

LUXURY LIFT

HYDRAULIC 950

Planning Guide

Applicable Safety Codes:

ASME A17.1/CSA-B44
Safety Code for Elevators and Escalators
Section 5.3 - Private Residential Elevators



Elevating your standard of living

September 2016

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About REI

- Factory Direct installation of Home Elevators throughout the Southeast United States, Eastern Seaboard, Texas and California
- Authorized Distributors of residential elevators throughout North America and the Caribbean
- Our residential elevators are built using the same design criteria developed over decades and used in the commercial elevator market
- Enjoy commercial elevator features at residential elevator prices
- Save money on your taxes by installing a Home Elevator

Benefits

- Residential Elevators, Inc. (REI) is pleased to offer the Luxury Lift LLH-950 - hydraulic elevator line with our largest size and payload ever.
- REI's Luxury Lift LLH-950 residential elevators are built using the same design criteria developed over decades and used in the commercial and industrial elevator market.
- REI's Luxury Lift LLH 950 gives the lifting capacity normally available only with commercial elevators.
- REI's exclusive Auto Lowering emergency exit feature allows the Luxury Lift LLT-950 to lower automatically to the next landing, allowing passengers to exit safely in the event of a power outage
- Low maintenance consistent with REI's reputation and demonstrated track
- record for effective and highly engineered hydraulic elevators with affordable cost and beautiful finish.
- Environmentally Friendly and Energy Efficient
- An excellent value in the ultimate home appliance
- Unmatched quality and customer service
- Many optional features to complement your individual tastes and desires

Planning

This Planning Guide and your REI Representative will help you plan for a LLH-950 Hydraulic elevator by determining the following:

- Hoistway and elevator cab sizes including wheel chair requirements
- Elevator hoistway door locations
- Residential Elevator national and local code requirements
- Hoistway construction requirements
- Machine access door location and size
- Electrical requirements
- Ordering your REI elevator
- Quality installation of your elevator
- Quality maintenance and service by certified technicians



Minimum Requirements

- 48" x 48" clear inside hoistway dimensions when using an accordion style solid gate
- 8" minimum pit built to withstand a 5,100 lb. load
- 96" clear hoistway overhead for std. cab
- 108" clear hoistway overhead for 8'-0" cab
- 12" minimum return on rail side wall. If this cannot be obtained, contact representative for approval
- If masonry construction, rail wall needs to be poured solid
- Rail side blocking for wood frame hoistways must be two 2 x 12s sandwiched together with 2 x 4s, running vertically the entire length of the hoistway, 12" on center of either side of the rail wall centerline. (Please see rail wall structural drawing on page 8)
- Legal machinery space with access doors (Please see access door drawing on page 10)

Standard Features

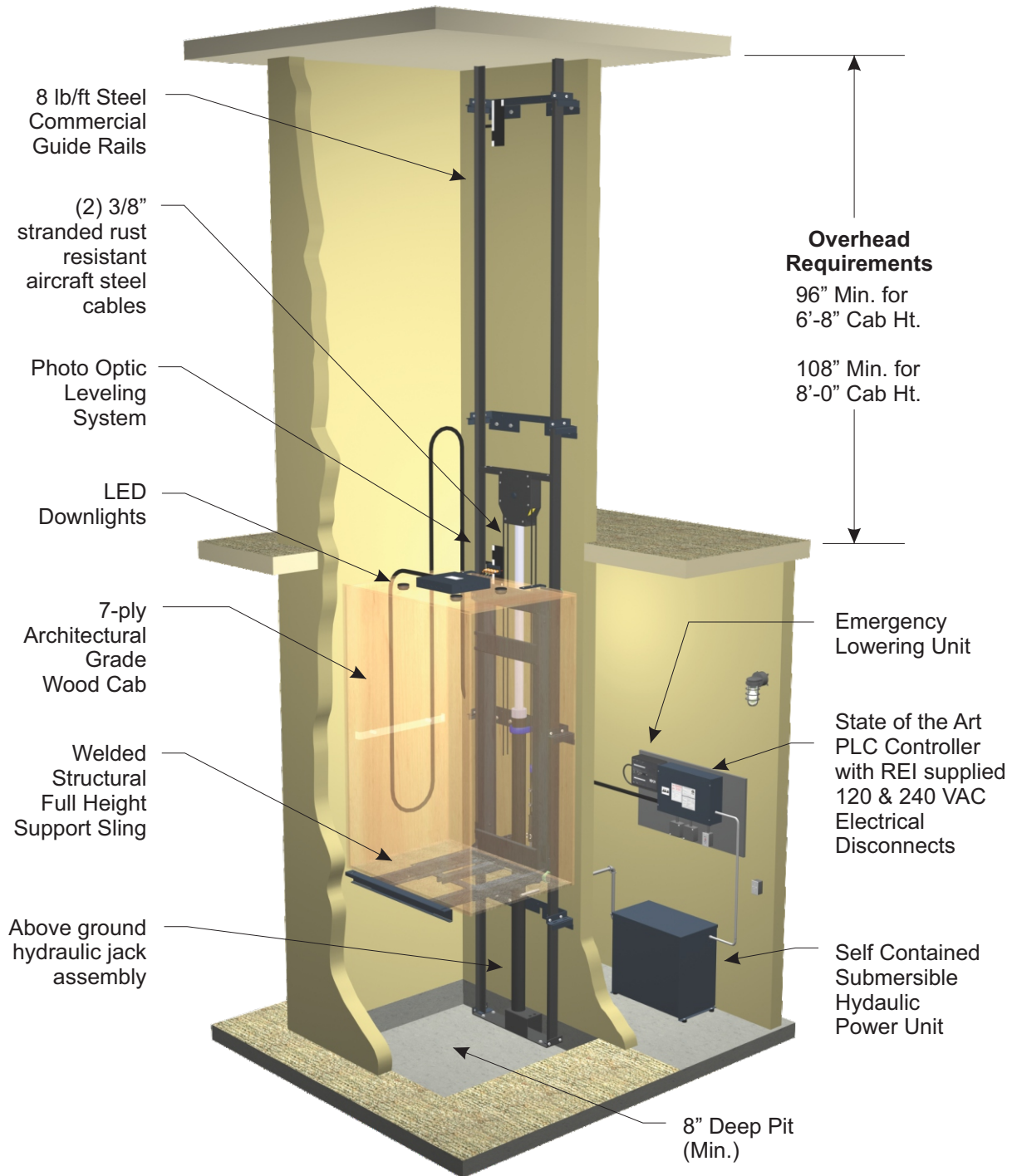
- Free job site survey by a trained representative
- 950 lb. capacity
- Auto Lowering Emergency System
- Travel standard up to 50 ft.
- Travel speed of 40 ft. per minute
- PLC (Programmable Logic Controls) Controller
- 3/8" Heavy duty aircraft cables
- 2 speed leveling valve
- 3/4" sturdy cab walls (7 ply custom cabinet grade material)
- Custom made cab and interior to your specifications
- Aluminum anodized scissor gate or accordion style solid gate
- Standard interior cab color choices: (Pre-finished Maple or Oak and Classic White)
- Solid matching hardwood handrail
- Recessed lighting
- Single integrated car operating panel with built in phone and emergency light
- "Car Here" and "In Use" indicators
- Meets or exceeds all ASME/ANSI A17.1 National Safety Codes for Elevators - Section 5.3 **Private Residence Elevators.**

Optional Features

- Woods other than standard
- Additional gate(s)
- Custom gate(s)
- Oversize cab
- Over height cab up to 8'-0"
- Variety of custom cabs
- Observation glass panel inserts
- 750 lb. capacity (as necessary by code in certain areas)
- Mirror with hardwood trim
- LED downlights
- Keyed hall station
- Remote diagnostics and monitoring
- Auto homing / auto light / auto run
- And much more - Contact your local representative for all the details and options

LUXURY LIFT - LLH 950

HYDRAULIC ELEVATOR



Contract Specifications

To Specify: The manufacturer shall furnish _____ traction residential elevator(s) (LLH-952, LLH-953, LLH-954, LLH-955) as manufactured by Residential Elevators, Inc. for hoistway plan HP- _____

Design Characteristics: Hydraulic elevator(s) shall have: Capacity: 950 lb - Standard, 750 lb. - **Optional Speed:** 40 fpm

Travel Distance: _____ ft. _____ in. (50'-0" max.)

