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# Planning Guide

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## **Residential Elevators** **With Hydraulic Technology** Built on T or J Rail





We are a proud member of the Accessibility Equipment Manufacturers Association. This symbol assures you of our commitment to high quality and accessibility to everyone.



# Waupaca Elevator’s Mission Statement

Our company’s mission is to supply and service products that meet or exceed our customers’ expectations of high quality, value, delivery and longevity. Our success is a direct reflection of our employees’ involvement and commitment to excellence. We strive to continuously improve our products to ensure meeting the future requirements of our customers and facilitate competitive growth.



# CSI 3-Part Specifications

Customize and download CSI 3-Part Specifications by logging on to:  
[www.arcat.com](http://www.arcat.com) - specify Waupaca Elevator as the requested manufacturer  
[www.waupacaelevator.com](http://www.waupacaelevator.com) - go to “Architect Section” click on linking icon

SpecWizard is a faster easier way to customize CSI 3-part residential elevator specifications. Follow the above website information and choose the Spec Wizard icon. The drop down menus could not be any easier to use, just click on your choice of listed options and within a couple of minutes you have a completely customized spec.

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# Introduction

This Planning Guide is to be used as a reference to determine parameters of installation and steps taken to achieve a proper elevator installation. This guide may be used by the architect, contractor, dealer or home owner. The information in this guide is intended as an overview. Each installation will have job specific specifications that must be followed. Do not attempt to construct a hoistway on this information.

Elevator installation is to be done by an authorized elevator contractor, and in accordance with installation instructions provided by the manufacturer. Installation must also be in compliance with requirements of the National Electric Code, American Society of Mechanical Engineers safety code, and state and local building codes. Waupaca Elevator's products are designed to meet the requirements of ASME - 17.1 National Elevator Codes for residential elevators. Waupaca Elevator Company, Inc., elevators manufactured and installed under the proper parameters are under warranty for 2 years. Manufacturer assumes no liability for equipment not installed in compliance with these codes.

Waupaca Elevator Company, Inc., reserves the right to modify the design, technical specifications and dimensions of the products shown in this document.

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## Planning Steps

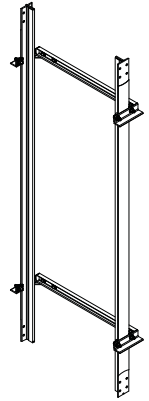
Locate a local dealer and together homescape your elevator. Congratulations you have chosen a hydraulic drive system. If you prefer a winding drum power based elevator please locate and use the Planning Guide for Residential Elevators with Winding Drum Technology. Please complete steps below to finish creating your elevator package.

- 1 - Select rail system.
- 2 - Size drive system for travel range, layout machine room, and location.
- 3 - Choose control system and plan for electrical requirements.
- 4 - Address national, state, and local code requirements
- 5 - Determine hoistway size, car size, layout configuration and available options. Please reference a Waupaca Elevator Brochure for available design options: cab style, car operating panels, hall stations, phone boxes, handrails, light fixtures, and gates.
- 6 - Obtain and follow site specific field drawings. Forward all necessary documents to contractor/builder, architect, and structural engineers. Use job specific drawings while building hoistway, doorways, machine room, and any other construction related to the elevator.
- 7 - Coordinate with your dealer to install elevator, and enjoy your homescaped elevator.

## Design Features of :

### Hydraulic Technology Built on T Rail

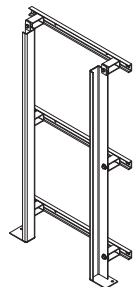
- Design Built on 8 LBS. T Rail System
- Each Section is Up to 8 Feet Long
- Durable Cantilever Sling Design
- PLC Control System
- Three or Four Coil Valve
- Tape Reader Locates Floors with Magnetic Sensor
- Sling Movement Translates Through Roller Wheels



## Design Features of :

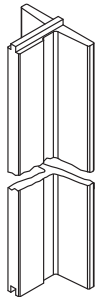
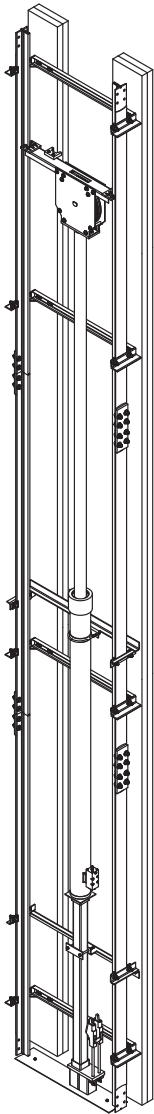
### Hydraulic Technology Built on J Rail

- Modular Design Built on J Rail System
- Each Section is Up to 8 Feet Long
- Durable Cantilever Sling Design
- PLC Control System
- Three or Four Coil Valve
- Tape Reader Locates Floors with Magnetic Sensor
- Sling Movement Translates Through Gliding Blocks



# Mechanical Illustrations of T and J Rail

T Rail

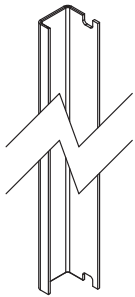
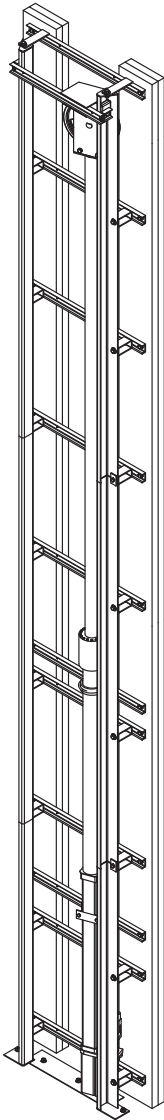


