

GENERATION

Generation Uni Roof User Guide



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Introduction

The UNI Roof System is an all-aluminium modular temporary-roofing system which is the lightest solution currently on the market. The system offers its end user significant operational, time, and cost benefits, and its efficiency and flexibility allow for the work on any project and the effective support of any type of scaffold in a safe yet very cost effective manner. The system is available in a range of spans and bay sizes, in metric and non-metric variants, and utilises the DESSA Aluminium beams, which can be used in a variety of additional applications due to their universal nature. The system can also be constructed with other types of beams, such as 450mm alloy beams, which reduces the need for additional capital investment. In addition to the Aluminium beams the modular system utilises “push-fit” horizontal and Diagonal Braces, and brace frames for a rapid installation, with minimal need for tools. The Horizontal Braces and brace frames are fitted with DESSA’s unique sliding-button system which retains the Keder Sheet Tracking and allows for the installation of the PVC Sheeting. The unique design of the UNI Roof allows the user to install the roof Sheets from the eaves of the temporary roof, mitigating the need for operatives to climb over the roof during installation.

Due to its impressive flexibility, the UNI Roof can be installed on any existing scaffold or support structure; however, the scaffold must always be designed by a competent Design Engineer to ensure that the supporting structure is capable of withstanding the generated loads.



Important Note

This User Guide describes in detail how the UNI Roof System functions and how it offers bespoke solutions tailored to individual clients’ needs. Nevertheless, the UNI Roof System may be subject to country-specific regulations, and therefore must be designed by a competent Design Engineer.

Key Features

The DESSA UNI Roof...

- 1 Is compatible with all scaffolding types.
- 2 Has a small number of different parts.
- 3 Utilises multi-purpose beams which can be used in different applications. Beams come in a variety of lengths so different spans are easily accommodated.
- 4 Can be built using a range of beams from 0.45m to 1.3m in depth.
- 5 Can accommodate clear spans of up to 40m.
- 6 Can be configured as Mono-pitched, Duo-pitched, Vaulted or Multi-pitched roofs.
- 7 Utilises PVC Sheeting for a comprehensive weather-proofing for the end user.
- 8 Utilises Keder tracking, which allows the user to install Roof Sheets from the safety of the scaffold platform.
- 9 Utilises a unique Alloy Track Spigot which improves joint stability and secures Sheet Tracking firmly in place.
- 10 Allows for easily splitting or staggering bays.
- 11 18 Degree pitch means that water is dispersed efficiently from the roof surface. DESSA offer several different roof configurations, which are explored in this guide.
- 12 Allows for individual bays to be opened for the craning of materials.



Regulations

British/European Standards (Current Editions)

BS EN 12810-1. Facade Scaffolds made of prefabricated components.

BS EN 12811-1-3. Scaffolds - Performance requirements and general design.

BS EN 1991-1-3. Snow Loading.

BS EN 1991-1-4. Wind Loading.

BS EN 16508. Temporary works equipment, Encapsulation constructions—Performance requirements and general design.

Technical Guidance (Current Editions)

TG20. Guide to good practice for scaffolding with tubes & fittings.

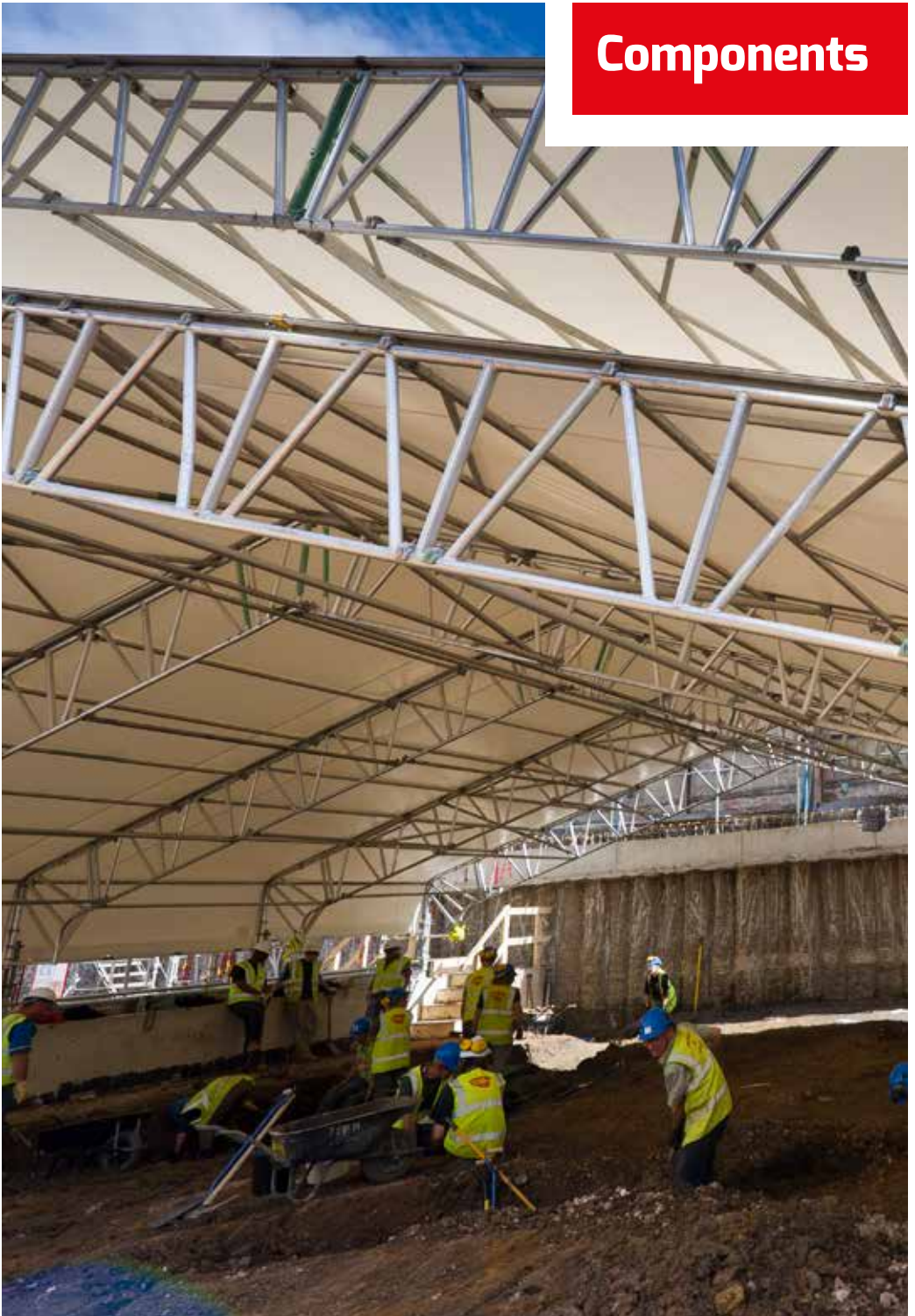
TG9. Guide to the design and construction of temporary roofs and buildings.

BS 5975. Code of practice for temporary works procedures and the permissible stress design of false work.

TG4. Anchorage Systems for Access Scaffolds.



Components



Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
1.	D78 Eaves Beam Beam designed to be positioned at the end of a roofing span, to provide a more aesthetically pleasing finish and enhanced weather proofing.	440111	9.20	0.96	0.78
2.	D78 Ridge Beam 18 Degrees Can be used singularly to form an 18 degree duo pitch roof or can be used in multiples to form perfect dome structures.	440001	7.45	1.28	0.93
3.	D78 Ridge Beam 36 Degrees Can be used to form 36 degree duo pitched roofs to cover tall buildings. Can also be used at the eaves to form building structures and shelters.	440112	12.00	1.69	1.17
4.	D78 Aluminium Beam 1m UNI Roof D78 1m beam section.	440005	6.34	1.00	0.78
5.	D78 Aluminium Beam 2m UNI Roof D78 2m beam section.	440006	11.63	2.00	0.78
6.	D78 Aluminium Beam 3m UNI Roof D78 3m beam section.	440007	16.92	3.00	0.78
7.	D78 Aluminium Beam 4m UNI Roof D78 4m beam section.	440008	22.21	4.00	0.78
8.	D78 Aluminium Beam 5m UNI Roof D78 5m beam section.	440009	27.50	5.00	0.78
9.	D78 Aluminium Beam 6m UNI Roof D78 6m Beam section.	440010	32079	6.00	0.78

Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
10.	Beam Spigot D78 4 Hole	440011	0.80	0.50	0.0381
11.	450mm Ridge Beam 18 Degrees Can be used singularly to form an 18 degree duo pitch roof or can be used in multiples to form perfect dome structures.	440003	6.40	1.28	0.62
12.	450mm Ridge Beam 36 Degrees Can be used to form 36 degree duo pitched roofs to cover tall buildings. Can also be used at the eaves to form building structures and shelters.	440002	9.90	1.69	0.91
13.	450mm Aluminium Beam 4.1m UNI Roof D45 4.1m beam section.	277499	18.30	4.10	0.45
14.	450mm Aluminium Beam 6.1m UNI Roof D45 6.1m beam section.	277490	28.60	6.10	0.45
15.	450mm Aluminium Beam 8.1m UNI Roof D45 8.1m beam section.	277500	36.24	8.10	0.45
16.	Beam Spigot 6HS Used to connect all 450mm beams together. Simply secured in place using quick release pins 277631.	277501	1049	0.50	0.0381

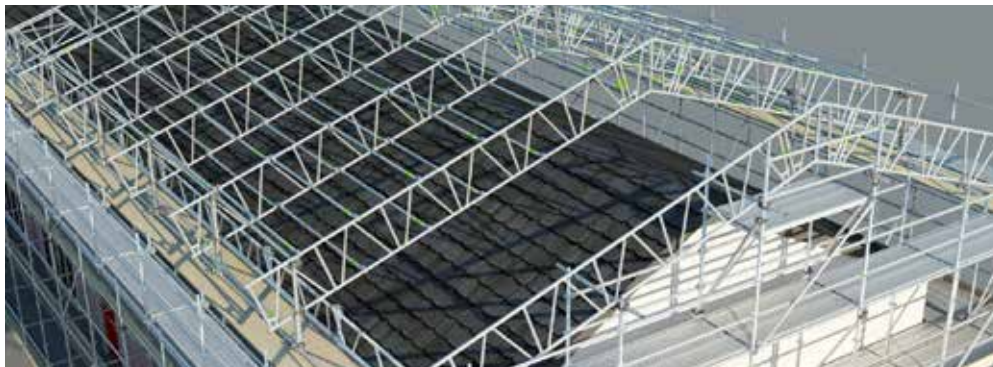
Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
17.	UNI Eaves Beam D78 Track section for eaves beam 440111, connected using 440016 spring pins. Profile allows for simple installation of Roof Sheets.	440114	4.53 15.0	1.02	0.84
18.	Sheet Pulling Bar Assembly, Nylon Wheels	440041	8.2	3.25	0.08
19.	UNI Ridge Track for D78 18° Track section for Ridge Beam	440033	2.41	1.31	0.22
20.	UNI Ridge Track for D78 36° Track section for the Ridge Beam.	440113	3.32	1075	0.52
21.	UNI Track Special aluminium Keder profile supplied in variable lengths.	440035 440036 440072	3.50 5.30 7.10	2.00 3.00 4.00	0.3 0.3 0.3
22.	UNI Track Compressor Installed at beam ends of each span and secured using 277631 spring pin. Maintains track compression of 100kg of force along the UNI track.	440042	1.09	0.32	0.23
23.	UNI Alloy Spigot including Gasket Ensures unrivalled joint stability between track lengths and provides an effective seal between adjacent track lengths.	440128	0.26	0.14	0.04