Landing Served: _____: with openings at _____ front, _____ rear, _____ right, _____ left

Door Size: (_____ w x _____ h) **Door Swing:** Right: _____ Left: _____

Hoistway: (Size _____ x _____) **Cab:** (Size: _____ "w x _____ "d x _____ "h) Minimum 8'-6" overhead clearance for standard height cab (9'-6" for 8'-0" cabs)

Hoistway Pit: 8" Minimum

Controller Location: Machine room.

Std. Cab Interiors: Pre-Finished Maple: _____ Pre-Finished Oak: _____ Classic White Laminate: _____

Optional Species: Sapele: _____ Cherry: _____ Walnut: _____ Alder: _____ Maple: _____ Bamboo: _____

[Note: All wood species available in stained and lacquered finish or unfinished.]

Cab & Hall Stations: Stainless Steel (#4): _____ Bronze (#4 or Antique): _____ Black: _____

Cab: Standard Residential Elevator shall be suitably finished on the interior side with natural wood grain; constructed of 3/4" 7 ply custom cabinet grade materials. Ceiling to be same species as walls unless specified, and 1" plywood on platform unfinished and ready for floor covering (flooring by others.) Cab is standard equipped with one folding aluminum scissor gate (gold tone or silver tone finish) or accordion style solid vinyl gate (white). It is provided with a gate switch to prevent operation unless the gate is closed. A single recessed incandescent light shall be in the center of the car ceiling. Cab shall be equipped with a solid hardwood handrail.

Guide Rails: Shall be two (2) 8 lb. planed T Section with smooth splices located on one load bearing hoistway wall. Guide rails shall be fastened at 7'-0" intervals by steel brackets.

Hydraulic Power Unit: A power unit especially designed and manufactured for this service shall be furnished. It shall include a constant displacement rotary screw type pump, submersible pump motor, oil reservoir, hydraulic control unit and oil level gauge. The hydraulic control unit shall include a safety check valve, an UP direction valve with high pressure relief including UP leveling and soft stop features, a lowering valve including DOWN leveling and a manual lowering feature (Two-Speed

Valve); all encased in a compact unit assembly. The control valves shall be solenoid operated and designed to open and close gradually to give smooth starts and stops.

Operation: Controls shall be momentary pressure and completely automatic. Each entrance shall be furnished with a call station. The car shall be furnished with a pushbutton station with one button for each level served. The car push button station shall also contain an emergency stop switch, alarm bell, and light switch, and integrated phone. (required by ASME/ANSI A17.1 National Safety Codes for Elevators - Section 5.3 Private Residence Elevators.) Car and hall pushbutton stations to be brushed (#4) or antique bronze tone or brushed stainless steel (#4) or Black.

Controller: The controller components shall be enclosed in a metal cabinet. It shall contain the following components: Power relays and overload device suitable for the size motor and power supply. A microprocessor unit for all logical control and safety circuits. All components to be protected by fused circuits. An emergency, battery UPS operated circuit, shall be incorporated in the control logic to automatically provide emergency lighting and lower the lift in the event of an electric power failure. Batteries to be maintained at full charge by a trickle charge circuit during normal operation.

Hoistway Door Interlocks: Electrical / mechanical door locks shall be furnished for all hall doors to prevent elevator operation unless all doors are closed and to prevent opening of door when car is not at that landing.

Car Frame / Suspension: The steel car frame shall be attached to and suspended by three (2) 3/8" dia. heavy duty aircraft cables. The cables shall be fastened to the pit structure on one end and pass over the U groove sheave to shackles attached to the car frame and safety device. Should one or more cables break or slacken, a broken rope safety mechanism shall apply two cams to wedge against the elevator guide rails and bring the car to a complete stop.

Installation: Installation to be performed by authorized elevator contractor. All work must be completed in accordance with installation and operating instructions provided by the manufacturer of the elevator and must be in compliance with requirements of the American Standard Safety Code, National Electrical Code, and state and local building codes.

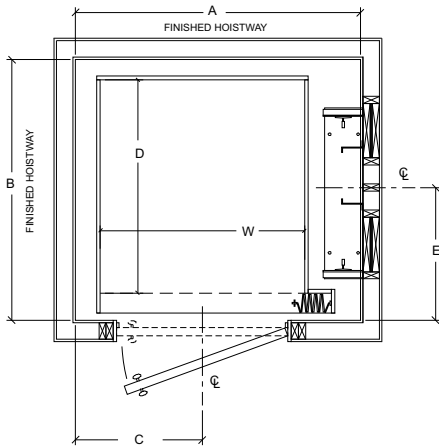
Standard Hoistway Plans, as drawn, are recommended size requirements only.

Contact REI for layout assistance if your needs are different.



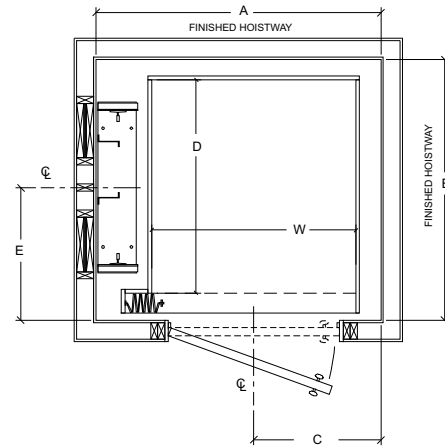
Hoistway Size Requirements

HP-1



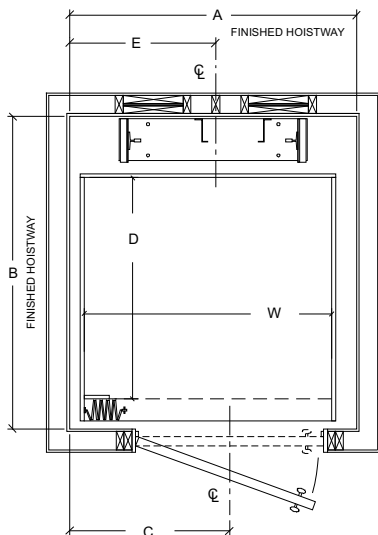
Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E
950 Lbs.	32"	32.5" x 38"	Min. *	48"	48"	21"	28"
950 Lbs.	36"	36.5" x 47"	12	52"	57"	23"	28"
950 Lbs.	36"	40" x 53.5"	15	55.5"	63.5"	23"	28"
950 Lbs.	36"	39" x 55"	15	54.5"	65"	23"	28"

