

# INFINITY<sup>®</sup>

## Residential Elevator

Roped Hydraulic Residential Elevator

### **Planning Guide**

ASME A17.1 - 2000 Part 5 Section 5.3

CAN/CSA B44 - 2000 Part 5 Section 5.3

Effective April 1, 2004

# Introduction

This planning guide is designed to assist architects, contractors, home owners and elevator professionals in planning for an INFINITY Residential Elevator to meet the requirements of ASME A17.1 Part 5, Section 5.3 and CAN/CSA B44 Part 5, Section 5.3.

We strongly recommend that you contact the code authority having jurisdiction in the area(s) where the elevator will be installed to become familiar with all the legal requirements governing the installation and use of elevators in private residences. It is extremely important for you to know and adhere to all regulations pertaining to the installation and use of elevators.

### IMPORTANT NOTICE

This Planning Guide provides nominal dimensions and specifications useful for the initial planning of an elevator project. Before beginning actual construction be sure to receive application drawings customized with specifications and dimensions for your specific project.

Elevator configurations and dimensions are in accordance with our interpretation of the standards set forth by ASME A17.1 Part 5, Section 5.3 and CAN/CSA B44 Part 5, Section 5.3. Please consult Concord Elevator Inc. or the authorized Concord dealer in your area for more specific information pertaining to your project, including any discrepancy between referenced standards and those of any local codes or laws.

The dimensions and specifications in this Planning Guide are subject to change (without notice) due to product enhancements and continually evolving codes and product applications.

## Planning for an INFINITY Residential Elevator

1. Determine customer's intention for use.
2. Determine code requirements of site.
3. Determine installation parameters of site.
4. Use Page 4 and 5 to determine the car type and hoistway size requirements.
5. Use pages 5 to 8 to plan for machine room and electrical requirements.

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This elevator meets the requirements of  
ASME A17.1 Part 5, Section 5.3 and CAN/CSA B44 Part 5, Section 5.3  
for a Residential Elevator

## General

Rated Load: 750 lbs. (340kg) or 1000 lbs. (454kg)  
Nominal Speed: 36 fpm (.18 ms)  
2 Stop up to 10' travel (Up to 50' optional)  
Data Plates, capacity tags and rope tags  
Minimum pit depth: 8" (203mm)  
Minimum overhead clearance: 92" (2337 mm)  
Presentation drawings

## Mechanical Equipment

208/230V, 60 Hz, 30 Amp single phase power supply  
8 lb. T-Rail system  
Two 3/8" diameter wire rope cables  
Sling assembly  
Forged rope sockets

## Roped Hydraulic Drive

1:2 roped hydraulic single stage cylinder  
3 hp submersed motor with two speed valve  
assembly

## Standard Cab and Appointments

Cab Size: 35" (914 mm)W x 48" (1219 mm)L  
x 80" (2032 mm)H (inside clear measurements)  
Cab Walls: ½" (13 mm) Melamine or M.D.F. panels  
with black anodized aluminum trim  
Cab Ceiling: Architectural white steel ceiling with four  
(4) recessed incandescent down lights  
Solid oak handrail painted black  
Stainless steel flush mounted cab operating panel  
Digital floor and directional indicator (optional on SRE)  
Illuminated cab operating buttons  
Recessed plywood flooring  
Telephone jack

## Controls

Solid state (Plug n' Play) controller  
Fully automatic operation  
Constant pressure operation available  
Stainless steel rectangular hall call stations  
Automatic cab lighting with battery back-up operation  
Emergency alarm and stop button  
Floor specific battery lowering  
Magnetic tape reader for floor selection and levelling  
Automatic home landing to pre-selected floor

## Safety Devices

Easy access emergency manual lowering  
Upper and lower terminal limits  
Manual reset slack rope safety switch  
Automatic bi-directional leveling  
Anti creep device  
Pit switch  
Pump run timer  
Car top stop switch  
Emergency battery back-up for lighting, alarm and  
lowering  
Cab gate safety switch

## Other Options - All Models

Automatic cab gate operator  
Automatic operators for hoistway doors  
Various styles of interlocks for hoistway doors  
90 degree entry/exit cab  
2 Exit openings at one landing  
35" x 54" or 35" x 60" cab sizes  
96" (2743 mm) high cab  
3 or 4 stops with up to 50 ft. (15.24 m) of travel  
Finished oak hardwood flooring  
Two piece hydraulic jack for lifting heights exceeding  
32 ft. (9.75 m)

## Other Options – Infinity Luxury Model

Recessed telephone cabinet in stainless steel or  
brass  
Various panel-fold cab gates or black scissor gate  
Custom cab sizes up to 15 sq.ft. (1.39 sq. m)  
Solid cherry, maple or oak raised panel walls and  
ceiling  
Thermofoil red apple, honey apple, pine or white ash  
raised panel walls and ceiling  
Unfinished oak veneer walls and ceiling  
Brass or Designer cab operating panel  
Brass rectangular or oval hall/call stations  
Stainless steel oval hall/call stations  
Unfinished or finished oak handrail  
Cylindrical brass or stainless steel handrails  
Recessed brass down lights  
Clear or brass anodized cab trim  
5 stops – requires PLC Controller Package

## Choice of Five Variations

Important Note: Finished hoistway dimensions must include the drywall. Determine the fire rating of the hoistway, the type and layers of sheet rock and build only off shop drawings specific to your project.

