GoLift Hoist

INSTALLATION GUIDANCE

Contents

INTRODUCTION

This manual provides detailed instruction on the installation of GoLifts. Since the introduction of ceiling mounted patient lifts, the frequency of installations has rapidly increased. This is due to greater awareness of the risks associated with manual patient transfer and repositioning, which has led to the enforcement of more strict lifting regulations. Wealden Rehab strives to consistently provide exemplary service, design, and installation to all of its customers. In an ever more competitive market, it is important to standardize installation techniques, thus ensuring that the highest standards of quality and safety are met.

The guidance given in this manual is intended for use by architects, designers and customers of Wealden Rehab

TYPES OF INSTALLATION

1. Attachment Across Wood Joists
2. Attachment Between Wood Joists
3. Attachment to T.G.I.'s
4. Attachment to Concrete
5. Attachment to Open Steel Web Joists
6. Attachment to Steel I-Beams
7. Attachment to Structural Walls
8. Attachment to Non-Structural Walls

ATTACHMENT ACROSS WOOD JOISTS

Attachment across wood joists means that the direction of the track line is perpendicular to the direction of the joists.

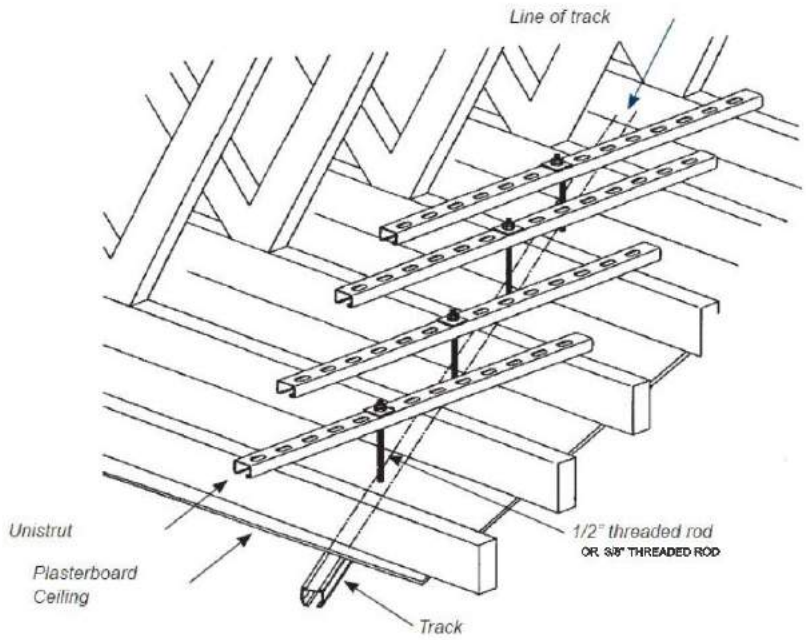
If the wood joists are 2” x 4”, The Top-Down Method must be used and the lift capacity cannot exceed 700 lbs. If the lift capacity is greater than 700 lbs., the Top-Down Method must be used and the minimum joist requirement is 2” x 6”.

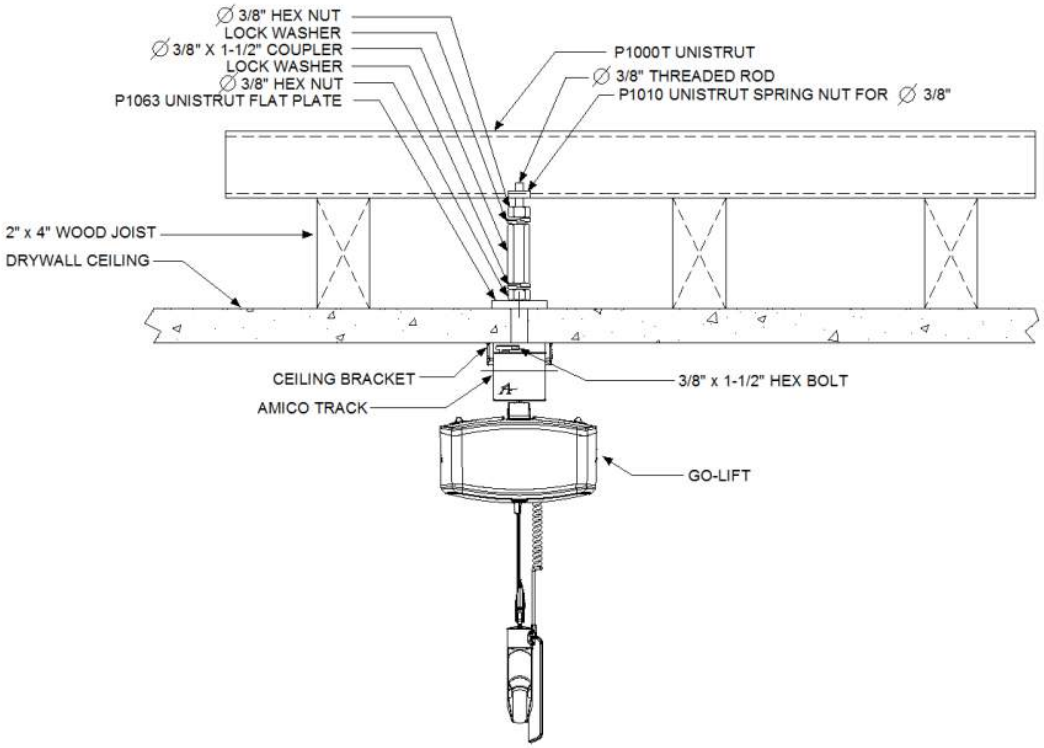
There are two methods than can be used to attach track across wood joists:

TOP-DOWN METHOD

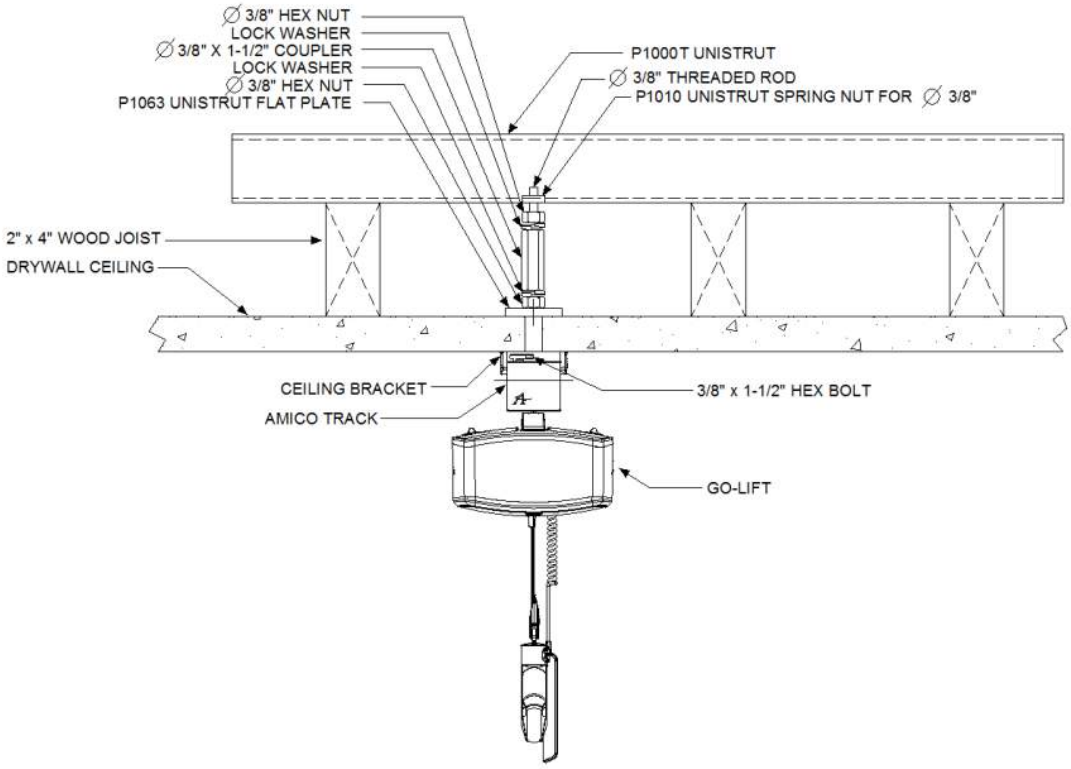
This method is used when there is workable space above the finished ceiling. In most cases, this method applies to rooms that are on the uppermost floor of a building, below the roof trusses.