N ^o	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
24.	UNI Frame Fitted to the roof beam chords to provide plan stiffness and structural integrity, each corner is fitted with a special tracking button that is used to secure the Sheet Track in place. To be used at a minimum of one bay in every five.	440017	11.95	2.07	1.00
		440018	13.14	2.57	1.00
		440019	14.48	3.07	1.00
25.	UNI Horizontal Brace D78 Single Horizontal Brace used for top and bottom-chord lacing and connection of infill bays. Special button fitted to each end to enable Keder Sheet Tracking to be installed.	440020	3.22	2.07	0.10
		440021	3.73	2.57	0.10
		440022	4.24	3.07	0.10
26.	UNI Diagonal Brace D45 Connects to the top and bottom-chords of adjacent beam lines to ensure lateral stability. Used at a minimum of one bay in every five.	440023	3.85	2.07	0.73
		440024	4.36	2.57	0.73
		440025		3.07	0.73
27.	UNI Diagonal Brace Connects to the top and bottom chords of adjacent beam lines to ensure material stability. Used at a minimum of one bay in every five.	440026	3.35	2.07	0.40
		440027	3.85	2.57	0.40
		443098	4.37	3.07	0.40
28.	UNI Roller Brace Non-structural element used at changes in sheeting direction and ensures even tension is applied to the Sheets when tensioned. Connects into Track Compressor UA0005 or directly to eaves and ridge beams.	440029	8.80	2.07	0.13
		440030	11.40	2.57	0.13
		440031	13.60	3.07	0.13

Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
29.	Plas™ Sheet Flame retardant heavy duty 610gsm Sheets with 8mm Keder to suit installation into UNI tracks ensuring complete weather protection.	440047	12.60	10.00	2.07
		440048	18.90	15.00	2.07
		440049	25.30	20.00	2.07
		440050	31.60	25.00	2.07
		440051	37.90	30.00	2.07
		440052	44.20	35.00	2.07
		440053	50.50	40.00	2.07
30.	Plas™ Sheet Flame retardant heavy duty 610gsm Sheets with 8mm Keder to suit installation into UNI tracks ensuring complete weather protection.	440054	56.80	45.00	2.07
		440055	15.70	10.00	2.57
		440056	23.50	15.00	2.57
		440057	31.40	20.00	2.57
		440058	39.20	25.00	2.57
		440059	47.00	30.00	2.57
		440060	54.90	35.00	2.57
31.	Plas™ Sheet Flame retardant heavy duty 610gsm Sheets with 8mm Keder to suit installation into UNI tracks ensuring complete weather protection.	440061	62.70	40.00	2.57
		440062	70.50	45.00	2.57
		440063	18.70	10.00	3.07
		440064	28.10	15.00	3.07
		440065	37.50	20.00	3.07
		440066	46.80	25.00	3.07
		440067	56.20	30.00	3.07
32.	Flex™ Sheet Lightweight 360gsm Sheets with 8mm Keder to enable installation to UNI tracks and complete weather protection.	440068	65.50	35.00	3.07
		440069	74.90	40.00	3.07
		440070	84.30	45.00	3.07
		440150	13.89	15.00	2.57
		440151	18.52	20.00	2.57
33.	Flex™ Sheet Lightweight 360gsm Sheets with 8mm Keder to enable installation of UNI tracks and complete weather protection.	440152	23.15	25.00	2.57
		440152	27.78	30.00	2.57
		440154	16.59	15.00	3.07
		440155	22.12	20.00	3.07
34.	Sheet Pulling Wheel	440156	27.65	25.00	3.07
		440157	33.18	30.00	3.07
		440110	1.51	0.26	0.08

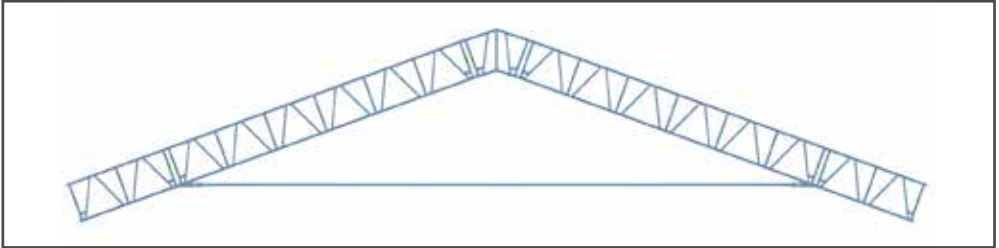
N ^o	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
35.	Gable Sheet 610gsm Optional gable Sheet used to close each gable end and for improved weather protection. Can be ordered with lugs and eyes or perimeter Keder track.	Sundry	0.61	1.00	1.00
36.	Additional Sheet Pocket One or several additional pockets can be added to provide flexibility and utilisation of Roof Sheets, additional Sheet Pockets enable Sheets to be used on several different spans and ensure tensioning positions are always correct.	Sundry	0.44	DOA	0.21
37.	UNI Sheet Tensioning Bar Special length tubes to be used in the ends of each Roof Sheet to enable installation and tensioning. 2 x 440110.	440038 440039 440040	8.48 10.66 12.85	2.07 2.57 3.07	0.0483
38.	Ratchet Straps 460kg SWL Enables Sheets to be tensioned and to be connected to the scaffold structure.	440045	0.48	2.00	0.035
39.	Ratchet Straps 1000kg SWL To provide additional tension over large span roofs, recommended for all spans above 30m.	440046	0.52	2.00	0.050
40.	Trax Tube Holder Enables standard scaffold tube to be used on timber boards or steel decks to form an effective track for rolling of scaffold structures, using Castor.	440120	1.30	0.18	0.16

Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
41.	Trax UB Beam with integrated tubing element, positioned on ledgers/transoms and secured using 440104 boltless girder clamp. Maintains anti uplift at all times.	440101	40.00	2.00	0.20
		440102	60.00	3.00	0.20
		440103	80.00	4.00	0.20
42.	Trax UB End Closer Effective stop end for Trax UB, safety device to ensure rolling structures remain captive on the Trax UB span.	440099	2.60	0.09	0.25
43.	Trax UB Joining Plate To join adjacent lengths of Trax UB, secured using M16x40 bolts AF0003.	440100	2.60	0.09	0.005
44.	Boltless Girder Clamp Connects with existing tubular ledgers/transoms to secure Trax UB in place.	440104	1.10	0.083	0.097
45.	Castor & Top Plate, Scaffold Tube To allow standard scaffold tube connections.	440129	3.40	0.17	0.26
46.	Castor & Top Plate 18° Provides an 18 degree connection to the roof structure.	440108	5.20	0.17	0.17



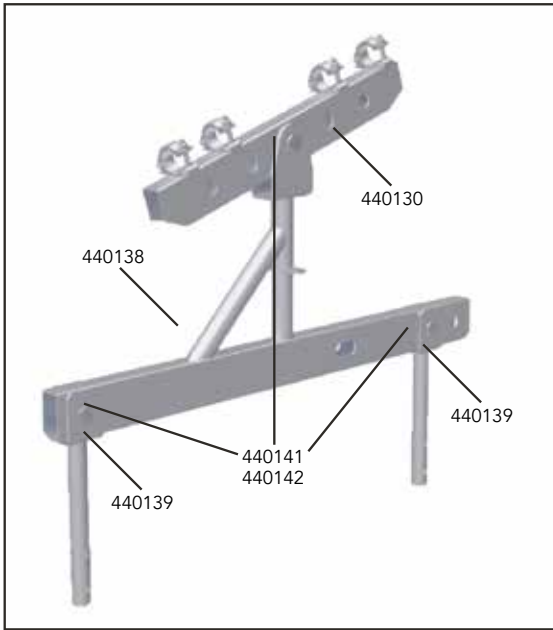
Tubular Tension Bar

Unique, simple and effective modular tension bar system using 48.3mm diameter steel tube. The tension bar system increases capacity and assists in alleviating the effect of snow or high vertical loads. Due to the tubular nature of the tension bar it can be effectively braced using standard UNI Roof braces or tubes and couplers. Once braced, the tension bar system can provide compressive resistance.



Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
47.	Tension bar connection plate 18° Connection plates used in pairs ensures that loads introduced from the tension bar are introduced at precisely the correct location at the beam joints.	440135	1.79	0.59	0.15
48.	End Piece 18 Degrees D78 End connector for the tubular tension bar. Connects to the 440135 connection plate.	440136	11.38	2.99	0.08
49.	End Piece 18° End connector for the tubular tension bar. Connects to the 440135 connection plate.	440137	5.04	1.19	0.08
50.	Tubular Tension Bar Tension bar in three lengths enable all spans to be achieved, connected using 277301 Spigots and quick release pins 277631.	440132 440153 440154	7.11 10.66 21.32	1.90 2.85 5.71	0.05

Beam Support



DESSA's unique pivoting beam support enables connection of scaffold or roof structure to modular scaffolding and ensures all loads are introduced at the standards. High capacity hinge mechanism ensures no moments are transferred to the supporting structures.

Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
51.	Beam Support Body Suits multiple scaffold widths and secured in place using locking pin AF0004.	440138	17.20	1.21	0.55
52.	U-Head for OE Standard Installed to open ended standards of system scaffold, secured in place using quick release pins.	440139	2.10	0.43	0.08
53.	Beam Connector 0.7m c/w four half couplers Enables connection of scaffold or roof structure to beam support body TA0001.	440130	7.30	0.72	0.09

Accessories

DESSA supply a selection of accessories and fixings to enable functional possibilities with standard material and to ensure structural integrity.







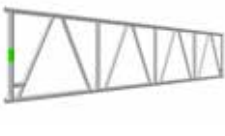
Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
54.	Intermediate Roller Brace Coupler Connects to roofing beams mid lengths to provide additional connection points for Roller Braces. Allows for staggered and split bay roof configurations or non-standard beam lengths.	440043	1.45	0.14	0.11
55.	UNI Track Coupler Short Allows connection of UNI track to 48.3mm diameter scaffold tube for sidewalls or roof extensions.	440044	0.65	0.038	0.116
56.	Sheet Pulling Bar Assembly, Nylon Wheels To be situated through the steel tension bar prior to positioning. Nylon wheels to be located over the UNI Track to enable ease of Sheet installation within each bay of the roof.	440041	8.20	3.25	0.08 (Wheel)

















Fixings






















Nº	DESCRIPTION	PART NUMBER	WEIGHT (KG)	DIM 1 (M)	DIM 2 (M)
57.	Spring Pin M12 x 60 for round tube A direct replacement for a nut and bolt, enables rapid assembly of beam spans.	277631	0.07	0.066	0.012
58.	Spring Pin M12 x 70 for UNI Track To connect ridge and eaves Sheet tracks to ridge and eaves beams.	440016	0.10	0.082	0.012
59.	Hex Bolt BZP G8.8 Steel M16 x 40 Used to connect Trax UB sections together, used in conjunction with joining plate BR0012.	440105	0.09	0.0577	0.016
60.	Locking Pin 30mm High capacity connecting pin used to connect tension bars and support components.	440141	0.55	0.0975	0.030
61.	R Clip 30mm Used in conjunction with AF0004.	440142	0.02	0.169	0.004
62.	Hex Bolt BZP G8.8 Steel M12 x 90 High capacity bolt used to connect roof tension bar endplates 440135 to beam joints.	440140	0.09	0.1077	0.012
63.	Hex Bolt BZP G8.8 Steel M12x60 For connection of 277501 spigots to beams.	440013	0.06	0.0777	0.012


Images








Nº	IMAGE
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Nº	IMAGE
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Nº	IMAGE
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19.	
20.	
21.	