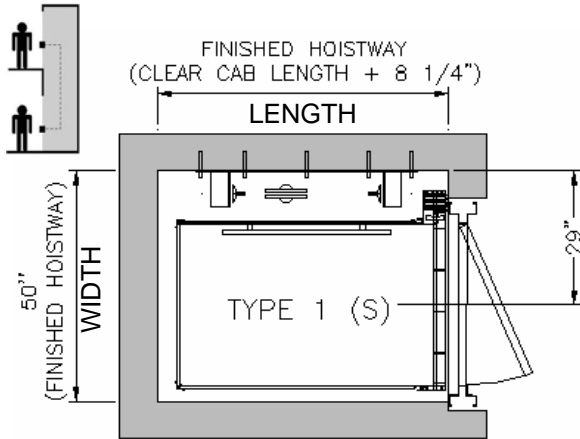
Available Cab Dimensions (Clear Inside):

35" x 48"

35" x 54"

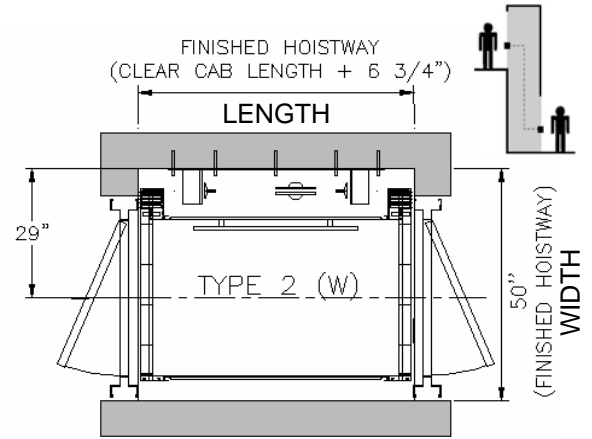
35" x 60"

### Type 1 (S) - Enter/Exit Same Side



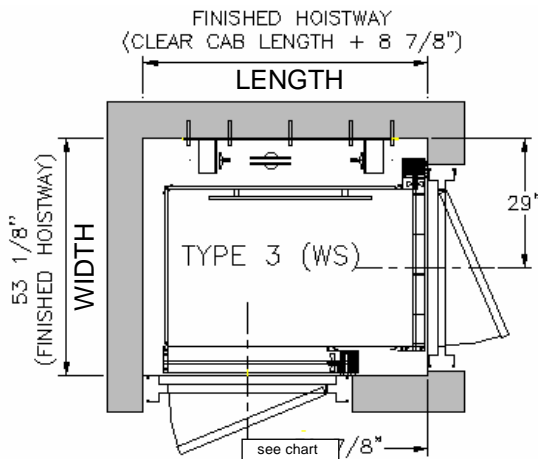
Clear Cab Length	Finished Hoistway Length
48"	56 1/4"
54"	62 1/4"
60"	68 1/4"
X	X + 8 1/4"

### Type 2 (W) - Enter/Exit Opposite Side



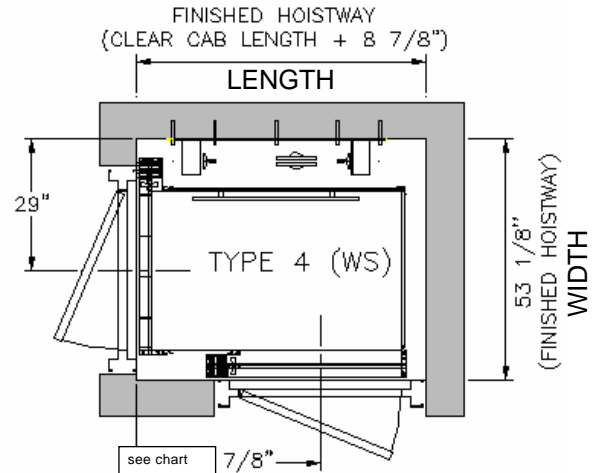
Clear Cab Length	Finished Hoistway Length
48"	54 3/4"
54"	60 3/4"
60"	66 3/4"
X	X + 6 3/4"

### Type 3 (WS) - 90° Enter/Exit



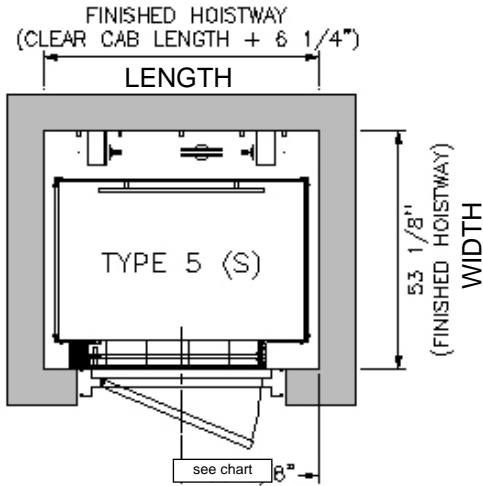
Clear Cab Length	Finished Hoistway Length	Side Entrance Center Lines
48"	56 7/8"	33 7/8"
54"	62 7/8"	39 7/8"
60"	68 7/8"	45 7/8"
X	X + 8 7/8"	X + 14 1/8"

### Type 4 (WS) - 90° Enter/Exit



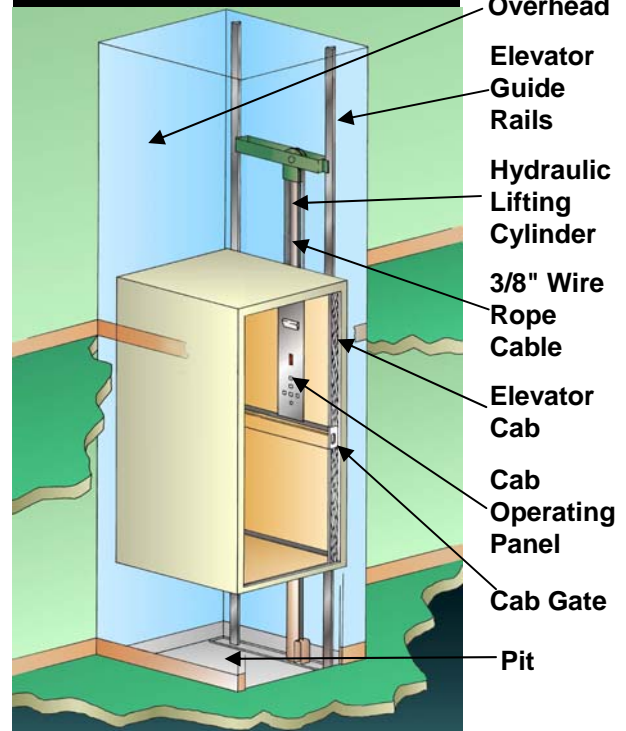
Clear Cab Length	Finished Hoistway Length	Side Entrance Center Lines
48"	56 7/8"	33 7/8"
54"	62 7/8"	39 7/8"
60"	68 7/8"	45 7/8"
X	X + 8 7/8"	X + 14 1/8"

