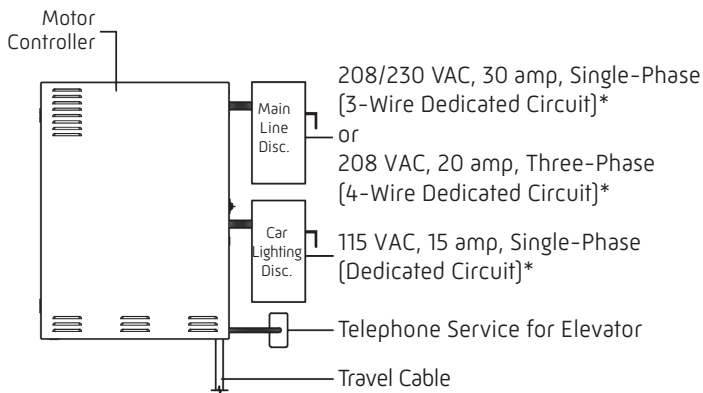
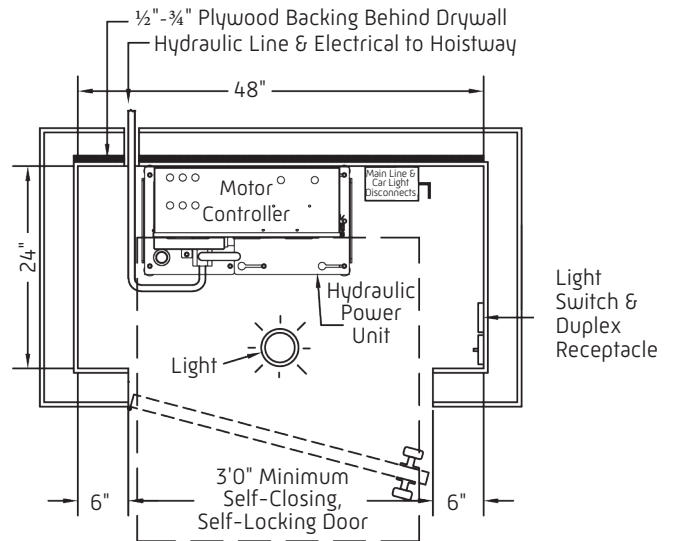




