CAMBRIDGE
ELEVATING

E-50 DESIGN GUIDE

DESIGNED TO BE THE MOST AFFORDABLE AND INCORPABLE HOME ELEVATOR IN NORTH AMERICA

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Introduction

This design guide assists architects, builders, contractors, home owners and elevator professionals in planning for a home elevator installation that meets the code requirements of ASME A17.1 / CSA B44, Safety Code for Elevators and Escalators, specifically Section 5.3 – Private Residence Elevators.

Please note this guide provides nominal dimensions and specifications and is useful for initial planning. Before starting construction please consult the specific application drawings provided by Cambridge Elevating or an authorized distributor that indicate exact dimensions for your project.

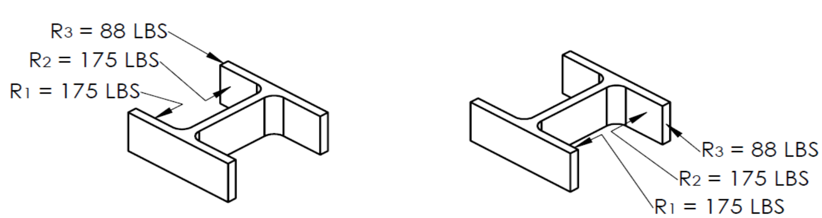
Please note that due to product enhancements and continually evolving codes, the information in this guide is subject to change without notice.

General Planning

The following planning procedure is strongly recommended:

1. Determine the customer’s intended use.
2. Determine local, state and national code requirements of the installation location.
3. Use pages 9 through 13 for hoistway construction details, structural requirements, pit depth and overhead clearance requirements.
4. Use page 15 to plan for electrical requirements.
5. Use page 16 to determine car and hoistway size requirements

Specifications

Specification type	**Specification data**
Weight Capacity	500 lb (227 kg)
Rated Speed	35 ft/min (0.18 m/s) Nominal
Maximum Travel	35 ft
Maximum No. of Stops	4
Minimum Pit Depth	6 in (152.4mm)
Minimum Overhead Clearance	96 in (2438.4mm)
Power Supply (Circuit to be Supplied by Others)	220 VAC, 60 Hz, 30 Amp & 120 VAC, 60 Hz, 15 Amp Single Phase Power
Lighting Disconnect Power Supply	110Vac
Motor	3-phase, VFD Controlled
Drive System	3/4 hp Geared Counterweight Chain
Control System	Microprocessor based controller for electric elevator motor
Environmental Operating Range Temperature	-0°C (14°F) to 40°C (104°F) @ 90° humidity operation -25°C (13°F) to 70°C (158°F) @ 95° humidity storage
Sound Level	66-69 dBA
Daily Use	Normal: 8 Heavy: 20 Excessive: 50 Maximum starts in 1 hour on standard installation: 15
Measurement of Hoistway	50 in x 50 in (1270mm x 1270mm)
Cab Size	33.5 in x 44.4 in (851mm x 1127mm)
Cab Height	79 in (2007mm)
Cab Floor	1/2 in Recess. Finished by others
Cab Wall Finishes	Melamine Cab Interiors: Walnut, Maple, Gibraltar, Palomino, Kodiak, Alabaster, MDF
Hall Call Stations and Car Operating Panel Finish	Stainless steel
Standard Features	Two (2) recessed LED cab lights Finished Interior cab walls and ceiling, choice of 6 standard melamines Unfinished Interior cab walls and ceiling, (MDF) Medium density fibreboard – paint grade Automatic opening bi-fold cab door system with white panels Fully automatic operation Automatic timed cab lighting Stainless steel Car Operating Panel (COP), telephone box and hall call stations Dual illuminated hall call station push buttons and landing selection push buttons on COP Emergency stop switch on COP Digital Position Indicator (DPI) with animated direction arrows on COP
Safety Features	Final limit switch Slack chain safety switch Pit stop switch Car top stop switch Emergency battery lowering Electro-mechanical door interlocks at each landing Manual lowering Touch-tone telephone in cab Overspeed governor
Loadings	

Provision by Others

General

Provide required building permit(s) and/or engineering services per local authorities.

Structural

A structural engineer must ensure that building and hoistway can safely support all loads imposed by the elevator equipment.

The drawings contained herein have been prepared using engineering principles and the design loads that are applied by the rails to the wall. However the details and member sizes and the attachments to the structure should not be construed as a complete wall system. The contractor and/or the project engineer are responsible to evaluate the other loads that are applied to the wall from the floor or roof system and modify sizes or connections as required by their analysis.

It is recommended the elevator's rail brackets attach to a load-bearing wall that can sustain the required rail reactions**.**

It is recommended the building structure sustain a chain hoist for hoisting elevator equipment to the top of the hoistway during installation.

Hoistway Construction

Hoistway must be in accordance with ASME A17.1/CSA B44 Section 5.3, and all local codes and regulations.

Provide an enclosed, plumb and square hoistway with smooth interior surfaces per elevator manufacturer's engineered drawings. Hoistway must be plumb from bottom to the top within 1/8" (3.175mm). Include for fascias or furring of hoistway interior. To be inspected and confirmed by elevator contractor prior to elevator installation.

For poured or block concrete hoistways, refer to the loading forces details under the Specifications and consult the project engineer.

Only elevator mechanical equipment and related wiring to be in hoistway.

See pg. 10-12 for details

Provision by Others

Recessed Pit

Pit floor construction must withstand an impact load of 3000lbs and static load of 1700lbs. Provide pit depth and size per elevator manufacturer's engineered drawings. **See pg. 14 for details**

Provide pit water proofing or sump pump if necessary

Overhead

Provide required overhead clearances and top rail backing blocking based on engineer drawings. **See pg. 11 for details**

Electrical

Provide sufficient machine-room area suitable to contain elevator controller & disconnects based on elevator manufacturer's engineered drawings. **See pg. 16 for details.**

Electrical contractor to supply one (1) dedicated 220VAC single phase, 60 (30amps) power source to the elevator controller location. 10awg wire recommended. **See pg. 16 for details.**

Electrical contractor to supply one (1) dedicated 120VAC single phase, 60 (30amps) power source to the elevator controller location. 12awg wire recommended. **See pg. 16 for details.**

Provide appropriate sleeve(s) for all electrical wiring from controller location to hoistway. More than one sleeve might be required by local code. Trenching may be required if controller location is not adjacent to hoistway.

Provide telephone connection to outside line for integration into Cambridge Elevating controller.

Landing Entrance

Provide required rough openings at each hoistway landing per elevator manufacturer's engineered drawings.

Frame landing entrance walls to adhere with the respective code addressing the gap between the contractor provided swing door and elevator car gate. **See pg. 7 for details.**

Provide 2'-8" x 6'-8" swing landing door with solid core construction.

Provide all finishes around landing door frames and landing entrances.

Door Space Safety

WARNING

DUE TO THE IMPORTANCE OF THIS TOPIC, BE SURE TO READ THIS PAGE IN ITS ENTIRETY AS IT RELATES TO ELEVATOR USER SAFETY.

By nature of home elevators using a standard residential swing door at each landing, there exists a space (or gap) between this hoistway door and the elevator car's gate/door large enough for a child to enter and put themselves in a potentially unsafe scenario which could result in serious injury or death.