202 LBS.  
MAX. SHEAR

635 lbs.  
MAX. TENSION

8 LBS. PER FOOT  
COMMERCIAL ELEVATOR RAIL

J Rail

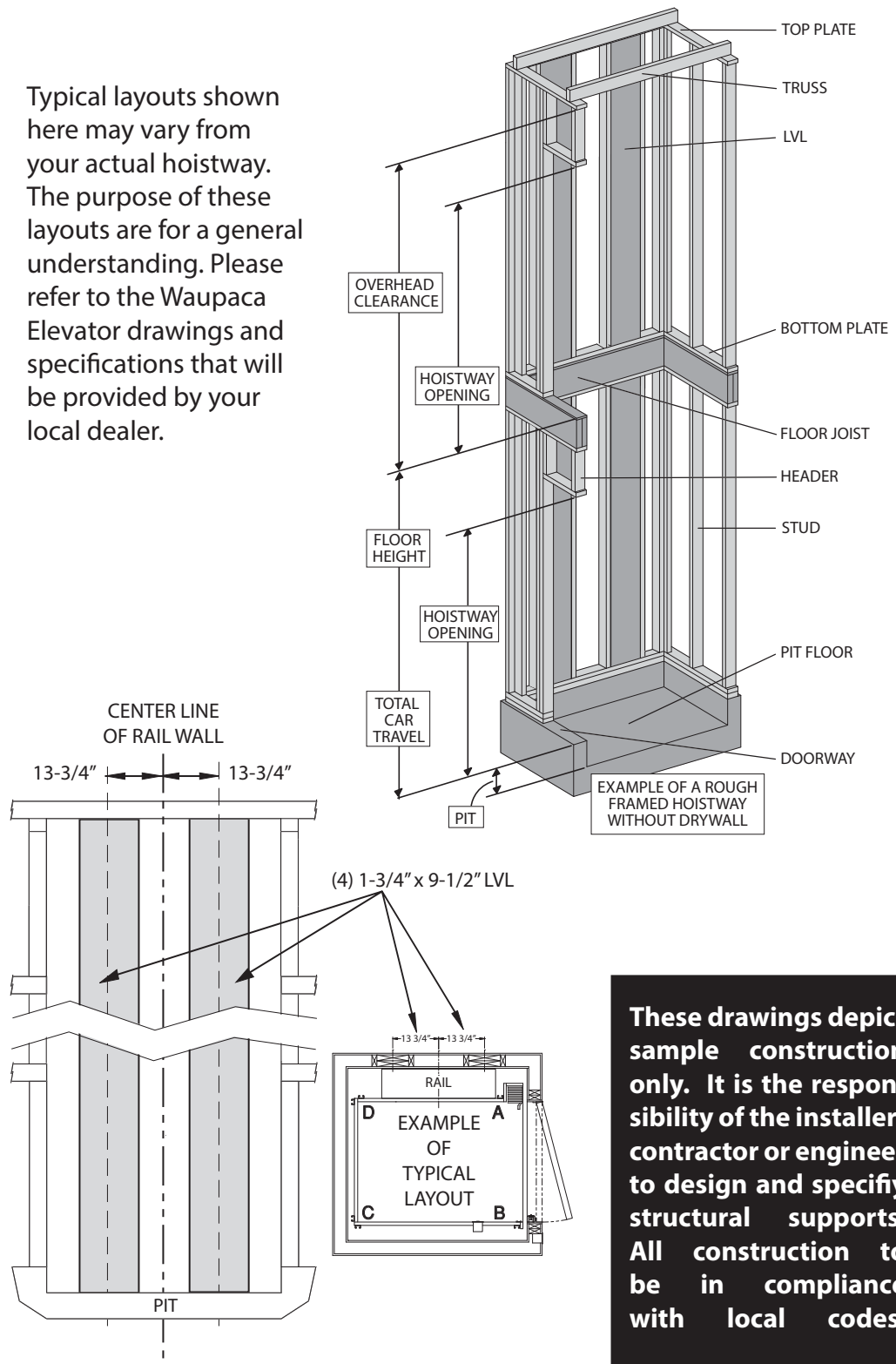


362 LBS. MAX.  
TENSION PER  
FASTENER

300 LBS. MAX.  
SHEAR PER  
FASTENER

# Rail Backing Detail - Hydraulic Elevator

Typical layouts shown here may vary from your actual hoistway. The purpose of these layouts are for a general understanding. Please refer to the Waupaca Elevator drawings and specifications that will be provided by your local dealer.