HP-2



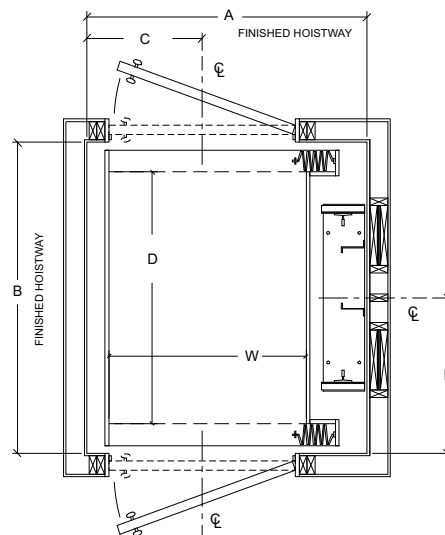
Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E
950 Lbs.	32"	32.5" x 38"	Min. *	48"	48"	21"	28"
950 Lbs.	36"	36.5" x 47"	12	52"	57"	23"	28"
950 Lbs.	36"	40" x 53.5"	15	55.5"	63.5"	23"	28"
950 Lbs.	36"	39" x 55"	15	54.5"	65"	23"	28"

HP-3



Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E
950 Lbs.	32"	41.5" x 30"	Min. *	48"	48"	27"	24"
950 Lbs.	36"	48.5" x 36"	12	55"	54"	32"	27.5"
950 Lbs.	36"	57" x 37.5"	15	63.5"	55.5"	40.5"	31.75"

HP-4

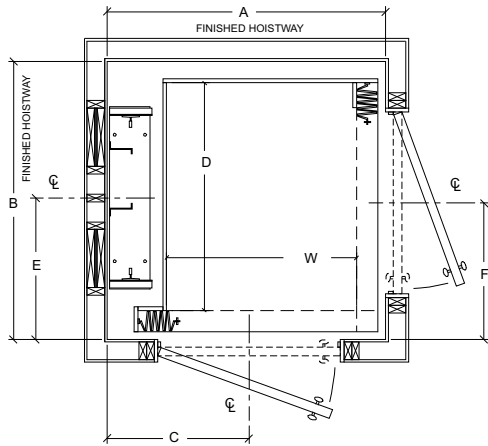


Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E
950 Lbs.	32"	32.5" x 43"	Min. *	48"	54"	21"	27"
950 Lbs.	36"	36.5" x 47.5"	12	52"	58.5"	23"	29.25"
950 Lbs.	36"	43" x 50"	15	58.5"	61"	23"	30.5"

* This is the smallest elevator cab available.

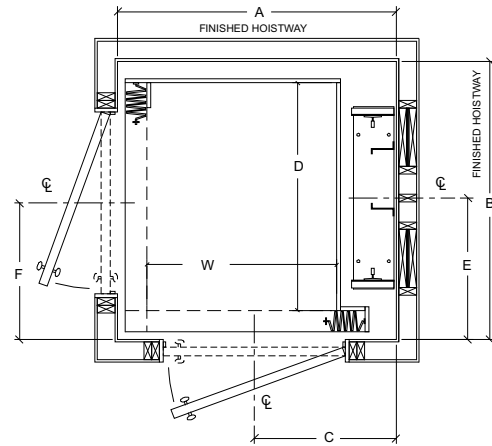
Hoistway Size Requirements

HP-5



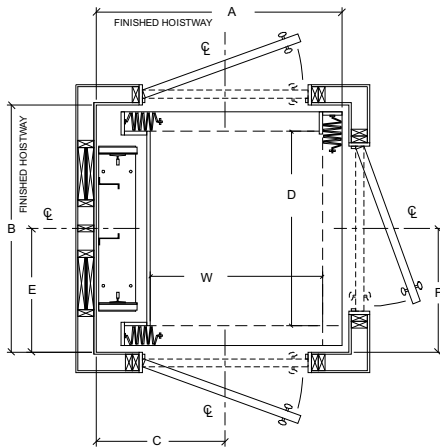
Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E	F
950 Lbs.	36"	39" x 44"	12	56.5"	54"	33.5"	28"	23"
950 Lbs.	36"	40.5" x 53"	15	58"	63"	35"	28"	23"

HP-6



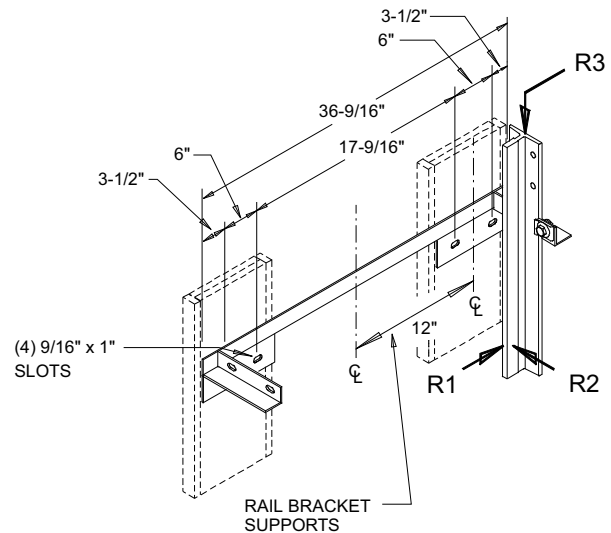
Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E	F
950 Lbs.	36"	39" x 44"	12	56.5"	54"	33.5"	28"	23"
950 Lbs.	36"	40.5" x 53"	15	58"	63"	35"	28"	23"

HP-7



Capacity	Door	Cab Size W x D	Sq. Ft.	A	B	C	E	F
950 Lbs.	36"	40" x 43"	12	57.5"	54"	34.5"	27"	23"
950 Lbs.	36"	43" x 50"	15	60.5"	61"	32.5"	30.5"	23"