### Standard Machine Room



### Compact Machine Room



**Motor Controller**  
22"W x 30"H x 8"D

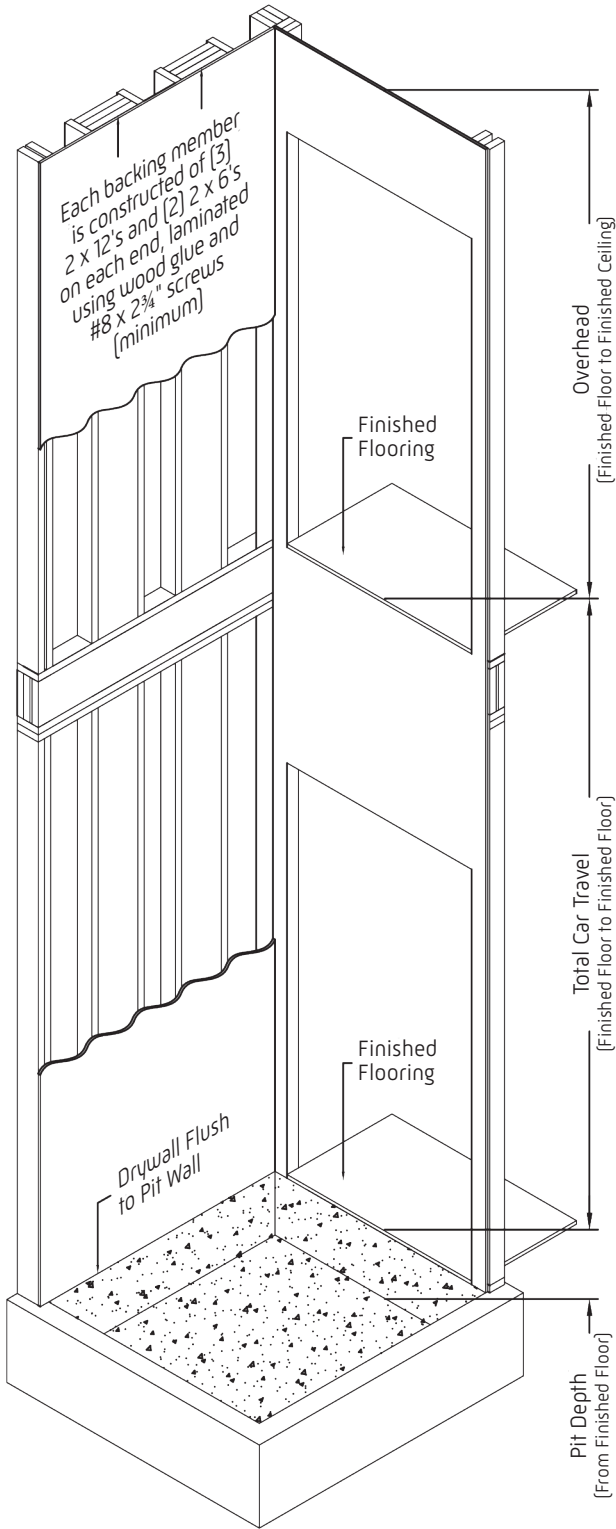
**Main Line Disconnect**  
Single-Phase  
Square D-H322N or Equivalent  
2 Pole with Auxiliary Contact or 3 Pole  
Three-Phase  
Square D-H321N or Equivalent  
3 Pole with Auxiliary Contact

**Car Lighting Disconnect**  
Square D-G221N or Equivalent

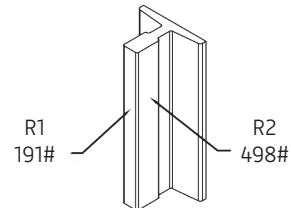
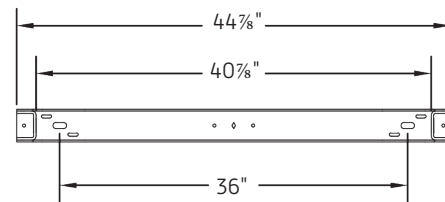
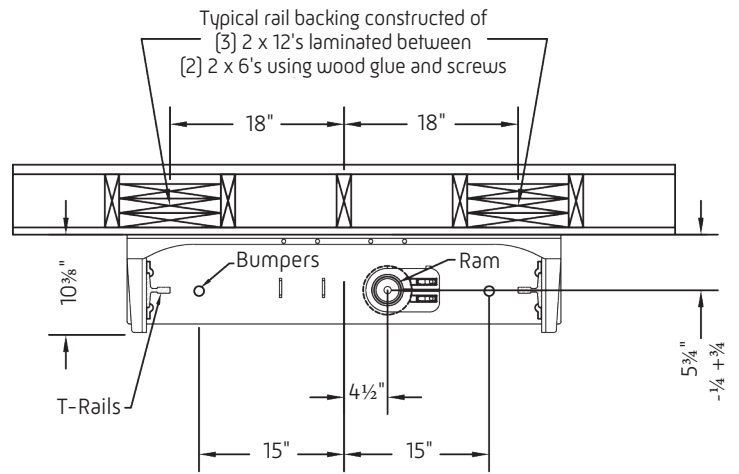
**Hydraulic Power Unit**  
24 1/4"W x 33 1/2"H x 12 3/4"D

### Notes:

- 1) The elevator machine room location and layout must meet the code requirements defined by the local authority having jurisdiction.
- 2) 30" wide x 36" deep clear working space in front of the motor controller and disconnects as required by National Electrical Code (NFPA 70).
- 3) The disconnects and light switch must be located on the strike side of the machine room door.
- 4) The hydraulic power unit must be located within 40'0" of the cylinder.
- 5) The machine room must be free of all equipment not related to the elevator.
- 6) The minimum machine room headroom is 7'0".
- 7) The machine room must be maintained between 50°F and 80°F, with relative humidity from 5% to 95%, non-condensing.  
\*Feeding breaker must not be a G.F.I.