Figure 1 – Top-Down Wood Joist Installation





NOTE: USE 1/2" THREADED ROD FOR LOAD CAPACITIES OVER 400 LBS

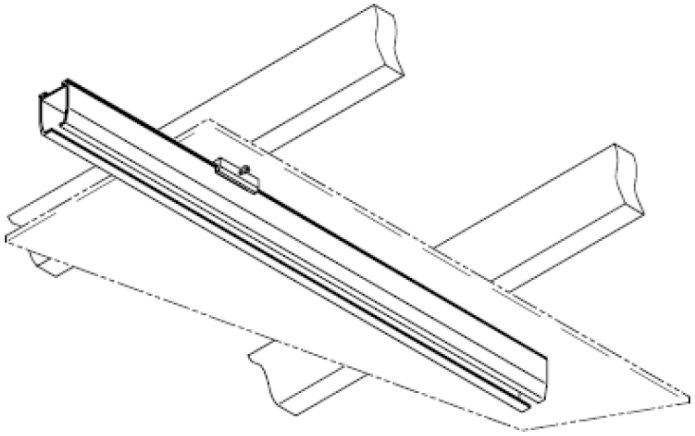


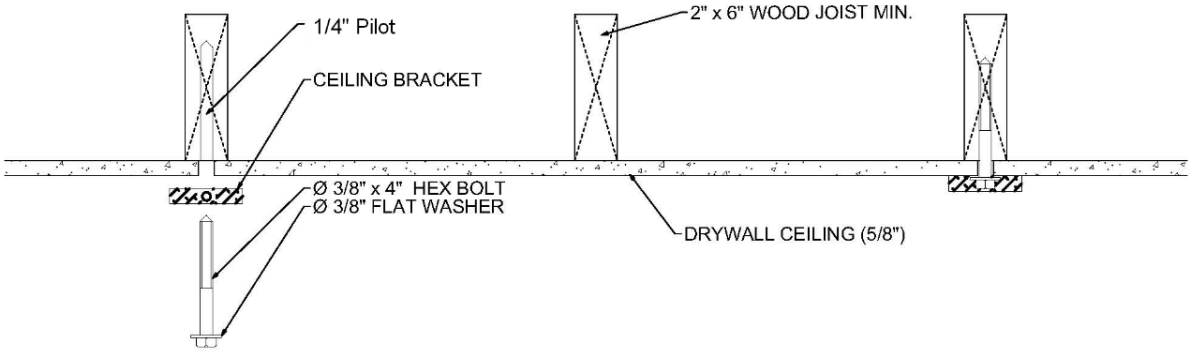
NOTE: USE 1/2" THREADED ROD FOR LOAD CAPACITIES OVER 400 LBS

BOTTOM-UP METHOD

This method is used when the joists are located between floors, and where there is no workable access above the ceiling.

Figure 2 – Bottom-Up Wood Joist Installation





ATTACHMENT BETWEEN WOOD JOISTS

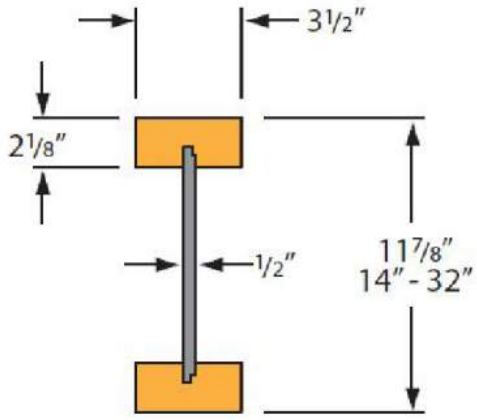
Attachment between wood joists means that the direction of the track line is parallel to the direction of the joists. If the joists are 2” x 4”, either the Top-Down Method or the Bottom-Up Method can be used, but lifting capacity cannot exceed 700 lbs. If the joists are at least 2” x 6”, there are no limitations on lifting capacity. If there is workable space above the ceiling, use the Top-Down Method, as described in the previous section. If there is no workable space above the ceiling, The Bottom-Up Method must be used. When attaching between joists, the Bottom-Up Method of attachment is different than described in the previous section.

Bottom-Up Method:

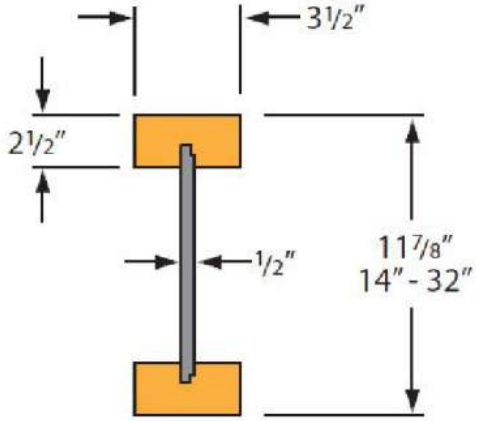
This method is used when the joists are located between floors, and where there is no workable access above the ceiling.

ATTACHMENT TO I-JOISTS

A modern method of construction is to use I-joists, also called, TGI joists, TJI joists or silent floor joists (examples below) instead of traditional wood joists.



TJI® HD90



TJI® HS90

Knowledge of structural I-joists components is crucial when working with these types of joists. There is only one way to determine the best way to attach to I-joists. The most important fact to remember is that the bottom cord of the I-joist is never a structural member. Similarly, the vertical plywood portion of the joist is also not structural.

Furthermore, the joist as a whole cannot be attached to until the necessary support is added. This means that the I-joist must be "packed" in order to add any significant structural pullout value. Packing is a method commonly used to turn a non-structural member into a structural member by significantly increasing the pullout value. There are instances when the shape of the I-joist will limit the materials that can be used for packing. When preparing for a job that involves attachments to I-joists, it is always a good idea to have the manufacturer specs, so that the packing material can be predetermined and will be ready at the time of installation. It is very costly to show up at a job and not be able to do the installation because the proper materials were not planned for or packed.