**These drawings depict sample construction only. It is the responsibility of the installer/contractor or engineer to design and specify structural supports. All construction to be in compliance with local codes.**

# Hoistway Elevation View with T Rail

Example of Hydraulic Elevator

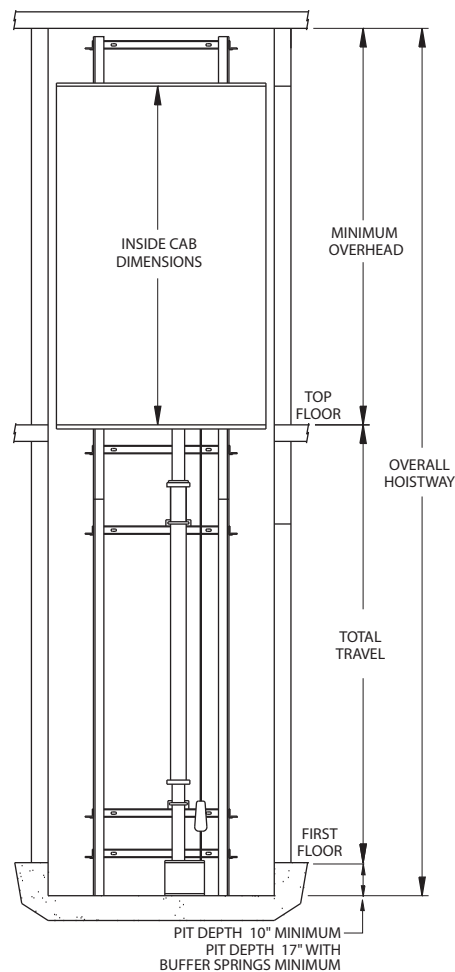
## Required Overhead Heights

Inside Cab Dimension	6' 10"	7' 0"	7' 4"	8' 0"
Minimum Overhead	7' 10"	8' 0"	8' 4"	9' 0"

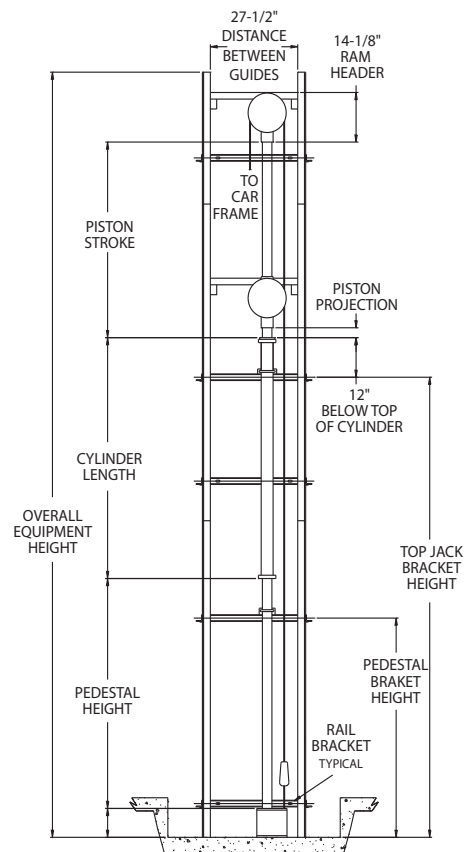
\* Custom sized cabs will alter these dimensions. Waupaca Elevator will provide you with the appropriate dimensions. Please contact your local dealer to acquire alternate layouts.

This is a graphical representation of a hydraulic elevator on T rail which offers a total of five or six stops (based on controller package), and a travel distance of 50 feet.

## Elevation



## Rail Layout and Jack Calculations



## Rail Calculations

$$\text{Rail Length} = \text{Hoistway} - 2"$$



# Hoistway Elevation View with J Rail

## Example of Hydraulic Elevator

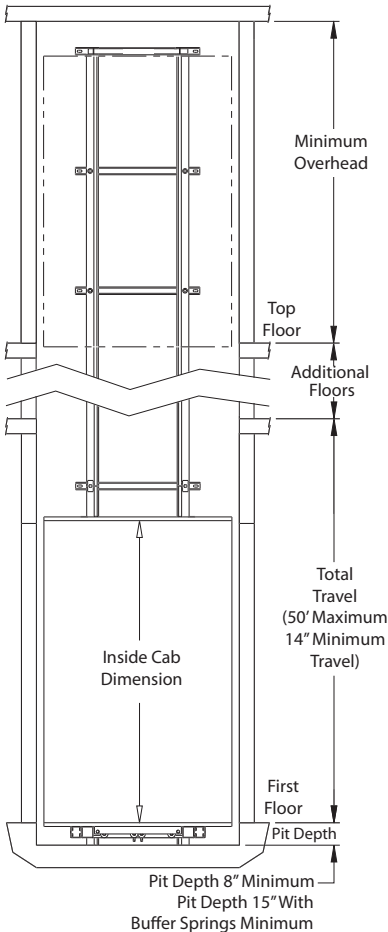
### Required Overhead Heights

Inside Cab Dimension	6' 10"	7' 0"	7' 4"	8' 0"
Minimum Overhead	7' 10"	8' 0"	8' 4"	9' 0"