Each backing member is constructed of (3) 2 x 12's and (2) 2 x 6's on each end, laminated using wood glue and #8 x 2 3/4" screws (minimum).



Static Rail Reaction  
(per rail)

## Rail Backing & General Hoistway

- Provide adequate rail backing per drawings. For vertical spans between floor systems that exceed 10'0", please consult a structural engineer. The wall must be capable of supporting the loads without deflecting more than  $\frac{1}{8}$  inch.
- The hoistway must be constructed square and plumb within  $\frac{1}{8}$  inch tolerance throughout.
- The hoistway must be free of any obstructions not related to the operation of the elevator (i.e. sprinklers, pipes, ducts, etc.).
- The structure of the hoistway must allow for installation of a chain hoist to transfer materials during installation.
- The maximum rail bracket spacing is 6'0".

## Pit Floor

- Provide a pit floor at a minimum of 13 inches (14 inches with buffer springs) from the top of the finished floor to the highest point in the pit.
- If required, the pit shall have means to prevent the collection of ground water.
- If provided with fire service, a drain or sump pump shall be provided to remove 3,000 gallons of water per hour.
- Provide a pit floor capable of supporting the loads below:
  - The maximum vertical force imposed on each guide rail upon application of the safety is approximately 4,800 lbs. for a total floor impact of 9,600 lbs. This load is applied at the respective T-rail locations on the base plate.
  - The impact load imposed on each buffer or bumper assembly is approximately 3,300 lbs. for a total floor impact load of 6,600 lbs. This load is applied at the respective buffer or bumper floor plate locations.
  - The approximate overall static net vertical load from the elevator system is 3,760 lbs. This value includes the capacity, car, sling, ram, ram's header and fluid weights and is applied at the ram location on the base plate.