Nº.	IMAGE	Nº.	IMAGE	Nº.	IMAGE
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23.		30.		37.	
24.		31.		38.	
25.		32.		39.	
26.		33.		40.	
27.		34.		41.	
28.		35.		42.	

Nº	IMAGE
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59.	
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63.	

Safety Considerations



Handling of components

Materials

Scaffold Interface

Supporting Structure

Ground Conditions

Overhead Electricity

Adverse Weather

Method Statements & Risk Assessments



Safety Considerations

Handling of components

The Management of Health and Safety at Work Regulations 1999 require employers to make a “suitable and sufficient assessment” of the risks to the health and safety of their employees whilst at work. As such, the Manual Handling Operations Regulations 1992 must be adhered to. In addition to the above the Construction (Design and Management) Regulations 2015 (CDM) make specific reference to manual handling as a consideration in the design process by Architects, Design Engineers, and Employers, to name but a few.

In light of the above DESSA have taken pro-active measures to ensure that our UNI Roof components are made from the lightest materials without compromising structural stability.

The individual product weights listed above demonstrate DESSA’s commitment to ensuring no single product presents significant manual handling issues.

Materials

All UNI Roof components have been extensively tested and modelled in all but the most exceptional weather / environmental conditions. Where experience indicates that there is an additional risk for the structure a qualified Design Engineer will provide a solution.

For instance, in extremely exposed areas a high saline or chemical content might be in the atmosphere—if unchecked this could create a local environment for corrosion, especially when steel fittings are used. If there is any doubt about the environment DESSA will happily advise accordingly.

Scaffold Interface

It is essential that all UNI Roof Structures are interfaced effectively and efficiently with the supporting structure. DESSA recommend several ways to achieve this:

- 1 UNI Roof attached directly to an trimmer beam.



- 2 UNI Roof attached to the Trax Universal Beam System for rolling roofs.



- 3** UNI Roof attached to a beam support which is inserted into the top of the inside and outside standards – system scaffolding only.



Supporting Structure

It is essential that all UNI Roof Structures are supported on a solid structure, whether this be an Access Scaffold, or directly on the ground; the UNI Roof will only be as stable as the structure it is supported from. In all instances a Design Engineer must be consulted who will calculate the loads the supporting structure will need to withstand.



Ground Conditions

In addition to the Scaffold Interface, the ground conditions under a supporting structure are critical in ensuring its overall stability and its subsequent ability to support the UNI Roof and the loads generated from such.



Overhead Electricity

Extreme caution should be taken when installing the UNI Roof system near overhead power lines. The method statement and risk assessment accompanying the design documents will cover this aspect of the installation.

Adverse Weather

Care must be taken in extreme weather conditions to ensure the safety of all operatives. In high-wind conditions it is not advisable to install the Roof Sheeting, as this is likely to act as a sail and be ripped from the operatives grip.

Similarly, during, and after, heavy snow falls it may be necessary to remove large deposits of snow. This will be detailed in the design supplied by the competent Design Engineer.

Method Statements & Risk Assessments

Method statements and risk assessments must be produced by a competent person detailing the method of installation and the risks associated with such.

In all instances the scaffold must be designed by a competent Design Engineer to ensure that the supporting structure is capable of withstanding the generated loads.

Installation

Planning

By Hand

Roll-Out Method Using
Trax Tube Holder

Roll-Out Method Using
Trax Universal Beam

Crane-Assisted Method







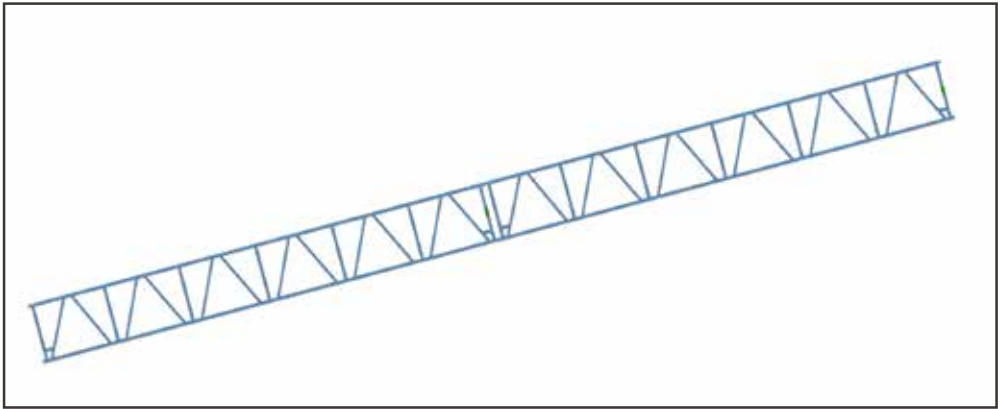
Planning

Choosing the Span Type

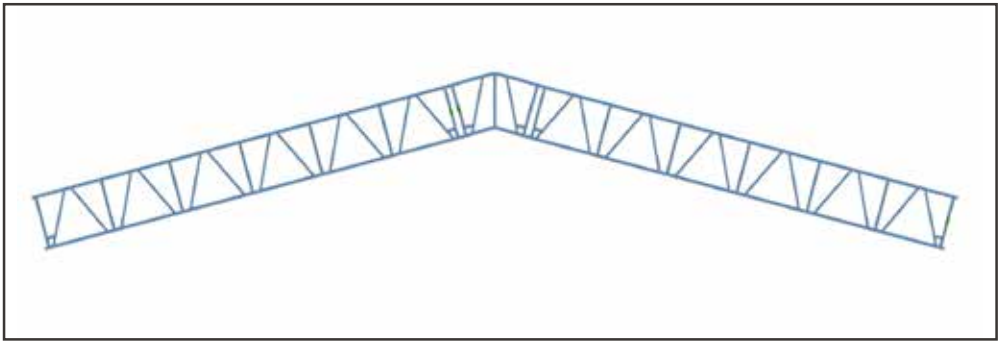
The UNI Roof can be configured as symmetric or asymmetric Mono-pitch, Duo-pitch, Vaulted or Multi-pitch Roof. Each of these variations can be achieved using all DESSA Aluminium Beams.

The images and table below offer an indicative oversight of the types of spans achievable.

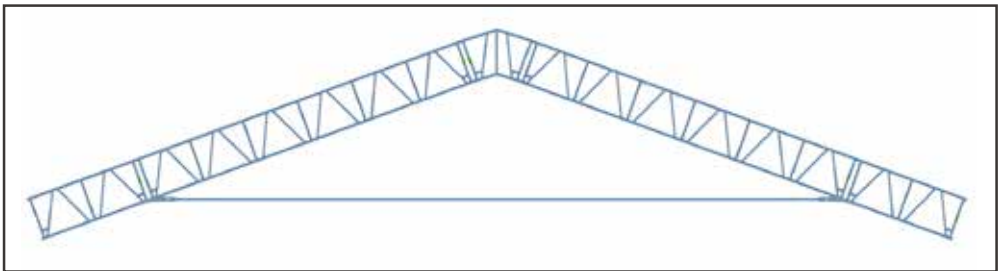
TYPICAL MAXIMUM SPANS USING 2.57M BAYS		
WIND LOAD 50 DAPA, SNOW LOAD 50 DAPA		
ROOF TYPE	VISUAL	D78 ALUMINIUM BEAM MAX. SPAN (M)
1.		15
2.		32
3.		33
4.		30
5.		26
6.		22
7.		30



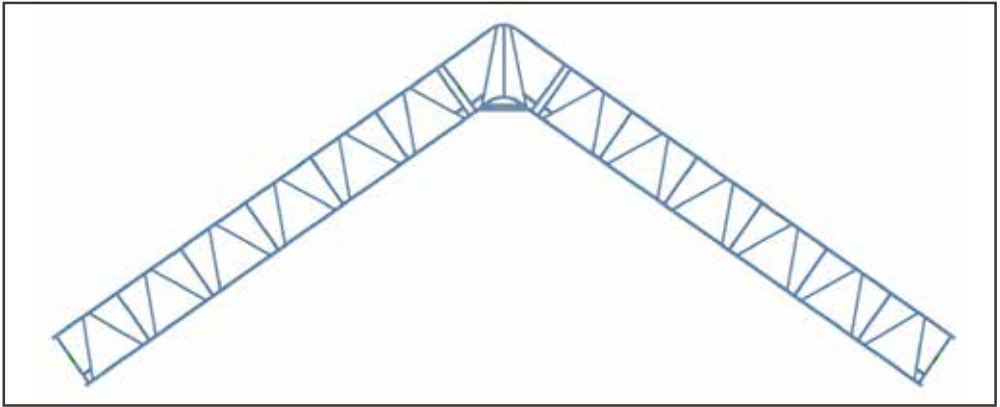
1 15 degree Mono-pitch Roof simply supported at both ends.



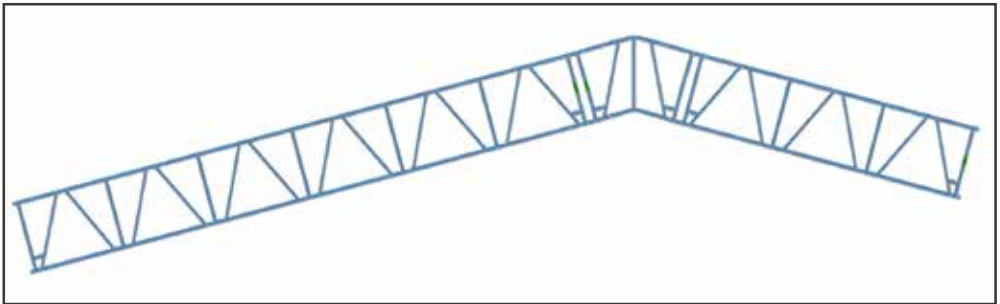
2 18 degree symmetric Duo-pitch Roof simply supported at each end.



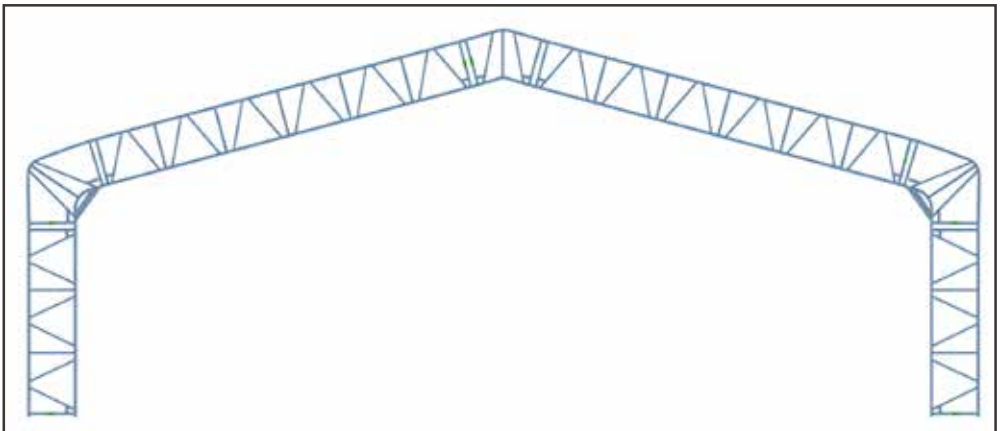
3 18 degree symmetric Duo-pitch Roof with tie bar, simply supported at each end.