All Cambridge Elevating residential elevator models are equipped with a safety light curtain as standard. While this greatly improves safety by preventing the elevator from moving if the light beam is interrupted, only the local building contractor is in control of the final location of the swing hoistway door to minimize the gap mentioned above.

The Standard for the residential elevator industry is The National Safety Code for Residential Elevators - ASME A17.1/CSA B44 (Section 5.3). The Safety Code details what is known as the 3" x 5" rule:

- Clearance between the hoistway door and the hoistway edge must not exceed **3 inches**
- Clearance between the hoistway door and the face of the car door must not exceed **5 inches**

In 2016 The National Safety Code was updated adopting a new rule reducing the gap even further, commonly known as the ¾" x 4" rule:

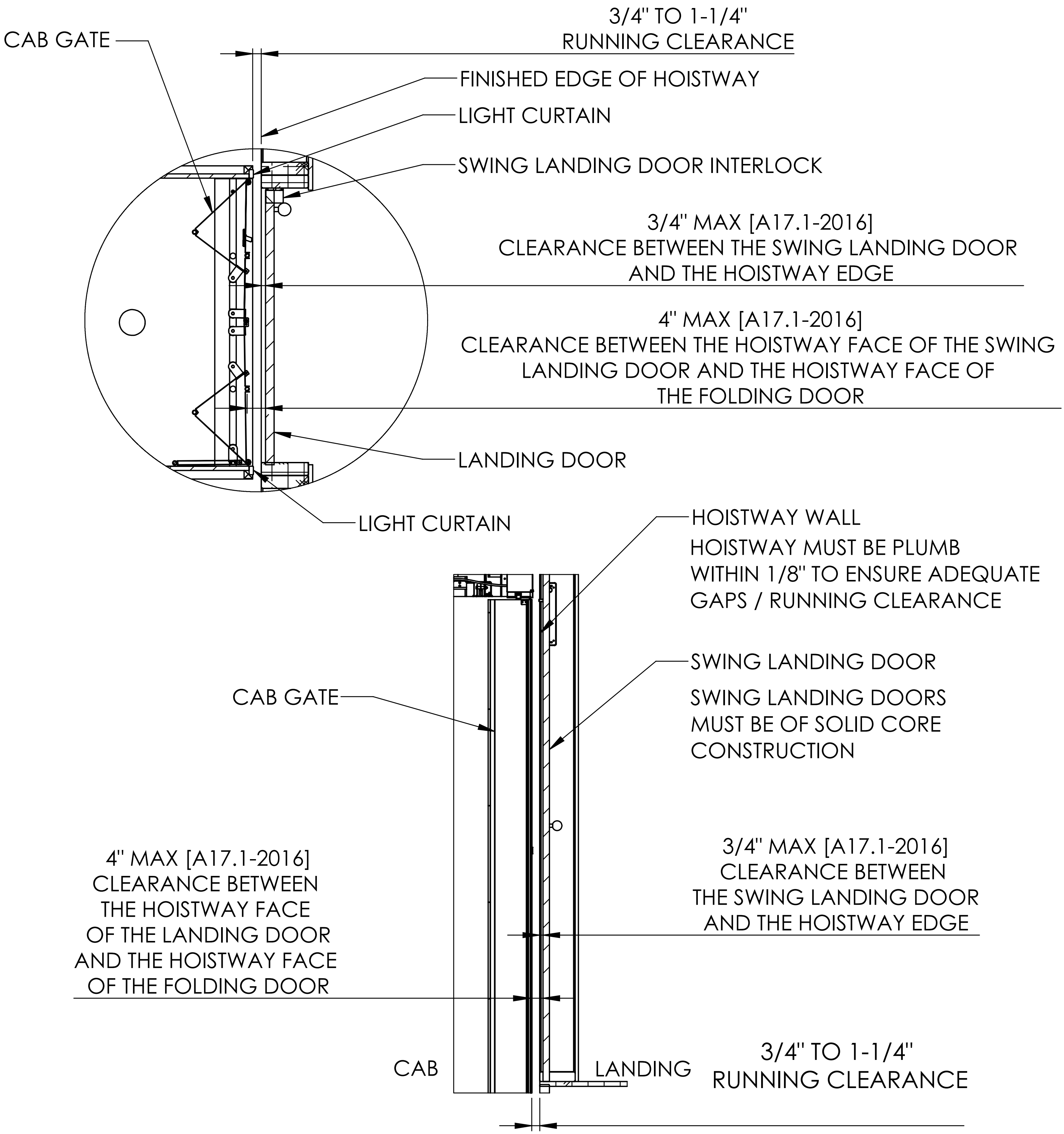
- Clearance between the hoistway door and the hoistway edge must not exceed **¾ inches**
- Clearance between the hoistway door and car door must not exceed **4 inches**

See the next page for specific details

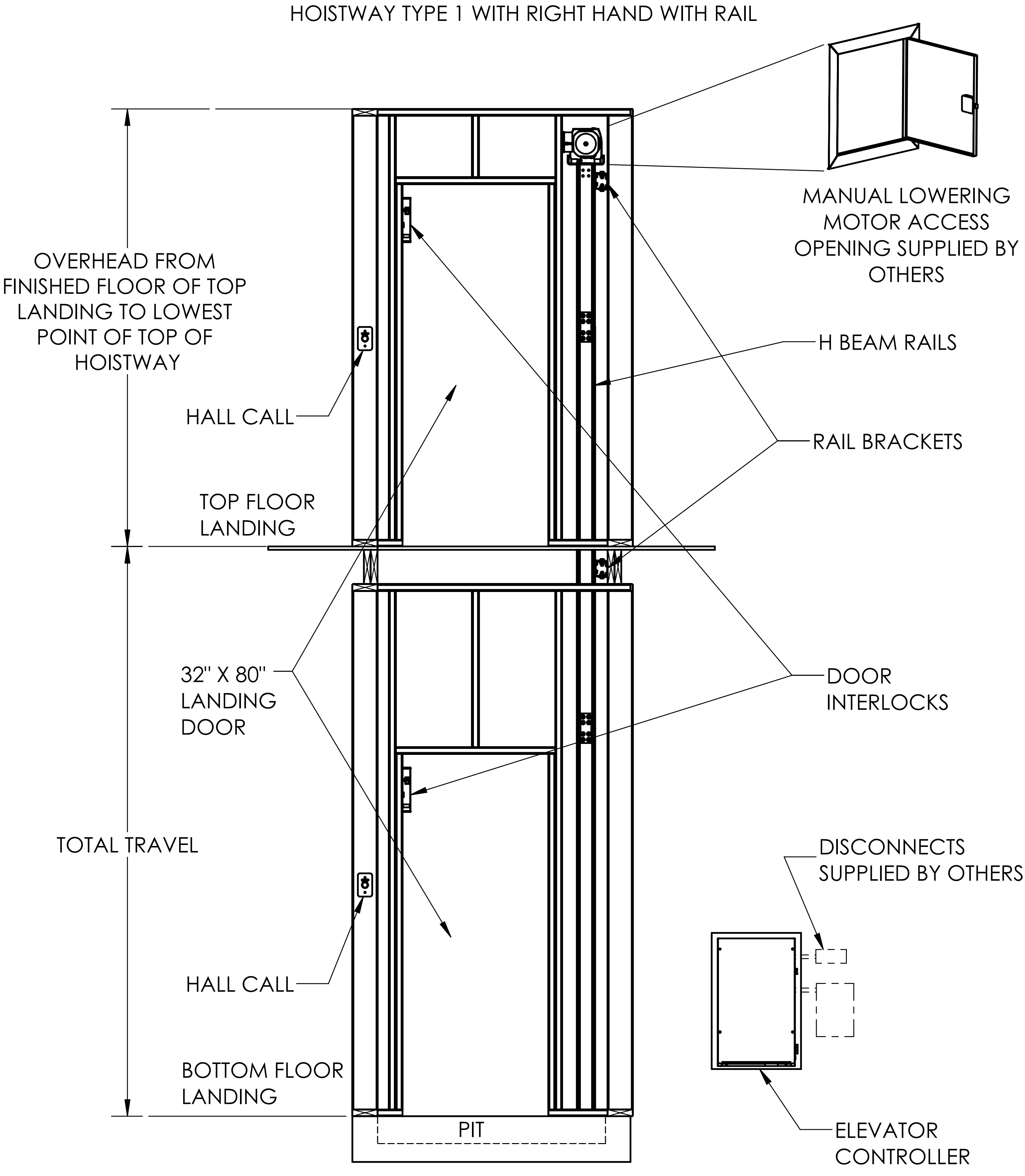
The standard above has been adopted by most states and is enforced by the Authority Having Jurisdiction (AHJ). It is important to note, not all states have adopted the same year of the A17.1 /CSA B44 standard and some states have not adopted any version.