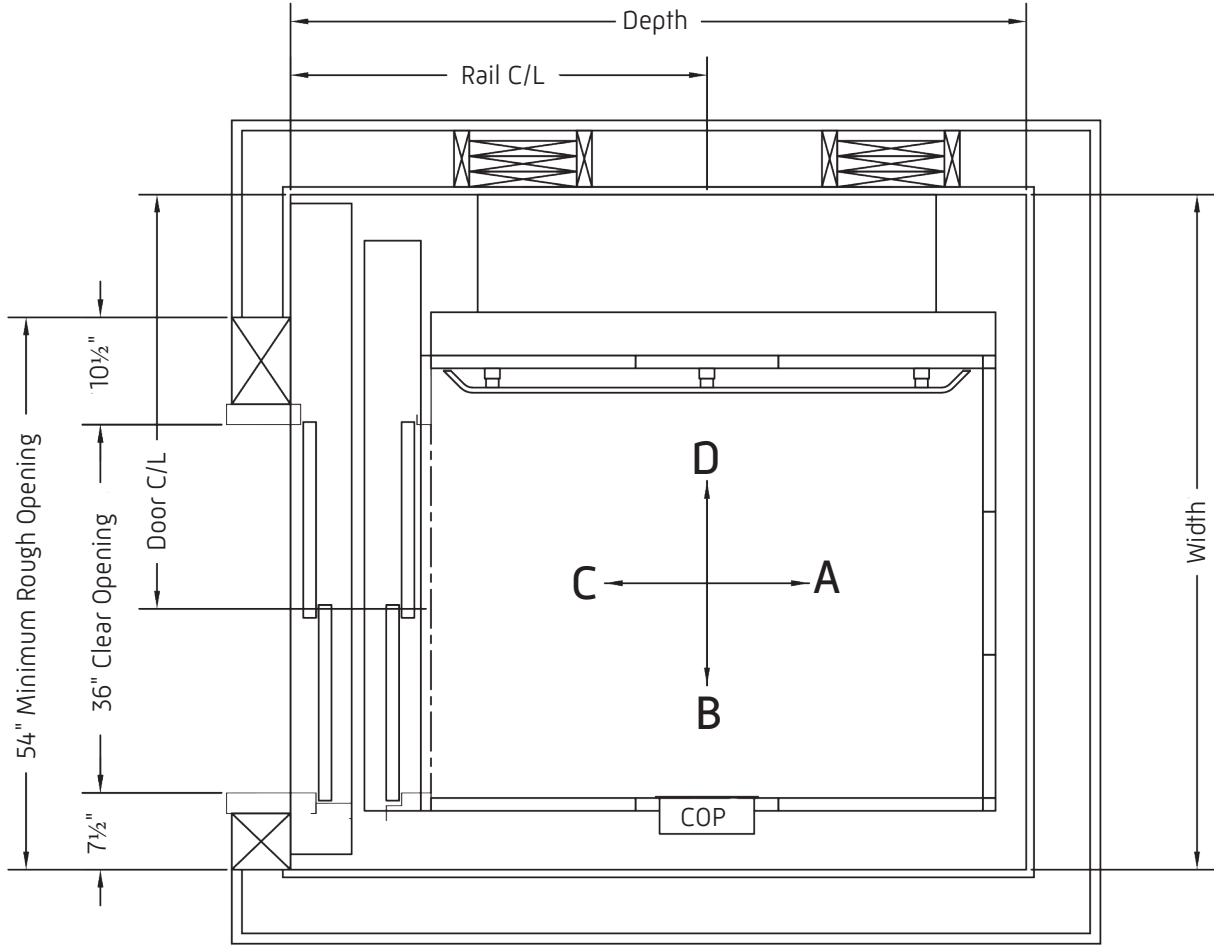
## Overhead

- Provide a minimum overhead of 8'10" (106 inches) for existing construction.
- Provide a minimum overhead of 11'0" for new construction.

***Please note that this guide is for planning purposes only, applies exclusively to national code and should not be used for construction.***

*Prior to construction, please contact your local Symmetry Elevating Solutions representative and request a job-specific set of elevator plans to ensure that you obtain the accurate dimensions and requirements for your project.*

