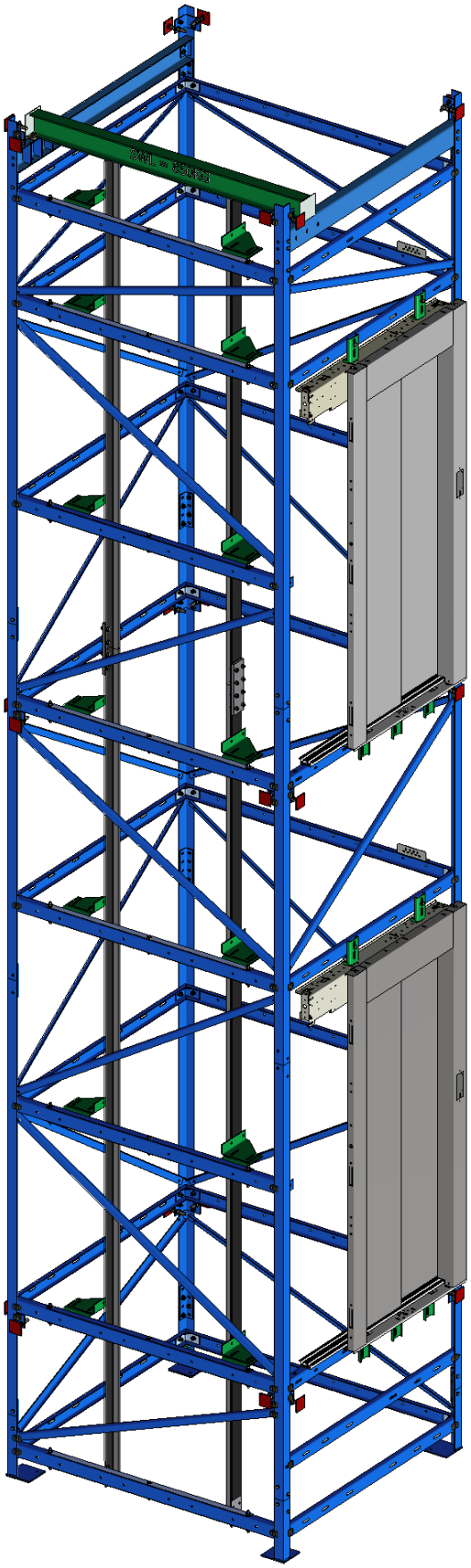
INSTALLATION GUIDE - FX STRUCTURE
KLEEMAN HYDRAULIC MAXILIFT 2.0



Part Number 1000019

Contents

1. General introduction

The intention of this document is to provide information for the correct installation of the Stannah FX structure to accommodate the Kleeman hydraulic Flexilift and to highlight key points and safety procedures.

This guidance manual should be read in conjunction with the contract specific General Arrangement Drawing and the Builder's Work Drawing.

Installing an FX steel structure can be dangerous if safe working practices are not followed. British Standard BS7255 (2012 Code of Practice for Safe Working in Lifts) recommends safe practices for those working on all types of lifts and should be referred to for guidance.

This manual is for guidance only. Owing to our policy of continual improvement, we reserve the right to alter the contents without prior notice.

Hazards identified during the installation of the FX steel structure are, but not limited to:

- Working at height (slips, trips and falls of persons)
- Falling objects
- Manual handling (Unhealthy postures or excessive effort)
- Impact hazard
- Cutting or severing hazard
- Crushing hazard
- Collapse of FX structure (error of fitting)

Please ensure that the installation is suitably planned and that site conditions (e.g. adequate lighting, floor surfaces etc) have been suitably assessed prior to commencement of installation.

NOTE: Heavy equipment. Some components and sub-assemblies are heavy and appropriate precautions must be taken to avoid injury when lifting or moving them.

The following PPE should be worn at all times during installation:

 *Safety gloves*	 *Safety goggles*	 *Safety helmet*	 *Safety shoes*	 *Clothing*

2. Measuring and setting out:

All setting out and installation details are given on the Builder's Work Drawing and General Arrangement Drawing. All distances from the structure upright to the shaft walls are given but may vary depending on how plumb the shaft is built.

The centre-line of the guide rails are dimensioned on the General Arrangement Drawing.

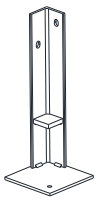
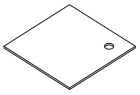
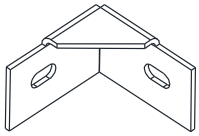
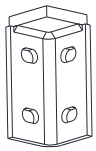
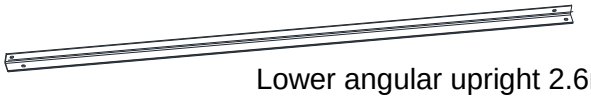
Any deviation from the Builders Work Drawing or the General Arrangement Drawing must always be agreed first with the Contracts Drawing Office.

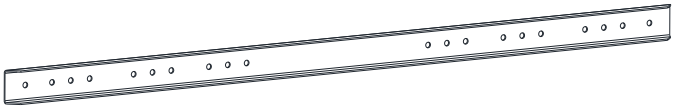
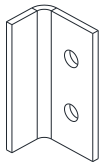
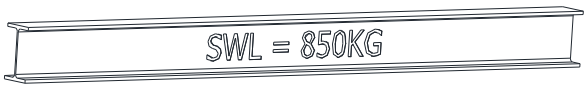
Prior planning should be undertaken to ensure that the guide-rail joints/fishplates and the corner angular upright joints do not coincide with a ring assembly. These will be shown on the builders work drawing. It is also important to pay particular attention to the correct vertical positions of ring assemblies at landing entrance levels.

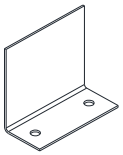
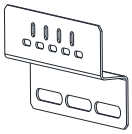
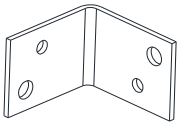
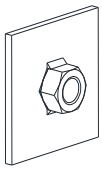
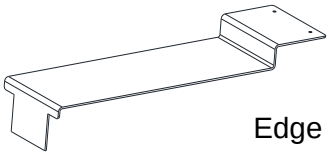
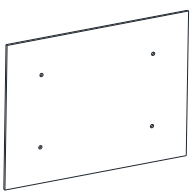
The landing architraves can be fixed in position in 2 ways depending on whether the building lift well construction is masonry or timber frame. Refer to section 5.6 for details.

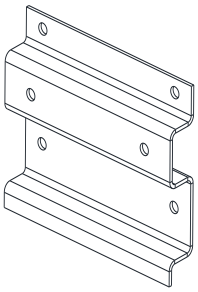
PARTICULAR ATTENTION MUST BE PAID TO THE HANDING OF THE GUIDES AND HYDRAULICS, PLEASE REFER TO THE BUILDERS WORK AND GENERAL ASSEMBLY DRAWINGS

3. Component Identification:

Item	Part Description	Part Ref No.	Qty
1	 Bottom angular upright assembly	1000020	4
2	 Packer for item1 (if req'd)	1000050	6
3	 Joint – angular uprights	1000025	Depends on lift travel
4	 Corner joint bracket - rings	1000034	4 per ring assy
5	 Support bracket – Lifting beam assembly	1000028	4
6	 Lower angular upright 2.6m long	1000024-2600	4
7	 Intermediate angular upright 3m long	1000024-3000	Depends on lift travel
8	 Angular upright – headroom – 3m long (Additional holes at upper end for lifting beam)	1000027	4
9	 Ring member – guide side - depth	1000030-1766 or 1000030-1826 or 1000030-1731	Depends on lift travel