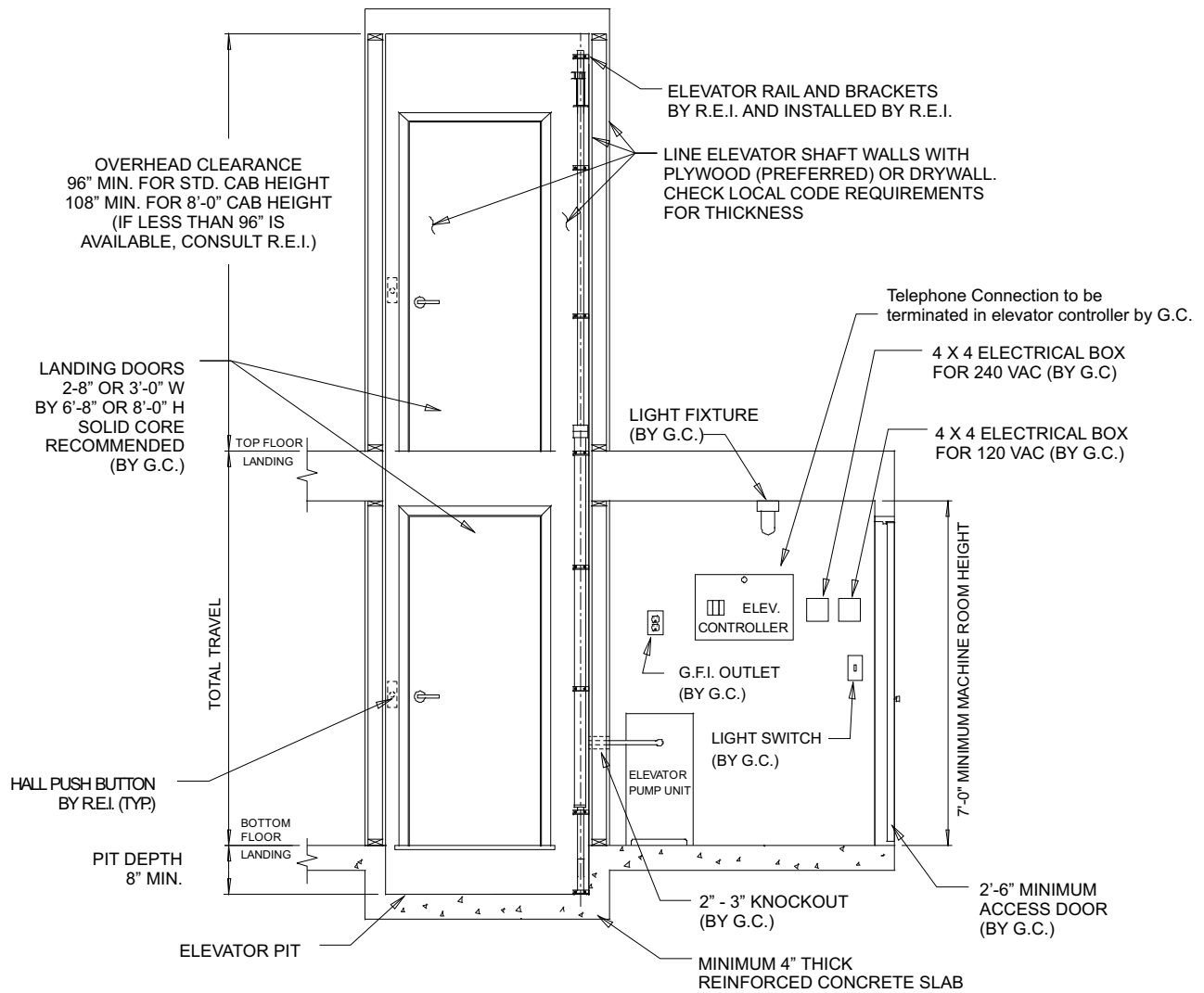
Rail Forces



R1	105 LBS.
R2	246 LBS.
R3	3900 LBS.

R3 not to exceed this value.
[varies with cab size, cab weight, jack size, travel, etc.]

Hoistway Elevation



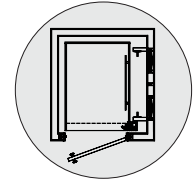
TYPICAL ELEVATION AND LAYOUT

(ADJACENT MACHINE ROOM)

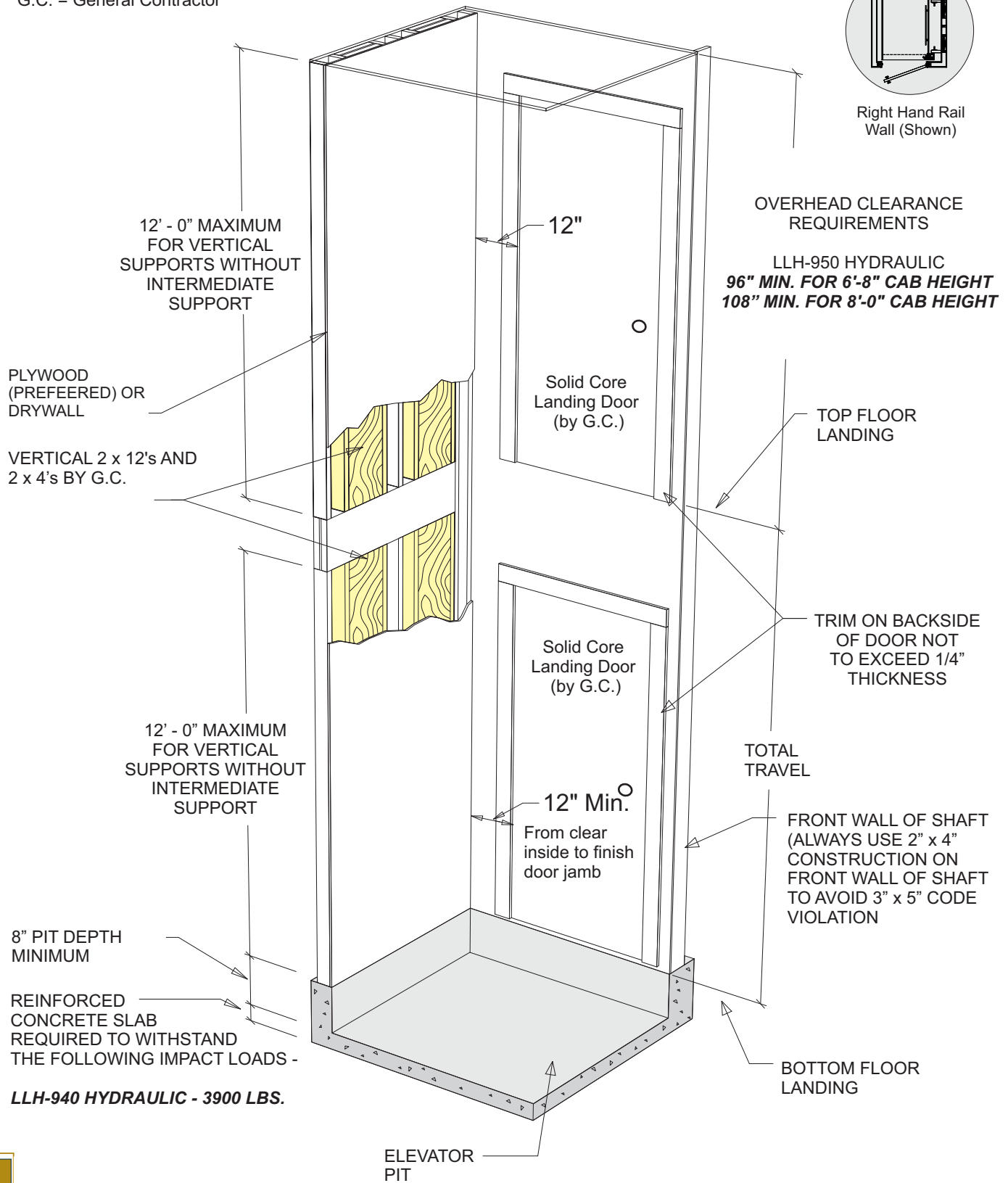
RESIDENTIAL ELEVATORS (REI) CONTROL SYSTEM CONTAINS THE 240 VAC AND 120 VAC DISCONNECTS. HOWEVER, GC/ OWNER MUST PROVIDE DEDICATED CIRCUIT AND WIRE TO A 4" x 4" BOX (1 FOR 240 VAC & 1 FOR 120 VAC) IN MACHINE SPACE PER DRAWING. SEE ELECTRICAL REQUIREMENTS FOR FURTHER DETAILS.