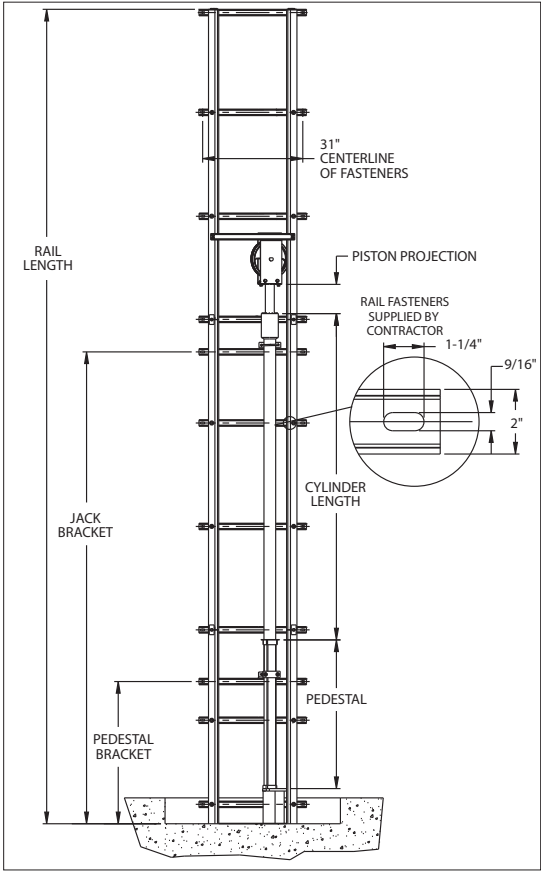
\* Custom sized cabs will alter these dimensions. Waupaca Elevator will provide you with the appropriate dimensions. Please contact your local dealer to acquire alternate layouts.

This is a graphical representation of a hydraulic elevator on J rail which offers a total of five or six stops (based on controller package), and a travel distance of 50 feet.

### Elevation



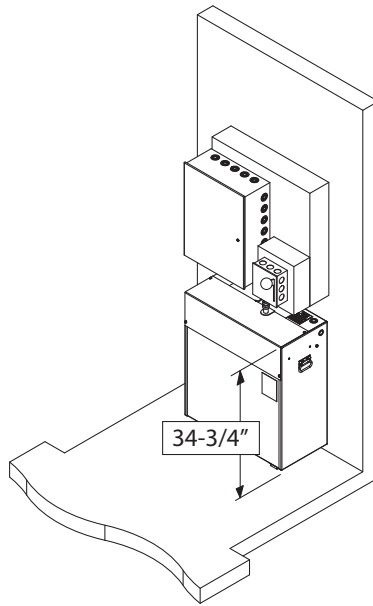
### Rail Layout and Jack Calculations



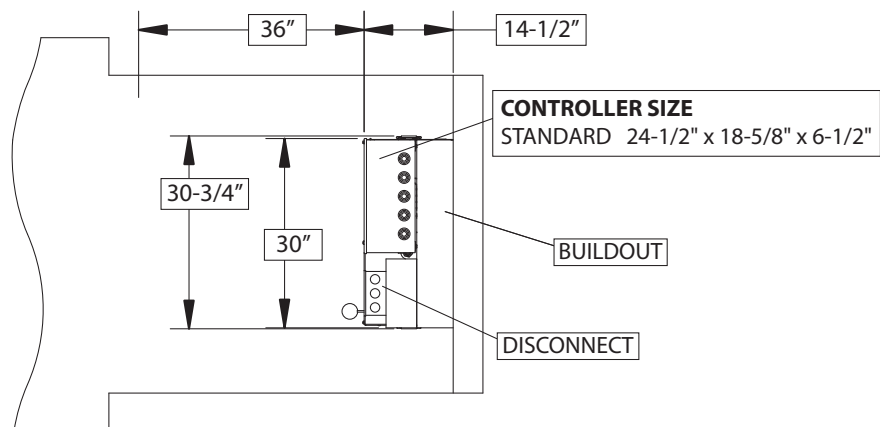
**Rail Calculations**  
 Rail Length =  
 Pit Depth + Travel + Car I.D. Height + 10"

# Machine Space & Controller Location

## Typical Layout Hydraulic Elevator



1. The Controller requires minimum clear space of 36" x 30" located directly in front of the controller (refer to illustration).
2. A lockable service disconnect must be placed within sight of the controller and must be easily accessible, from the latch side of the doorway (if door is present).
3. Controller space must be provided for the operating equipment that meets National Electrical Code clear space requirements and all local codes. Control space must contain a convenience outlet and light with switch. Temperatures must be maintained between 60°-110°F and must not be exposed to the elements (with a relative humidity not to exceed 95%).
4. Consult with your local dealer for layout dimensions.



NOTE : THE MACHINE ROOM MAY BE PLACED ON ANY LEVEL OF THE HOME.

# Control System - Hydraulic Elevator

## Standard Control System

PLC Based  
Field Wired  
Simplified Servicing

## VS. Fieldbus Enhanced Control System

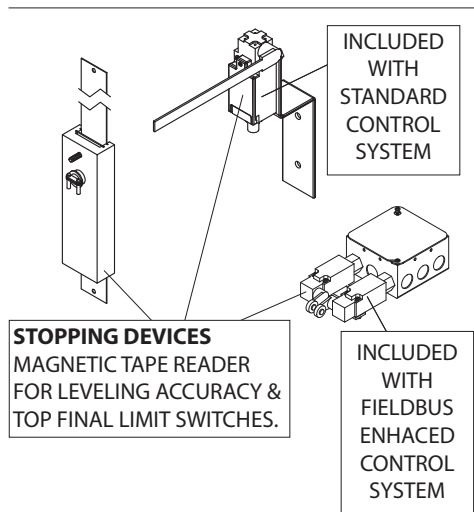
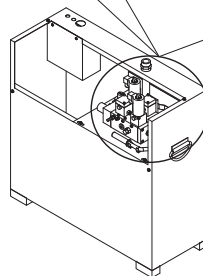
PLC Based  
Digitally Addressed System  
Reduced Wire Time  
Smaller Travel Cable

## Included Elevator Equipment

**PUMP UNIT** EQUIPPED WITH CONSTANT DISPLACEMENT ROTARY SCREW PUMP POWERED BY 2.5, 2.9, OR 3.5 HORSE-POWER, 230 VOLT SINGLE PHASE MOTOR.