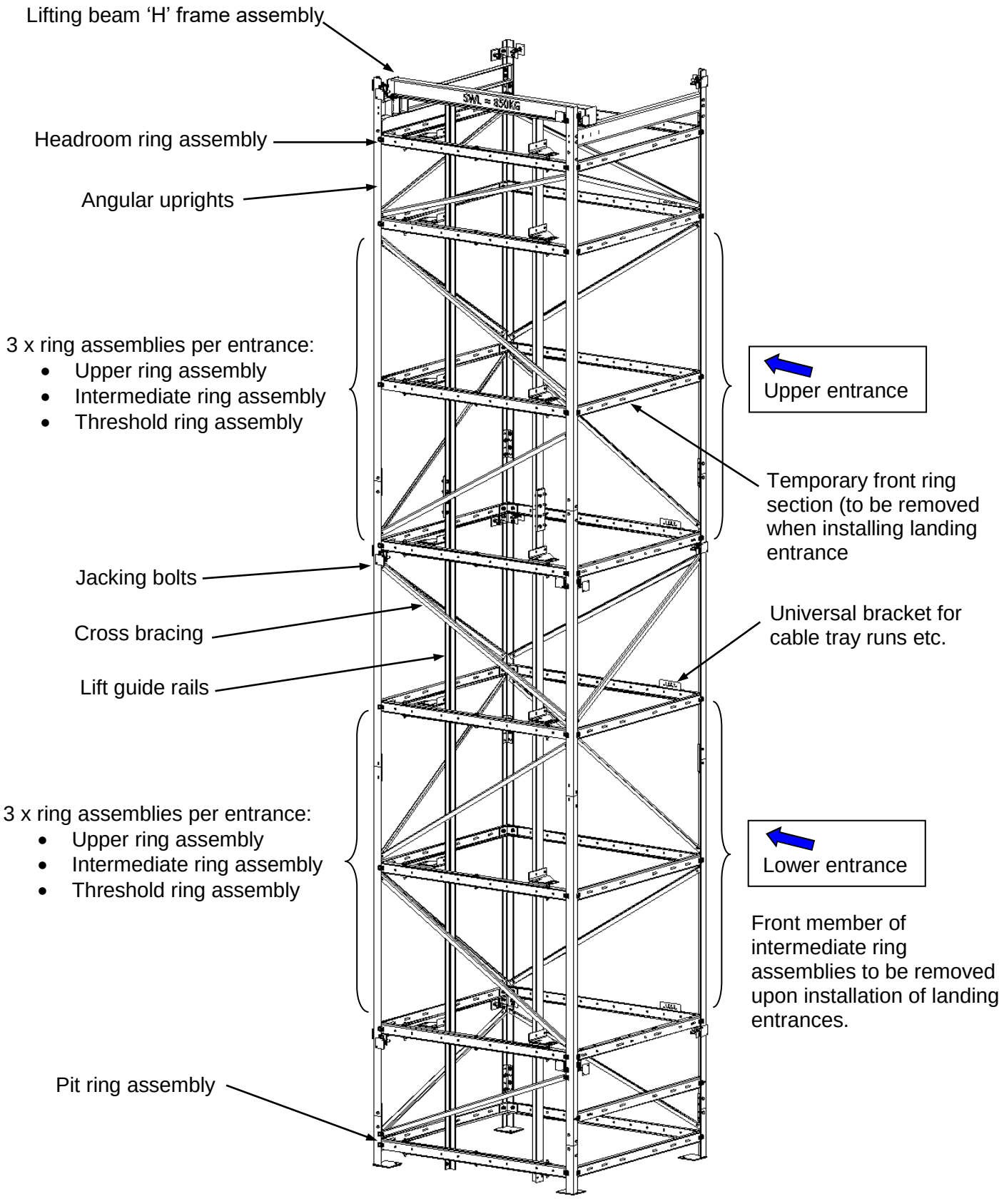
10	 Guide bracket fixing member	1000031	1 per item 9
11	 Ring member - width	1000032-1618 or 1000032-1708 or 1000032-1908	Depends on lift travel
12	 Ring member – non-guide side - depth	1000033-1766 or 1000033-1826 or 1000033-1731	Depends on lift travel
13	 Ring member – landing threshold - width	1000035 or 1000036 or 1000037	1 each landing entrance
14	 Stiffening strip for item 13	1000026	1 per item 13
15	 Cross bracing	1000052-1650-1700-1740-1800-1840-1900-1930-1970-2020-2080-2130	Depends on lift travel
17	 Lifting beam support member	1000040-1618 or 1000040-1708 or 1000040-1908	2
18	 Stiffener – Lifting beam assembly (refer to page 15)	1000064	4 (2 for each item 17)
19	 Lifting beam RSJ	1000038-1725 or 1000038-1760 or 1000038-1820	1

20	 Lifting beam retaining bracket	1000039	2
21	 Universal bracket – cable runs etc	1000046	Depends on lift travel
22	 Jacking bolt angle	1000043	Depends on lift travel
23	 Jacking bolt plate	1000044	Depends on lift travel
24	 Edge protection plate - scaffolding	1000047-430 or 1000047-490	7 per working level
25	 Support member – scaffold	1000048-1502 or 1000048-1592 or 1000048-1792	2 per working level
26	 Scaffold board	2000501-3 or 2000501-4 or 2000501-2	7/8 per working level
27	 Scaffold board retaining angle	1000051	2 per scaffold board
28	 Jacking bolt slip plate (Use on timber frame installations)	1000045	2 per Jacking bolt assy

29	 Support channels – for foldable pit ladder	1000066	2
30	 Additional support members – for foldable pit ladder (RPL) to EN81-20.	1000068	2

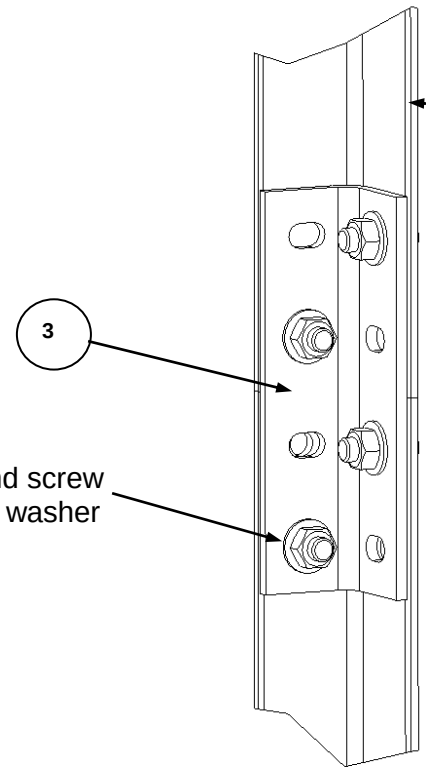
4. Assembly of the Structure Components:

4.1 Typical 2 floor structure with guides on left hand side (X entrance)



4.2 Assembly of the Angular Uprights:

The 4 bottom corner angular uprights (item 1 above) are 366mm long and are located on the pit floor. Intermediate angular uprights are then joined to form the 4 corners of the steel structure



The 4 lower angular uprights fixed to the short bottom members in the pit are 2.6m long.

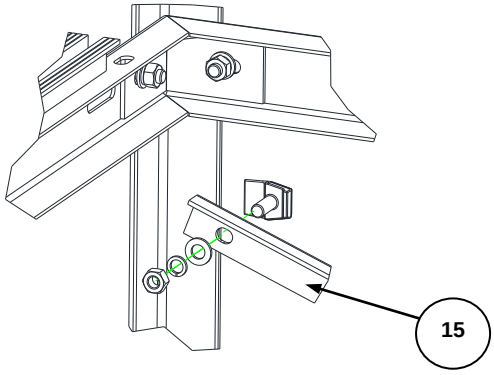
The intermediate angular uprights 3m long should not be confused with the top angular upright located in the headroom which have additional holes at one end to accept the lifting beam

As work progresses up the structure check that the joint brackets do not coincide with any of the ring sections. If this does happen then the upright must be cut and drilled.

Reference should be made to the Builders Work Drawing to ensure that the angular upright joints) do not coincide with guide bracket centres

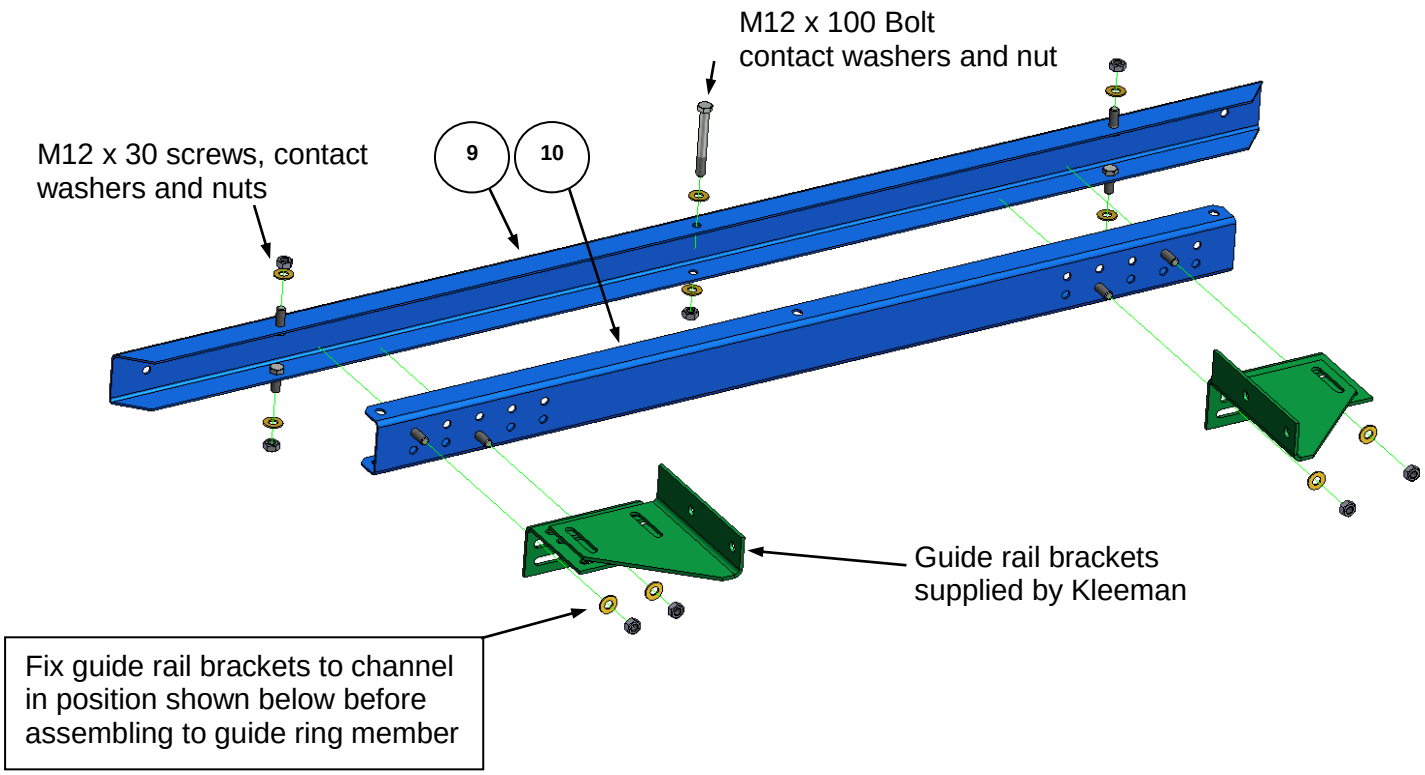
4.3 Assembly of the Cross Bracings:

Cross bracings of varying lengths should be fitted to all four sides of the FX structure.