Structural Work

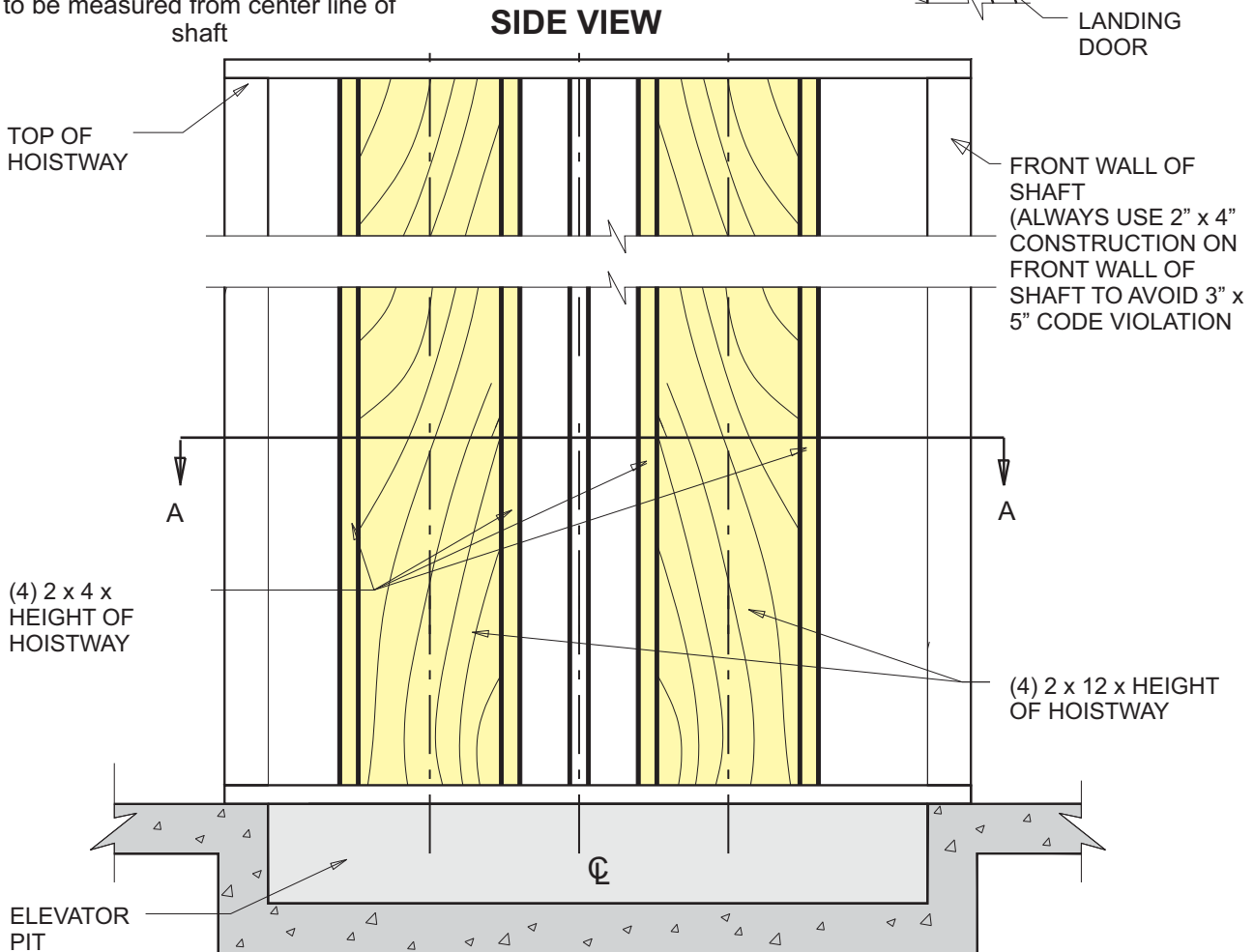
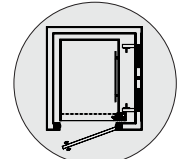
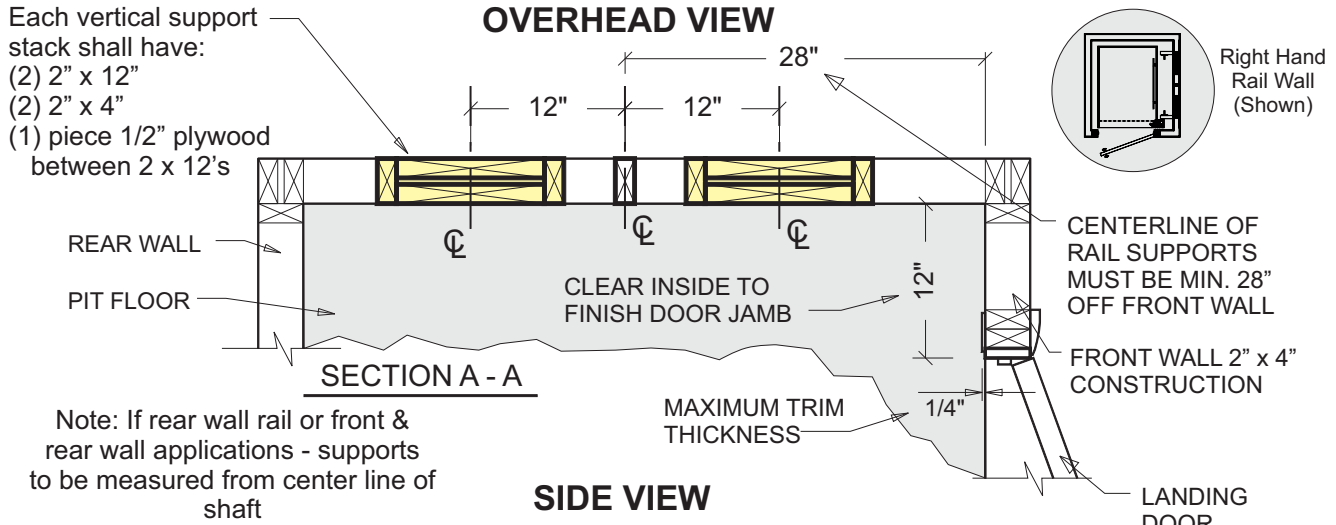
G.C. = General Contractor



Right Hand Rail Wall (Shown)



Structural Requirements



ELEVATION

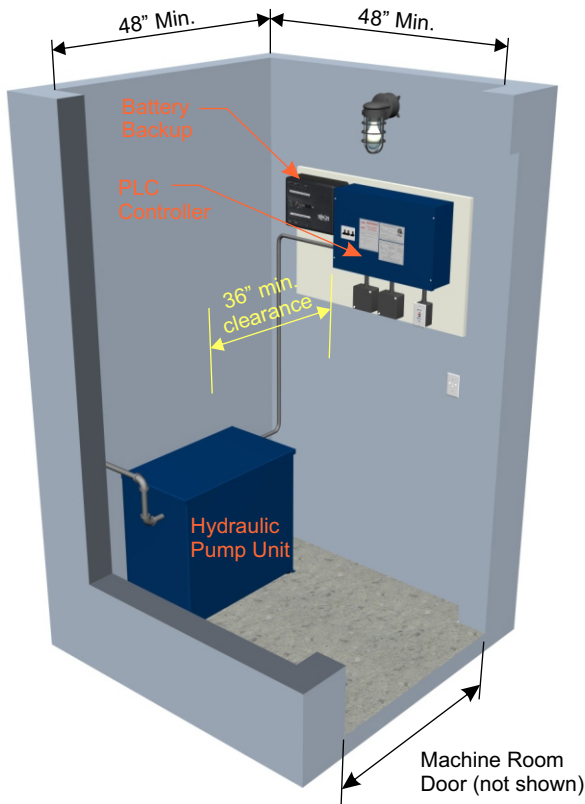
Right Hand Rail Supports Shown (Left Hand Opposite)

CONTRACTOR RESPONSIBILITY

TO ENSURE ADEQUATE SUPPORT IN WALL FOR GUIDE RAIL FASTENINGS, VERTICAL SPANS OF 2 x 12 's SHALL NOT TO EXCEED 12' - 0" INTERVALS WITHOUT INTERMEDIATE SUPPORT