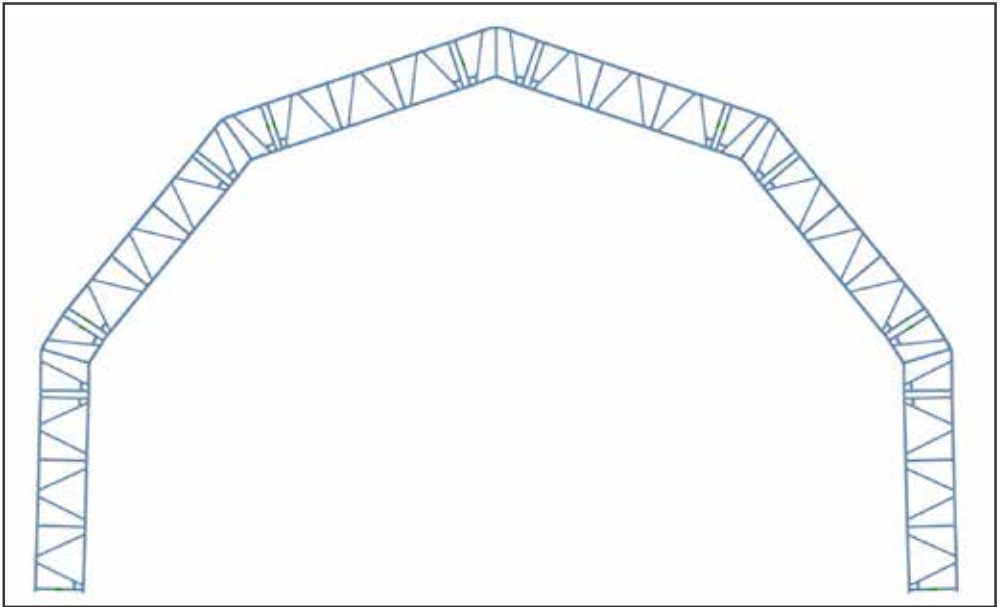
4 36 degree symmetric Duo-pitch Roof simply supported at each end.



5 18 degree Asymmetric Span simply supported at each end.



6 18 degree Portal Frame with vertical support beams. Support beams to be anchored/secured to the ground.



- 7** Domed Roof, formed using 5 x 18 degree Ridge Beams and roof beams of equal length, with vertical support beams. Support beams to be anchored/secured to the ground.



Installation Method: By Hand

Building the UNI Roof by hand is sometimes the only option available to clients. This could be due to several factors, which include: restricted access for crane installation; inability of installing a Trax UB Running Beam; or this is the preferred method adopted by the client, to name but a few. You must always start and finish with a Braced Bay; every fifth intermediate bay is then braced.

A Braced Bay consists of UNI Frames at 2m c/c, UNI Diagonals at 2mc/c and UNI Braces at 2mc/c on the bottom-chord.

Advantages

No need for additional "special" components.

Means that the UNI Roof can be built anywhere.

Lower cost of installation due to absence of crane.

Ideal for smaller temporary-roof applications.

Less frame and brace equipment as every fifth bay needs to be braced. Crane-built roofs are braced and framed at alternate bays.

Disadvantages

Installation is often slower than that with a crane.

More "labour intensive".

Requires operatives to work at height.



Installation Method: Roll-Out Method Using Trax Tube Holder

Rolling-Out the UNI Roof, either in bays or as a complete structure, using the Trax Tube Holder provides the scaffolders with a simple solution to moving complete bays with little effort. Once the bays are in position they are secured down to the supporting structure.

Advantages

Provides a simple and cost-effective way of moving UNI Roof Bays along a supporting structure.

Eliminates working at height.

Means that the UNI Roof can be built anywhere.

Lower cost of installation due to absence of crane.

Ideal for smaller temporary-roof applications.

Less frame and brace equipment as every fifth bay needs to be braced. Crane-built roofs are braced and framed at alternate bays.

Disadvantages

No integrated anti-uplift.

More "labour intensive".

Reliant on having a boarded platform to secure the Trax Tube Holder to it.



Installation Method: Roll-Out Method Using Trax Universal Beam

Rolling-Out the UNI Roof, either in bays or as a complete structure, using the Trax Universal Beam provides the end user with a simple solution in moving complete roof structures with little effort. Once the bays are in position they are secured down to the Universal Beam using the Anti-Uplift Castor.

Advantages

Eliminates working at height.

Provides a simple way of moving the UNI Roof as a complete structure to allow access to the structure below.

Means that the UNI Roof can be built anywhere.

Lower cost of installation due to absence of a crane.

Ideal for applications where there is a need to lower or raise materials into, or out of, the covered structure.

Less frame and brace equipment as every fifth bay needs to be braced. Crane-built roofs are braced and framed at alternate bays.

Disadvantages

More "labour intensive".

Heavy components.

Running equipment can be costly.



Installation Method: Crane-Assisted Method

Installing the UNI Roof with a crane is the quickest method. Bays are built in a designated area near the supporting structure and are then lifted into place. The additional equipment can be loaded onto the built bays so that very little material has to be raised by hand.

Advantages

Allow for rapid installation of UNI Roof Bays.

Reduces labour costs to install roof.

Ideal for applications where there are large spans to manoeuvre in place.

Disadvantages

Crane hire increases the installation cost.

Need more Braced and Famed Bays as these are the ones to be lifted – one in two bays is braced.

Not always possible to get a crane in the desired location due to site restrictions.

Requires operatives to work at height.





Basic Assembly Procedures

Tools Required

Connecting Beams

Attaching Braces

Installing Sheet
Tracking

Installing Track
Compressors

Installing Roller Braces

Installing Roof Sheets

Bracing Patterns

Quick-Start Guide

Tools Required

The Unique Selling Point of the UNI Roof is that you require few tools to install it. Through many years of experience we have found that the following tools are very useful, and make the installation much smoother:

- 1 A 19mm Flat spanner for securing track spigots and connecting bolts
- 2 A scaffold spanner, or hammer/podger, with a spike at one end. This is particularly useful when lining-up spigots with corresponding beam holes and the installation of the spring clips, or bolts.

It is important to remember that all components have been designed and manufactured to fit in the locations highlighted in this user guide. If, for whatever reason, a component does not fit then there are two probable causes:

- 1 The component is the wrong size in comparison to other components – for instance you may be trying to install a D 0.45m x 2.57m Brace in a D 0.78m x 2.57m Braced Bay. These items are very similar in size so on occasion they do get mixed up. All items are clearly labelled so this should be the first thing to check.
- 2 The component is not true or level. If this is the case, then agitating the component slightly will show you where the true location should be.

Under no circumstance should the components be struck with a hammer. The items will damage as they are made of aluminium.



Connecting Beams

All beams should be connected together using DESSA beam spigots and either DESSA quick release pins.

NOTE – Minimum of 6 pins quick release for each joint.

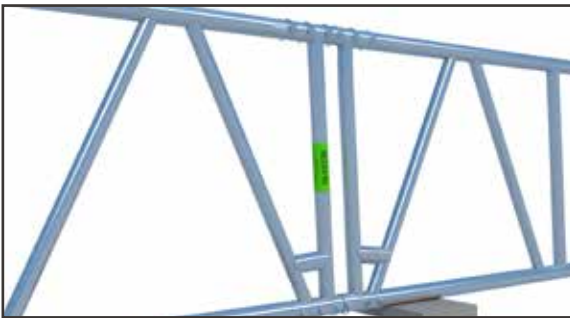


Exploded view of connection

Connect beams together using 2 spigots

277501 and either:

6x quick release pins 277631



Completed connection

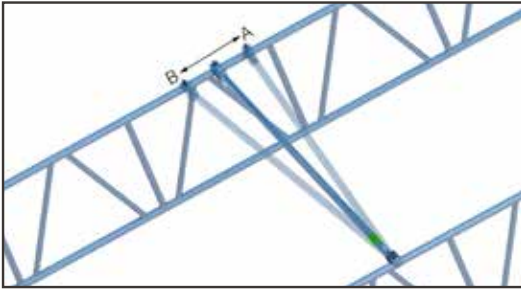
NOTE - it is good practice to orientate the beams so that the end diagonals are angled towards each other.



Attaching Braces: General

All braces are connected by push fit. Ensure that the braces are held at ninety degrees to the beam line prior to installation. To find the ninety degree position connect the brace on one side only, hold the loose end and move up slope until the engaged claw bites — shown as position A in the diagram below — then move downslope until the engaged claw bites — shown as position B in the diagram below. Half-way between these two bite points will be the ninety degree position.

NOTE – If the claw has to be forced onto the beam chord then it is not square. Release and find the correct position.



Horizontal brace installation

Half way between position A and B is the ninety degree position. Locate the brace at this point.

Braces should be installed to the beam chords with the button nuts facing upwards to receive the sheet tracking.



Where braces are required to link pre sheeted bays these can be fitted to the underside of the top chord with the button nuts facing downwards.

At the top chord position K-frames and horizontal braces should be installed between the diagonals as shown. Elsewhere braces should be installed close to and upslope of a diagonal or post connection.

Following installation ensure that the steel securing pin is fully extended so that the ring pull is in contact with the claw as shown below. A tap on the pin head/ring pull may be necessary to ensure the ring pull sits down as shown.



Failure of this pin to engage is a clear indication that the brace is not square to the beam and should be realigned. It is not necessary



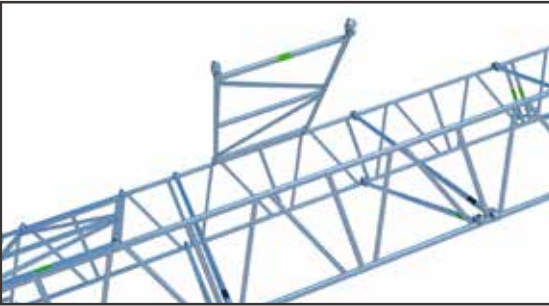
to use a hammer to fit braces if aligned correctly they will click into position with ease.

View of installed horizontal brace and diagonal brace

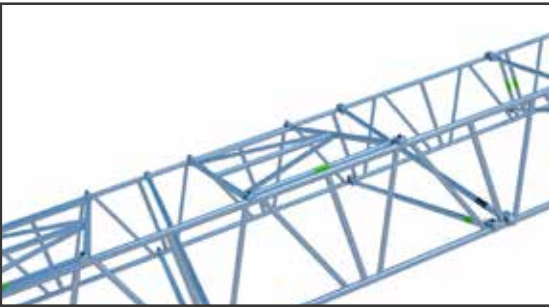
NOTE – The ring pull will be touching the brace head at the point where it passes through the latch pin when installed correctly.