PACKING I-JOISTS:

For every bracket attachment, two T.G.I. joists must be packed, and the attachment point suspended directly between the joists. (See Figure 3 – Packing T.G.I. joists) If the attachment point is biased toward either side of center, the weight will not be evenly distributed among the joists. This will decrease the pullout value of the member.

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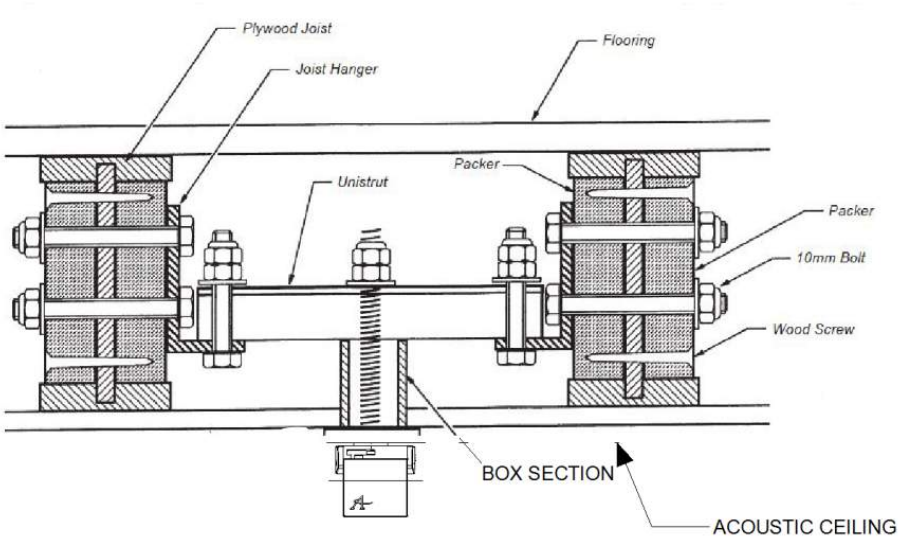
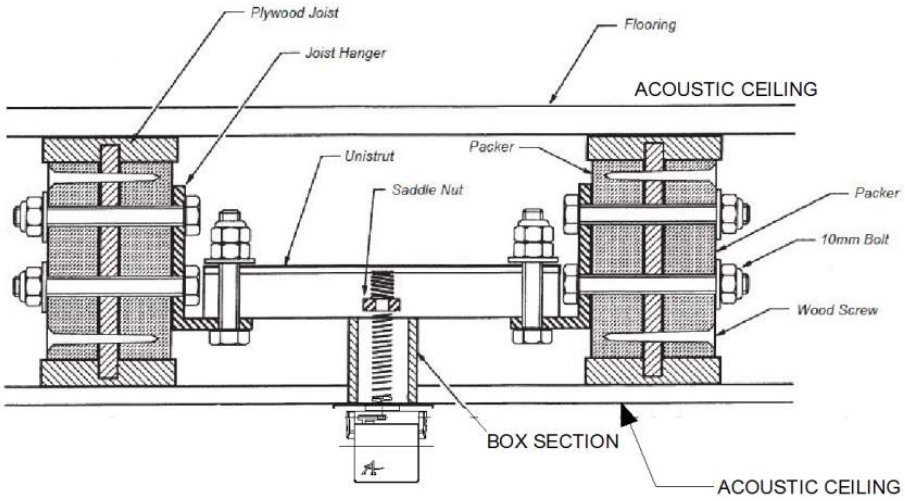
Figure 3 – Packing I-Joists



A spring (saddle) nut can also be used to secure the threaded rod, as shown below.



ATTACHING TO CONCRETE

There are a number of different types of concrete and every individual concrete structure is unique. It is very important that the structural details of concrete are investigated and scrutinized before ever determining if it is suitable for supporting a patient lift system. It is equally important that the specifications of the concrete anchor being used are known. Many manufacturer specs will provide pullout values for concrete with a number of different compression values. Compression values are measured in pounds-per-square-inch (P.S.I.). It is important to know this value before deciding that the combination of anchor and concrete will be sufficient for the requirements of the lift. If there is any doubt as to the adequacy of either the concrete or the concrete anchor, consult a structural engineer before proceeding with the installation.

This manual does not provide instructions on use of different concrete anchors. Refer to the manufacturer specs for instructions for use.

ATTACHING TO A CONCRETE SLAB

A concrete slab must be at least 4” thick to receive a typical heavy-duty concrete anchor. It is possible to attach to a thinner slab, but anchor selection will limit the load-bearing capability of the system. As a general rule, the concrete should be approximately three times as thick as the anchor embedment.