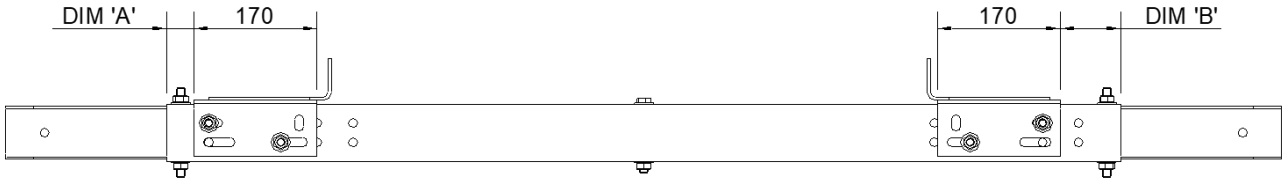


Each cross bracing is fixed to the angular uprights with x 2:
M12 Guide clips
M12 Full nut
M12 Spring washer
M12 Plain washer

4.4 Assembly of the Guide Bracket Members:



Front of lift well
As defined on GA drawing via dimension to DATUM LINE 'A'

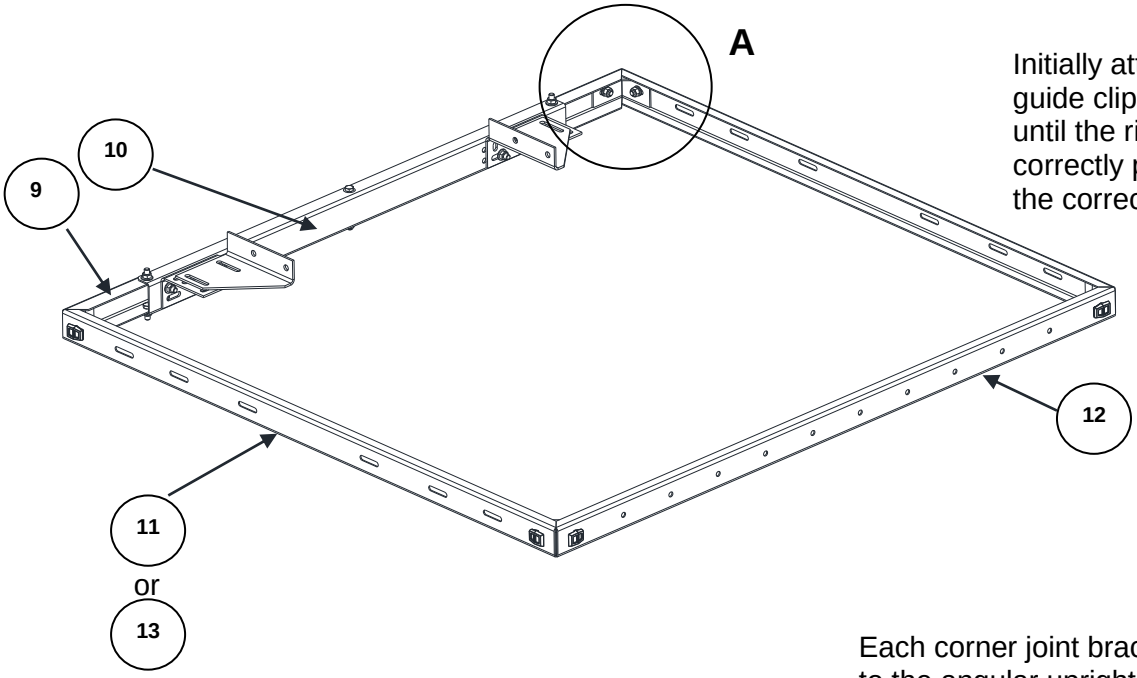


View shows typical layout for guides on left hand side

Model	Dim 'A' mm (front guide brkt)	Dim 'B' mm (rear guide brkt)
800 2S Single entrance	38	83
800 2S Through entrance	13	113
900 2S Single entrance	38	83
900 2S Through entrance	13	113
800 2C Single entrance	30	87
800 2C Through entrance	63	63

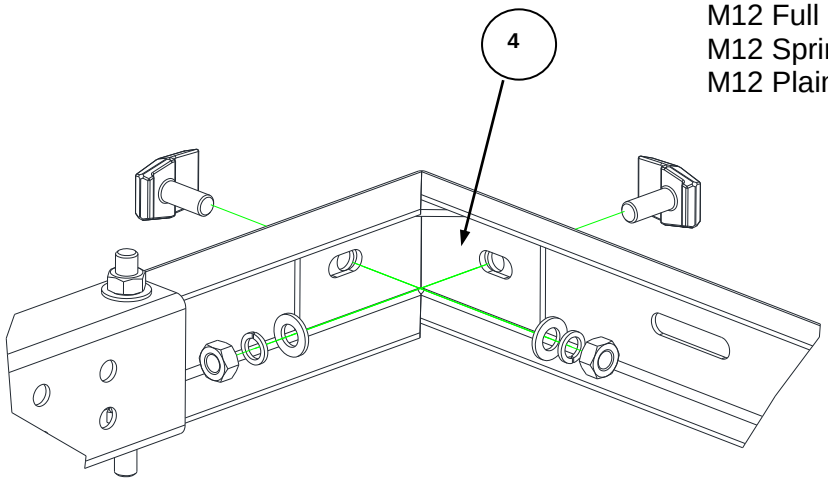
4.5 Assembly of the Structure Rings:

Check handing of guide brackets on the builders work drawing and general assembly for contract



Initially attach the guide clips loosely until the ring is correctly positioned at the correct height.

Each corner joint bracket is fixed to the angular uprights with x 2:
M12 Guide clips
M12 Full nut
M12 Spring washer
M12 Plain washer