Machine Room Requirements

Recommended Setup



Supplied by REI

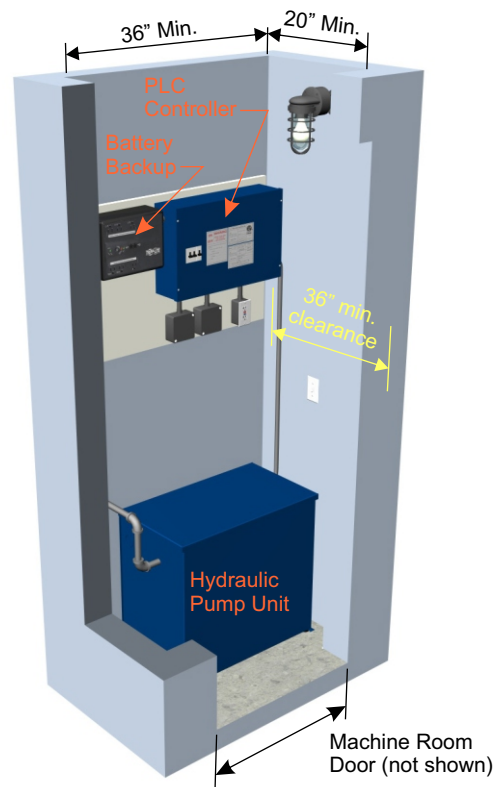
- State-of-the-Art PLC (Programmable Logic Controller) with built-in 240 VAC & 120 VAC disconnects (20" W x 6" D)
- Hydraulic Pump Unit (29" W x 16-1/2" D x 27-1/2" H)
- Battery Backup

Notes:

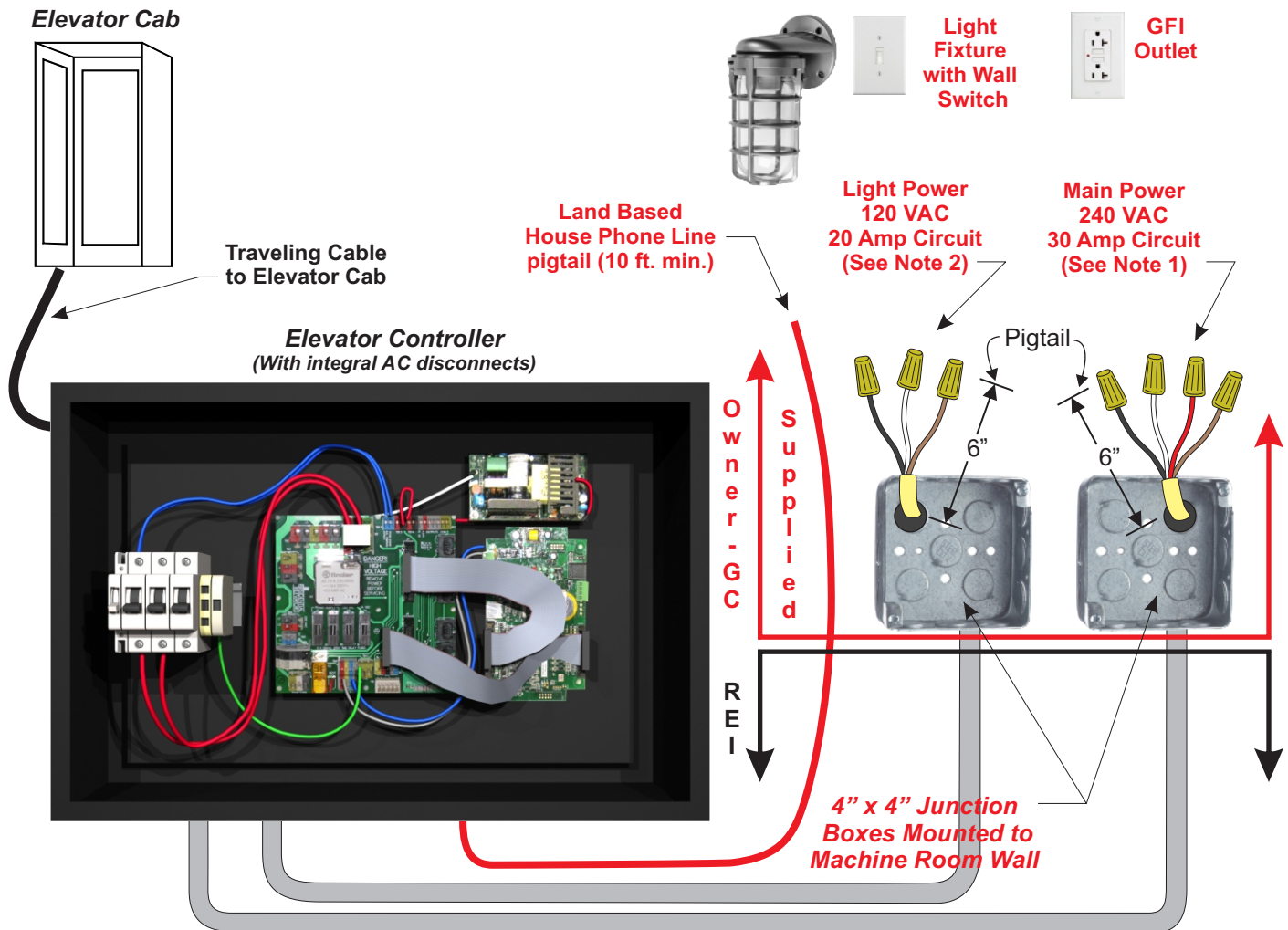
- Must comply with local & State Electrical Codes
- Electrical Requirements per NEC 2002.
- 36" clearance in front of controller panel with door open 90 degrees.
- 60" min. headroom required for elevated platform stands for hydraulic pump unit.
- Machine Room Door to be min. 30" wide.
- Machine Room must be adjacent to rail wall. (Remote machine rooms must be approved by REI factory engineers.)
- See your REI Representative for detail drawings.

Optional Setup

[When there is no other option]



Electrical Requirements for Elevator Machinery Space (by G.C. / Owner / Other)



By General Contractor / Owner

Each home elevator requires five (5) items from your Electrician and Telecommunications Contractor(s). They are as follows:

1. Main Power - 10/3 with Ground (min. 6") Pigtail connected to house 30 Amp dedicated circuit
2. Cab Light Power - 12/2 with Ground (min. 6") Pigtail connected to house 20 Amp dedicated circuit
3. One (1) GFI Outlet.
4. One (1) Light Fixture (with protective cover over bulb) with wall switch on lock side of entry door.
5. One (1) Live Land Based Phone Line with pigtail (10'-0" Min.) per code.

PLEASE BE ADVISED THAT POWER ON THE 240 VAC LINE MUST BE A 10-3 WIRE WITH A GROUND AND INSURE THERE IS A DEDICATED NEUTRAL TO THE UNIT.

Explanation: The 240 VAC feed should have a black, red, white and ground wire coming to the machine room. All electrical contractors will have full knowledge of this requirement. Simply insure they are aware of the requirement. Black and red are powered with 120 VAC, each totaling 240 VAC. White is neutral. Ground to ground standard.

Also, standard telephone line should be pulled to machine room with approximately ten feet extra length inside machine room. If further explanation or clarification is needed, please contact your local sales representative.