Figure 4 – Multiple Anchor Attachments

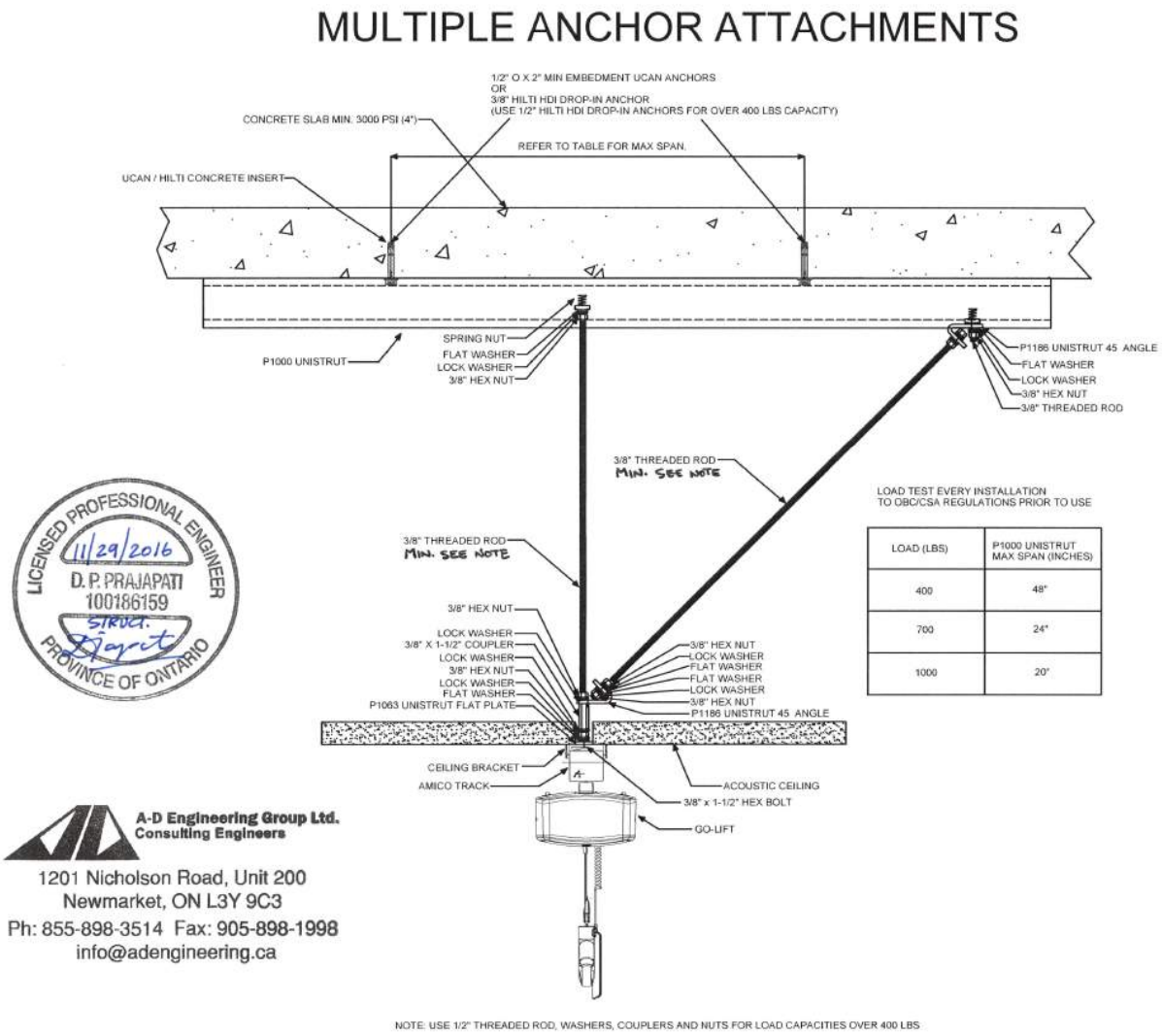
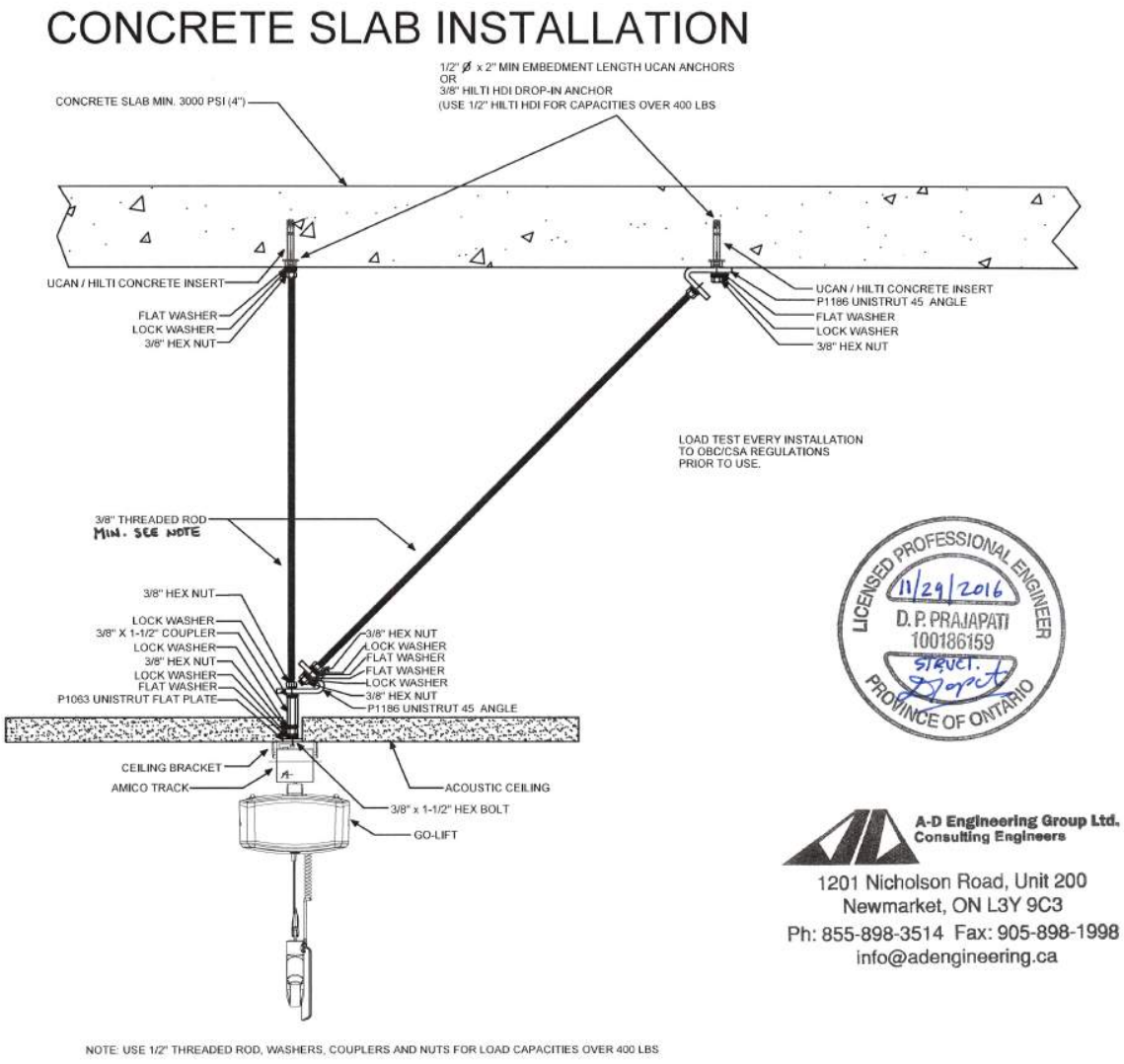


Figure 5 – Concrete Slab Installation

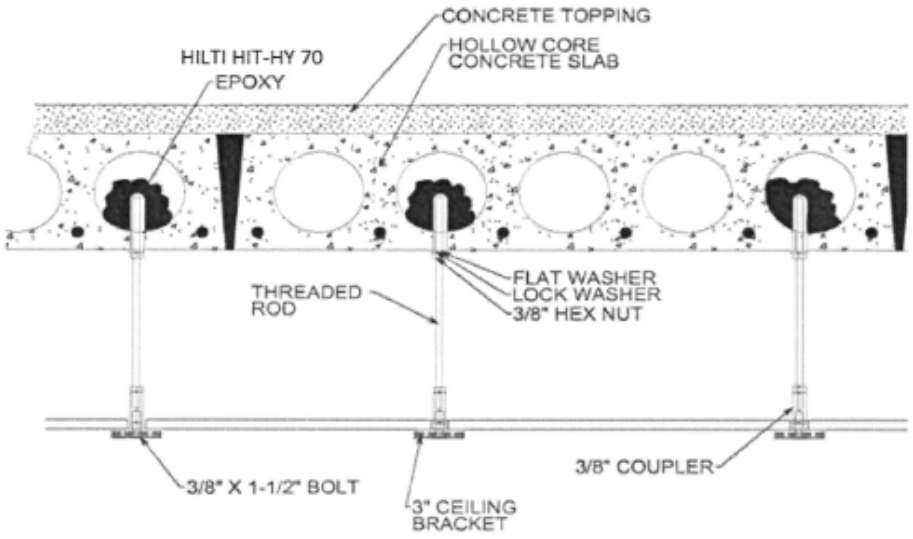


ATTACHING TO HOLLOW-CORE CONCRETE & OTHER HOLLOW STRUCTURE:

Chemical anchors are used when the ceiling is constructed of pre-cast reinforced concrete, poured reinforced concrete, pre-cast concrete sections or Beam & Block Construction (Beam and Block only on new builds or where access is available to visually inspect the beam). See Figure 6 – Epoxy Anchors in Hollow-Core Concrete.

Always verify load capacities with the anchor manufacturer's specs before installing

Figure 6 – Epoxy Anchors in Hollow-Core Concrete



Notes:

- Use 1/2 " threaded rod, bolts, washers and couplers for load capacities over 400 lbs.
- Load Test every installation to OBC/CSA Regulations prior to use.