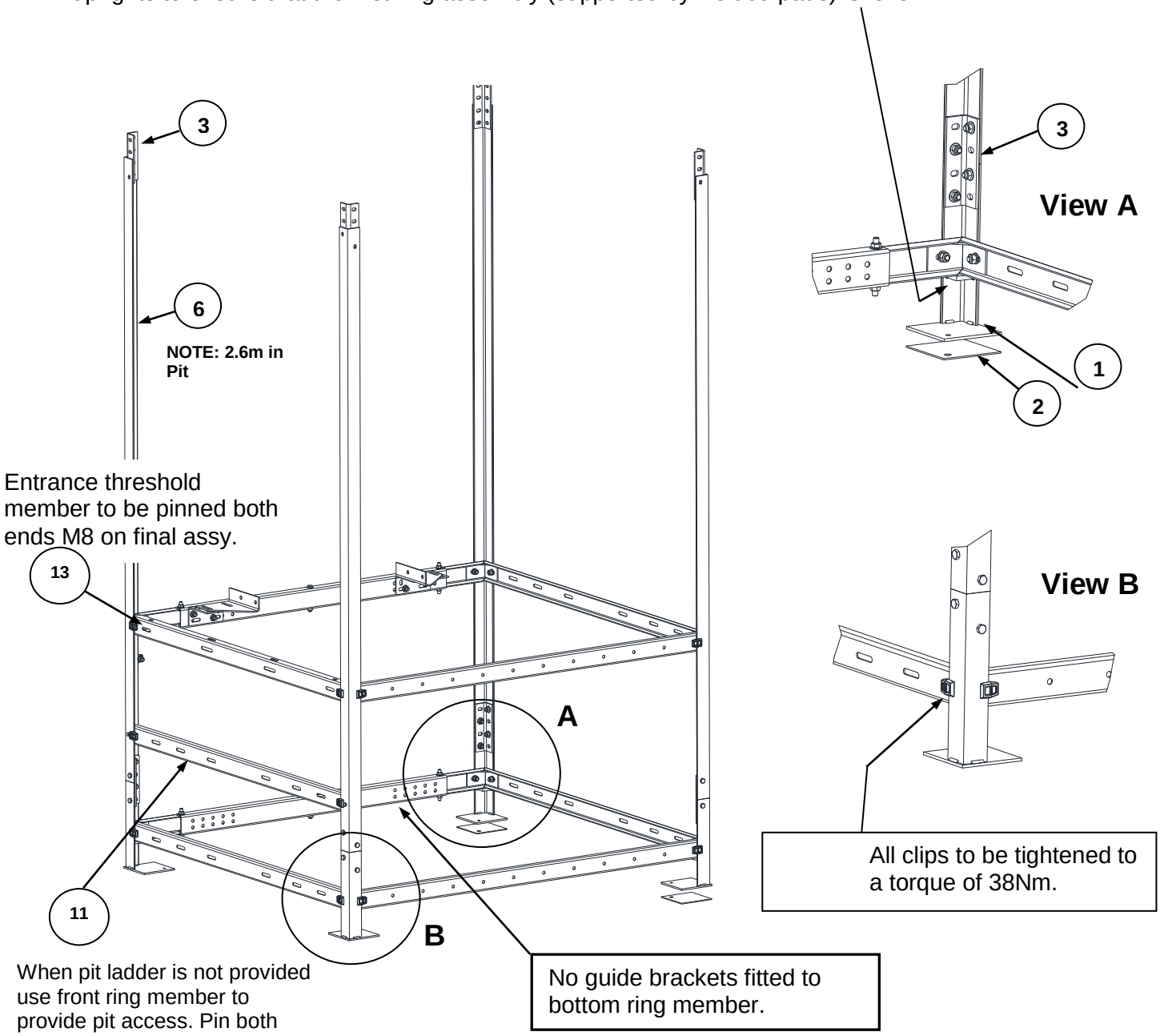


View A

5. Installing the FX Structure:

5.1 Installing the Pit Members:

The lift pit must be dry and free from dirt and dust. Use packers provided under the bottom angular uprights to ensure that the first ring assembly (supported by welded pads) is level.

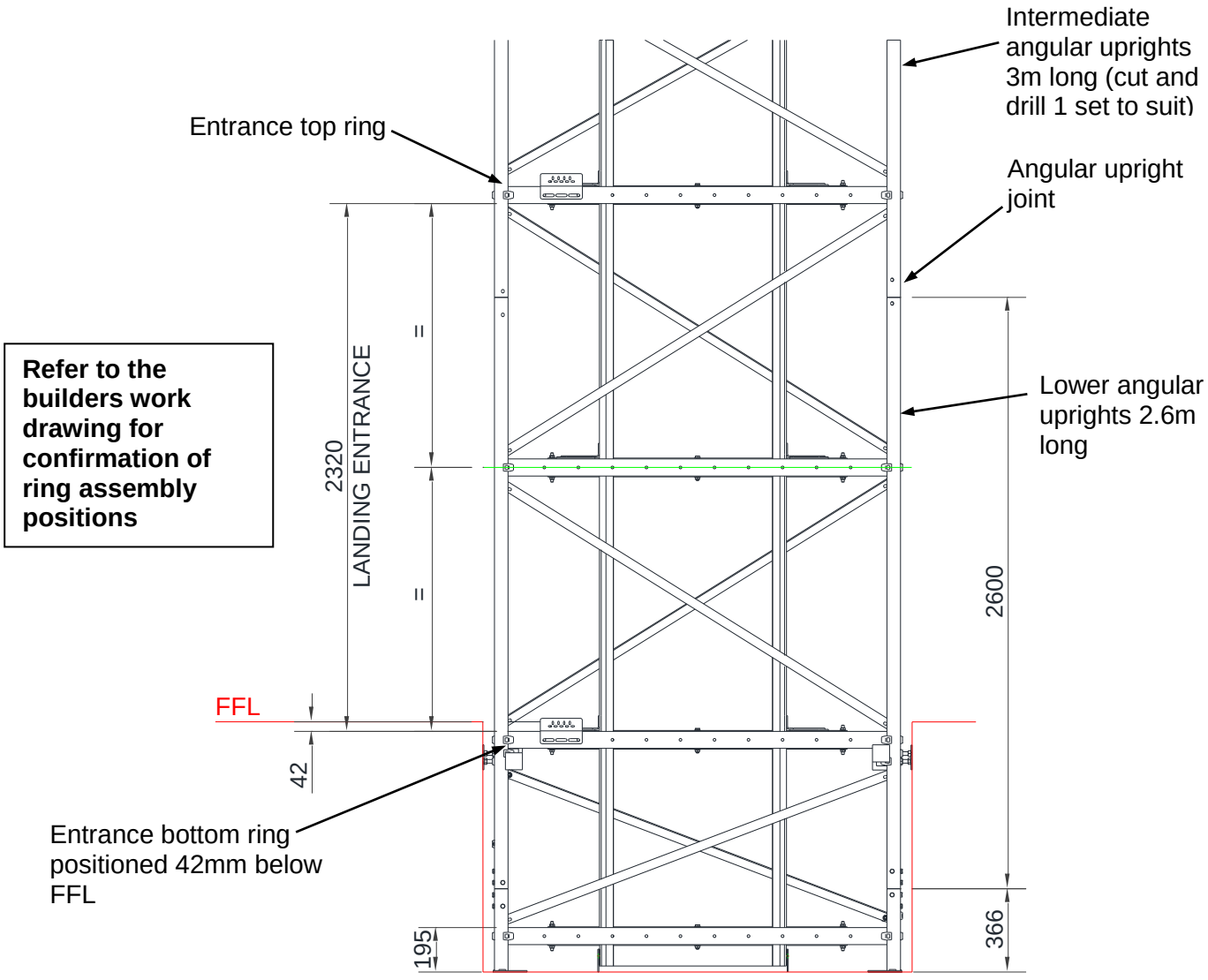


Note: Square up the pit ring section and uprights, then plumb the rest of the structure off the pit ring section.

5.2 Installation the Ring Members:

Prior to the erection of the tower structure it is advisable to segregate all the ring components into small batches which, when assembled will form the individual rings. The channels which make up the rings are pre-punched to accept the landing entrances, brackets for cable runs etc.

Ring assembly pitches should not exceed 1200mm. Additional ring assembly components are provided where this dimension is exceeded due to longer travels between floors.

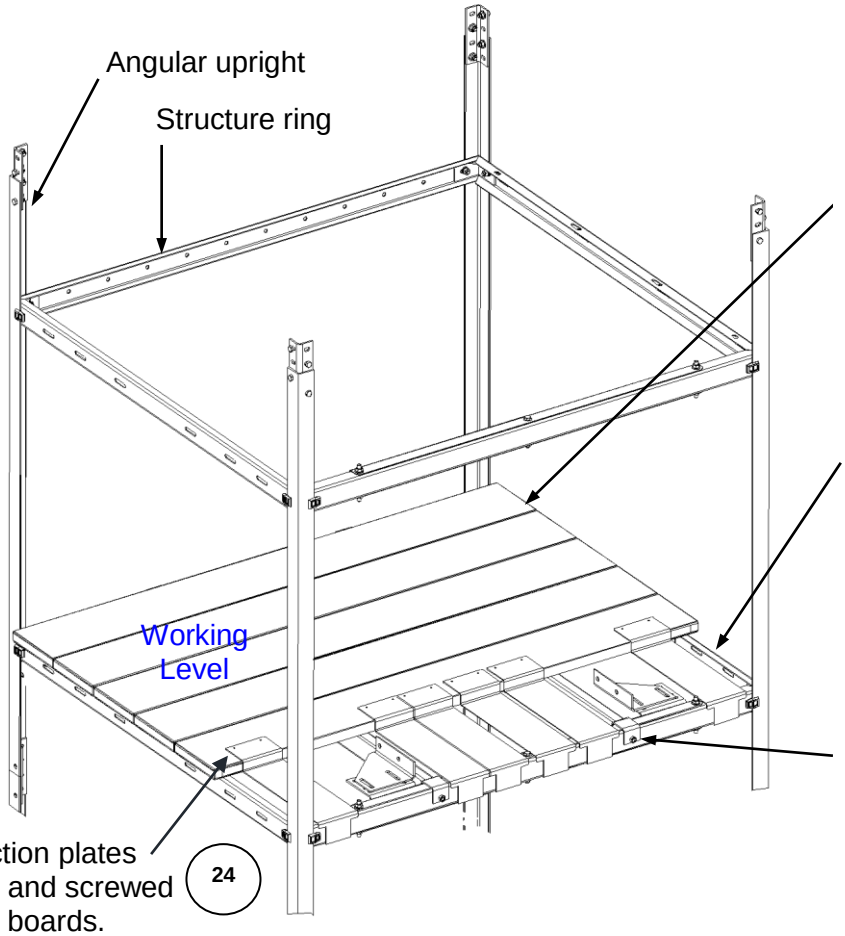


Side view shows pit and lowest floor entrance

5.3 Structure Working Platform:

The FX structure should be boarded out as below to provide working platforms during installation.

Max SWL distributed on the working platform = 500kg
Keep the working level fully boarded until installation of the guide rails.
The level below the working level must also be fully boarded and shall be at a vertical distance not exceeding 2 metres.