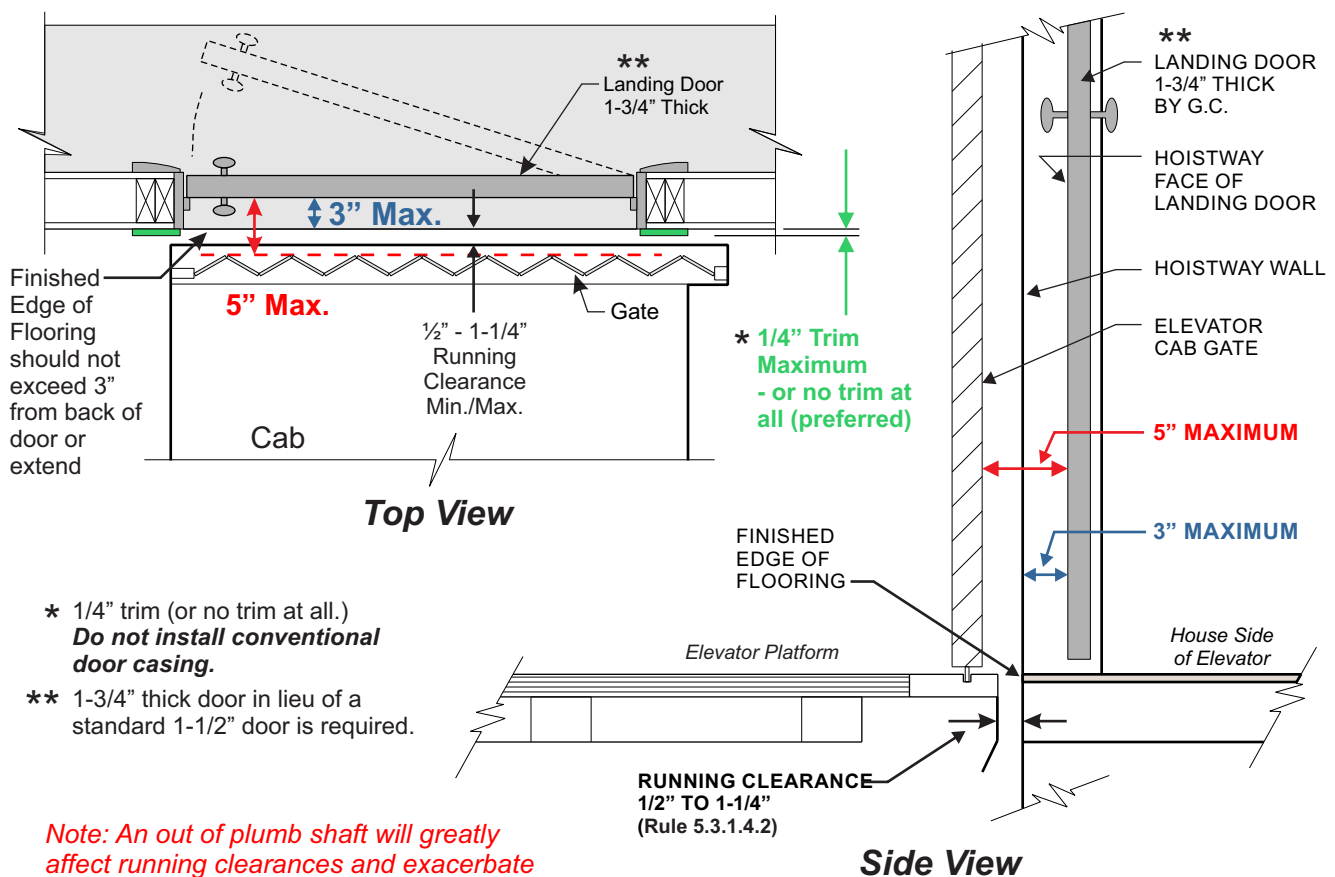
Home Elevator 3"x 5" Rule

Residential Elevators manufactures and installs a fully code compliant elevator per the ASME ANSI A17.1 National Safety Code for Elevators - Section 5.3 Private Residence Elevators.

Note: Some Local and State Codes have a modified 3" x 5" rule. (e.g. 3/4" x 3" and 3/4" x 4")

Rule 5.3.1.4.2 (aka 3"x 5" Rule) of the above referenced code states: Clearance Between Hoistway Door(s) or Gate(s) and Landing Sill(s) and Car Door(s) or Gate(s). The clearance between the hoistway doors or gates and the hoistway edge of the landing sill shall not exceed 3 inches (76 mm). The distance between the hoistway face of the landing door or gate and the car door or gate shall not exceed 5 inches (127 mm).

Note: Concrete block / masonry shafts and some commercial metal door frames can often create 3"X 5" Rule violations.



The 3"x 5" Rule is a code requirement. Residential Elevators takes pride in ensuring safety in the use of their equipment and as a policy wants to make sure all Builders, Architects, Developers, Owners / Users are aware of and adhere to this National Code.

This is a safety issue.

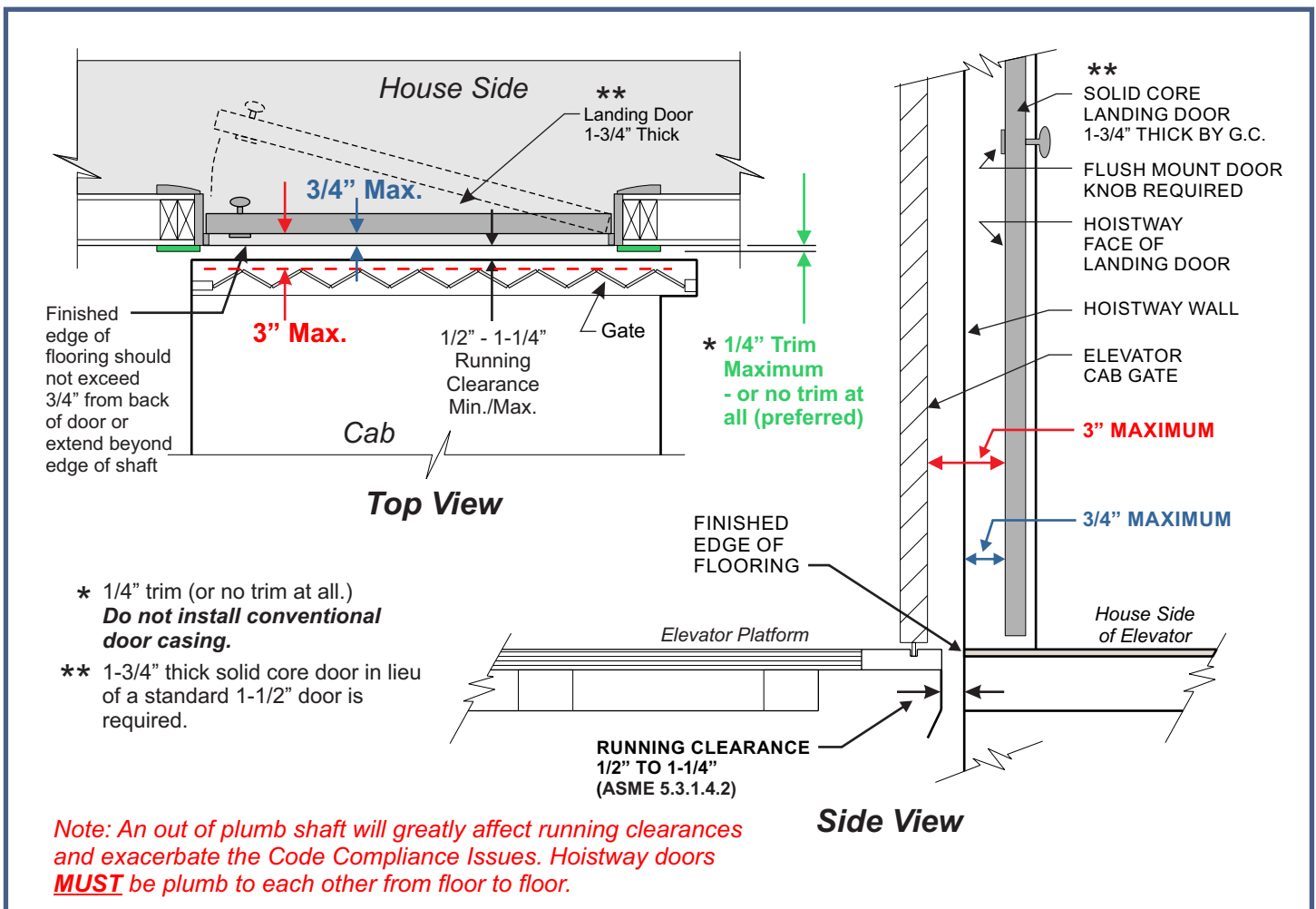
Modified 3/4" x 3" Rule

Residential Elevators manufactures and installs a fully code compliant elevator per the ASME ANSI A17.1 National Safety Code for Elevators - Section 5.3 Private Residence Elevators as modified by various states.