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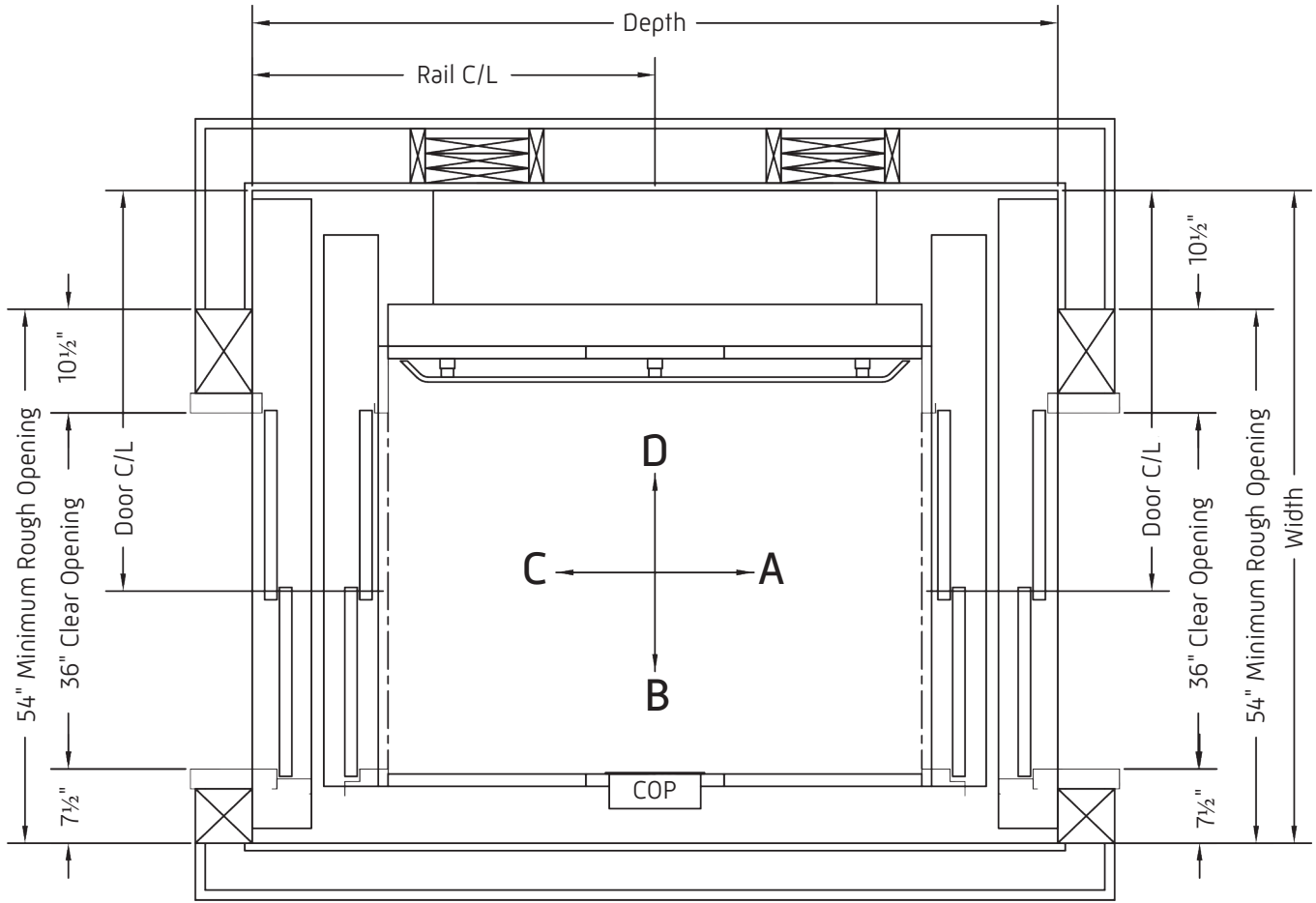


**Single Opening**

Rail Left, Right-Hand Door [shown]  
Rail Right, Left-Hand Door [opposite]

Car Size	Width*	Depth	Rail C/L	Door C/L
42x54	66"	72"	40 3/4"	40 1/2"
42x60	66"	78"	43 3/4"	40 1/2"
48x54	68"	72"	40 3/4"	42 1/2"

\*Add 2 inches to width if a pit ladder is required.