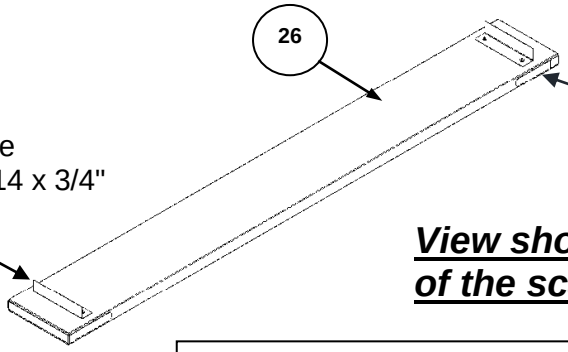
Ensure that the boards are supported at each end by the full flange of the structure ring section. They should not project more than 200mm beyond the support, unless secured to prevent tipping.

The working level and level below must comprise a complete structure ring with 4 steel members and a corner joint bracket in each corner. (Landing entrance mid-members can be removed later). **Ensure guide clips securing the ring assemblies to the corner uprights have been tightened prior to using as a working platform**.

2 x steel members to support the scaffold boards which must be used at all times. They must be located so that **the scaffold boards are supported at a span not exceeding 1200mm**. Clamp the support members in place using the M12 fixings provided.

Fall protection plates positioned and screwed to scaffold boards. 24

Keep the working level fully boarded until installation of the guides



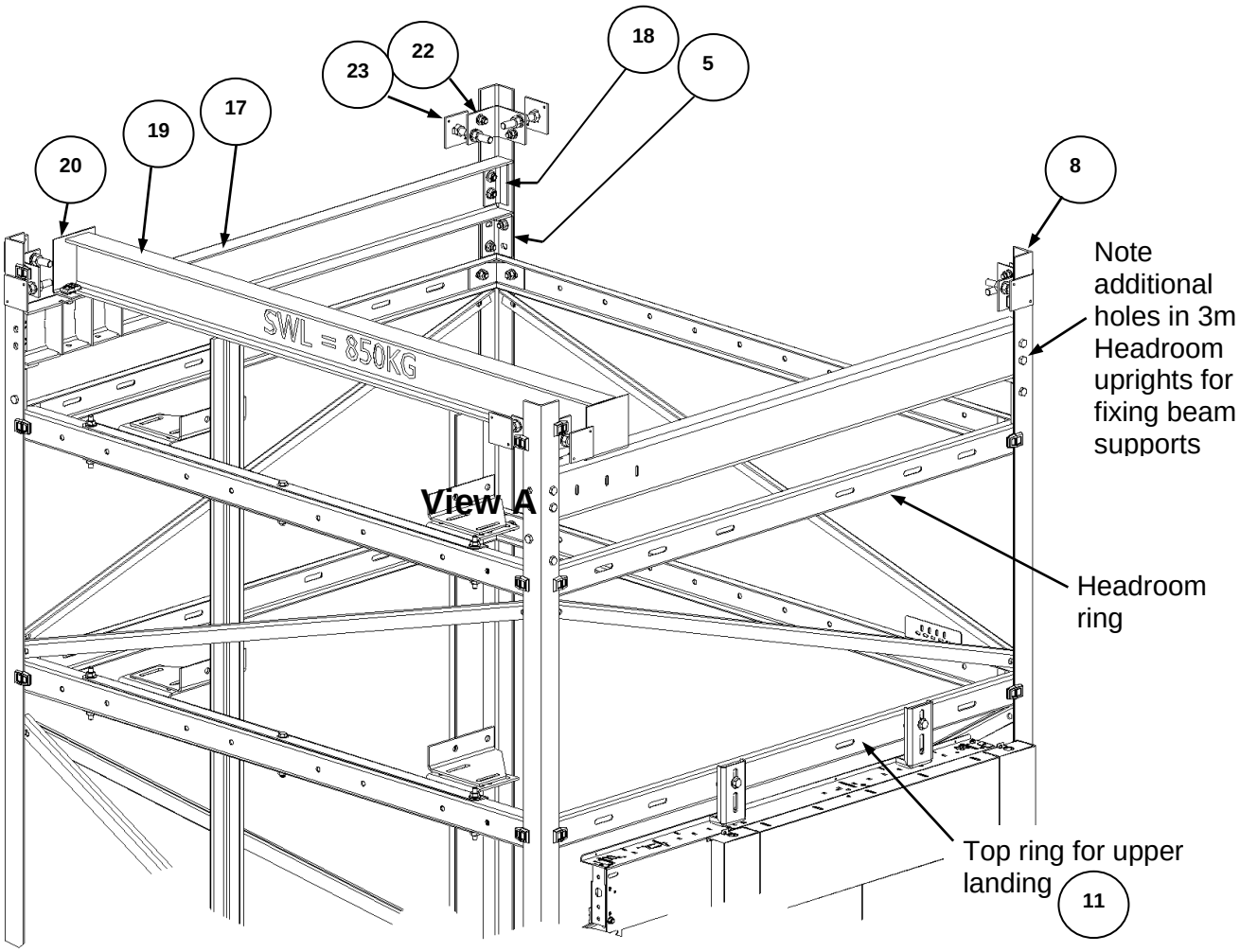
Banded scaffold boards 25

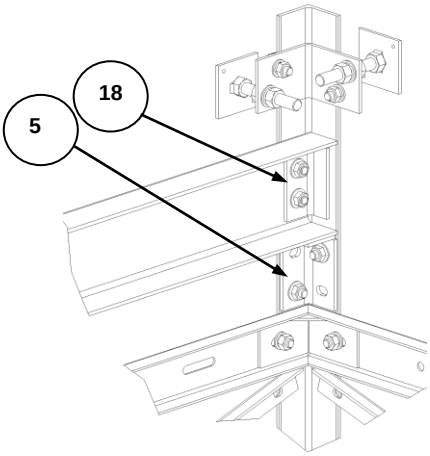
Board retaining angles fitted to the underside of the boards with No.14 x 3/4" self-tapping screws provided. See additional note ℹ below. 27

View shows the underside of the scaffold board

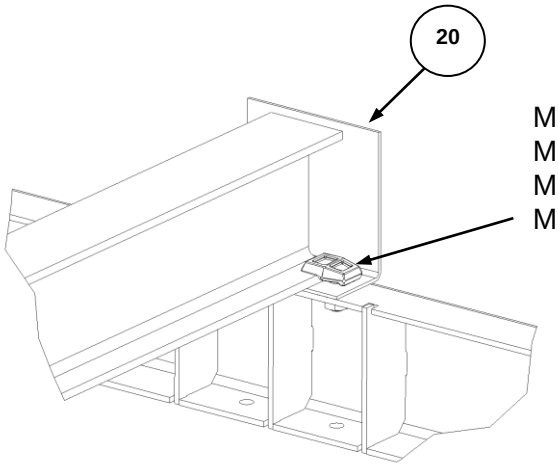
Note: Ensure that the distance outside the board retaining angles is only 10mm less than the inside dimension of the steel ring.

5.4 Top of Structure:





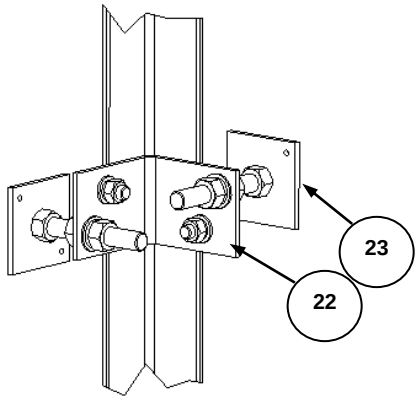
Supports for lifting beam frame



Lifting Beam fixing

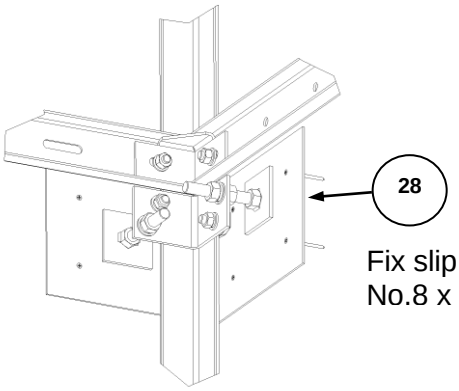
5.5 Plumbing and Stabilizing the Structure:

The FX structure assembly should be positioned the required distance from the landing as shown on the Builders Work and General Assembly drawings.