Note: Some Local and State Codes have a modified 3" x 5" rule. (e.g. 3/4" x 3" and 3/4" x 4")

ASME 5.3.1.7.2 of the above referenced code Clearance Between Hoistway Doors or Gates and Landing Sills and Car Doors or Gates and State Amendments to International Residential Code R321.1.1 Hoistway Opening Framing state: The clearance between the hoistway doors or gates and the hoistway edge of the landing sill shall not exceed 3/4 inches (19 mm). The distance between the hoistway face of the landing door or gate and the car door or gate shall not exceed 3 inches (76 mm).

Note: Concrete block / masonry shafts and some commercial metal door frames can often create Rule violations.



The 3"x 5" Rule is a code requirement. Residential Elevators takes pride in ensuring safety in the use of their equipment and as a policy wants to make sure all Builders, Architects, Developers, Owners / Users are aware of and adhere to this National Code.

This is a safety issue.

Work By Others

ELEVATOR HOISTWAY: Provide an enclosed finished **LEGAL** hoistway with **INSIDE CLEAN, CLEAR, SQUARE AND PLUMB** (including pit) dimensions recommended to be a minimum of 52 inches wide by 57 inches deep (52" X 57") including blocking, which will provide an interior cab dimension of approximately 12 square feet. REI will build to your specifications if smaller than the above, but only to the smallest dimension inside the clean, clear, square and plumb (including pit) finished hoistway (plywood walls preferred). Confirm with local building department for any other requirements regarding construction of elevator hoistway.

Barricades, and/or any/all other legal methods required by any jurisdiction to prevent access into shaft shall be required outside each floor landing for the protection of workmen and all other subcontractors and/or occupants until the elevator is installed completely and turned over to home owner. These devices shall be the sole responsibility of the G.C..

GC TO PROVIDE SOLID CORE HOISTWAY DOORS WITH HINGES LOCATED ON RAIL SIDE, properly installed to comply with A17.1.

"3 X 5" RULE (Clearance between the landing doors and gates AND landing sills): DOOR SIDE WALL TO BE OF 2" x 4" CONSTRUCTION. Regardless of construction type EACH DOOR MUST BE RECESSED TO MEET THRESHOLD CONSTRUCTION REQUIREMENTS AS CONTAINED IN THE ANSI A17.1 (3" x 5" SPACING CODE). The distance between the landing door, in the closed position, and elevator gate(s), in the open position, shall not exceed 5 inches. The distance between the landing door face, in the closed position, and landing sill shall not exceed 3 inches. ELEVATOR CANNOT BE OPERATIONAL UNLESS LANDING DOORS ARE IN COMPLIANCE. Contact your local REI representative for further details.

Note: Same local and state codes have a modified 3"x5" Rule (e.g. 3/4"x 3" and 3/4" x 4"; see page 13)

THRESHOLD: Contractor shall provide a threshold from each floor to within 1/2" minimum to 1-1/4" maximum of the elevator platform AFTER the elevator has been installed. Doors in hoistway shall NOT be centered but installed per REI specs to allow proper rail side return measurement. Rail Side return measurement of at least 12 inches is required. Hoistway side of landing doorframes shall NOT have casing or door trim that exceeds 1/4" in thickness.

HYDRAULIC: A MINIMUM PIT OF 8" INCHES IS REQUIRED built to withstand 3,900 lb minimum load. A minimum 14" deep pit is required where occupied space below the shaft exists. A minimum of 96" of overhead clearance is required for 6' 8" cab (108" for 8'-0" cabs.)

Contractor to complete all drywall and grouting patchwork.

WOOD FRAME HOME BLOCKING REQUIREMENTS: Four (2 sets of 2 ea.) 2" X 12" yellow pine studs running vertically the entire length of the hoistway 12" on center on

each side of rail wall centerline (centerline of rail wall must be minimum of 28" off inside front wall), 2" x 12" to be face nailed, glued and edged with 2" x 4" for structural integrity. The yellow pine boards shall all be fastened to the wall supports with 3/8" by 2-1/2" lag bolts to support elevator rail system. To insure adequate supports in the wall for guide rail fastenings these should not exceed 10' vertical feet and meet all pertinent building codes (see REI blocking detail).

CONCRETE BLOCK HOISTWAY: All dimensions shall remain the same for **INSIDE CLEAN, CLEAR, SQUARE AND PLUMB** hoistway. Rail sidewall blocks shall be filled solid with concrete the entire height of hoistway. All patching, painting and grouting required after installation is the responsibility of the GC.

EQUIPMENT ACCESS DOOR: The REI LLT950 Traction Luxury Lift does not require a conventional Machine Room, however, CODE COMPLIANT ACCESS to the equipment space in the elevator hoistway overhead must be provided by the General Contractor/Owner. Access to equipment must be through an access door (18" H x 24" W min.; 24" x 24" max.) located on the top floor or from the attic (see REI drawing detail for more information). If access door is located in attic accessibility for service and installation must be provided including catwalk, decking adjacent to access door, scuttle hole and attic ladder and controller/disconnect location.

ELECTRICAL: Standard 240 VAC 30 Amp dedicated service 10-3 wire with ground and standard 120 VAC, 15 Amp single pole disconnect / circuit breaker, telephone line, GFI Receptacle, electrically dedicated light fixture with bulb guard and switch, shall all be located in elevator hoistway overhead or in attic depending on location of access door.

POWER ON THE 220V LINE MUST BE A 10-3 WIRE WITH A GROUND AND INSURE THERE IS A DEDICATED NEUTRAL TO THE UNIT. IN ADDITION, ELECTRICAL CONTRACTOR TO SUPPLY AND INSTALL 240V-30AMP DISCONNECT WITH INTERLOCK AUXILIARY CONTACTS KIT PLUS 2 EACH 250V RK5 FUSES, AND SINGLE POLE FUSIBLE 110V-15A DISCONNECT. Explanation: The 220V feed should have a black, red, white and ground wire coming to the machine room. All electrical contractors will have full knowledge of this requirement. Simply insure they are aware of the requirement. Black and red are powered with 120V each totaling 240V. White is neutral to feed low voltage transformer with ground to ground standard. (See REI electrical requirements sheet)

General Contractor and/or Owner shall Defend, Indemnify and hold REI harmless for all claims subject to this "Work Done by Others".

NOTE: INFORMATION SUBJECT TO CHANGE WITHOUT NOTICE





RESIDENTIAL
ELEVATORS

Elevating your standard of living



ResidentialElevators.com

800.832.2004