It is strongly recommended by Cambridge Elevating that all contractors comply with the latest code requirements (2016 and later) to minimize the gap and maximize safety of the elevator installation.

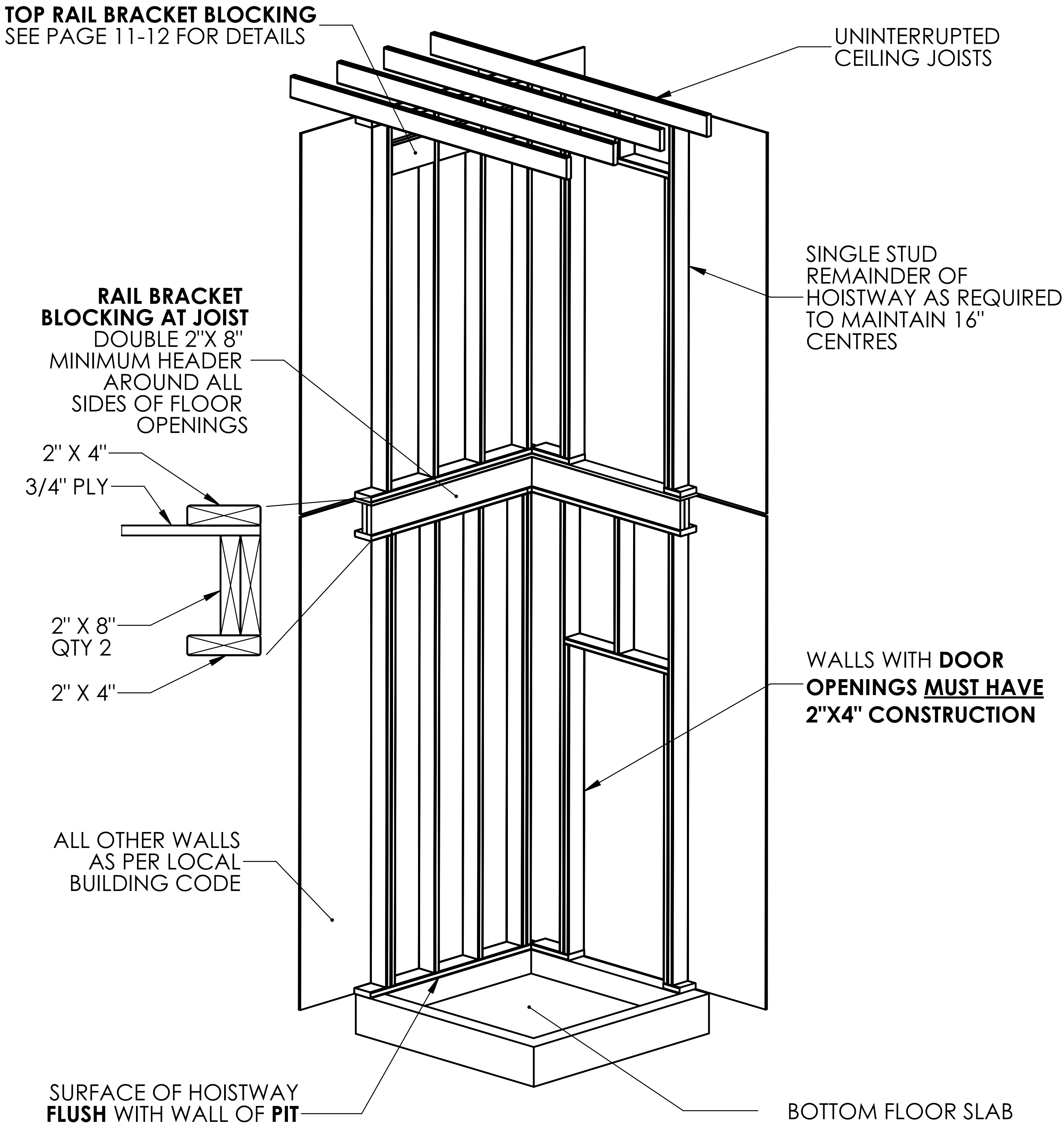
Cambridge Elevating Safety Enhanced Door System