## Type 5 (S) - Enter/Exit Same Side (Opposite Sling)



Clear Cab Length	Finished Hoistway Length	Side Entrance Center Lines
48"	54 1/4"	27 1/8"
54"	60 1/4"	30 1/8"
60"	66 1/4"	33 1/8"
X	X + 6 1/2"	(X + 6 1/4") / 2

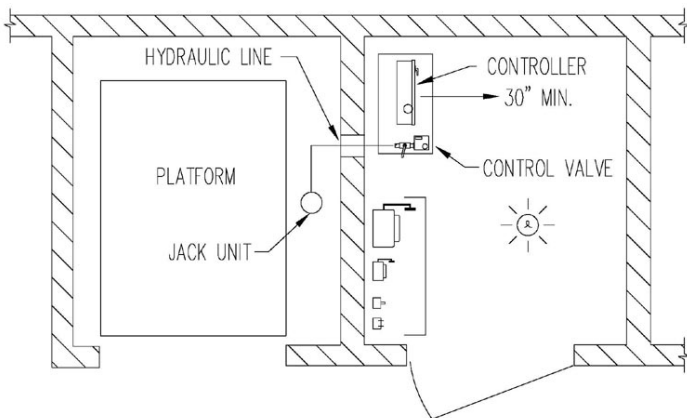
## Diagram of Elevator Shaft



## Hoistway Overhead Clearance

Infinity Cab Height	Overhead Clearance Requirements
80" Cab Height	92" Minimum Clear Overhead
96" Cab Height	108" Minimum Clear Overhead

## Typical Hydraulic Drive Machine Room Layout



Machine Room Plan at Lower Level

Machine room must be built in accordance with local, state/provincial and national codes. Machine room lighting shall be a minimum of 19 foot candles at working surfaces. The switch for the light must be within 18" of the strike side of the machine room door. The switch, light and wiring are provided and installed by others. A convenience outlet, 115 VAC 15 AMP single phase with G.F.I. shall be located next to the light switch in the machine room. provided and installed by others. NEC requires a 30" wide x 36" deep work space in front of the disconnects and the elevator controller. A telephone line circuit is to be provided and installed by others. This circuit must be connected to an outside line.

Controller/Pump Unit Dimensions = 30"W x 16"D x 55"H

## PART 1 - GENERAL

### SCOPE

To furnish all labor, materials and equipment necessary or required to fully complete the installation of the elevator as indicated on the Drawings and Specifications. This suggested specification is intended to cover the complete installation of the Concord INFINITY Residential Elevator design.

### SYSTEM DESCRIPTION

The elevator assembly shall consist of a power unit, car, guide system, 1:2 cable hydraulic lifting device, control system, signals and alarms, electrical wiring, and parts and accessories necessary to provide required performance, operation, code and safety requirements.

### QUALITY ASSURANCE

#### 1.3.1

The elevator shall meet or exceed the applicable regulations of all governing agencies and be in conformance with the applicable sections of the most current edition of the following codes and standards:

- a) ASME A17.1 "Safety Code for Elevators and Escalators; "Private Residence Elevators". CAN/CSA B44 Part 5 Section 5.3
- b) ICC/ANSI A117.1-1998 "Accessible and Usable Buildings and Facilities".
- c) NFPA 70-1999 "The National Electric Code" (NEC).
- d) ADAAG "Americans With Disabilities Act Accessibility Guidelines" (where applicable).
- e) CSA B44.1/ASME A17.5 "Elevator and Escalator Electrical Equipment"
- f) Local codes and regulations, as applicable.

#### 1.3.2 REQUIREMENTS OF THE REGULATORY AGENCIES

- a) Fabricate and install work in compliance with all applicable jurisdictional authorities.
- b) File shop drawings and submissions to local authorities as the information is made available. Company pre-inspection and jurisdictional authority inspections and permits are to be made on a timely basis as required. Work will include all inspections and re-inspections that are required to ensure licenses are issued.

#### 1.3.3 SUBCONTRACTOR QUALIFICATIONS

- a) Execute work of this specification only by a contractor/company who has adequate product and public liability insurance in excess of one million dollars.
- b) Skilled tradesmen must be employees of the contractor and perform the work on a timely basis. Employees must be trained by the manufacturer and be supervised by the elevator contractor.

#### 1.3.4 SUBSTITUTIONS

No substitutions will be considered unless written request for approval has been submitted by the bidder and received by the architect at least 10 days before the receipt of bids. Each such request shall include a complete description of the proposed substitute including drawings, test data, photographs, and any other information needed for consideration.

## PART 2- PREPARATORY WORK BY OTHERS

### 2.1

The following preparatory work to accommodate/receive the elevator is to be done by others.

#### 2.1.1

Provide power unit machine room to meet applicable Codes and Standards.

#### 2.1.2

Permanent power (220 Volt, Single Phase, 30 Amp or 208 Volt, 3 Phase, 30 Amp.) to operate the elevator to be provided to a Lockable Fused/Cartridge Type Disconnect Switch with auxiliary contact/switch for emergency battery lowering. Refer to architectural drawings for permanent power specifications and location of disconnects.

#### 2.1.3

Provide 110-volt lighting supply and disconnect. Refer to architectural drawings for permanent power specifications and location of disconnects.

#### 2.1.4

Provide an enclosed, plumb and square hoistway with smooth interior surfaces. Include for fascias or furring of hoistway interior where applicable.

#### 2.1.5

Provide doors, frames, and door hardware. Provide rough openings as per elevator contractor's drawings.