Attaching Braces: Brace Frames

All brace frames are connected by push fit. Sit the brace frames on the top chord of the truss between the diagonal braces — see image:



Ensure the bottom claws are engaged fully onto the top chord and in one movement lower the brace frame and connect it to the second truss until the remaining two claws engage — see image:



The brace frame must be located so that the claws sit between the diagonals of the truss. This prevents any movement.

BRACE FRAMES MAY NEED TO BE AGITATED SLIGHTLY TO ENSURE THAT THE CLAW PINS ARE ENGAGED FULLY

View of installed brace frame

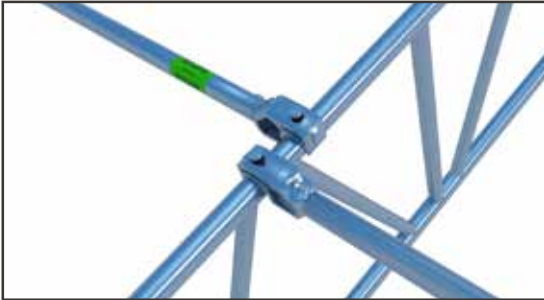


NOTE – The ring pull will be touching the brace head at the point where it passes through the latch pin when installed correctly.

Attaching Braces: Horizontal Braces

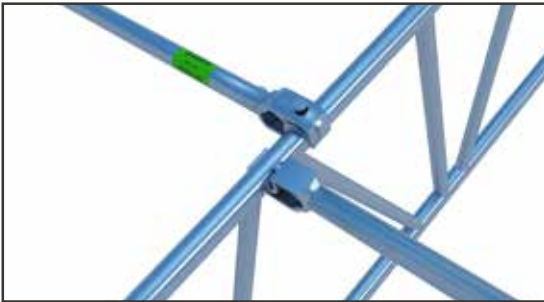
Horizontal braces are used to link together adjacent beams structurally. Additionally they can also be used to secure Keder track sheeting profiles to the beams.

Varying installation methods are acceptable as shown below, with each method offering additional features as described.



Method A

Additional restraint capacity of the sheet tracking if required and the design specifies as such.

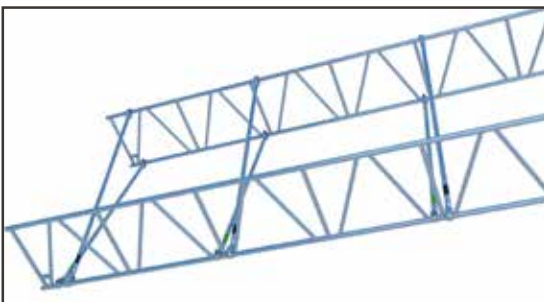


Method B

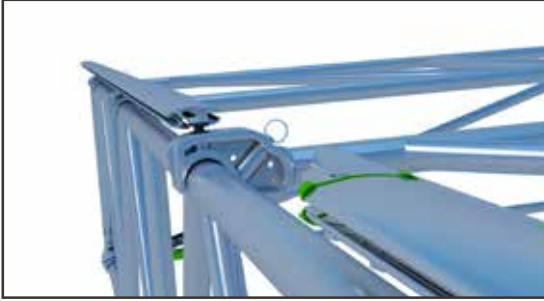
If an intermediate bay needs to be removed to allow materials to be lowered / lifted.

Attaching Braces: Diagonal Braces

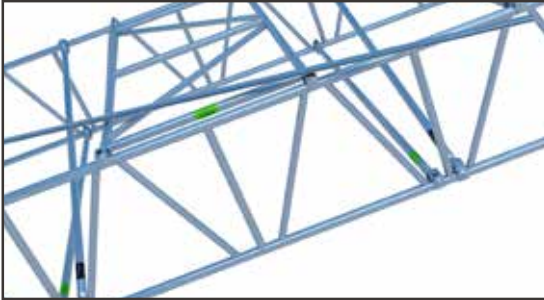
Diagonal braces should be installed as close as possible to each brace frame. Diagonal bracing is installed at two metre centres from the bottom chord of one truss to the top chord of the other:



Installing Sheet Tracking



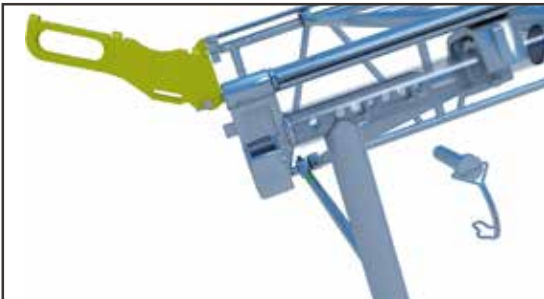
Sheet tracks can be installed from the eaves upwards or from the ridge downwards. Tracking is installed by sliding the recess on the bottom of the track over a button nut on top of a horizontal brace.



The UA0021 alloy track spigot with rubber gasket must be placed between lengths of tracking, to ensure a secure connection.

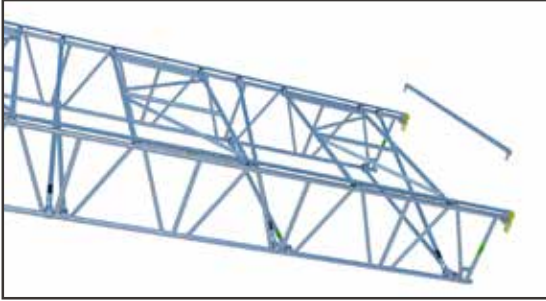
Installing Track Compressors

The track compressor is installed after the installation of the sheet tracking. The compressor is inserted into the end of the beam line, with the handle pulled up. The compressor is then fixed in place using one AF0001 spring pin. Once engaged, the handle of the track compressor is pushed into its downwards position to ensure the track remains in its compressed position whilst in use.



Once this process has been conducted, ensure that all alloy track spigots bolts are tightened.

Installing Roller Braces



The roller brace is inserted into the housing points located on the track compressor and also on all ridge or eaves beams. Pull the spring loaded lug to one end and insert.

Installing Roof Sheets



The weather conditions will determine whether it is safe to commence with the installation of roof sheets. This is due to the sheets being vulnerable to high winds.

Ideally the installation of roof sheeting will be carried out by four

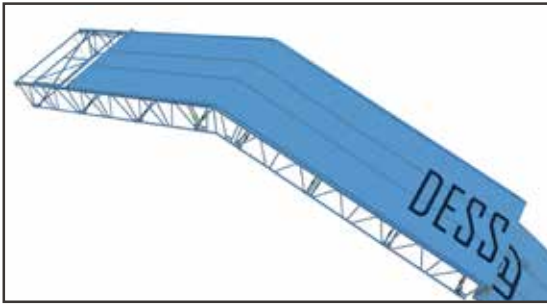
operatives, two positioned at each side of the bay span. Safe working platforms must be built-in to the support scaffold for these operatives.

Prior to the installation process, ensure that all sheets are leaf folded, clean, and fit for use. Ensure the Keder bead along the length of the sheet is undamaged. If the sheet is deemed unfit for use, it should not be installed.

Insert the tension bar into the pocket of the leading edge of the sheet. Ropes ends are then to be passed through and the sheet cut outs and secured to the tension bar. The ropes are to be of sufficient length to extend from roof beam end to opposite beam end plus a minimum of 4m. (i.e. for 15.0m of roof truss, rope lengths should be 19.0m)

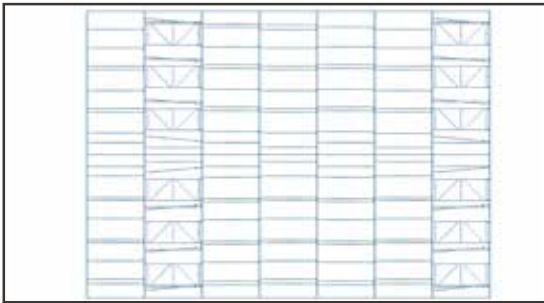
The sheet pulling bar should then be inserted through the sheet tensioning bar. This is conducted by removing one of the nylon wheels, sliding the bar through, and re-placing the wheel at the appropriate bay depth indicator along the bar. Both wheels should be positioned over the sheet tracking at each side of the bay depth.

The Keder bead of the sheet should then be inserted approximately 500mm into the sheet track to ensure correct alignment.



Once the Keder bead is aligned and the sheet pulling bar wheels are in their designated positions, the sheet can be pulled along the sheet track, using the two ropes. This process is to be conducted gradually and evenly.

Once fully fitted, a second sheet tensioning tube will need to be fitted into the pocket of the sheet's trailing edge. With these in place, the sheet can then be tensioned to scaffold ledgers either side of the roof span, using 4 x no. ratchet straps.



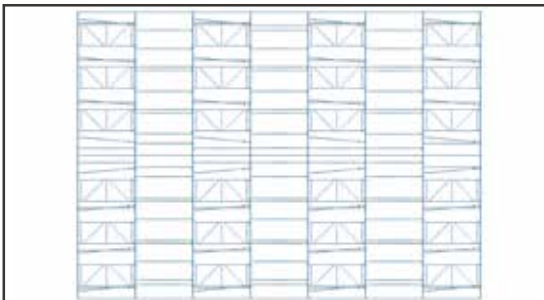
Bracing Patterns

A Braced Bay consists of UNI Frames at 2m c/c, UNI Diagonals at 2mc/c and UNI Braces at 2mc/c on the bottom-chord.

The Bracing Pattern used will depend on the build method chosen for the erection of the Braced Bays.

Bracing Patterns: By Hand

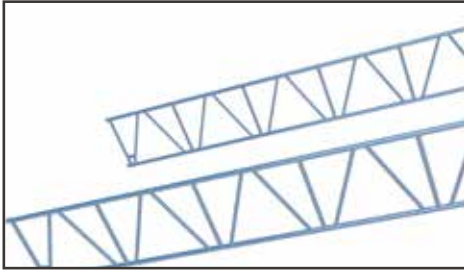
With this Bracing Patter you must always start and finish with a Braced Bay and every fifth intermediate bay is then braced.



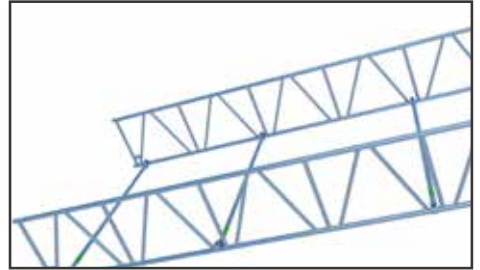
Bracing Patterns: By Crane

With this Bracing Patter you must always start and finish with a Braced Bay and every fifth intermediate bay is then braced.