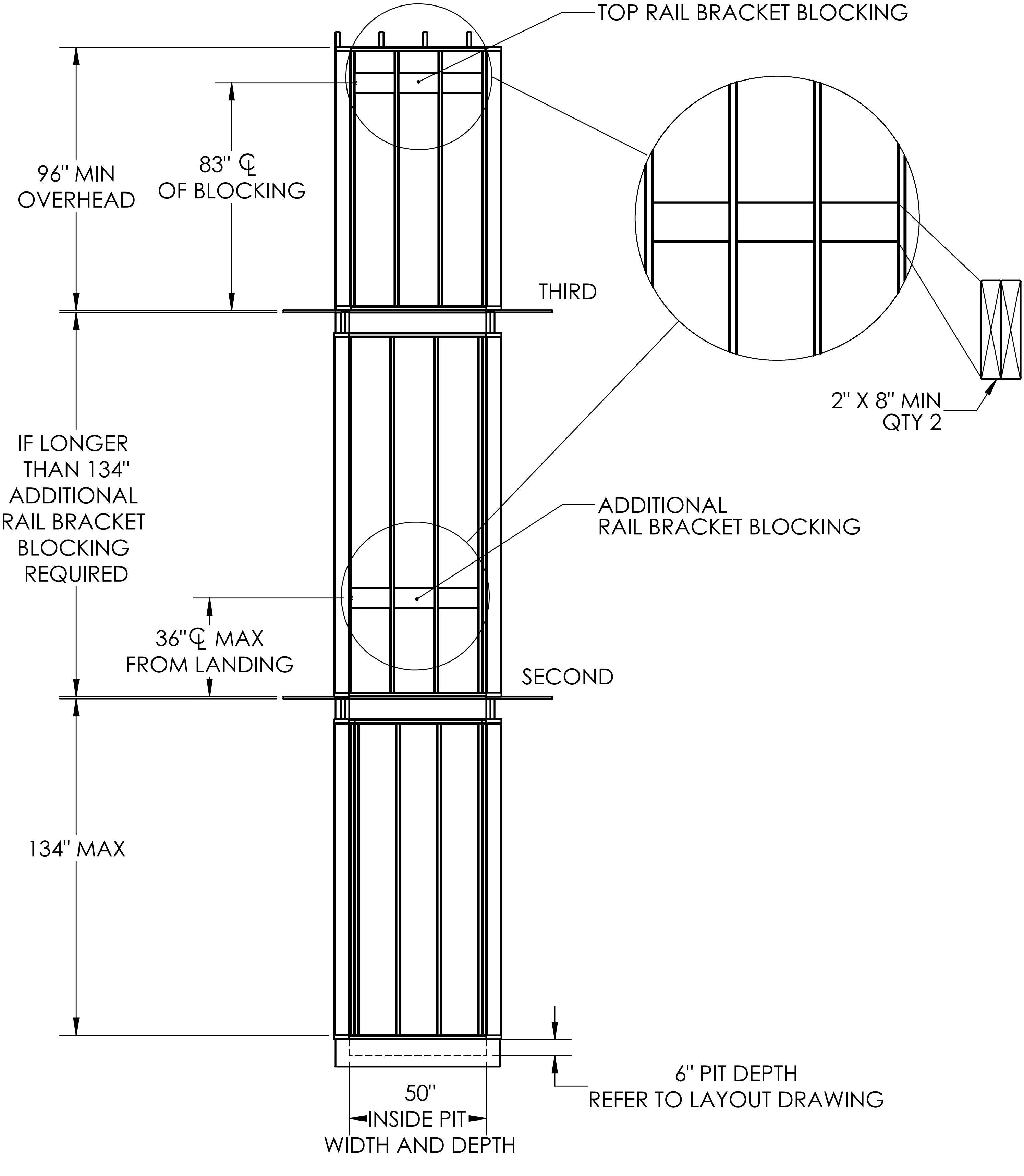
Hoistway Overview (2 STOP SHOWN, 2-4 STOP POSSIBLE)



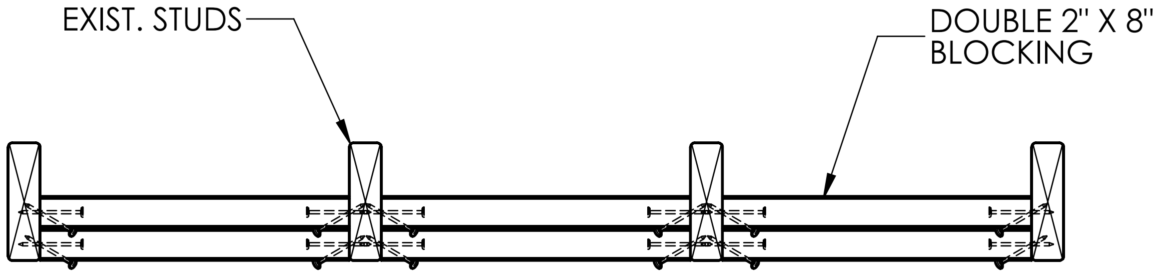
Hoistway Construction - Wood Stud Wall (2 STOP SHOWN, 2-4 STOP POSSIBLE)



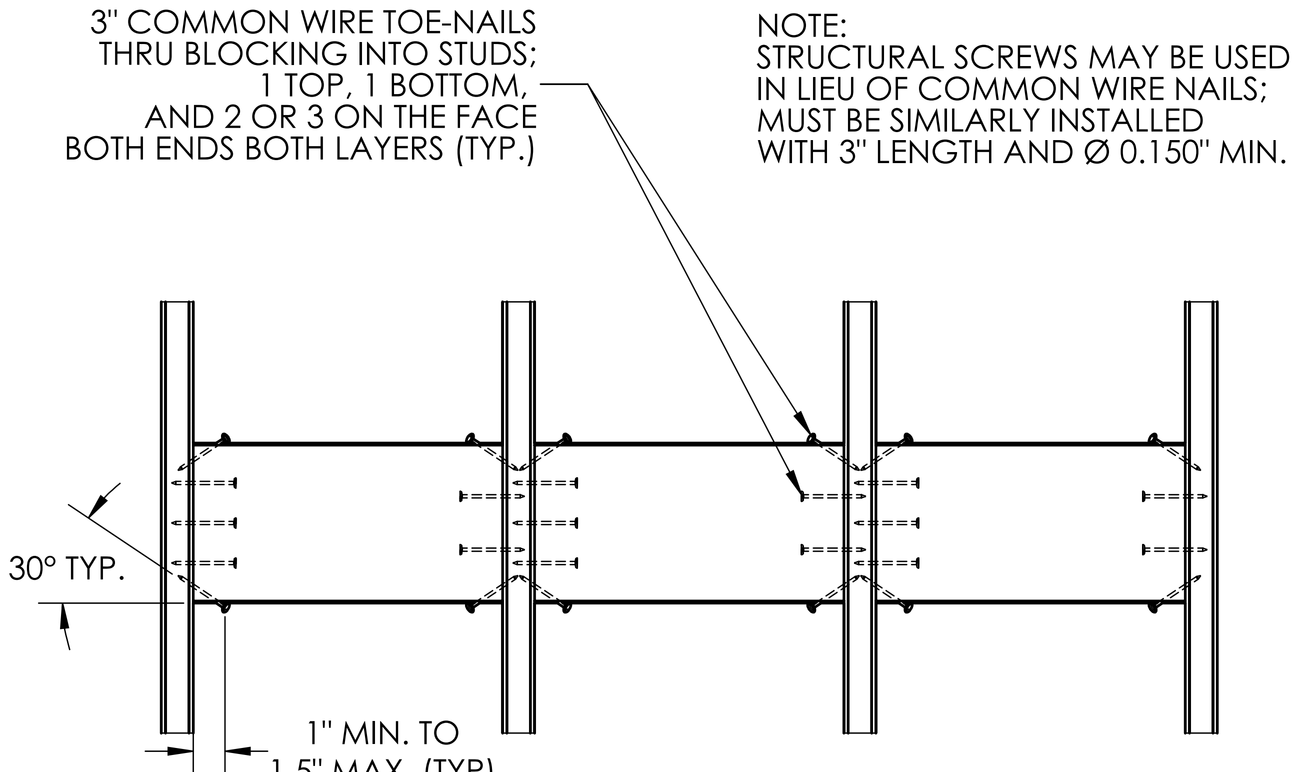
Top Rail/Additional Bracket Details (3 STOP SHOWN, 2-4 STOP POSSIBLE)