#### 2.1.6

Provide substantial, level pit floor slab to support loads indicated on elevator contractor's shop drawings.

#### 2.1.7

Provide adequate support for guide rail fastenings.

#### 2.1.8

Provide pit water proofing to maintain a dry pit. Sump pump where required by authority having jurisdiction. (see elevator contractor for location).

#### 2.1.9

Provide 8" (203 mm) minimum pit.

#### 2.1.10

Provide 92" (2337 mm) minimum overhead (distance from floor at upper level to underside of roof).

## PART 3 – SUBMITTALS

### 3.1 SHOP DRAWINGS (presentation)

The shop drawings shall show a complete layout of the elevator equipment detailing dimensions, clearances and location of machinery. Including the following:

- a) Drawings show the dimensions including plans, elevations, and sections to show equipment locations.
- b) Load and reaction drawings shall be provided by the elevator manufacturer and detailed on drawings.

**PART 4 – PRODUCT DATA****4.1 MANUFACTURER/PRODUCT**

The elevator shall be the CONCORD INFINITY Residential Elevator manufactured by Concord Elevator Inc. Toll Free (800) 661-5112 and (905) 791-5555, Fax (905) 791-2222

Dealer Name \_\_\_\_\_

Number \_\_\_\_\_

Rated Load: 750 lbs. (340 kg.)

Nominal Speed: 36-fpm (0.18 m/s)

Car Dimensions: 36" W x 48" D (914 mm W x 1220 mm D)

Operation: Automatic

Gate Type: Horizontally collapsible, accordion style with 3 vision panels

Power Supply: 220 Volt, Single Phase, 30 Amps or 208 Volt, 3 Phase, 30 Amps

Travel Distance: 50 ft. (15.2 m) max \_\_\_\_\_

Levels Served: (up to 5, max. 4 - SRE) \_\_\_\_\_

Number of Openings: Two (2) Maximum

Lighting Supply: 110 Volt, 1 Phase, 60 Cycle, 15 Amps

Jack Type: 1:2 Cable Hydraulic

Pump Type: Submersible with Variable Speed Valve Levelling

Device Type: Magnetic

**4.2 CAR ENCLOSURE****4.2.1 WALLS**

1/2" (13 mm) Melamine panels and black anodized aluminum trim.

**4.2.2 CEILINGS**

Architectural white with four (4) recessed incandescent down lights.

**4.2.3 FLOOR**

Plywood sub-flooring.

**4.2.4 HANDRAIL**

Black painted oak handrail located on control panel.

**4.2.5 EMERGENCY OPERATION**

The elevator car shall be equipped with a battery-powered emergency lowering device and alarm that can be actuated on the failure of normal building power supply. Battery will be rechargeable type with an automatic recharging system.

**4.2.6 EMERGENCY LIGHT**

The car shall be equipped with an integral emergency light that will illuminate automatically in the event of a main power failure.

**4.2.7 CAR OPERATING PANEL**

Car operating panel shall consist of metal push buttons with halo lighting for each landing, an emergency stop button, an alarm button and a key switch. The key is removable in both the on and off position. All mounted on a #4 finished stainless steel panel. Car station panel is hinged.

**4.2.8 DIGITAL FLOOR INDICATOR**

Digital floor indicator located in the control panel will display the location and direction of travel (floor number) of the elevator in the shaft. (optional on SRE model)

**4.2.9 CAR LIGHTING**

The car lighting shall consist of four (4) low voltage recessed incandescent down lights. The failure of one lamp shall not cause the remaining lamp to extinguish.

**4.2.10 AUTOMATIC LIGHTS**

Overhead lights in the car compartment shall turn ON automatically when the elevator door is opened and will stay on while the elevator is in use. The elevator lights will shut off by a timer when the elevator is not in use.

**4.3 DOOR LOCKS**

Locks shall be electrically operated and electrically released at floor level and will remain unlocked until hall or car call is placed. When released, the locks' lag member will drop down and close the electrical circuitry to ensure the elevator cannot move unless the door is closed and locked (a true interlock).

**4.4 HALL CALL STATIONS**

Provide a keyless hall call station with an illuminated call button and stainless steel cover plate for each landing.

**4.5 PLATFORM TOE GUARD**

A platform toe guard shall be provided at each car entrance opening to extend below the car entrance opening for safety.

**4.6 LEVELING DEVICE**

- a) The elevator shall be provided with a 2-way leveling device, which will maintain the car within 1/2" (13mm) of the landing.
- b) Levelling device sensors shall be located in a position to be inaccessible to unauthorized persons.

**4.7 CAR GATE REQUIRED OPTION**

Horizontally collapsible accordion style woodfold car gate with rattan panels and three (3) clear acrylic vision panels car gate shall enclose each car entrance.

**4.8 HYDRAULIC POWER UNIT**

- a) The pump and motor shall be the submersible type installed inside the oil tank.
- b) The controller shall be integrally mounted on the power unit frame and pre-wired and tested before shipment.
- c) Control circuitry to be located at the top of the oil tank.
- d) The power unit control valve shall be a variable speed proportional valve type that includes all hydraulic control valving inherently.

This valve shall incorporate the following features:

- (i) Up and down acceleration and deceleration speed adjustment for smooth starts and stops.
- (ii) Smooth stops at each landing shall be an inherent feature of the valve.
- (iii) Adjustable pressure relief valve.
- (iv) Manually operating 'DOWN' valve to lower elevator in an emergency.
- (v) Pressure gauge indicating in P.S.I. and Bars.
- (vi) Gate valve to isolate cylinder from pump unit.
- (vii) Negative pressure switch.

**4.9 CYLINDER AND PLUNGER****4.9.1**

The cylinder shall be constructed of steel pipe of a sufficient thickness and suitable safety margin. The top of the cylinder shall be equipped with a cylinder head with an internal guide ring and self-adjusting packing.

**4.9.2**

The plunger shall be constructed of a steel shaft of a proper diameter machined true and smooth. The plunger shall be provided with a stop electrically welded to the bottom to prevent the plunger from leaving the cylinder.