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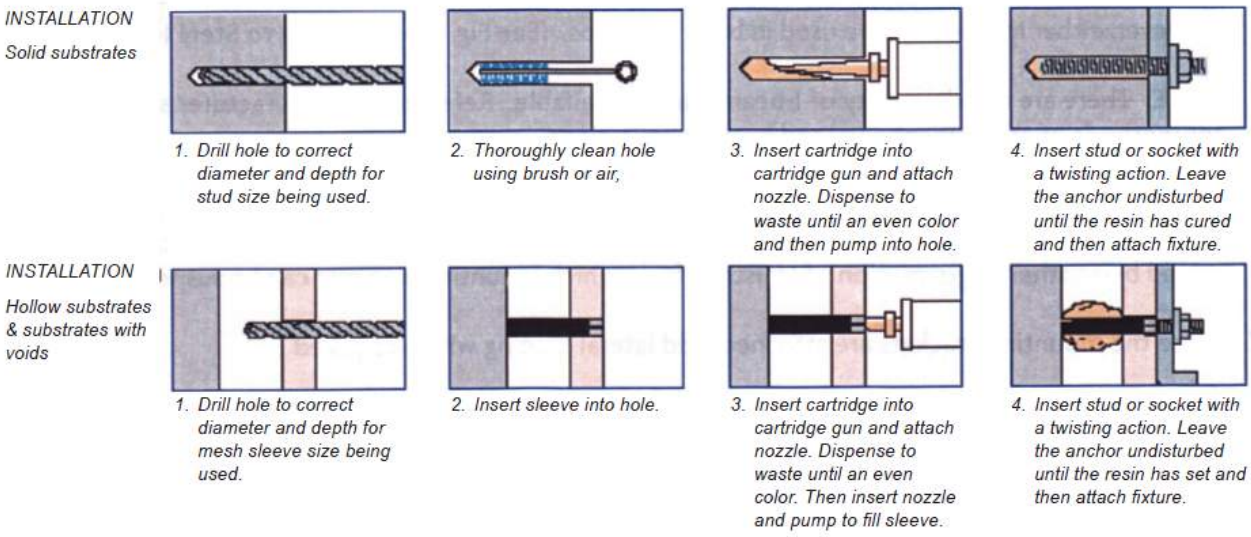
Figure 7 – Anchoring to Hollow Structures

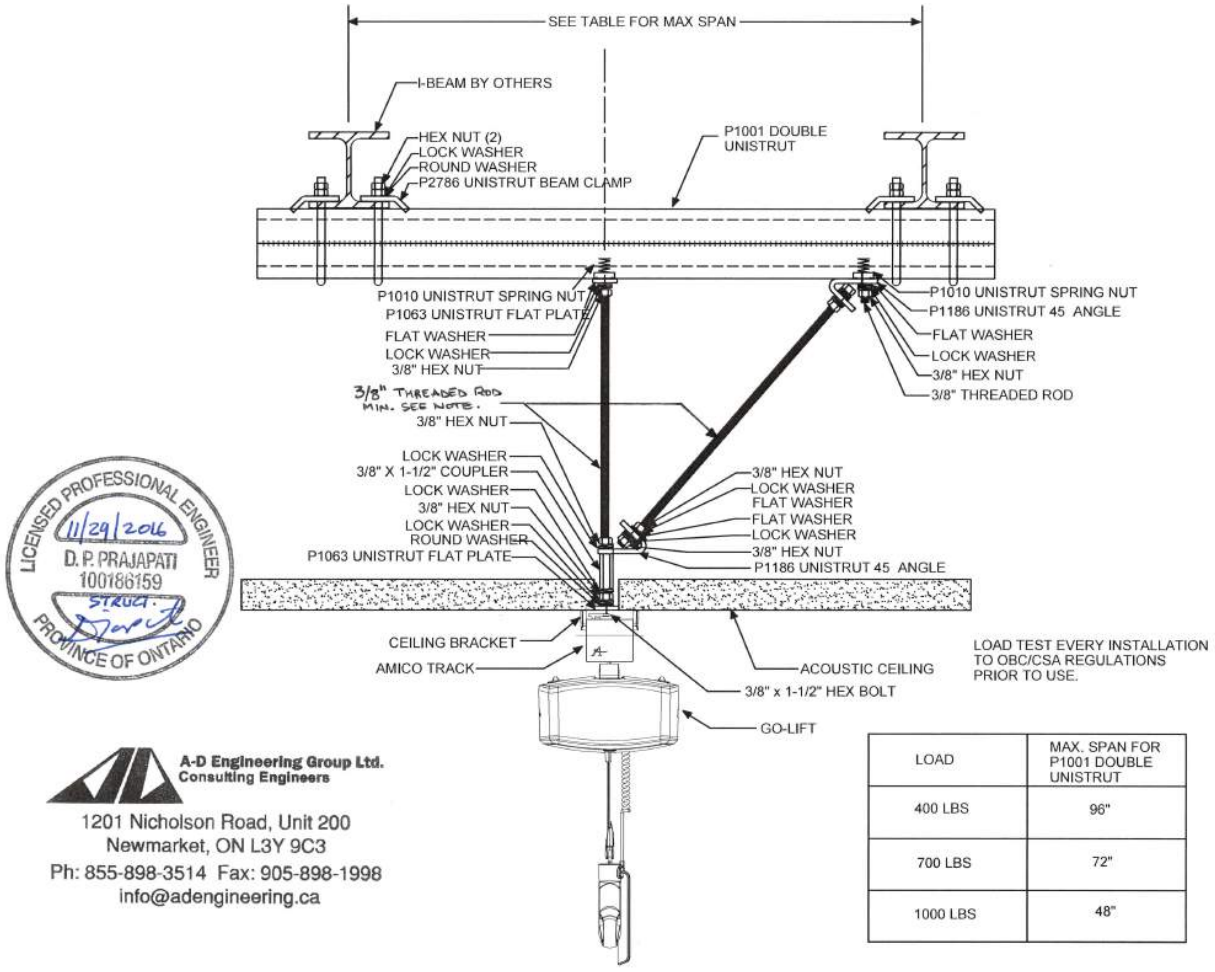


ATTACHMENT TO STEEL I-BEAMS

As with any structural member, the specifications and load bearing limitations should be checked at the time of the site assessment. The most significant determining factor with respect to material and labour cost is the span between beams. When surveying a room, the surveyor should note the exact distances between beams, how many beams are in each room, and where they are located. In some cases, it may be necessary to penetrate the firewalls between rooms to attach structural steel between I-beams in adjoining rooms.

NOTE: There are a wide variety of I-beams clamps available. Refer to the manufacturer specifications for methods of attachment and load bearing limitations.