**OIL TANK** REQUIRES APPROXIMATELY 30 GALLONS OF AW-32 OR 68 HIGH GRADE HYDRAULIC OIL.

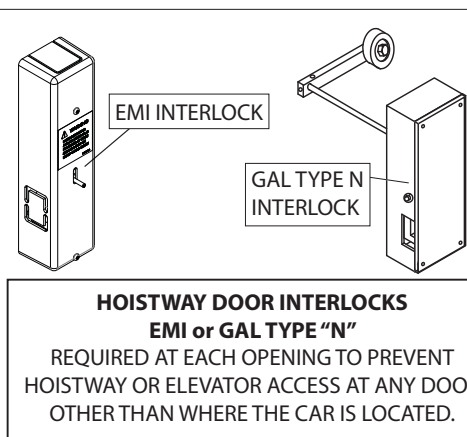
**VALVE**  
TWO SPEEDS FOR SMOOTH STARTS AND STOPS.  
WORKING PRESSURE BETWEEN 250 & 750 PSI AT 5-8 GPM.



**STOPPING DEVICES**  
MAGNETIC TAPE READER FOR LEVELING ACCURACY & TOP FINAL LIMIT SWITCHES.

INCLUDED WITH STANDARD CONTROL SYSTEM

INCLUDED WITH FIELDBUS ENHANCED CONTROL SYSTEM



**HOISTWAY DOOR INTERLOCKS**  
**EMI or GAL TYPE "N"**  
REQUIRED AT EACH OPENING TO PREVENT HOISTWAY OR ELEVATOR ACCESS AT ANY DOOR OTHER THAN WHERE THE CAR IS LOCATED.

# Hoistway Specifications - Hydraulic Elevator

## ATTENTION CONSTRUCTION CONTRACTOR:

Job specific documentation will be provided by Waupaca Elevator from which to construct the hoistway.

**Hoistway Construction Requirements** to be completed prior to elevator installation by contractor

1. **Electrical Requirements By Others:**

- Dedicated 230 VAC 40 AMP Circuit Single Phase with ground and neutral, 60 Hertz.
- A fused disconnect switch with branch 3 pole circuit wire to suit a 35 AMP service, fused for 35 AMP dual element (time delay fuse) with neutral.
- 115 Volt, 15 AMP single phase circuit for car lighting.
- Electrical wiring to comply with applicable codes.
- Any VAC other than 230 VAC may require a buck/boost transformer.

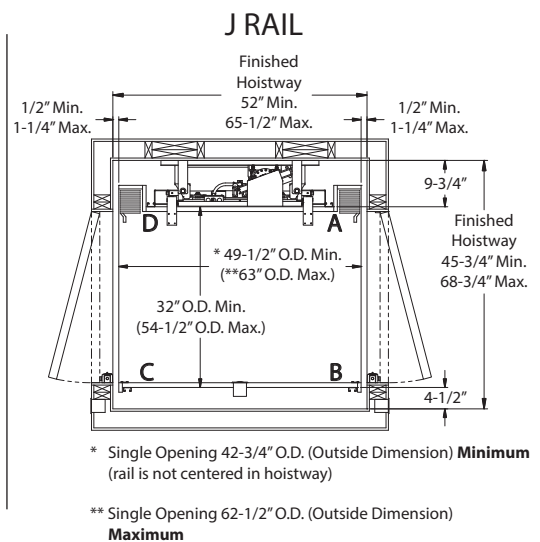
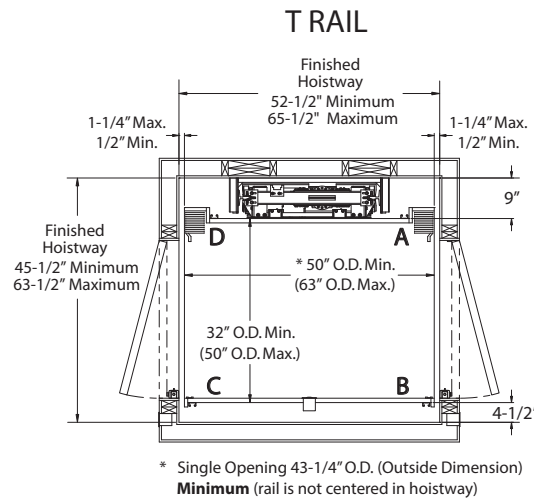
**NOTE :**

Electrical requirements are for general reference only. All job specific electrical requirements must be acquired from job specific drawings provided by Waupaca Elevator Company, Inc.