Blocking Fastening

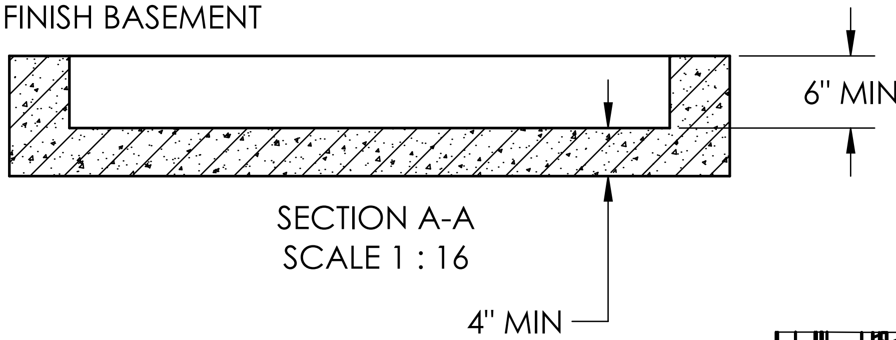


BLOCKING PLAN VIEW

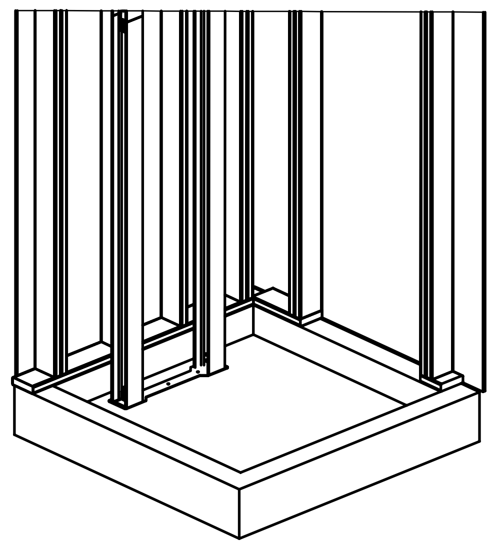


BLOCKING ELEVATION VIEW

Residential Pit Details

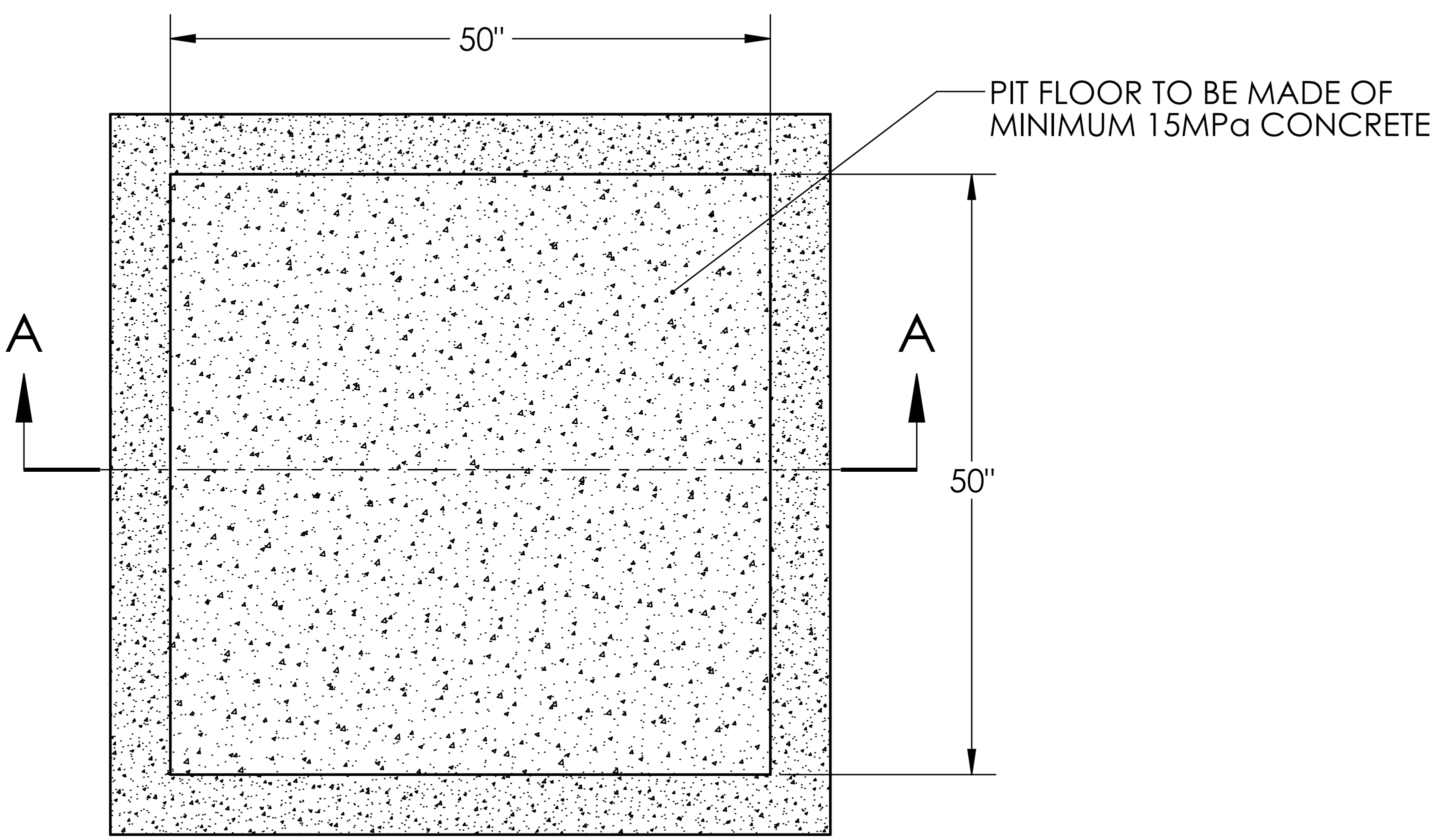


SECTION A-A
SCALE 1 : 16

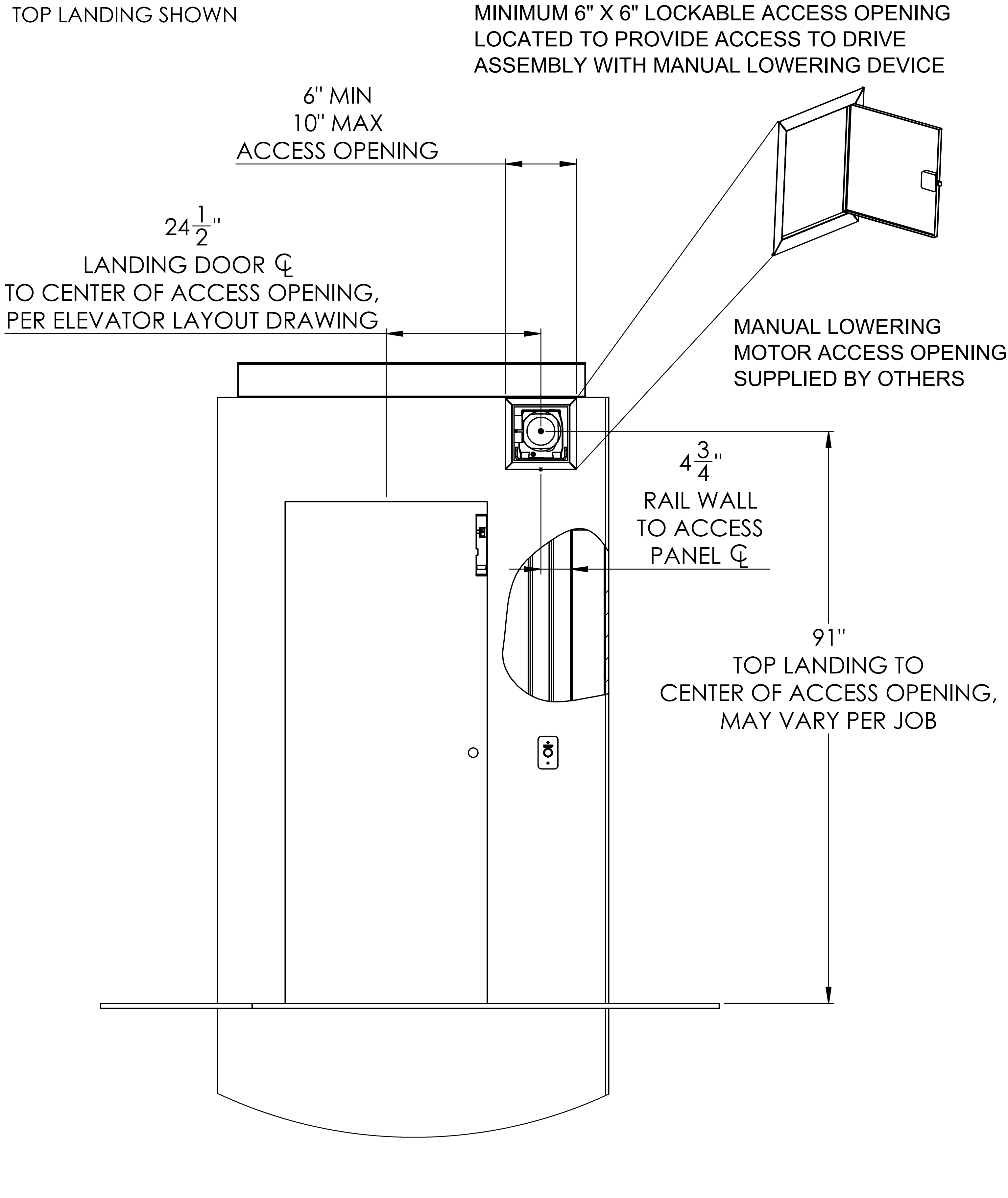


PIT FLOOR TO BE DESIGNED FOR AN IMPACT LOAD OF 3000 LBS AND A STATIC LOAD OF 1700 LBS DISTRIBUTED ACROSS BOTH RAILS

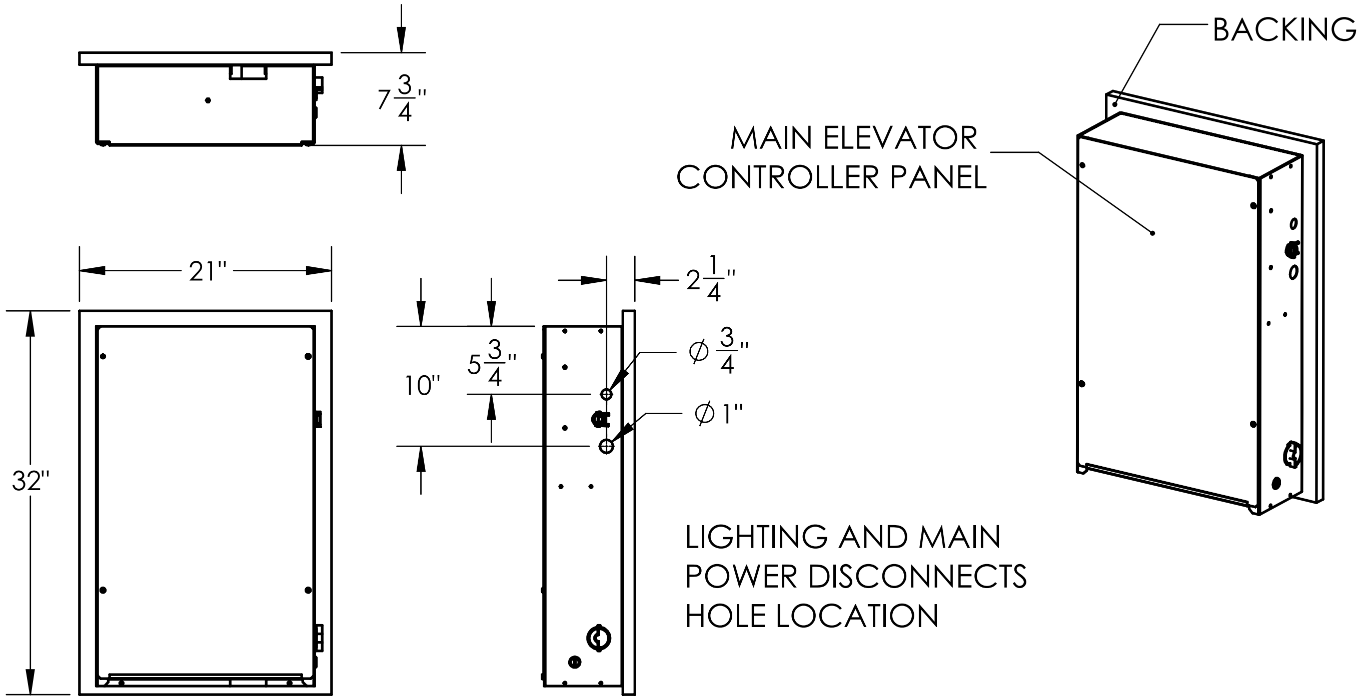