**4.10 CABLE**

Minimum of two 3/8" (10 mm) IWRC Galvanized Aircraft Cables.  
Minimum breaking strength of 14,400 lbs. each.

**4.11 SAFETY DEVICE**

A "slack/broken cable" safety device shall be supplied which will stop and sustain the elevator and its rated load, if either of the hoisting cables become slack or breaks. The safety device shall be resettable by the operation of the elevator in the upward direction. A switch shall be mounted in such a position as to sense the operation of the safety device, and will open the safety circuit to the controller to prevent operation of the elevator in either direction.

**4.12 GUIDE YOKE**

The 1:2 guide yoke/sheave arrangement shall be supplied with a sheave, guide shoes, roller bearings and adjustable cable guards. The sheave shall be finished with rounded grooves to fit the cables.

**4.14 FINAL LIMIT SWITCH**

The elevator shall be equipped with a final limit switch to cut off all power to the elevator if the upper normal terminal stopping devices fail.

**4.15 GUIDE RAILS AND BRACKETS****4.15.1**

Steel 8lb/ft "T" guide rails and brackets shall be securely fastened to the building structure.

**4.15.2**

Brackets shall securely hold the guides in a plumb and true position regardless of car loading.

**4.15.3**

Guides shall be bolted through the hoistway enclosure with back-up plates, washers and nuts. Subject to architects' alterations and approval.

**4.16 CAR SLING****4.16.1**

Car sling shall be fabricated from steel members with adequate bracing to support the platform and cab.

**4.16.2**

The buffer-striking member on the underside of the car must stop the elevator before the jack plunger reaches its down limit of travel.

**4.16.3**

Guide shoes to be solid slipper type with polyurethane inserts.

**4.17 WIRING**

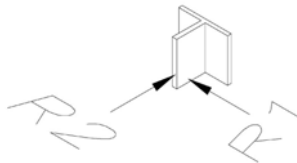
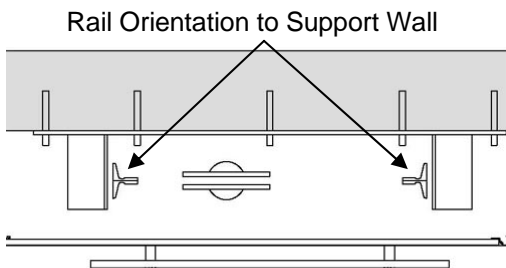
All wiring and electrical connections shall comply with applicable codes, insulated wiring shall have flame retardant and moisture proof outer covering and shall be run in conduit or electrical wireways. Traveling cables shall be flexible and suitably suspended to relieve strain.

**Part 5 - EXECUTION****5.1 EXAMINATION**

All site dimensions shall be taken to ensure that tolerances and clearances have been maintained and meet local regulations.

**5.2 PREPARATION**

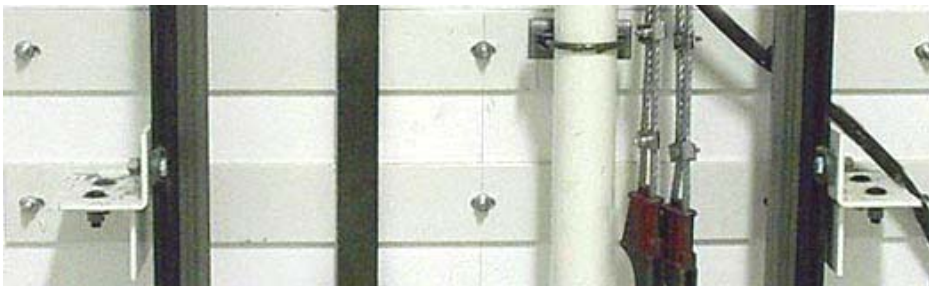
Pre-inspect the construction and service requirements for "Work by Others". These requirements will be included in drawings, diagrams, engineering data sheets and special instructions before the work commences.

**Rail Reactions**

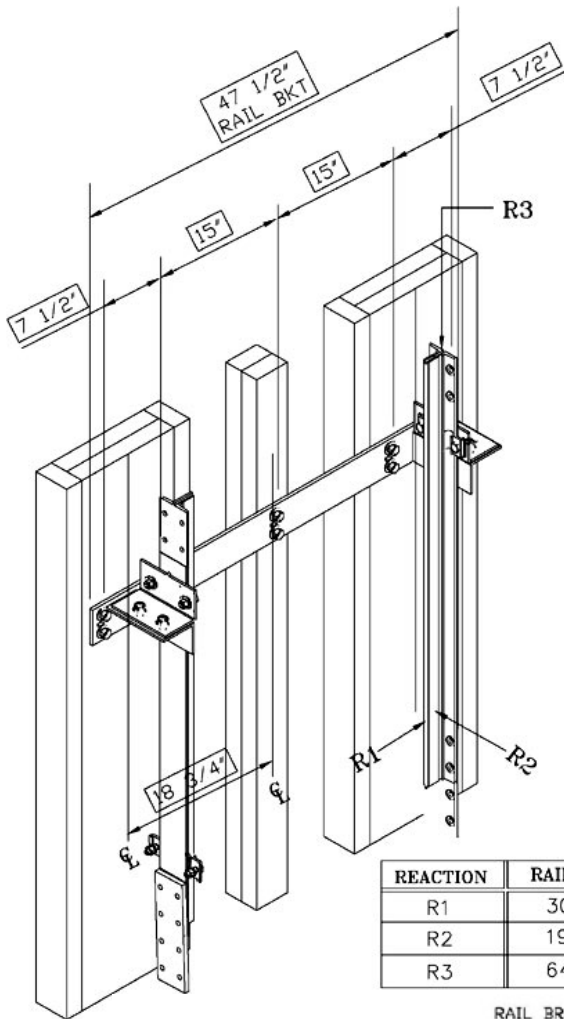
$$R1 = 304 \text{ LBF}$$

$$R2 = 194 \text{ LBF}$$

Rail reactions do not include safety factors.  
Applicable safety factors must be considered  
in hoistway design.