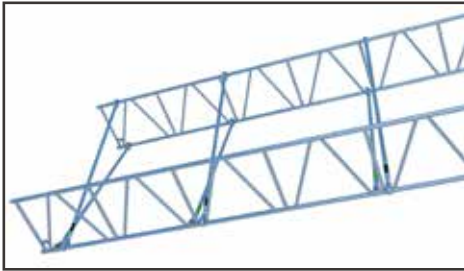
Quick Start Guide



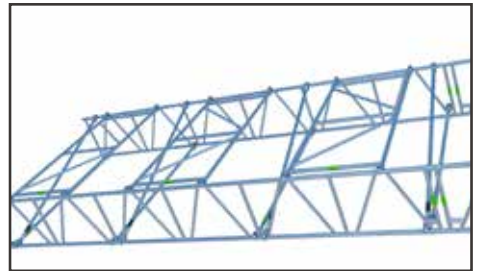
1 Locate Trusses



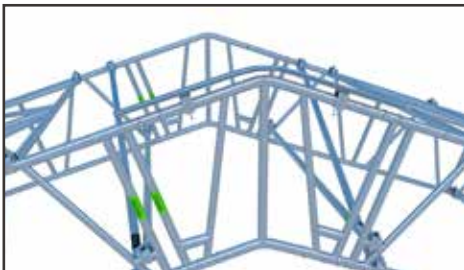
2 Install Horizontal Braces



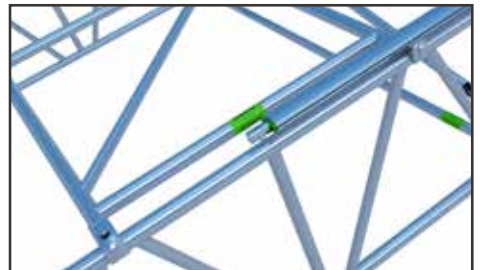
3 Install Diagonal Braces



4 Install UNI Frame



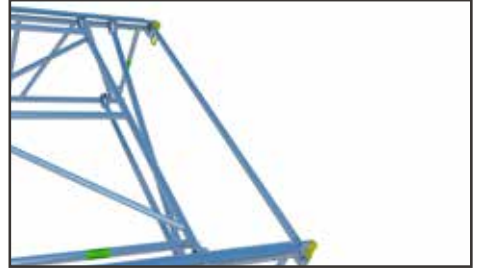
5 Install Ridge Tracks



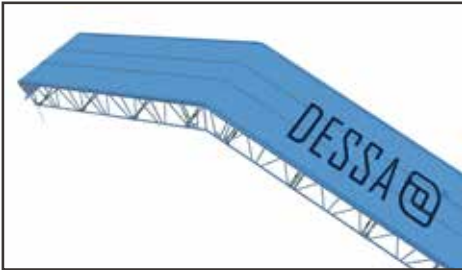
6 Install UNI Tracks



7 Install Track Compressors



8 Install Roller Braces



9 Install Roof Sheets

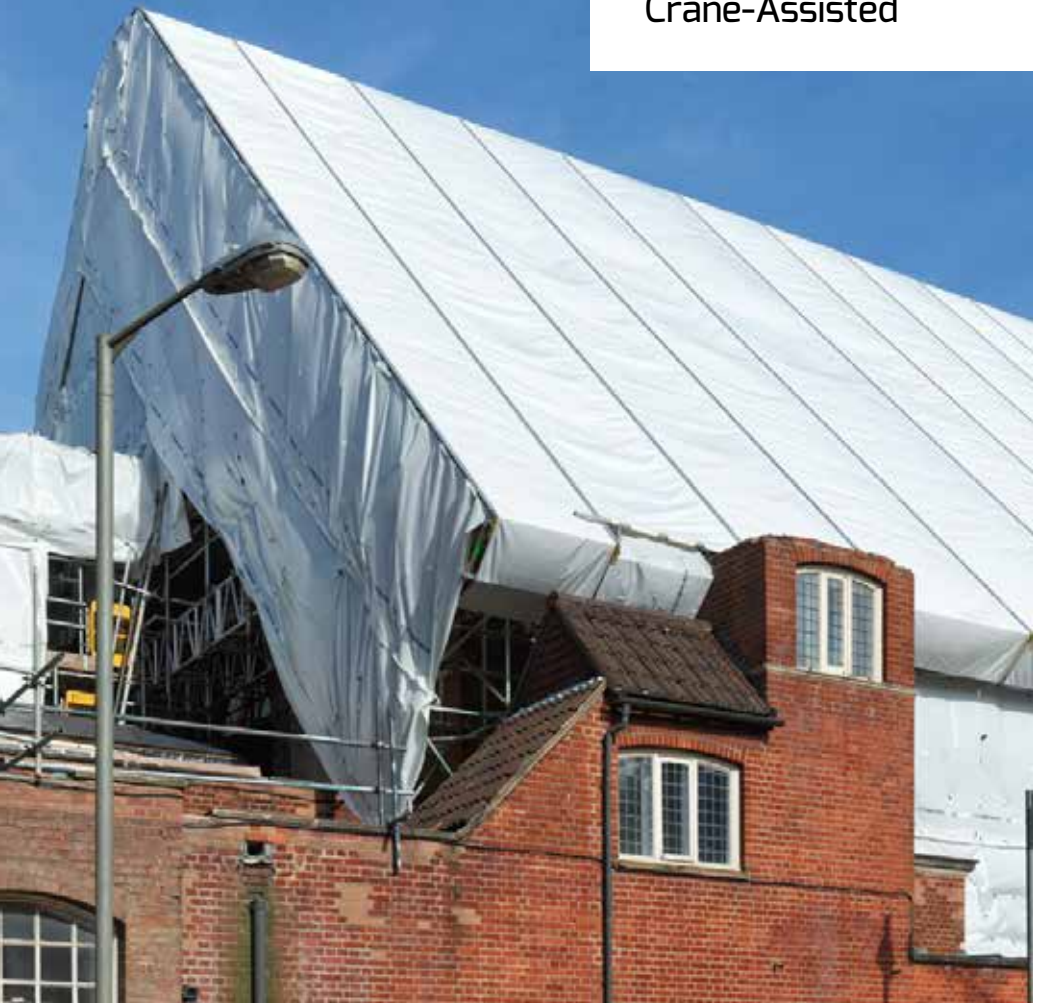
Roof Installation

By-Hand

Roll-Out Method Using
Trax Tube Holder

Roll-Out Method Using
Trax Universal Beam

Crane-Assisted



Roof Installation

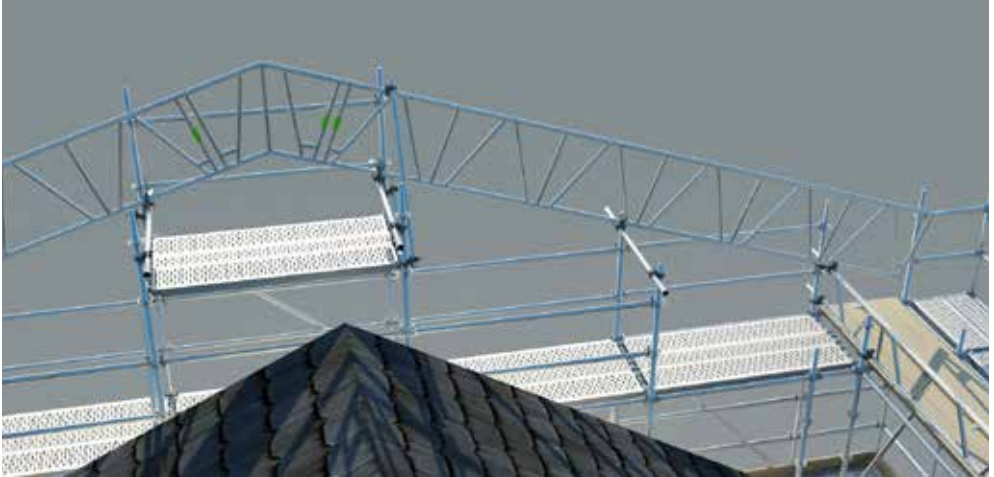
By Hand

Building the UNI Roof by hand is often the only option available to clients. Although this places a greater emphasis on operatives working at height, this guide will now demonstrate how this can still be completed safely and efficiently.



Hand-Built Installation Guide

1 The first step of hand-installation is to create a platform at one of the gable-ends of the roof; this can be a gable hop-up on the Access Scaffold, or the installation of a beam span over the roof to link the front and rear scaffolds – one of these options will need to be adopted to enable the “close sheeting” of the gable-end(s) of the structure. Once this platform is established it enables the operatives to build the first Roof Bay from the safety of the scaffold.



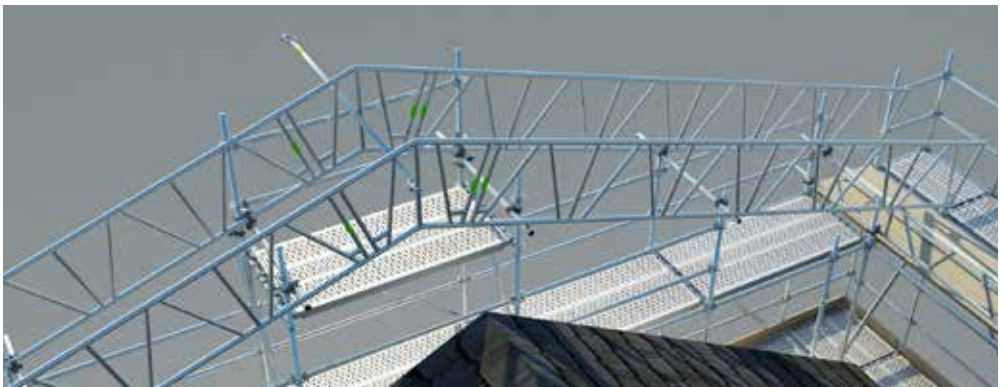
2 The second step is to build the first Truss Beam from the gable-end platform. This truss can be supported at several points along its span by installing temporary transoms between the standards up to ridge level. The beams can then be secured to these transoms along the bottom-chord using right-angled couplers – it is important at this stage that the first Truss Beam is secured level in the vertical plane. This can be achieved by levelling the post near a node point and then fastening the right-angled coupler to hold it in place. As a secondary measure, a section brace should be installed from the scaffold lift to the top-chord of the beam. This process is further repeated to form the second Truss Beam.

Following the completion of the first pair of Truss Beams, the first UNI Roof Bay is ready to be assembled.

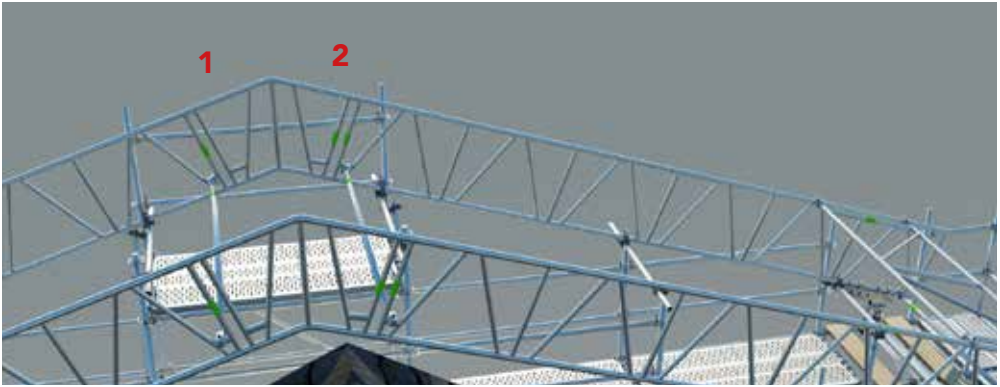
- a)** Firstly the Truss Beams must be correctly spaced and secured in place in readiness for the brace and frame assembly. With the first Truss Beam secured in place, as mentioned above, the second Truss Beam is ready to be moved into position.
- b)** Before the second Truss Beam is moved it is prudent to “mark-out” the centres of the Roof Trusses using a horizontal ledger and fix a right-angled coupler to the eaves beam, thus ensuring that when it is time to install subsequent trusses that the fixing is in place and ready to accept the truss.



c) With the right-angled couplers set at the correct distances the second Truss Beam can be moved into position. It is recommended that five operatives perform this operation; two at either end of the truss and one in the centre. The operative in the centre stands on the gable hop-up and attaches a Horizontal Brace to the upper part of the ridge-post of the second truss, then, in unison, the operatives at either end and the operative in the centre slide the truss out to the desired location – the operative in the centre only has to stop the truss from “overturning”.



d) Once in position, the operative in 1 and 2 centre fixes the Horizontal Braces **(1 & 2)** to the first truss, and the second truss is now secure at its centre. Once secured at its centre the operatives at either end land the trusses in the “pre-fixed” right-angled couplers and temporarily secure in place 3. A UNI Frame is then secured to the top-chords of the first and second trusses, thus ensuring that the spacing is correct. Once the correct spacing is achieved – the truss may need to be moved slightly from its temporary position – the right-angled couplers can be tightly secured. With these four Horizontal Braces in place, the first bay can be filled in.