REINFORCING AND STRENGTH AS PER LOCAL STANDARDS AND CODES



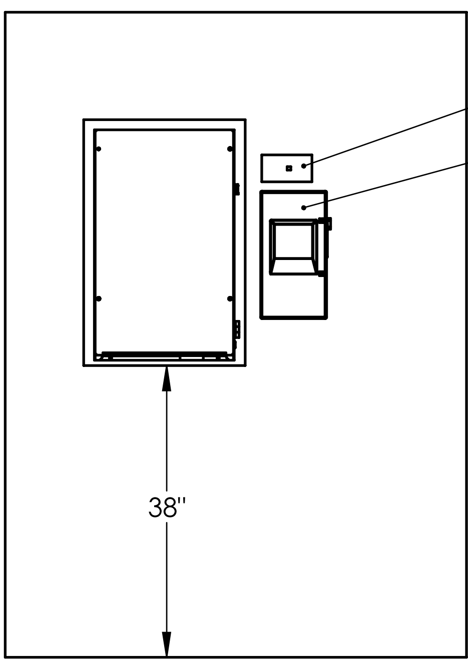
Manual Lowering Access Opening



Residential Controller Details (Without Disconnects)



WIRE GAUGE AS PER LOCAL CODE REQUIREMENTS



110Vac LIGHTING DISCONNECT **SUPPLIED BY OTHERS**

220Vac MAIN DISCONNECT **SUPPLIED BY OTHERS**

TO BE LOCATED WITHIN 20 FEET OF ELEVATOR POWER UNIT. FOR LONGER DISTANCES, CONSULT CAMBRIDGE ELEVATING.