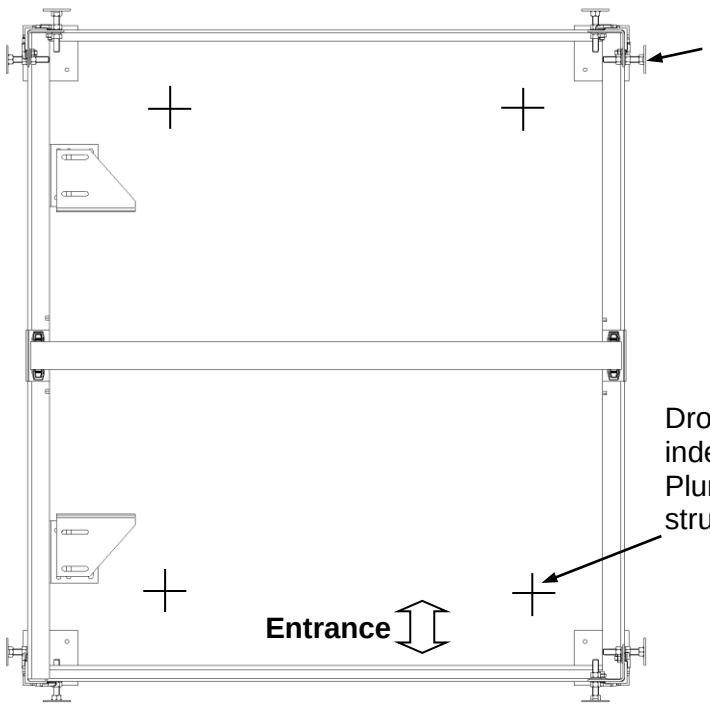
The structure assembly is plumbed and stabilised using jacking bolts.

The structure should be anchored where possible to resilient building material at each floor level, at the top of the structure and at any intermediate points where the pitch between jacking bolts exceeds 4m.



For timber frame structures, fix steel slip plates between jacking bolt plates and lift well. Refer to the Builders Work Drawing for details.

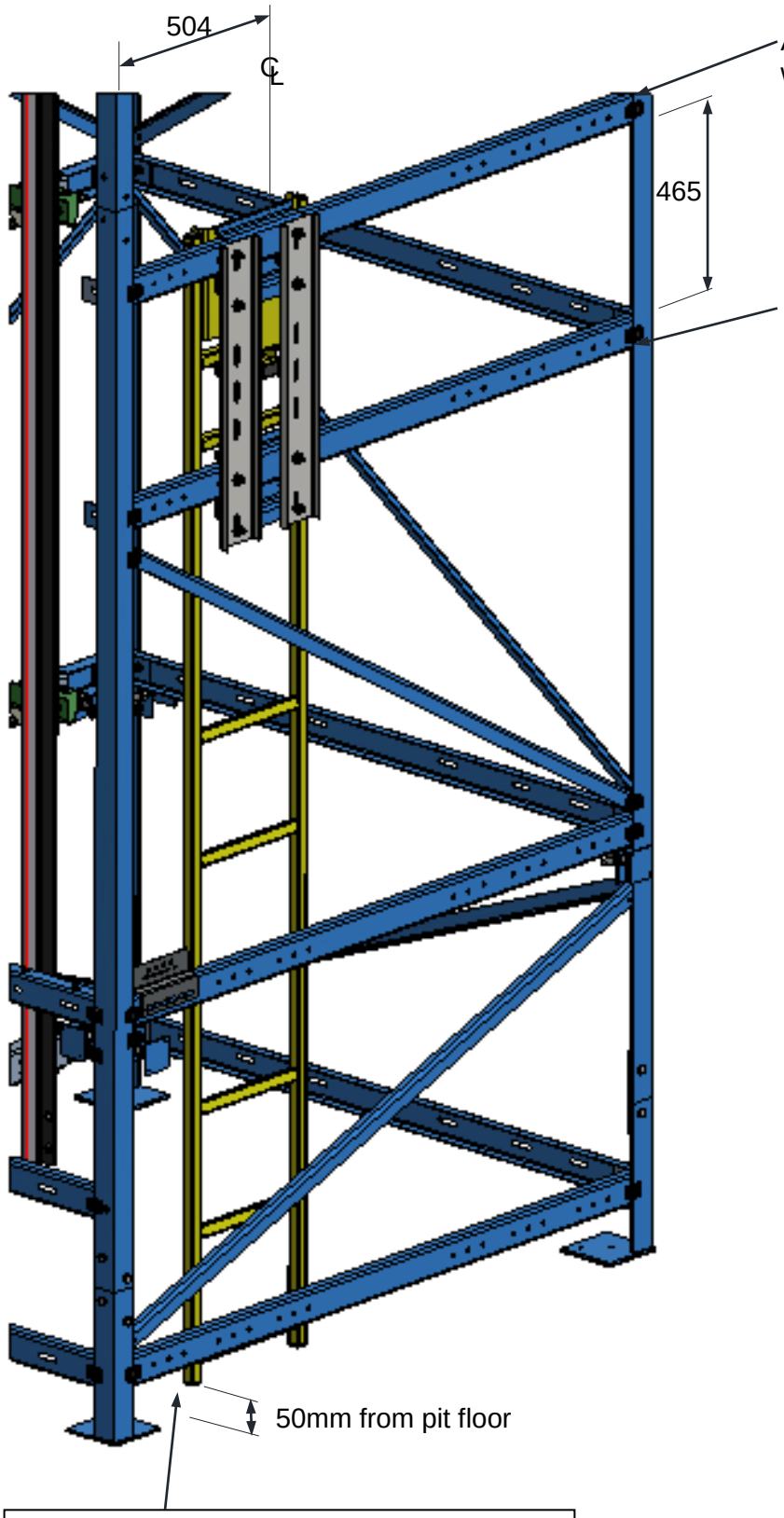
Fix slip plates to timbers with No.8 x 65 CSK screws



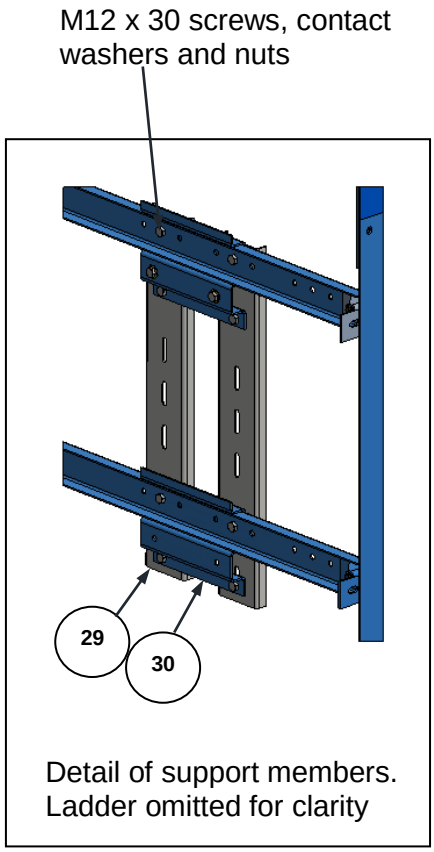
Jacking bolts located in 8 places to anchor the structure

Drop 4 plumb lines independent of the structure. Plumb and square the structure from the base

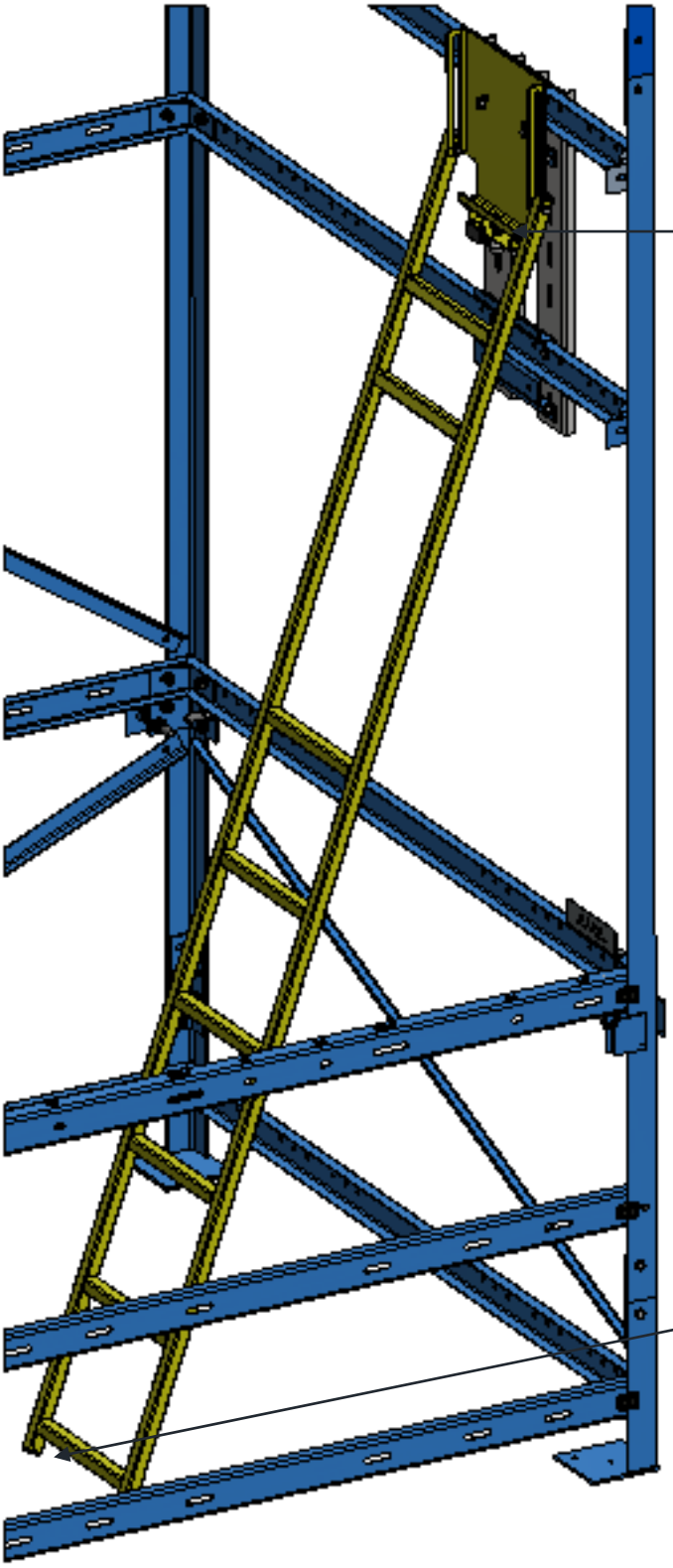
5.6 Installing the FPL foldable pit ladder (to EN81-20)



Pit ladder shown in <u>stored</u> position – supplied by Kleeman



Detail of support members. Ladder omitted for clarity



Ensure electrical safety switch is activated to prevent lift operation when not in stored position.