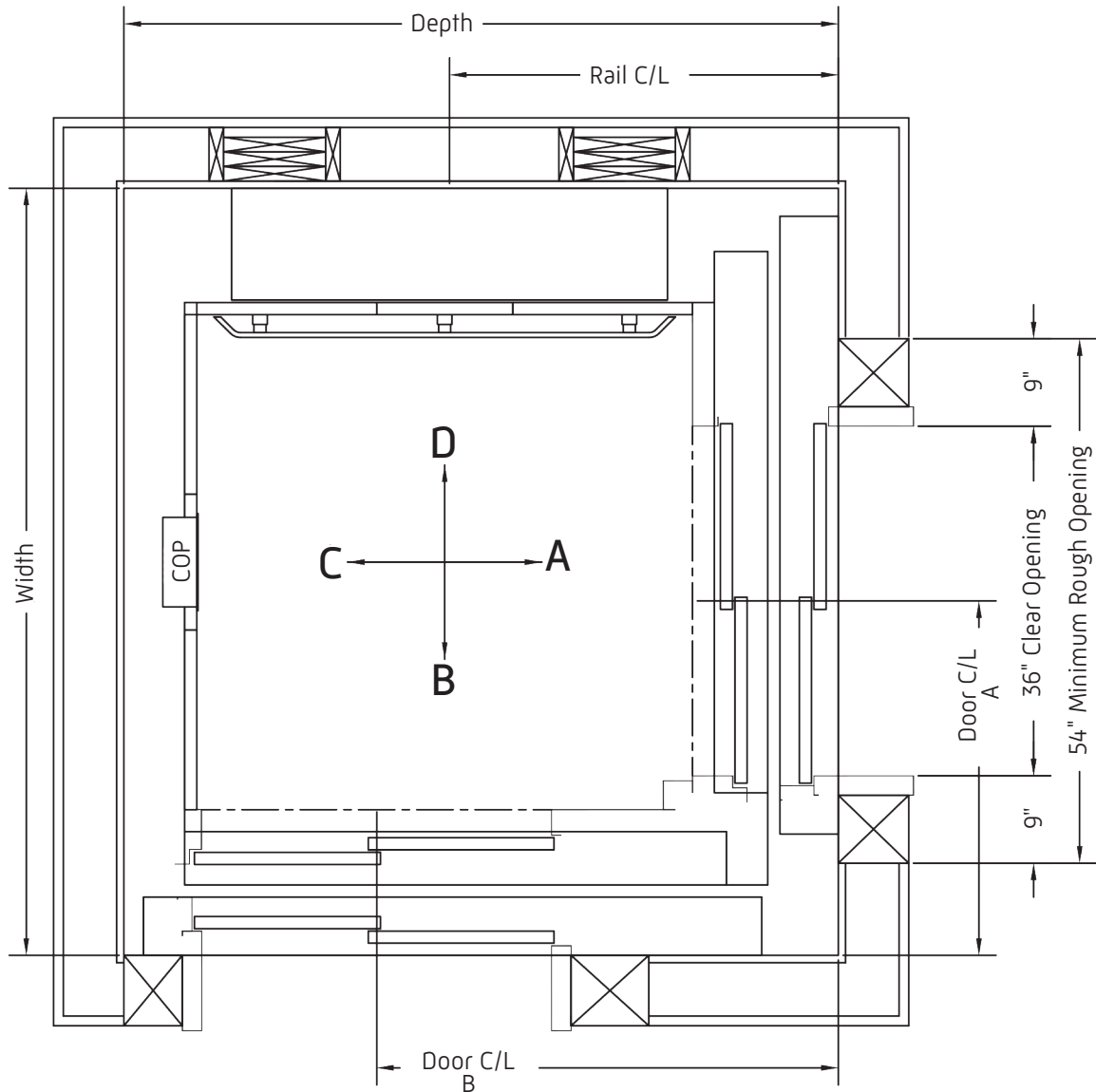


**Opposite Opening**

Rail Left, Right-Hand Door, Left-Hand Door  
Rail Right, Left-Hand Door, Right-Hand Door

Car Size	Width*	Depth	Rail C/L	Door C/L
42x54	66"	81½"	40¾"	40½"
42x60	66"	87½"	43¾"	40½"
48x54	68"	81½"	40¾"	42½"