Figure 8 – Attaching to Steel I-Beams

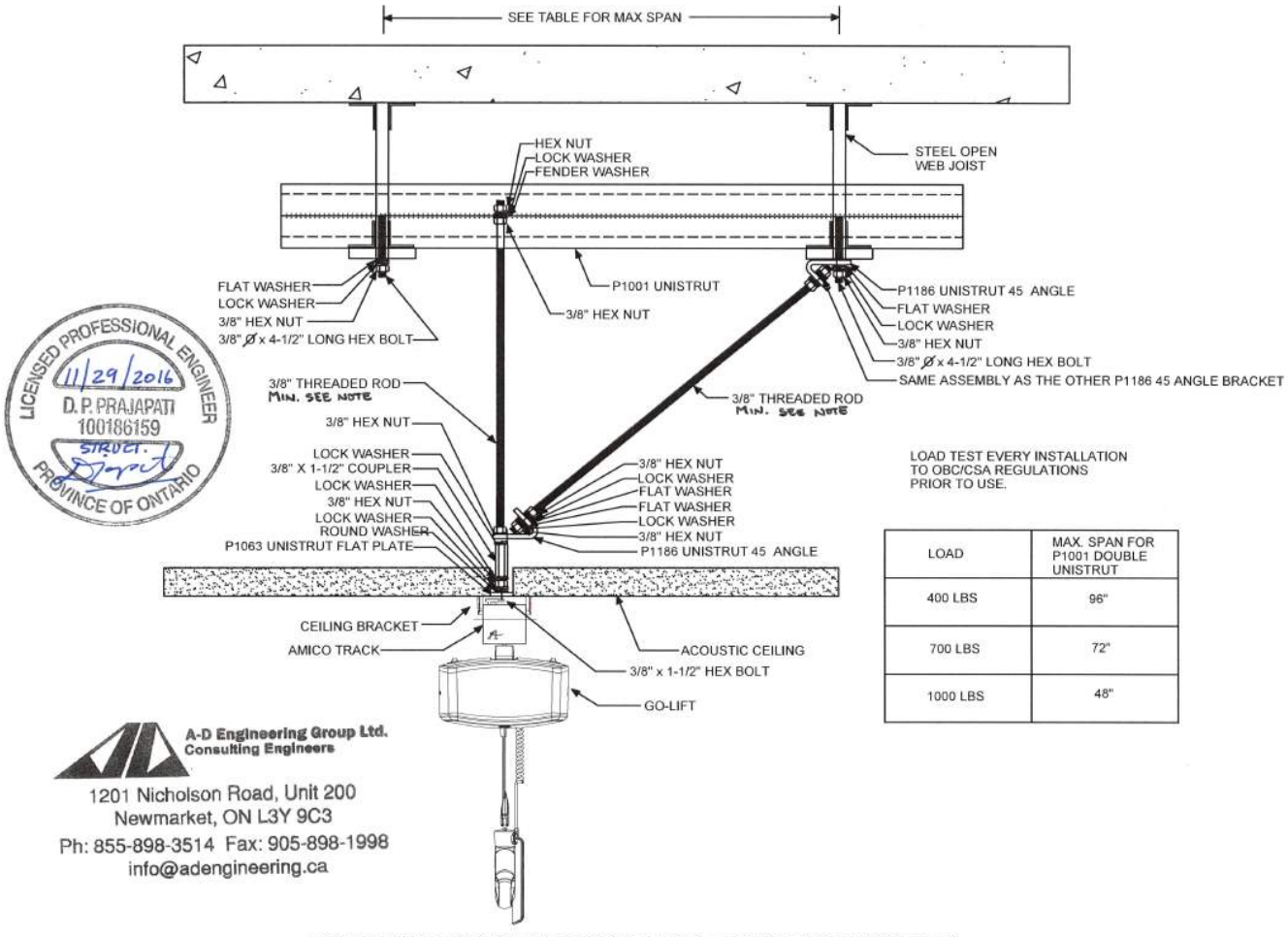


LOAD	MAX. SPAN FOR P1001 DOUBLE UNISTRUT
400 LBS	96"
700 LBS	72"
1000 LBS	48"

ATTACHMENT TO OPEN STEEL WEB JOISTS

There are a number of different types and sizes of open steel web joists (OSWJ), each with varying load bearing limitations. It is important to know the specifications of the joists before beginning the installation. When possible, obtain input from an engineer to verify the adequacy of the joists for the purposes of the track system.

Figure 9 – Attaching To Open Steel Web Joists



ATTACHMENT TO STRUCTURAL WALLS

Wall mounted track systems are typically used when it is not possible to hang from the existing ceiling. Special consideration is required when fastening wall brackets to the walls. Wall mounted brackets can only be attached to structural load-bearing walls. (See Figure 10 – Wall Mount Bracket). There are a number of different types of structural walls, each requiring a specific anchor type. Extra care should be taken when preparing to attach each bracket. Use a laser to make sure the brackets will be level. If the track system is an XY configuration, make sure that the brackets are evenly spaced between parallel tracks, as to prevent any potential for the gantry to bind.

ATTACHING TO CINDERBLOCK:

There are three anchoring options when attaching to cinderblock walls.

1. Epoxy anchors can be used in any hollow portion of the block, as well as through the mortar. Refer to the manufacturer specs for application instructions and cure times. Remember that the epoxy must cure 100% before a load test can be performed on the track system.

2. Sleeve anchors or lag shield anchors can be used, but are not recommended if the track span exceeds (a) 92” with Single Track (b) 149” with Double Track (c) 262” with Triple Track. These anchors are intended for use in hollow blocks.

3. The mounting bracket can be attached by drilling through the structural wall and using a back plate on the opposite side of the wall. A back plate is simply a small steel plate (1/4” thick) with mounting holes that mirror the holes on the mounting bracket. The plate should be painted to match the colour of the wall. Connect the plate to the bracket using long bolts or threaded rod. In the rare event that the opposite side of the wall is a room that is also being tracked, and the position of the back plate is a suitable location to mount, a mounting bracket can be used instead of a back plate.

ATTACHING TO SOLID CONCRETE WALLS:

If the wall is solid concrete, a drop-in anchor or a wedge anchor can be used refer to the manufacturer specs to determine the pullout value of the anchor. Since the anchor is being used horizontally (into the wall), rather than vertically (into the ceiling), the type and amount of stress that the anchor causes on the concrete is not the same. The former causes “shear force”, while the latter causes tensile force.

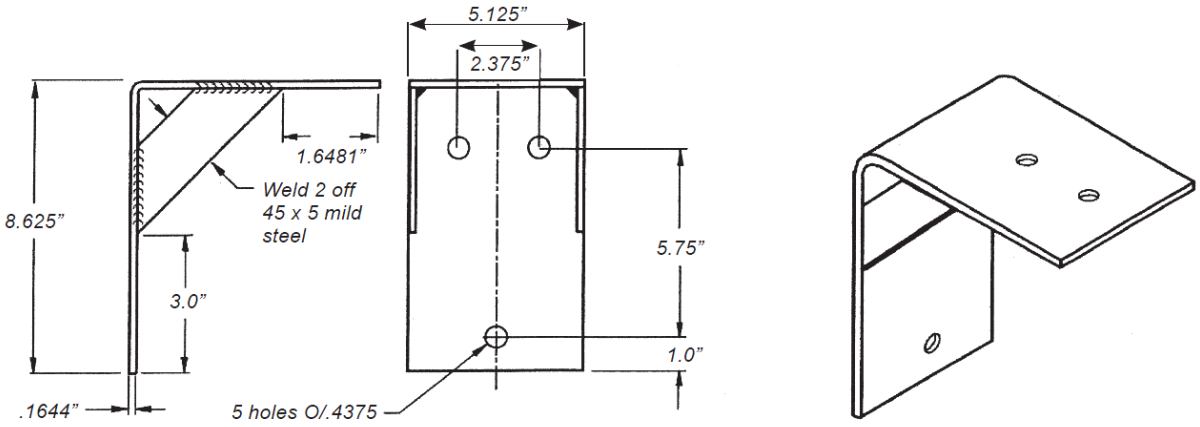
Tensile Force is force that is applied in the direction of the anchor length. In other words, a concrete anchor that is inserted vertically into concrete will undergo stress, as the load is also vertical.