2. **Unfinished/Un-installed Door** - Installation company may prefer a minimum of one hoistway door and associated framing be left unfinished/un-installed to accommodate elevator installation equipment and to prevent accidental damage to door and framing (preferably at grade level).
3. **Plumb and Square Hoistway** - Hoistway must be plumb within 1/8 inch per 10 ft. of height and square at any point within 1/4 inch based on difference in diagonal measurements.
4. **Supportive Structure** - Structure must be capable of supporting the appropriate loads. Local engineering support is recommended.
5. **Telephone Connection** - Code requires a telephone connection to the elevator car; therefore, a phone line must be installed leading to the controller.
6. **ASME 17.1 Section 5.3** - Hoistway to be constructed in accordance with ASME17.1 section 5.3 and all local codes.
7. **Hoistway Door Security (Interlocks)** - All hoistway doors require interlocks as well as a door handle and a latch set. Interlocks will be installed by the elevator installers. Waupaca Elevator recommends the use of solid core doors.
8. **Hoistway Requirements** - Any operating equipment must meet National Electric Code and all local codes. Machine space must have a light switch and a convenience outlet. Temperature must be maintainable between 60° - 110° F and must not be exposed to the elements (with a relative humidity not to exceed 95%).
9. **No Alterations** - Any alterations to the equipment without written authorization by Waupaca Elevator will void all warranties.
10. **Pit Floor Strength** - A pit floor must be designed to withstand a load of 4,000 lbs. When used, concrete must be a minimum of 4" thick and rated at 3500 PSI.
11. **Rated Load** - Elevator system is rated for maximum capacity from the factory. Flooring, walls, trim, base, and/or permanent decor added to elevator car must be subtracted from car capacity.
12. **Verify Code Requirements** - Verify national, state, and local code requirements are all met before installation.

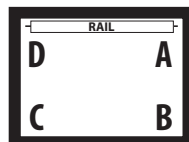
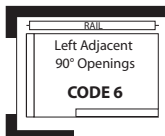
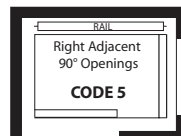
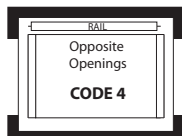
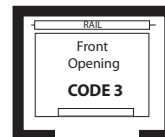
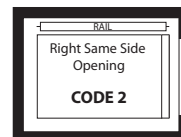
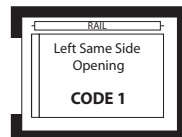
# Hoistway Layouts - Hydraulic Elevator

## Minimum and Maximum Dimensions

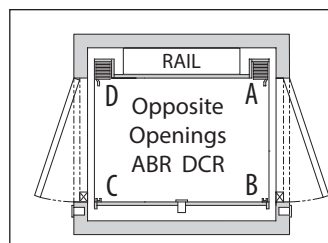


- NOTE:**
- 1) Minimum **D A** dimensions reflect rail centered in hoistway
  - 2) T Rail minimum **D A** dimension for car without a gate recess is 37" O.D. (outside dimension)  
J Rail minimum **D A** dimension for car without a gate recess is 36" O.D. (outside dimension)
  - 3) Car I.D. (inside dimensions) can not exceed 12 sq. ft. for 750 lb.  
Car I.D. (inside dimensions) can not exceed 15 sq. ft. for 1,000 lb.

## Car Opening Configurations and Coding



- 1- The D A is the side on which the rail is attached.
- 2- The first letter refers to the attachment location of the gate.
- 3- The second letter refers to the location of the strike plate.
- 4- If present, the third letter "R" denotes a recessed gate.



### Example: ABR DCR

- |                    |                     |
|--------------------|---------------------|
| First Gate - ABR   | Second Gate - DCR   |
| A- gate attachment | D - gate attachment |
| B - strike plate   | C - strike plate    |
| R - recessed gate  | R - recessed gate   |

# Hoistway Layouts - Hydraulic Elevator

## Construction Notes:

- Use specified rail backing from architect to frame into wall.
- The hoistway illustrations below show finished dimensions. Finished hoistway dimensions include drywall, plaster and paint.
- A maximum of 3" (see "f" below) are allowed between the closed hoistway door and the outer edge of the landing sill.
- Determine height of hall station per local code and ADA requirements.
- Rough frame door in place with an extra inch of space on each side of the door to allow for door installation.
- Determine rail type and reference appropriate columns and dimensions based on layout configurations listed charts below.

The following examples are of units up to 750 lbs. and 1,000 lbs. Elevators are illustrated with accordion gates. The following layouts were designed for travel up to 50 feet.

These symbols are listed beside the car size Waupaca Elevator believes to be best suited for use by wheelchair passengers and their accompanying attendant.