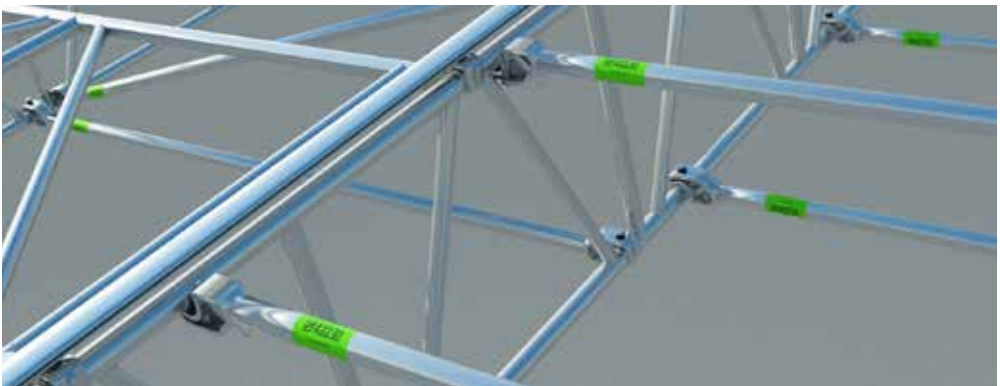


4 Following the connection of the first Roof-Truss pair, UNI Horizontal Braces are secured to the bottom-chord of the Roof Trusses at 2m centres. **See DVA 16004—Fitting of Horizontal Braces.**

5 Once these are in place Diagonal Braces are installed at 2m centres to keep the truss true. **See DVA 16005—Fitting of Diagonal Braces.**

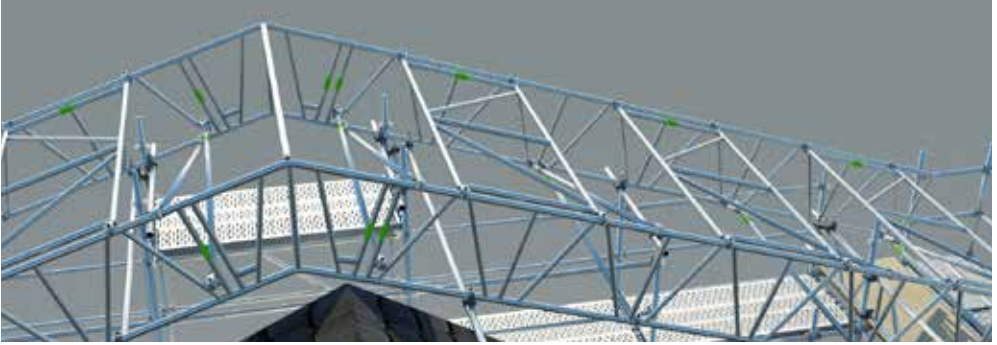
6 A UNI Frame is then installed at the first “V” position on the truss, directly over the Diagonal Brace. The above process is then repeated at 2m intervals so that the UNI Frames are at 1m centres on the top-chord of the truss and the Horizontal Braces on the bottom-chords, and the Diagonal Braces, are at 2m centres – see image. **See DVA 16006—Fitting a UNI Frame.**

Once the bay is braced and framed the Sheet Tracking can be installed. It is important to note that if the tracking is installed at this stage then the beams and/or frames will need to be alternated on the top-chord of the trusses, see image. This is necessary as once the tracking is in place the braces/frames in the subsequent bay can no longer be installed on the top-chord of the truss.



7 Installing Subsequent Bays – Subsequent Bays are easily installed by following the points below.

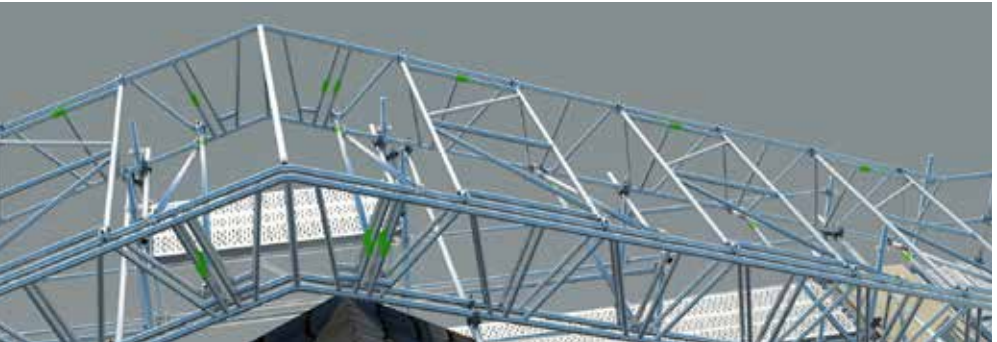
a) Firstly, install scaffold tube under the bottom-chords of the existing trusses at the junctions with subsequent beams, using right-angled couplers. These scaffold tube should cantilever a minimum of 500mm over the last support .



b) Once these tube have been installed to both sides of the bay the subsequent truss can be built. One operative is to remain at the ridge level of the trusses to guide the subsequent trusses into place.

c) Connect the Ridge Beam to the first Truss Beam and pass it up the truss-line to the operative at ridge level. Secure the beam to the scaffold tube using right-angled couplers.

d) Connect subsequent beams to the fixed beam using the support tube and right-angled couplers until the truss is complete on both sides of the ridge.



e) Release all right-angled couplers and support the complete truss by hand. The truss can now be moved into position.

f) It is recommended that five operatives perform this operation; two at either end of the truss and one in the centre. The operative in the centre stands on the gable hop-up and attaches a Horizontal Brace to the upper part of the ridge-post of the second truss, then, in unison, the operatives at either end and the operative in the centre slide the truss out to the desired location – the operative in the centre only has to stop the truss from “overturning”.



g) Once in position, the operative in the centre fixes the Horizontal Brace to the first truss and the second truss is now secure at its centre. Once secured at its centre the operatives at either end land the trusses in the “pre-fixed” right-angled couplers and temporarily secure in place. A Horizontal Brace is then secured to the top-chords of the first and second trusses, thus ensuring that the spacing is correct. Once the correct spacing is achieved – the truss may need to be moved slightly from its temporary position – the right-angled couplers can be tightly secured. With these three Horizontal Braces in place, the bay can then be filled in. All subsequent bays are then completed following the points described above. It is important to note that after every fourth intermediate bay a further braced bay needs to be installed.

8 Once the bay is braced and framed it is time to install the Sheet Tracking. The first track to install is the Ridge Track – if not already pre-installed. This is positioned and centred over the Ridge Beam and then connected using two Ridge Track quick release pins no. 440016. **See DVA16007— Fitting Ridge Tracks.** It is possible to install all braces/frames on the top-chord of the trusses, but care needs to be taken as differences in level between adjacent beams can cause difficulties when trying to install tracking over double button nuts.

9 An Alloy Track Spigot is then inserted into one end of the Ridge Track and the retaining bolt is loosely tightened to hold the spigot in place. **See DVA16008— Fitting an Alloy Track Spigot.** A length of track is then “fed over” the buttons from the end of the roof and located over the Alloy Spigot. Again, the retaining bolt is loosely tightened to hold the track in place. This process is repeated until all tracks are installed up to the track compressor. **See DVA16009—Fitting a Length of Track.**

10 With the Sheet Tracks in place on both sides of the Roof Truss, it is now possible to connect the Track Compressors. The Track Compressor is inserted into the end of the truss, the handle is raised and the spring clip is located. The handle is then compressed, exerting a pressure of 100kg to ensure the tracks are retained in place and are sat firmly against the Alloy Track Spigots. Once the handle has been compressed all spigot retaining bolts can be tightened to prevent any movement at the joint. **See DVA16010—Fitting of a Track Compressor.**

11 Roller Braces are then installed into the Track Compressor to allow for the Sheet Installation. **See DVA16011—Fitting a Roller Brace.**

12 Once the Roller Braces are installed the UNI Roof Bay is complete; subsequent bays can now be installed to form the complete roof structure.

13 With the structure complete, it is now ready for the PVC Sheeting. It is good practice to place all Sheets under the bays where they are required so that when it is time to raise them they are all prepared.

a) Firstly, send two ropes up and over the structure in preparation for raising the Sheet. **See DVA16014—Installing a Sheet.**

b) Next, install the Sheet Pulling Bar and correct sized Sheet Tension Bar through the Sheet – **See DVA16013—Using the Old Sheet Pulling Bar**, or, insert the Sheet Pulling Handles into the end of the Sheet Tensioning Bar in preparation for pulling the Sheet. **See DVA16012—Using the New Sheet Pulling Bar.**

c) Once the Sheet Pulling Bar is in place the Sheet is ready to be pulled. Ensure the wheels and Keder are aligned to the Sheet Tracking, then instruct the two operatives at the opposite side of the structure to begin pulling. Pull the Sheets up to the start of the Sheet Tracking and then stop. The remaining two operatives need to be at the eaves position of the bay to feed the Keder into the Sheet Tracking. Once in position the Sheet should be pulled slowly through the tracking until it is running smoothly; if it jams, go back slightly and start again. It is very important at the initial stage to make sure the Sheet runs parallel otherwise it will jam. Pull the Sheet to the desired location and then remove the Sheet Pulling Bar. **See DVA16014—Installing a Sheet.**

14 Once the Sheets are in the desired location, they are ready to be secured to the structure. The Sheets are secured using four Ratchet Straps (440045, depending of the span length and the exposure factor) each side of the bay. Fasten the Ratchet Straps evenly from both sides, down to a supporting ledger. Care must be taken not to overtighten, and thus damage the Sheets.

See DVA16014— Installing a Sheet.