Shear Force is force that is applied in a direction that is opposite of the anchor length. In other words, a concrete anchor that is inserted horizontally into concrete will undergo sheer stress, as the load is vertical.

ATTACHING TO STUD WALLS:

Wood studs are considered to be structural studs, as long as they are at least 2” x 4” studs, and are attached to both the top and bottom cord of the frame. Most wood studs are spaced 16” apart, but it is important to confirm the spacing during the initial assessment, to ensure that the appropriate back plate is selected. The back plate attaches directly to the wall and must span and anchor into at least three studs. The plate can be made of steel, wood, or any structural material that can support the load. Mounting holes are needed at the stud locations (using two anchors per stud), and where the wall mount bracket will attach. The wall mount bracket should be positioned between two studs for optimal weight distribution.

Figure 10 – Wall Mount Bracket



Note: Brackets can only be fixed to solid walls.

ATTACHMENT TO NON-STRUCTURAL WALLS

When attaching to walls that are not structural walls, a post system is used instead of a wall mount bracket. The wall post is attached to the wall, but the anchors used to attach it do not bare any load. Their purpose is simply to brace the post against the wall, while the load is borne by the post itself. In other words, the load is transferred down the post and is absorbed by the floor.

LOAD TESTING

After the installation is complete, the system must be load tested to 125% of the maximum load stated on the label of the ceiling lift.

To measure track deflection, only 100% of the SWL is used. The track may only deflect 1” for every 200” of unsupported track (1:200 ratio)

After the load test has been completed, the Final Inspection Checklist but be filled out.

GENERAL INFORMATION

Bracket Spacing Requirements

This chart applies to straight sections of track only.
All ceiling mounted track sections must have a minimum of three (3) brackets.
All curved tracks must have a minimum of three (3) brackets.
Make sure that all edges of tracks are without debris or excess powder coat in the running surfaces to ensure smooth GoLift/trolley traversing.

GoLift Ceiling & Gantry Track Span			
Lift Capacity (kg/st)	Regular Track (cm)	Double Track (cm)	Triple Track (cm)
181/28	233	378	665
318/50	152	270	480
454/72	110	236	420
Note: Any ceiling track must have a minimum 3 brackets. *Recommended for regular track to put 3 in bracket every 3ft*			

1) Service load = rated lifting capacity (400, 700, 1000 lbs).
2) Factored load = 125% test load of the rated lifting capacity (400 X 1.25% = 500 lbs)
3) Maximum deflection = L/200 (where “L” is the span between supports). A 96” span = 0.48” maximum deflection. Note: deflection should only be measured under Service Load and not the Factored Load.

TURNTABLE

The Amico Turntable is ideal for situations where junctions are required in a track or when a track turn is required that standard curved sections cannot accommodate.

The Amico Turntable provides the end-user with ultimate flexibility in lift and transfer situations that demand a wide range of locations, or require specialized options. Whether used in a multi-user institutional environment or in a private residential setting the turntable provides different ceiling take-off points that will meet the requirements of even the most demanding situations.

The Amico turntable has 4 possible exits which allow great flexibility for the system designer and gives the user more options for the installation. An adaptation that is being planned can be designed around the angles of the turntable. For instance, a turntable in a bathroom could be positioned so as to allow transfer between chair, bath, wheelchair, shower area and or changing stretcher.

BEFORE INSTALLATION:

Take the following into account when selecting the position for the turntable:

- You will need to be able to fix at a minimum of four equally spaced points round the outside of the turntable. The station where the pull cord is situated on a manual turntable is not a fixing point.
- When choosing installation position, ensure that a clear space can be maintained around the turntable, GoLift and track.
- At the end of each fixed track, connecting to a turntable, create a ramp by filing the edge so as to ensure a smooth traversing when trolley moves through the tracks.

TURNTABLE COMPONENTS:

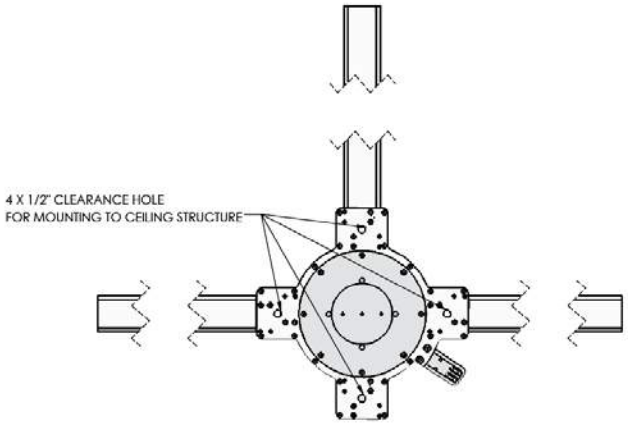
TURNTABLE INSTALLATION

When choosing installation position, ensure that a clear space can be maintained around the turntable, hoist and track,

When installing a turntable, the turntable should fitted first and the track then fitted from the turntable.

Curves that come directly from a turntable must not be cut back past the straight section otherwise the GoLift will not pass from the turntable to the track. A minimum of 4” (100mm) of straight track must be left on the bend.

Typical Installation using Unistrut hardware and 1/2" (12.7 mm) threaded rods.