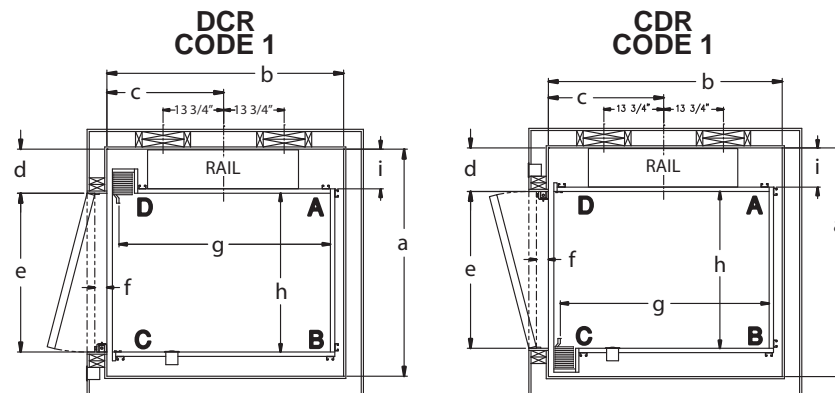


Recommended size for wheelchair passenger



Recommended size for both wheelchair and attendant passengers

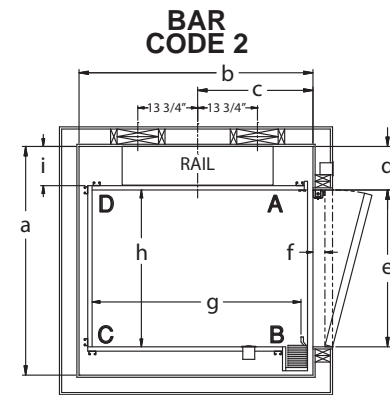
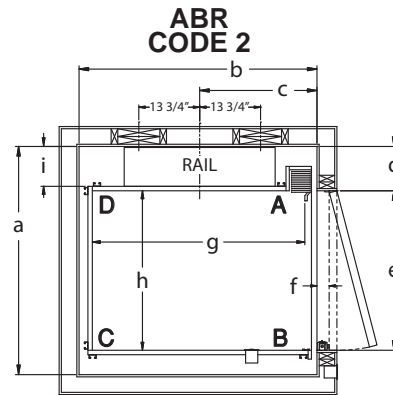
The following examples are limited to  
750 lbs. -12 ft. sq. maximum & 1,000 lbs. -15 ft. sq. maximum



HOISTWAY LAYOUT	CAR SIZE	T-RAIL J-RAIL			T-RAIL J-RAIL			T-RAIL J-RAIL			T-RAIL J-RAIL		
		a	b	c	d	e	f	g	h	i			
DCR CODE 1	48" X 36"	51.5"	52.25"	53.75"	26.5"	10"	10.75"	36"	3"	48"	36"	9"	9.75"
	54" X 40"	55.5"	56.25"	59.75"	29.5"	14"	14.75"	36"	3"	54"	40"	9"	9.75"
	60" X 36"	51.5"	52.25"	65.75"	32.5"	10"	10.75"	36"	3"	60"	36"	9"	9.75"
CDR CODE 1	48" X 36"	52.5"	53.25"	53.75"	26.5"	10"	10.75"	36"	3"	48"	36"	9"	9.75"
	54" X 40"	55"	55.75"	59.75"	29.5"	10"	10.75"	36"	3"	54"	40"	9"	9.75"
	60" X 36"	52.5"	53.25"	65.75"	32.5"	10"	10.75"	36"	3"	60"	36"	9"	9.75"

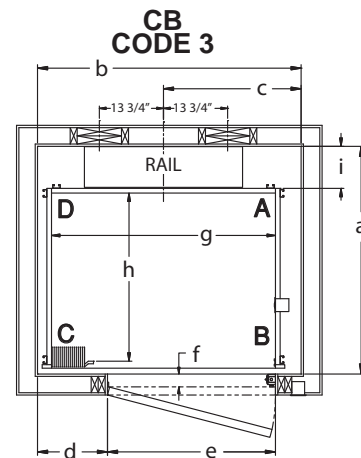
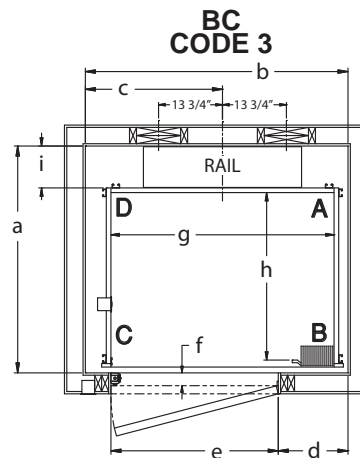
\* ALL DIMENSIONS ARE FINISHED HOISTWAY DIMENSIONS

# Hoistway Layouts - Hydraulic Elevator



HOISTWAY LAYOUT	CAR SIZE	T-RAIL		J-RAIL		b	c	T-RAIL		J-RAIL		d	e	f	g	h	T-RAIL		J-RAIL		i
		a																			
ABR CODE 2	48" X 36"	51.5"	52.25"	53.75"	26.5"	10"	10.75"	36"	3"	48"	36"	9"	9.75"								
	54" X 40"	55.5"	56.25"	59.75"	29.5"	14"	14.75"	36"	3"	54"	40"	9"	9.75"								
	60" X 36"	51.5"	52.25"	65.75"	32.5"	10"	10.75"	36"	3"	60"	36"	9"	9.75"								
BAR CODE 2	48" X 36"	52.5"	53.25"	53.75"	26.5"	10"	10.75"	36"	3"	48"	36"	9"	9.75"								
	54" X 40"	55"	55.75"	59.75"	29.5"	10"	10.75"	36"	3"	54"	40"	9"	9.75"								
	60" X 36"	52.5"	53.25"	65.75"	32.5"	10"	10.75"	36"	3"	60"	36"	9"	9.75"								