**Typical Lower Rail Bracket Configuration**



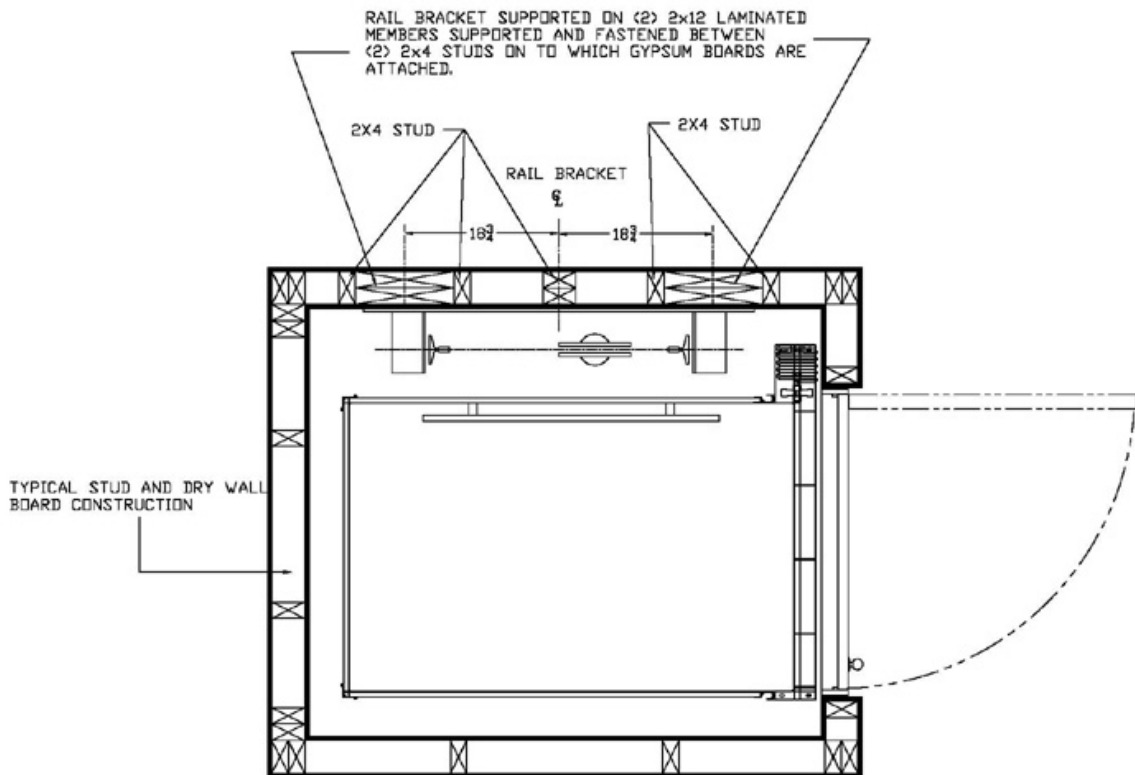


REACTION	RAIL FORCES
R1	304 LBS
R2	194 LBS
R3	6400 LBS

## Suggested Support Wall Wood Construction

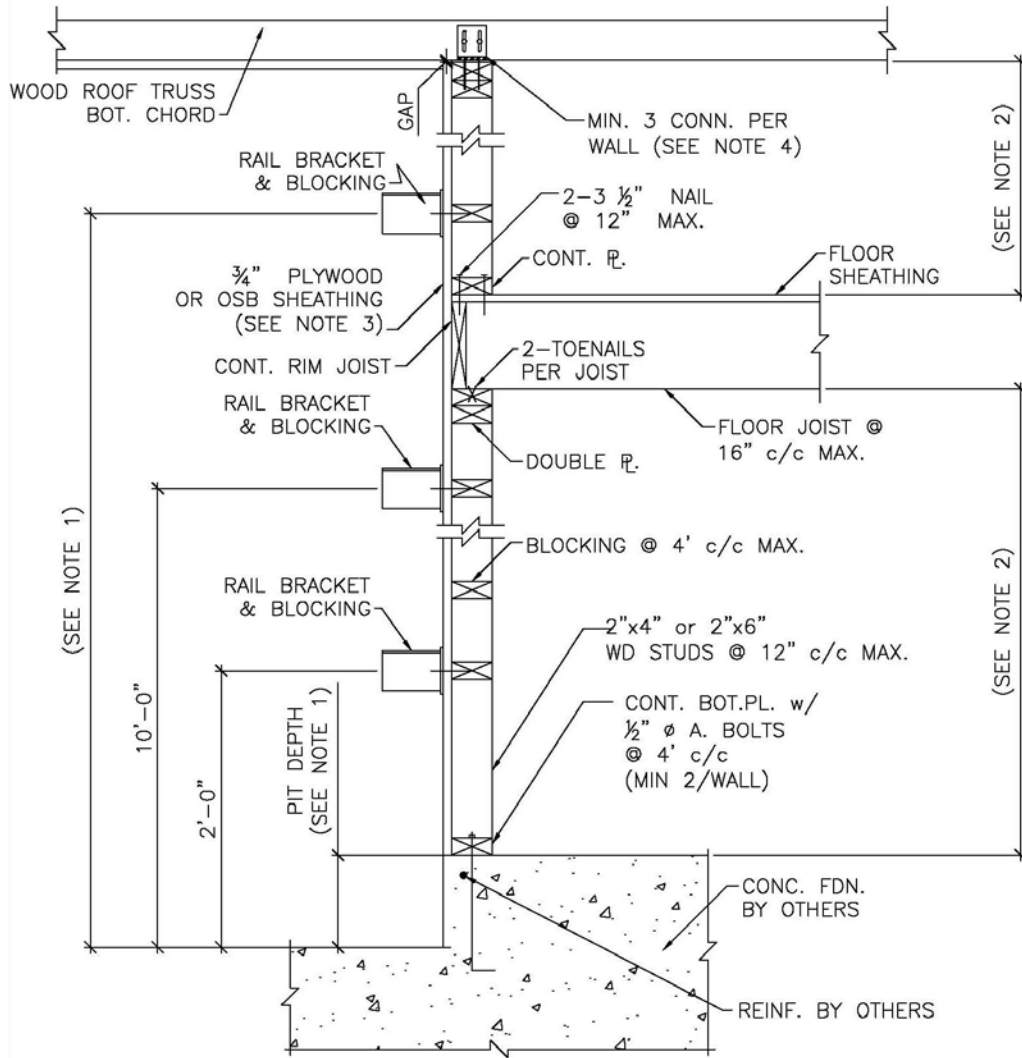
Note:

The drawings on this page are for reference only. Building structural engineer to ensure that the building and hoistway will support all loads imposed by the lift equipment. Fire rating of hoistway is subject to local building codes.

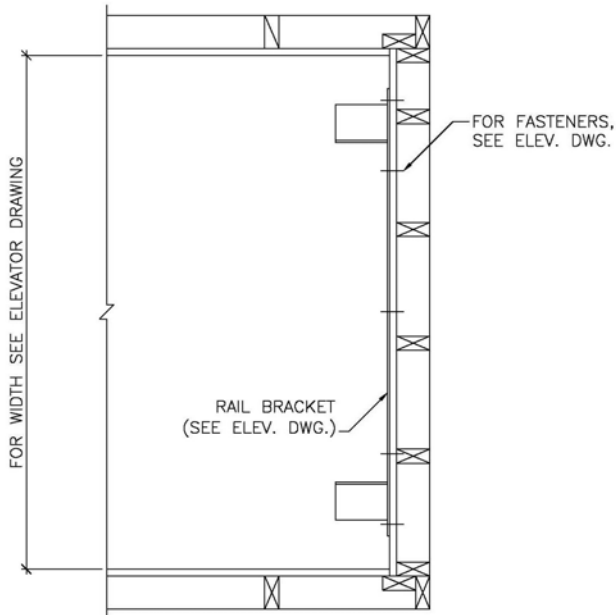


**NOTE:**

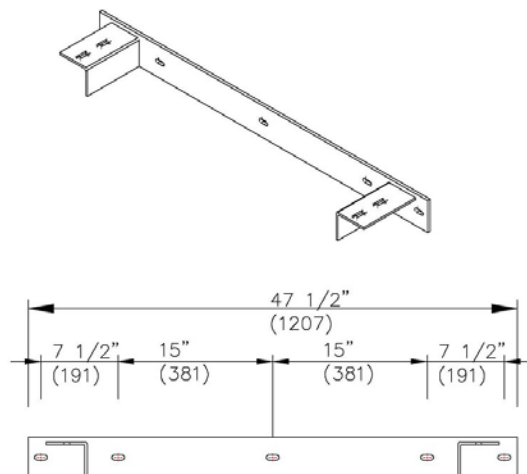
1. THIS DRAWING IS FOR REFERENCE ONLY. BUILDING STRUCTURAL ENGINEER TO ENSURE THAT THE BUILDING AND HOISTWAY WILL SAFELY SUPPORT ALL LOADS IMPOSED BY THE EQUIPMENT.
2. FIRE RATING OF HOISTWAY IS SUBJECT TO LOCAL BUILDING CODES.