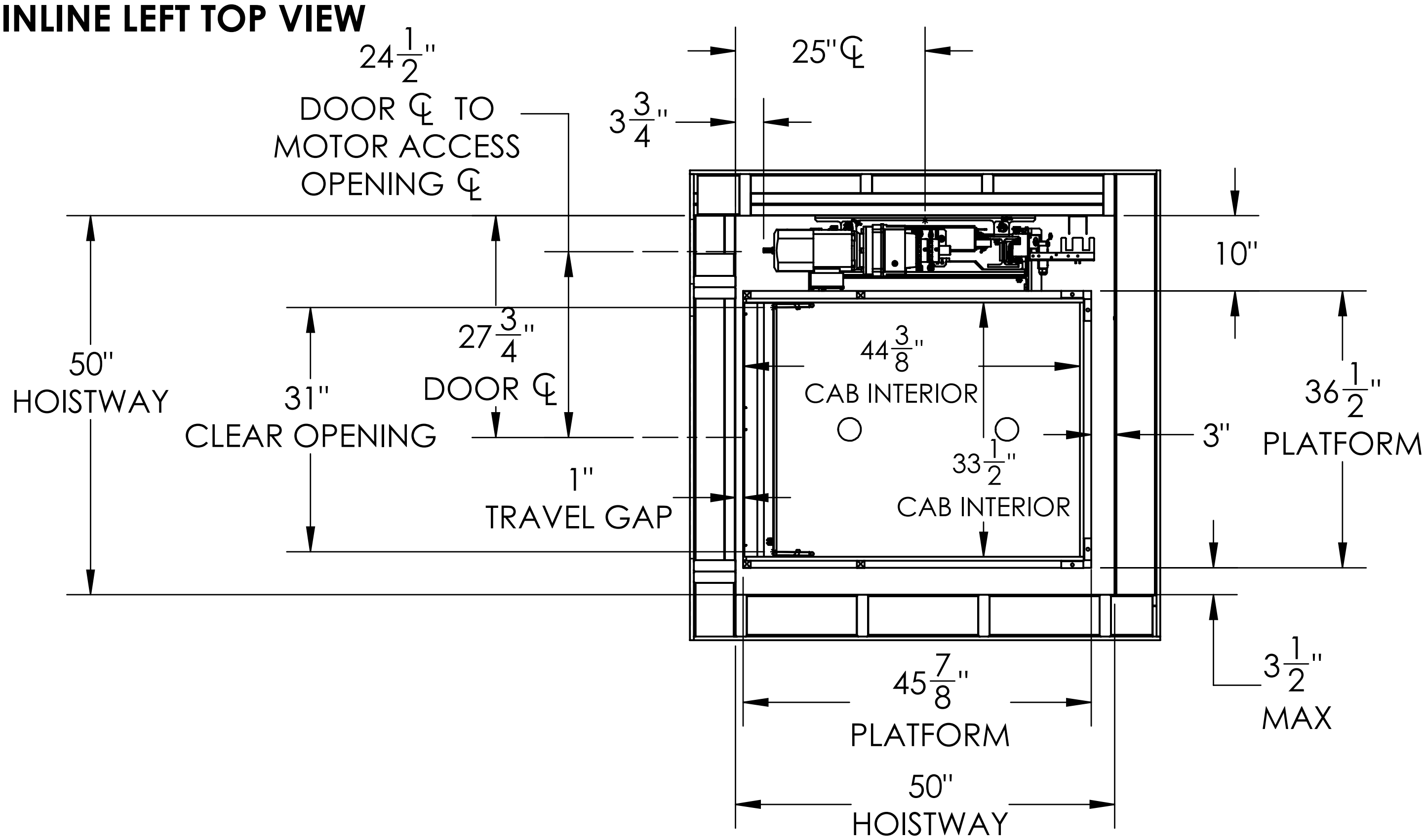
3/4 HP, 220V/1/60HZ DRIVE MOTOR

PROVIDE SUFFICIENT ELEVATOR MACHINE ROOM. CONSULT LOCAL AUTHORITIES TO DETERMINE IF DEDICATED MACHINE ROOM IS REQUIRED.

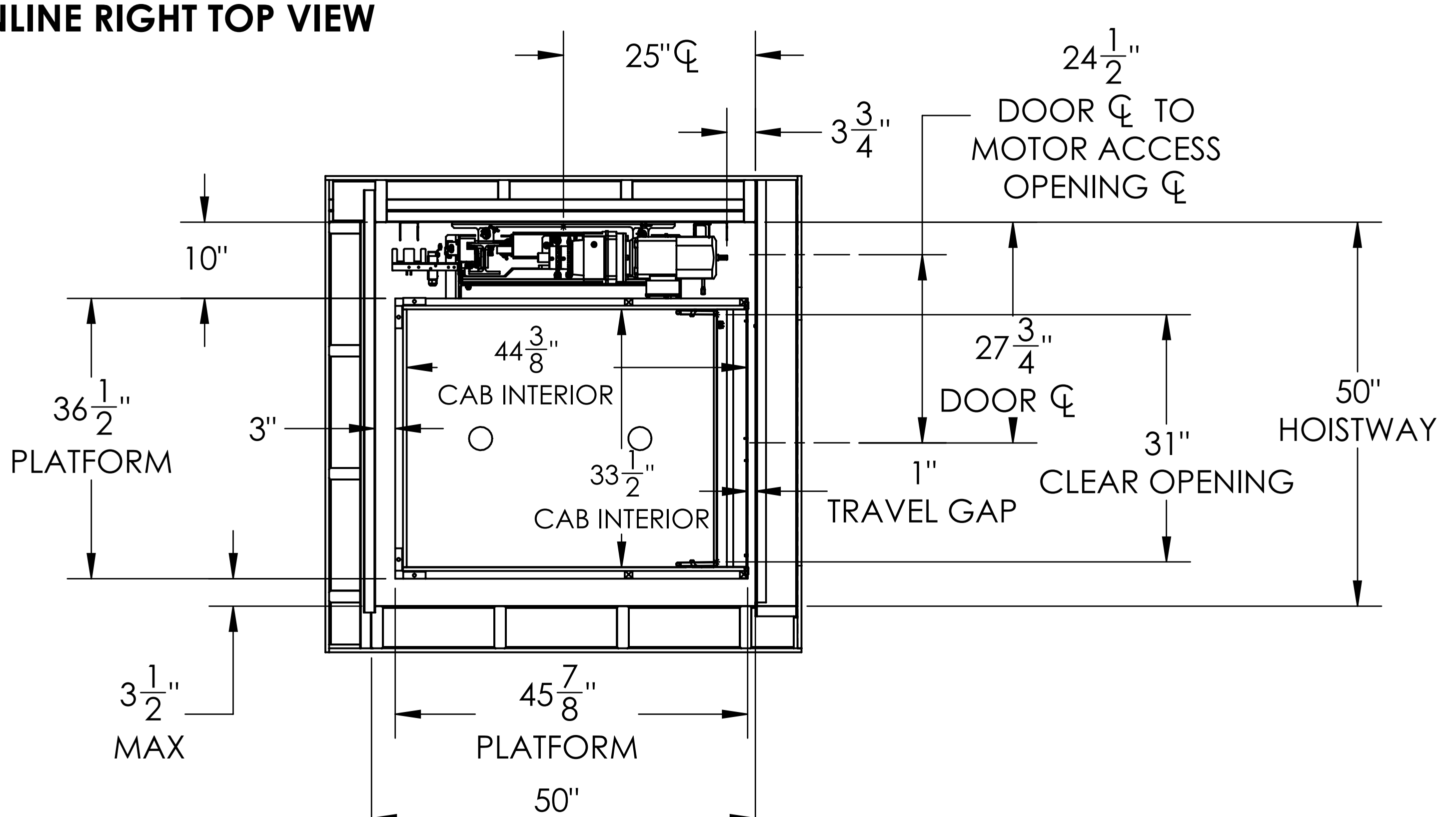
MOTOR POWER	PHASE	VOLTAGE	CIRCUIT CURRENT	FIELD PREPARATION
3/4 HP	1	220VAC	30A	120VAC 30 A 1PH TYPE 1 INDOOR, FUSIBLE 3 POLE 240VAC 30A, TYPE 1