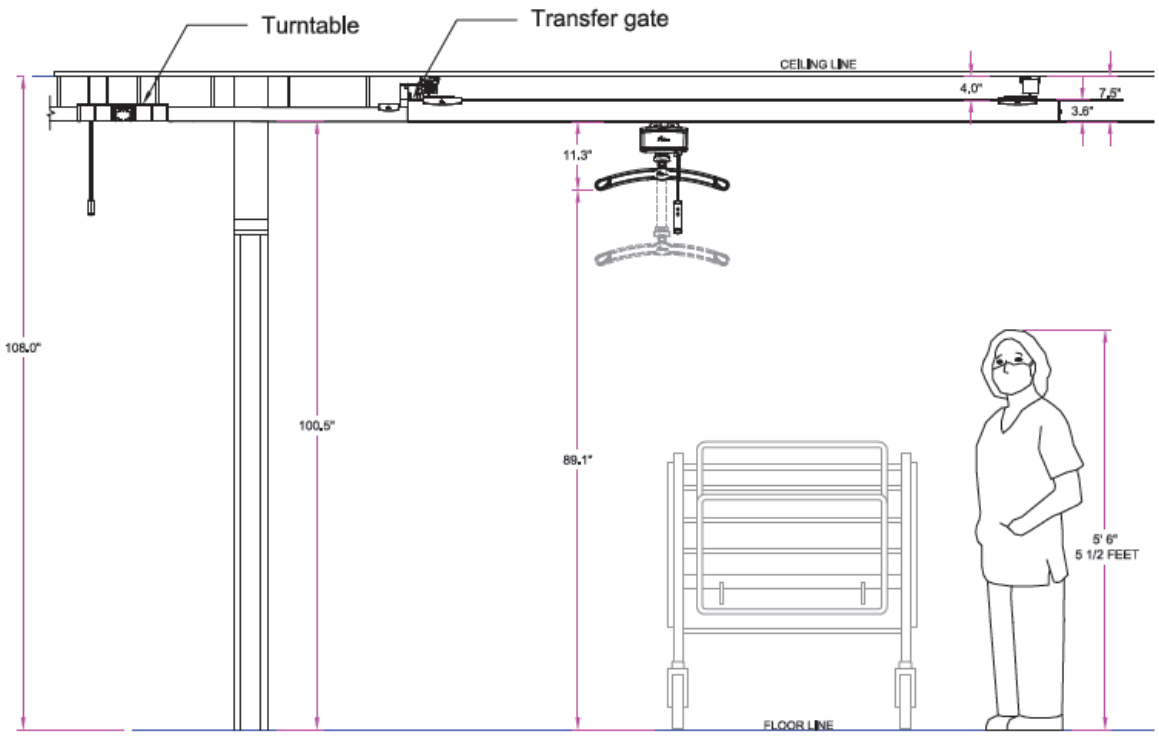


Location of 4 x ½" (114.3 mm) holes for the 1/2" (12.7 mm) threaded rods

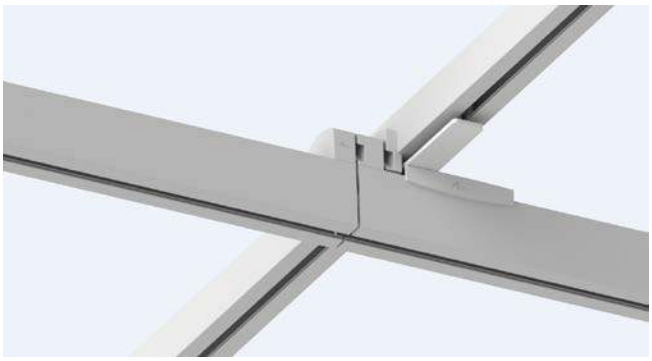
TRANSFER GATE

The transfer gate is an H system gate that permits a GoLift to travel between an H -System travelling track and a fixed track. A low-maintenance, mechanical device, the transition gate has a double failsafe action to ensure that the gate will only open when the two tracks are properly aligned and locked together.

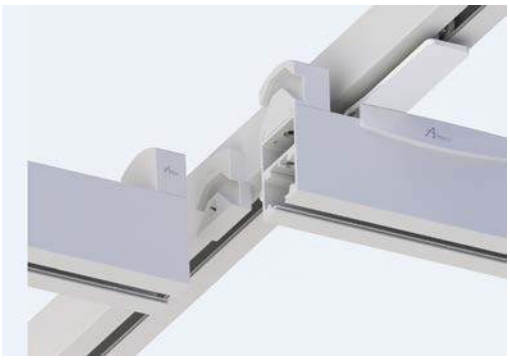
Typical Amico Transition Gate Installation



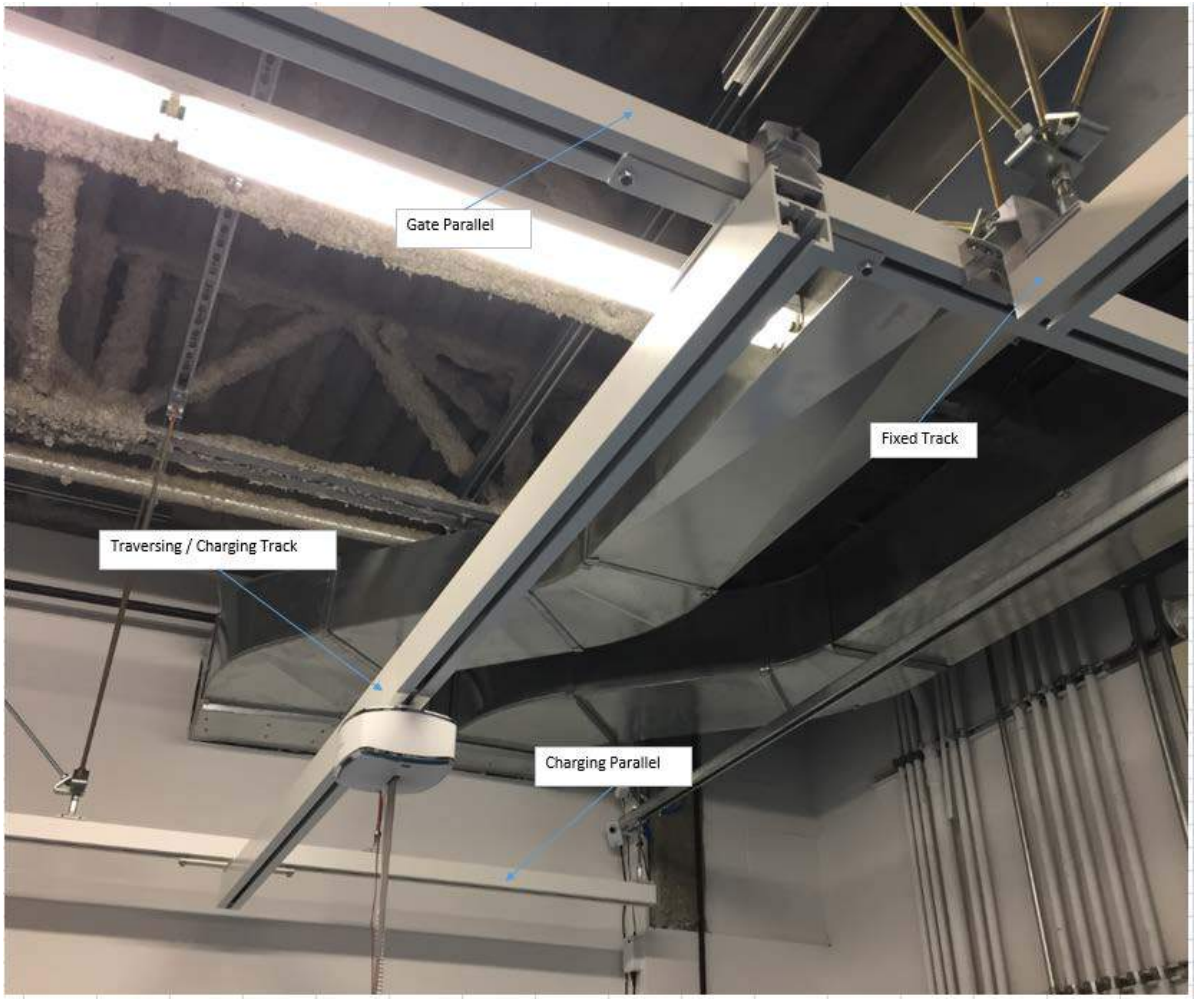
Track References:



Closed Gate



Open Gate



Transfer Gate and Track Components

ELECTRICAL CONNECTION

In most cases, the lift systems' wiring is taken from the premises ring main circuit. Although this only involves basic wiring, every care must be taken to ensure that all wiring and connections are in line with the current state or local regulations. All wiring should be done in such a manner that it is agreeable with the client. It is advisable to consult the client as to the positioning of any switches and the routes of any surface mounted conduit.

IMPORTANT NOTES:

All wiring to comply with the current edition of the state and local regulations.