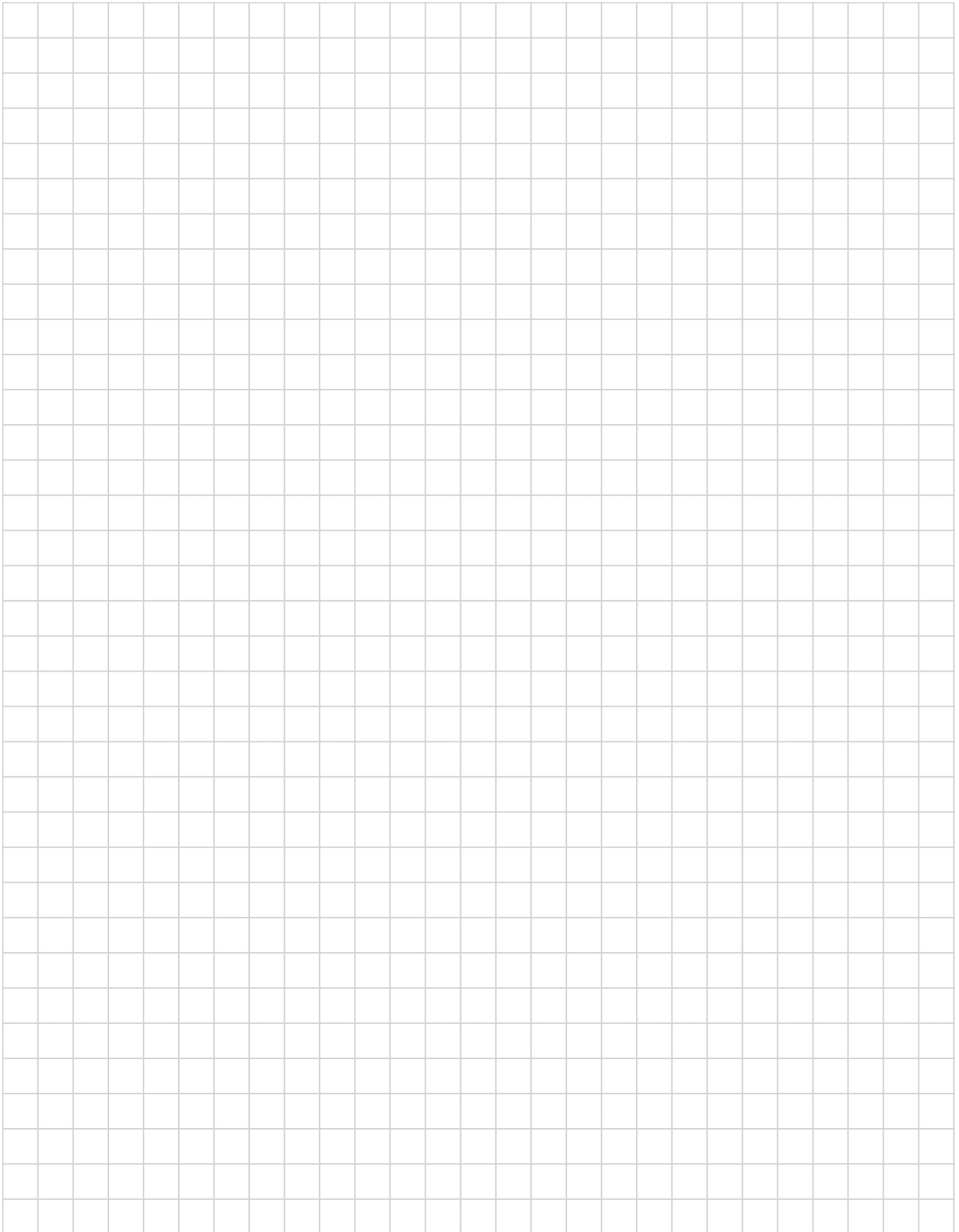
\*Add 2 inches to width if a pit ladder is required.



90° Opening  
Rail Right, Left-Hand Doors (shown)  
Rail Left, Right-Hand Doors (opposite)

Car Size	Width	Depth*	Rail C/L	Door C/L A	Door C/L B
51x51	79"	73½"	40"	36½"	47½"

\*Add 2 inches to depth if a pit ladder is required.





## AIA Continuing Education

[symmetryelevator.com/aia](http://symmetryelevator.com/aia)

*Symmetry offers in-person and online course options to obtain continuing education credits. Each completed course is worth 1 (one) LU/A HSW/SD credit and provides a detailed review of residential elevators, vertical platform lifts and limited use/limited application (LU/LA) elevators.*

*Our continuing education AIA courses also address specification, code application, suitability of product type and the direct governance and guidelines of the ADA, ANSI and ASME.*