Ensure feet of ladder are in contact with pit floor when in deployed position.

Ladder shown in <u>deployed</u> position

5.7 Fixing of the Landing architrave to the structure:

The landing architraves can be fixed in position in 2 ways:

1. Directly to the FX steel structure for masonry building construction.
2. To timber infill members which form part of a building timber frame construction. This method allows for settlement of the building due to the nature of the construction.

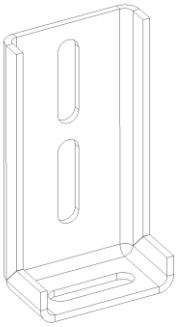
Both of the above methods utilise the architrave support brackets (5off per entrance) supplied by Kleeman. Bracket designations are listed in the following table:

Method1: Masonry Construction - Fixing Direct to FX Steel Structure

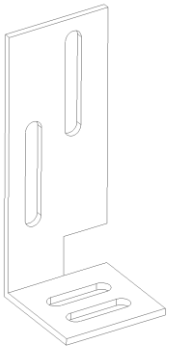
Door Type	Bottom Bracket Type	Top Bracket Type
2 Panel Side Opening	KE	KE
2 Panel Centre Opening	KE	KE

Method 2: Timber Frame Construction - Fixing to Timber Infill Members

Door Type	Bottom Bracket type	Top Bracket Type
2 Panel Side Opening	D	D
2 Panel Centre Opening	D	D



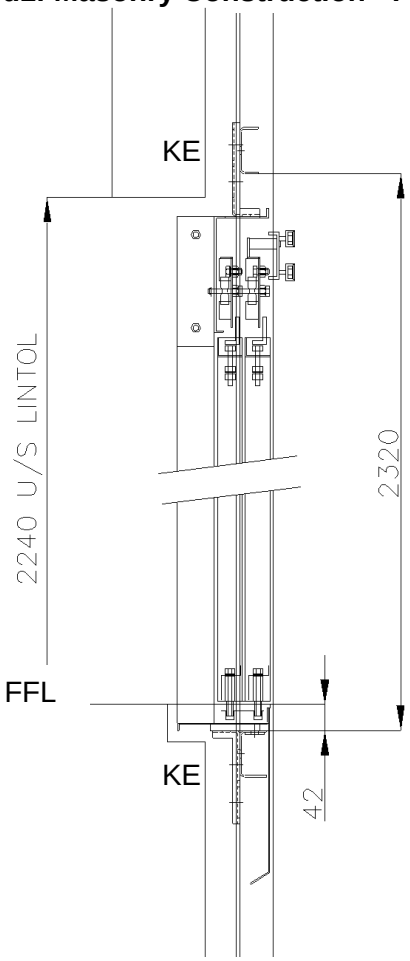
TYPE KE



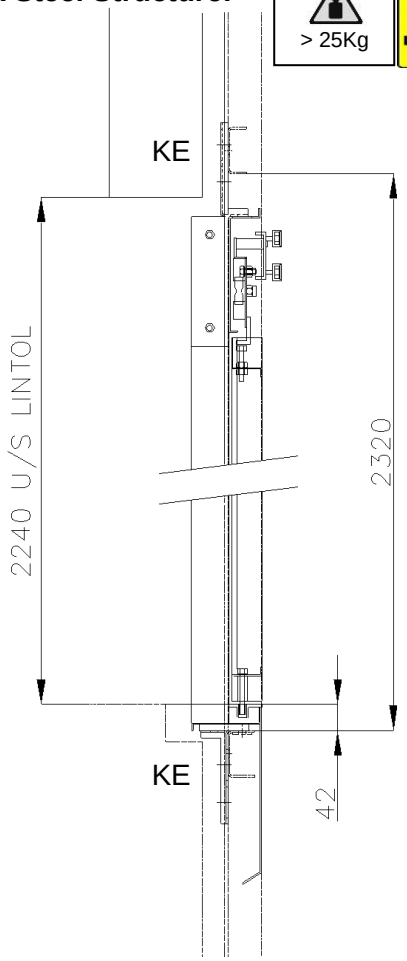
TYPE D

Reference must be made to the Builders Work Drawing to ensure the correct positioning of the landing entrances and the correct method of fixing.

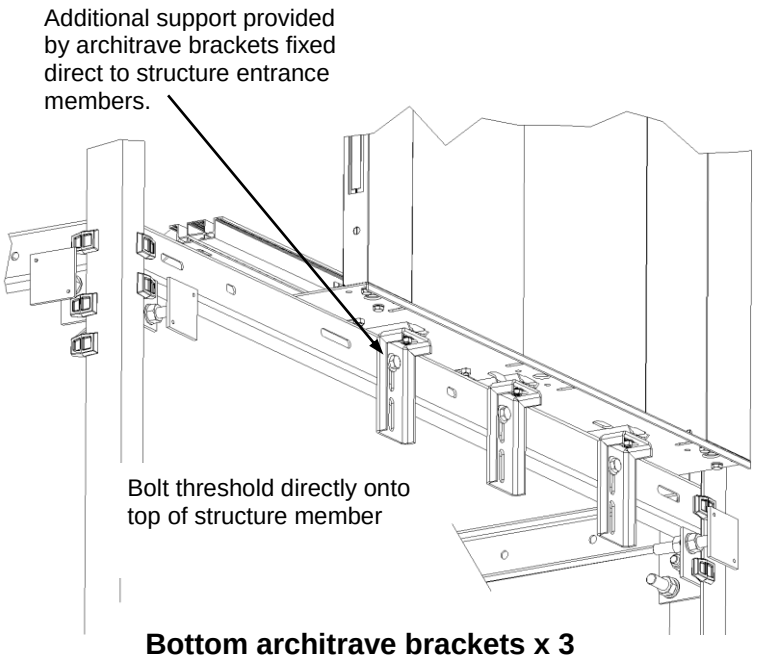
Method1: Masonry Construction - Fixing Direct to FX Steel Structure:



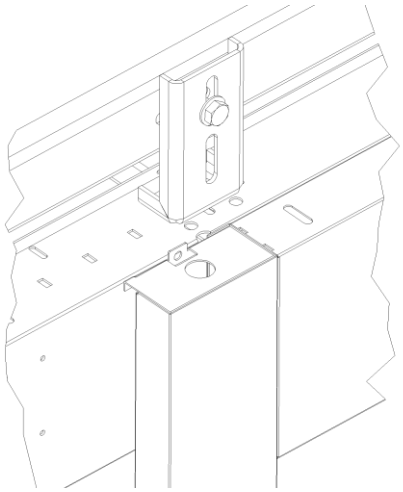
2 Panel Side Opening



2 Panel Centre Opening

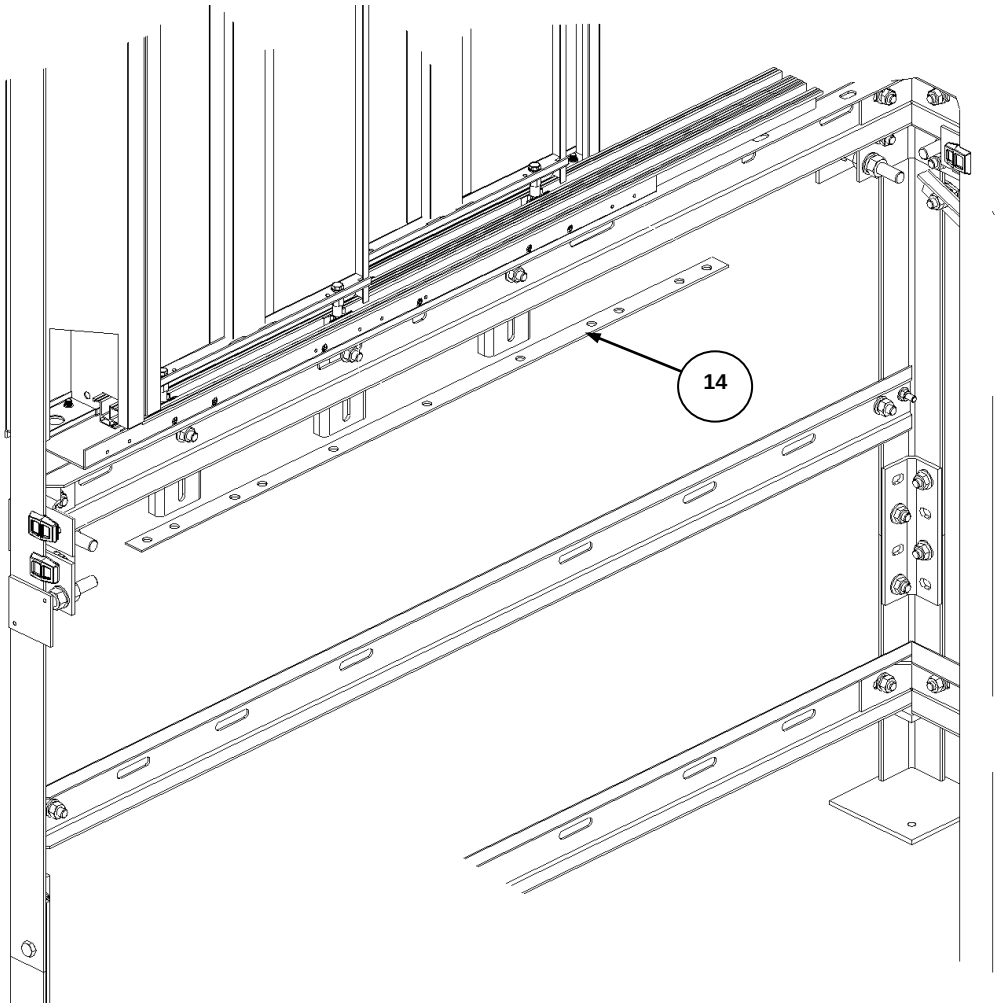


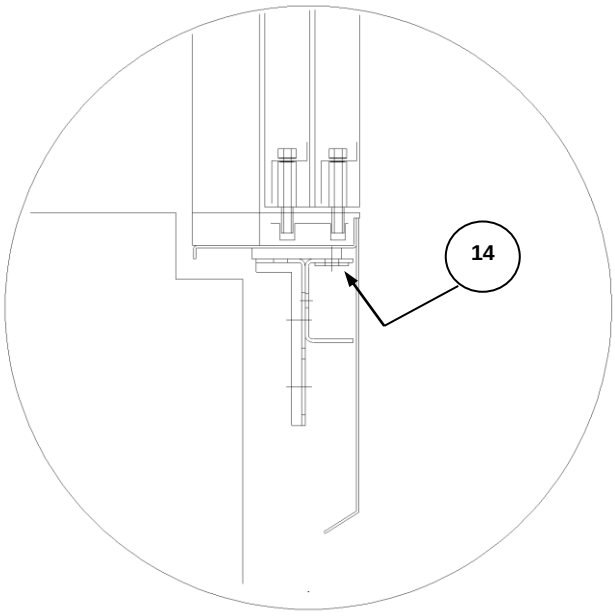
Bottom architrave brackets x 3



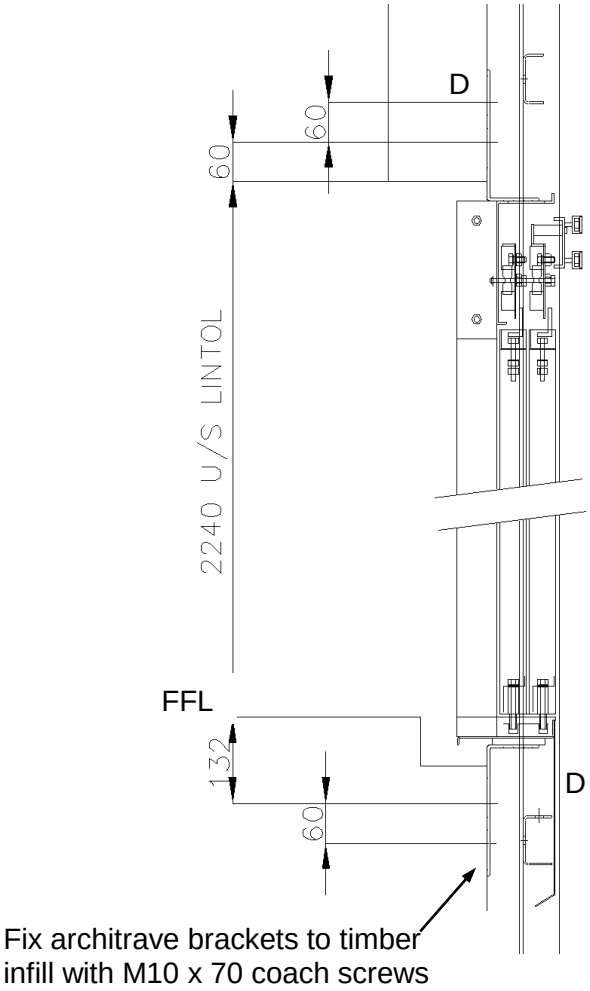
Top architrave brackets x 2

Where the architrave is mounted directly on the structure bottom support member a stiffening strip should be fixed in the position shown.

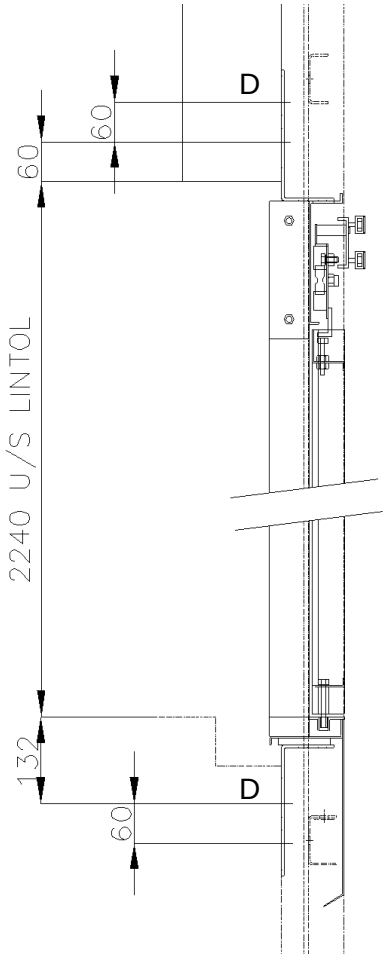




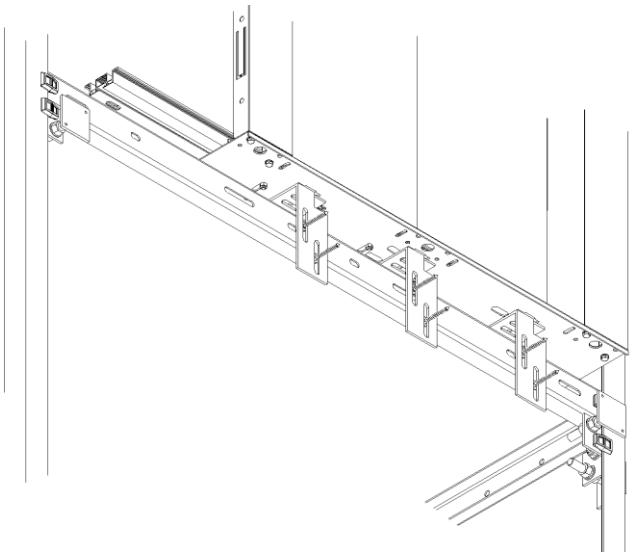
Method 2: Timber Frame Construction - Fixing to Timber Infill Members:



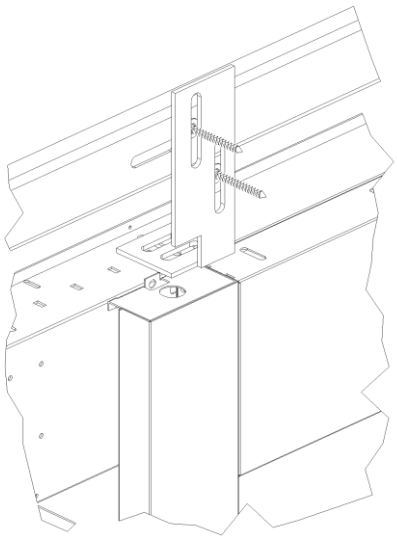
2 Panel Side Opening



2 Panel Centre Opening



Bottom architrave brackets x 3



Top architrave brackets x 2

6. Revision History:

6.1 DOCUMENT HISTORY			
Issue	**Changes**	**Name**	**Date**
1	Document introduced – Issue 1	PAJ	June 2013
2	Components added to accommodate retractable pit ladder	PAJ	Jan 2015
3	Amended to suit RPL pit ladder (to EN81-20). Document history added to manual.	PAJ	Jan 2018
4	Additional safety notes added to Section 5.3 for working platform – taken from TD3005 rev G. Includes max span of unsupported boards to be 1200mm and distance outside scaffold board end angles to be only 10mm less than inside dimension of the ring. This was raised on incident report IR30061.	PAJ	18/05/21