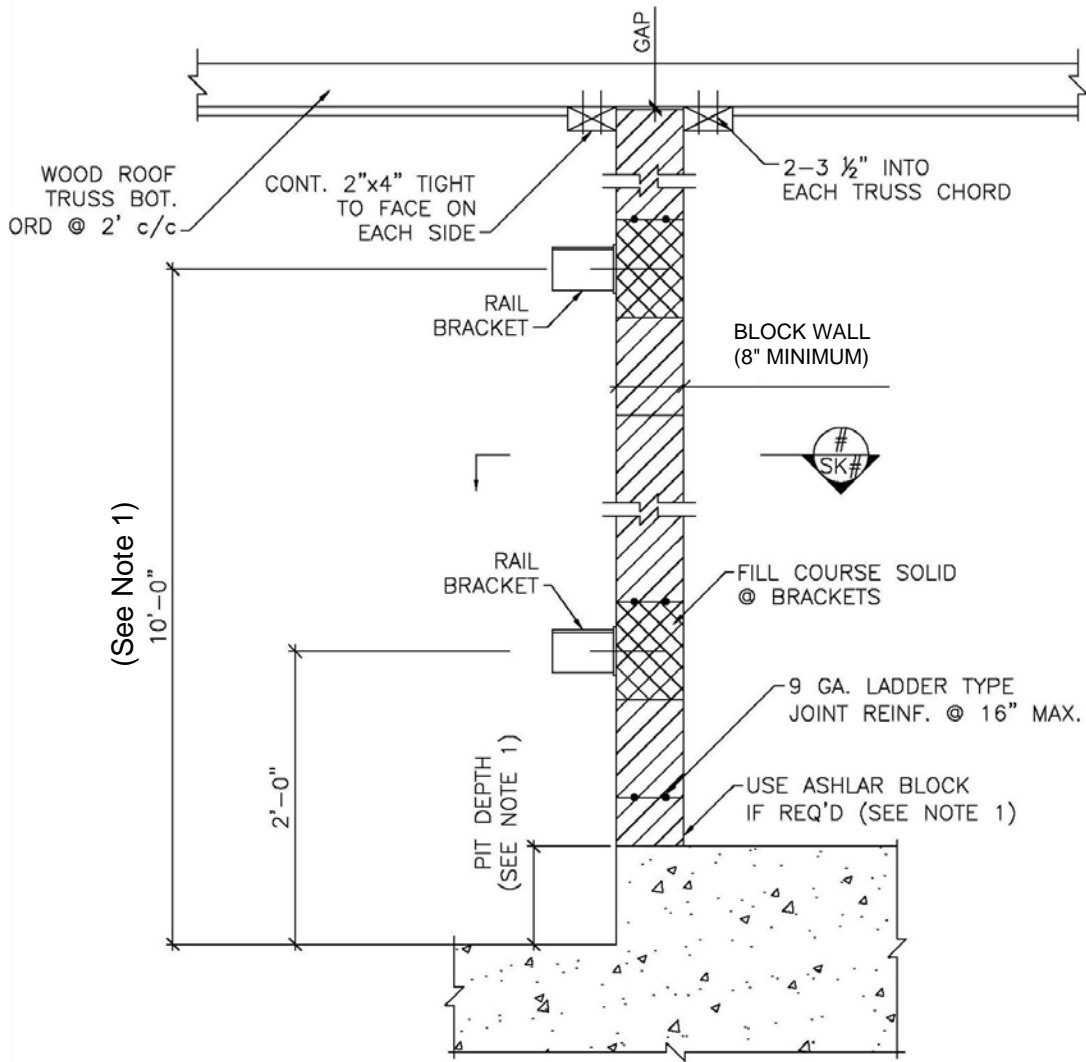


## Wood Construction Plan View

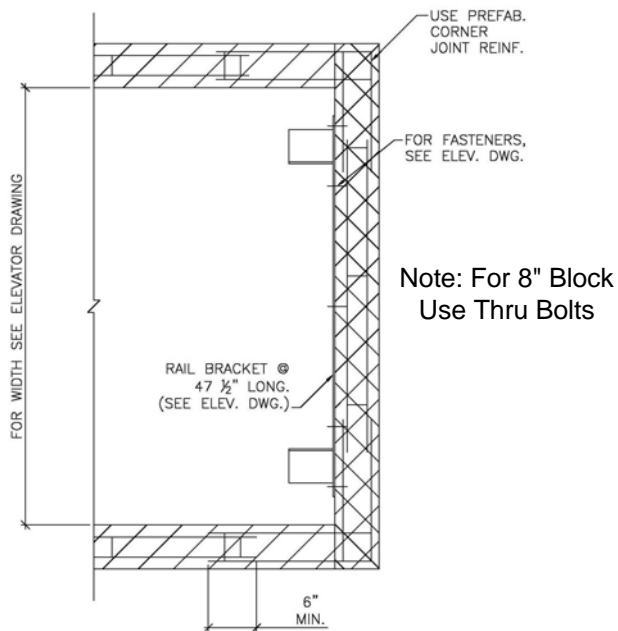


## Rail Bracket

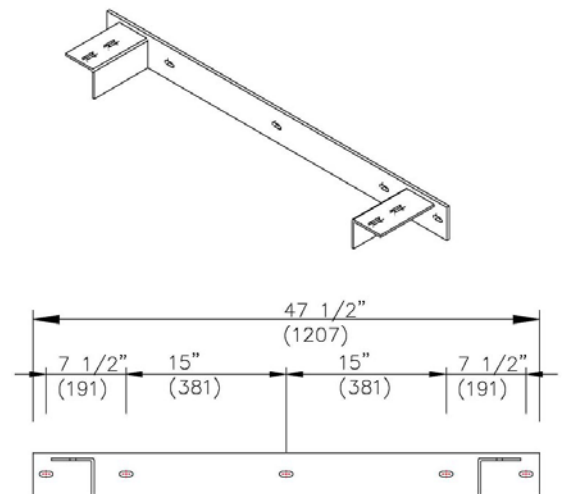




## Masonry Construction Plan View



## Rail Bracket



## Drawing Notes

- 1 See Elevator Drawing for rail bracket spacing and pit depth.
- 2 Wall lateral support spacing:
  - for 2" x 4" studs, use 6' -10" (2090 mm) max.
  - for 2" x 6" studs, use 13' -6" (4120 mm) max.
- 3 Sheathing installation: install sheets vertically full width of shaft or min. centred on rail brackets.
- 4 Connectors to resist horizontal load but allow vertical movement.  
For Wood, use 2" x ¼" cap screw lag bolts.

## General Specifications

- G1 The design and construction of all work is to conform to the local applicable building code.
- G2 Read these drawings in conjunction with all related architectural, mechanical, electrical, and elevator drawings as well as any other contract documents.
- G3 The wall drawings have been prepared using engineering principles and the design loads that are applied by the elevator rails to the wall. However, the details and member sizes and the attachments to the structure should not be construed as a complete design of the wall system. The contractor and/or the project engineer is responsible to evaluate the other loads that are applied to the wall from the floor or roof system and modify member sizes or connections as required by their analysis.
- G4 Do not scale the drawings.
- G5 See elevator shop drawings for service loads (including dynamic effects) which are:
  - horizontal load parallel to the wall = 194 lb.
  - horizontal load perpendicular to the wall = 304 lb.
- G6 Wood                                   SPF NO 1/2 Mix  
Concrete                               3000 psi (20 Mpa) @ 28 days. If exposed use 5% to 7% air content.  
A. Bolts                                 ASTM A307  
Mortar                                  Type "S"  
Masonry  
Grout                                   2100 psi (14 Mpa) High Slump  
Block                                   2100 psi (14 Mpa) on net area
- G7 Wall to be installed plumb and square within 1/8" (3mm) of top and bottom of shaft.
- G8 Wall lateral support spacing (H) selected for maximum horizontal deflection of H/360 from rail loads.

## Wood Construction

- W1 Separate wood from concrete with waterproof barrier or use pressure treated wood.
- W2 Bridging Maximum Spacing: Load Bearing or Shear walls – 4' c/c
- W3 Nail or screw sheathing at 6" c/c at edges and 12" c/c to other members.  
Use 2.5" Standard Ardox nails or 2" #12 Screws.

## Masonry Construction

- M1 All masonry construction to conform to applicable local standards
- M2 Reinforce lintel blocks with 2-15m bottom bars unless noted.
- M3 Provide continuous ladder type joint reinforcement at 16" (400) c/c.

## Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>