\* ALL DIMENSIONS ARE FINISHED HOISTWAY DIMENSIONS

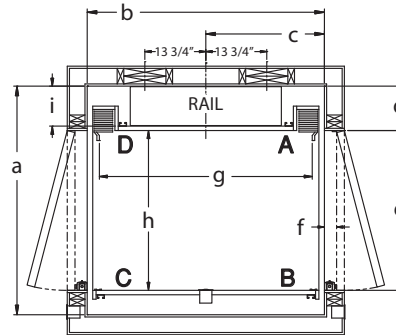


HOISTWAY LAYOUT	CAR SIZE	T-RAIL		J-RAIL		b	c	T-RAIL		J-RAIL		d	e	f	g	h	T-RAIL		J-RAIL		i
		a																			
BC CODE 3	48" X 36"	48.75"	49.5"	56.5"	29.5"	15"	15"	36"	3"	48"	36"	9"	9.75"								
	54" X 40"	52.75"	53.5"	62.5"	32.5"	21"	21"	36"	3"	54"	40"	9"	9.75"								
	60" X 36"	48.75"	49.5"	68.5"	35.5"	27"	27"	36"	3"	60"	36"	9"	9.75"								
CB CODE 3	48" X 36"	48.75"	49.5"	56.5"	29.5"	15"	15"	36"	3"	48"	36"	9"	9.75"								
	54" X 40"	52.75"	53.5"	62.5"	32.5"	21"	21"	36"	3"	54"	40"	9"	9.75"								
	60" X 36"	48.75"	49.5"	68.5"	35.5"	27"	27"	36"	3"	60"	36"	9"	9.75"								

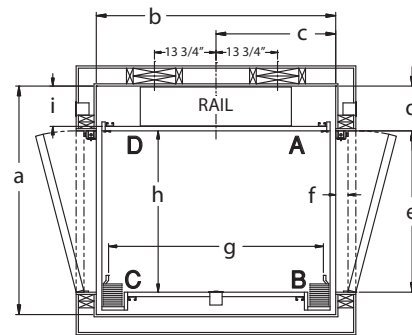
\* ALL DIMENSIONS ARE FINISHED HOISTWAY DIMENSIONS

# Hoistway Layouts - Hydraulic Elevator

**ABR - DCR  
CODE 4**



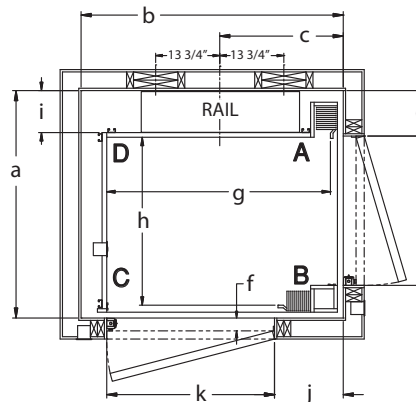
**BAR - CDR  
CODE 4**



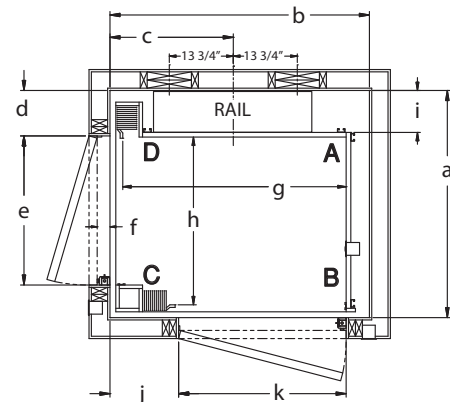
HOISTWAY LAYOUT	CAR SIZE	T-RAIL J-RAIL		a	b	c	T-RAIL J-RAIL		d	e	f	g	h	T-RAIL J-RAIL		i
ABR - DCR CODE 4	48" X 36"	51.5"	52.25"	53.5"	26.75"	10"	10.75"	36"	3"	48"	36"	9"	9.75"			
	54" X 40"	55.5"	56.25"	59.5"	29.75"	14"	14.75"	36"	3"	54"	40"	9"	9.75"			
	60" X 36"	51.5"	52.25"	65.5"	32.75"	10"	10.75"	36"	3"	60"	36"	9"	9.75"			
BAR - CDR CODE 4	48" X 36"	52.5"	53.25"	53.5"	26.75"	10"	10.75"	36"	3"	48"	36"	9"	9.75"			
	54" X 40"	55"	55.75"	59.5"	29.75"	10"	10.75"	36"	3"	54"	40"	9"	9.75"			
	60" X 36"	52.5"	53.25"	65.5"	32.75"	10"	10.75"	36"	3"	60"	36"	9"	9.75"			

\* ALL DIMENSIONS ARE FINISHED HOISTWAY DIMENSIONS

**ABR - BC  
CODE 5**



**DCR - CB  
CODE 6**



HOISTWAY LAYOUT	CAR SIZE	T-RAIL J-RAIL		a	b	c	T-RAIL J-RAIL		d	e	f	g	h	T-RAIL J-RAIL		i	j	K
ABR - BC CODE 6	48" X 36"	48.75"	49.5"	55.75"	26.5"	9.75"	10.5"	32"	3"	48"	36"	9"	9.75"	14.75"	36"			
	54" X 40"	52.75"	53.5"	61.75"	29.5"	9.75"	10.5"	36"	3"	54"	40"	9"	9.75"	20.75"	36"			
	60" X 36"	48.75"	49.5"	67.75"	32.5"	9.75"	10.5"	32"	3"	60"	36"	9"	9.75"	26.75"	36"			
DCR - CB CODE 6	48" X 36"	48.75"	49.5"	55.75"	26.5"	9.75"	10.5"	32"	3"	48"	36"	9"	9.75"	14.75"	36"			
	54" X 40"	52.75"	53.5"	61.75"	29.5"	9.75"	10.5"	36"	3"	54"	40"	9"	9.75"	20.75"	36"			
	60" X 36"	48.75"	49.5"	67.75"	32.5"	9.75"	10.5"	32"	3"	60"	36"	9"	9.75"	26.75"	36"			

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