Layout Drawings

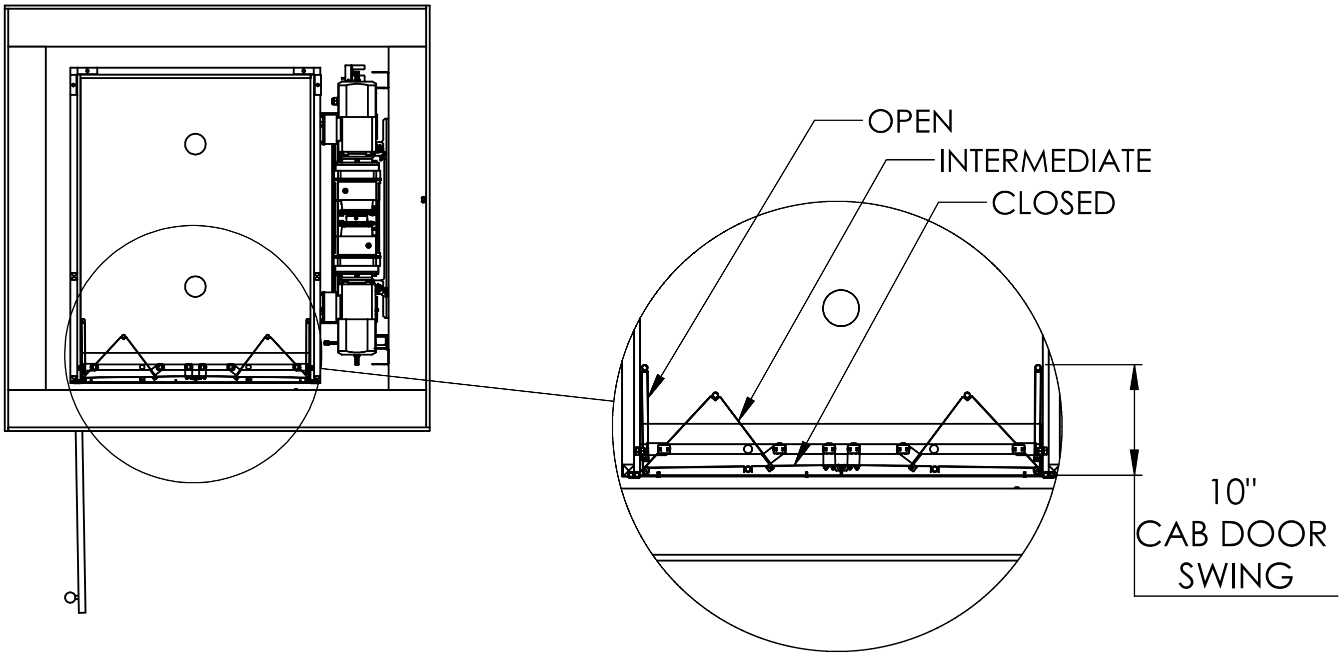
INLINE LEFT TOP VIEW



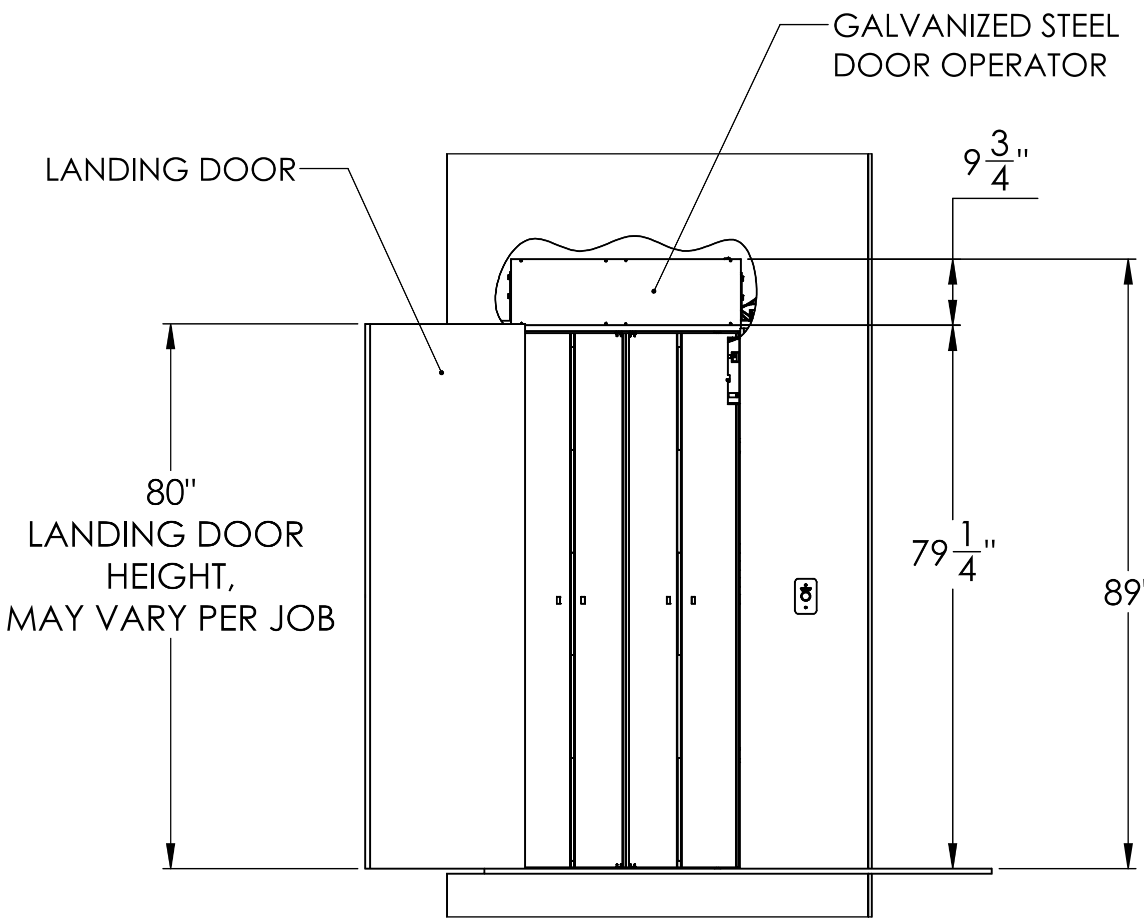
INLINE RIGHT TOP VIEW



Exterior View



CAB DOOR POSITIONS



Contact Us

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