Roll-Out Method using Trax Tube Holder

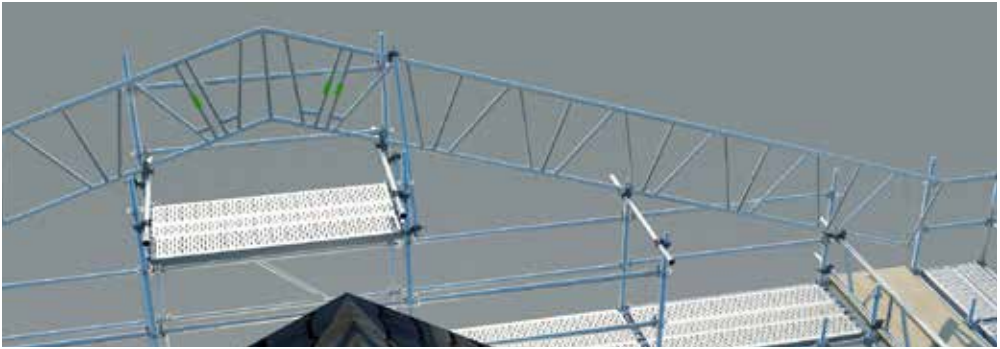


Rolling-Out the UNI Roof, either in bays or as a complete structure, using the Trax Tube Holder provides the scaffolders with a simple solution to moving complete bays with little effort. Once the bays are in position they are secured down to the supporting structure. The loads imparted onto the decking and support structure will require verification.

Roll-Out Method using Trax Tube Holder: Hand-Built Installation Guide using Trax Tube Holder

1 The first step of hand-installation is to create a platform at one of the gable-ends of the roof; this can be a gable hop-up on the Access Scaffold, or the installation of a beam span over the roof to link the front and rear scaffolds one of these options will need to be adopted to enable the “close sheeting” of the gable-end(s) of the structure. Once this platform is established it enables the operatives to build the first roof bay from the safety of the scaffold.

2 The second step is to build the first Truss Beam from the gable-end platform. This truss can be supported at several points along its span by installing temporary transoms between the standards up to ridge level on one side. The beams can then be secured to these transoms along the bottom-chord using right-angled couplers – it is important at this stage that the first Truss Beam is secured level in the vertical plane. This can be achieved by levelling the post near a node point and then fastening the right-angled coupler to hold it in place. As a secondary measure, a section brace should be installed from the scaffold lift to the top-chord of the beam. Now that both chords are secure, and the Ridge Beam is installed - if it is a duo-pitched or domed roof – the process is mirrored to form the first Truss Beam. This process is further repeated to form the second Truss Beam.



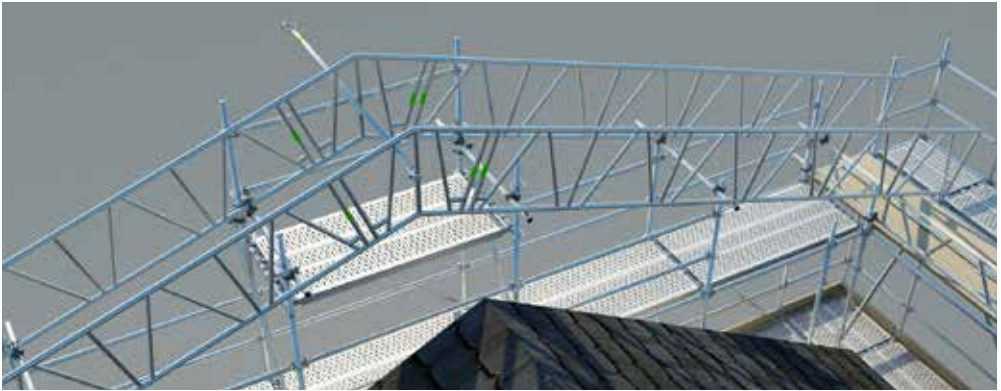
3 Following the completion of the first pair of Truss Beams, the first UNI Roof Bay is ready to be assembled.

a) Firstly, the Truss Beams must be correctly spaced and secured in place in readiness for the brace and frame assembly. With the first Truss Beam secured in place, as mentioned above, the second Truss Beam is ready to be moved into position.

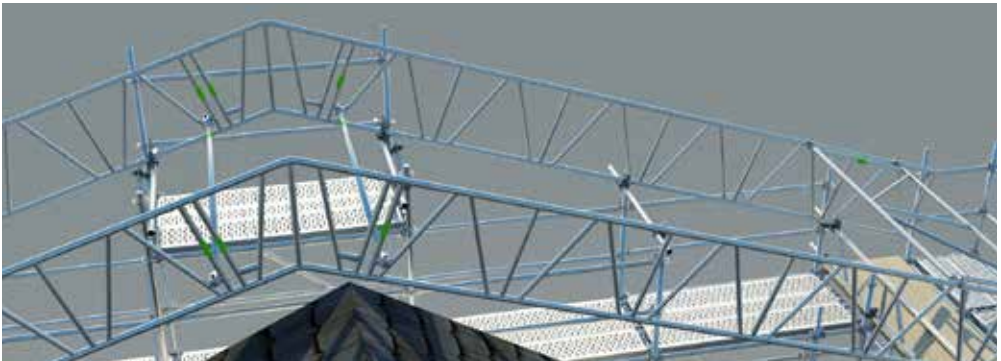
b) Before the second Truss Beam is moved it is prudent so “mark-out” the centres of the Roof Trusses using a horizontal ledger and fix a right-angled coupler to the eaves beam, thus ensuring that when it is time to install subsequent trusses that the fixing is in place and ready to accept the truss.



c) With the right-angled couplers set at the correct distances the second Truss Beam can be moved into position. It is recommended that five operatives perform this operation; two at either end of the truss and one in the centre. The operative in the centre stands on the gable hop-up and attaches a Horizontal Brace to the upper part of the ridge-post of the second truss, then, in unison, the operatives at either end and the operative in the centre slide the truss out to the desired location – the operative in the centre only has to stop the truss from “overturning”.



d) Once in position, the operative in the centre fixes the Horizontal Brace to the first truss and the second truss is now secure at its centre. Once secured at its centre the operatives at either end land the trusses on the beam connector, Castor Top Plate 18 degrees, and Anti-Uplift Castor. Three Horizontal Braces are then secured to the top-chords of the first and second trusses, thus ensuring that the spacing is correct. With these three Horizontal Braces in place, the first bay can be filled in.



4 Following the connection of the first Roof-Truss pair, UNI Horizontal Braces are secured to the bottom-chord of the Roof Trusses at 2m centres, as shown. **See DVA 16004—Fitting of Horizontal Braces.**

5 Once these are in place a Diagonal Brace is installed at the position of the first frame to keep the truss true. **See DVA 16005—Fitting of Diagonal Brace.**

6 A UNI Frame is then installed at the first “V” position on the truss, directly over the Diagonal Brace. The above process is then repeated at 2m intervals so that the UNI Frames are at 1m centres on the top-chord of the truss and the Horizontal Braces on the bottom-chords and the Diagonal Braces are at 2m centres – see image. **See DVA 16006—Fitting of UNI Frame.**

7 With the first bay in place, and the correct distances set, the scaffold tube and the Trax Tube Holder can be secured to the boarded platform using wood screws.

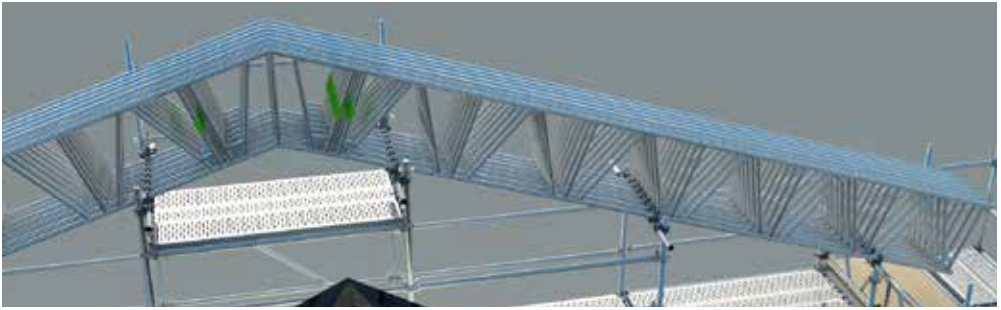


8 A scaffold tube is then connected to the trusses using right-angled couplers and band and plate couplers with the other end connected to a Castor and Castor Top Plate for scaffold tube. The Castor is then placed on the scaffold tube and the bay is ready to move. **It is important to note that this method is only to be used to move bays into position; bays must be secured to the supporting structure once in the correct location.**

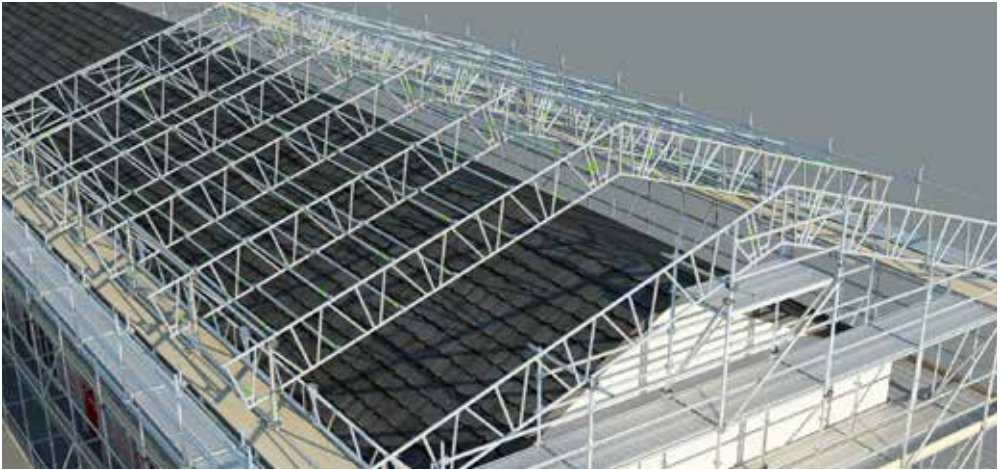


9 This bay is now moved along the structure by 3.5m and out of the way of the gable-end scaffold.

10 It is good practice to build all subsequent Roof Trusses on the gable-end scaffold and secure them in place using right-angled couplers.



11 Once all trusses are constructed and stored at the gable-end they can be moved one at a time, following the procedure above, and connected to the Braced Bay using Horizontal Braces. Four bays can be installed in this manner before the next braced and framed bay needs to be installed. All subsequent bays are then completed following the points described above. It is important to note that after every fourth intermediate bay a further braced bay needs to be installed.



12 The rolling-out process is repeated until all bays are installed and in their correct locations.

13 Once the bay is braced and framed it is time to install the Sheet Tracking. The first track to install is the Ridge Track – if not already pre-installed. This is positioned and centred over the Ridge Beam and then connected using two Ridge Track quick release pins. **See DVA16007— Fitting Ridge Tracks.** It is possible to install all braces/frames on the top-chord of the trusses, but care needs to be taken as differences in level between adjacent beams can cause difficulties when trying to install tracking over double button nuts.

14 An Alloy Track Spigot is then inserted into one end of the Ridge Track and the retaining bolt is loosely tightened to hold the spigot in place. **See DVA16008—Fitting an Alloy Track Spigot.** A length of track is then “fed over” the buttons from the end of the roof and located over the Alloy Spigot. Again, the retaining bolt is loosely tightened to hold the track in place. This process is repeated until all tracks are installed up to the track compressor. **See DVA16009—Fitting a Length of Track.**

15 With the Sheet Tracks in place on both sides of the Roof Truss it is now possible to connect the Track Compressors. The Track Compressor is inserted into the end of the truss, the handle is raised and the spring clip is located. The handle is then compressed, exerting a pressure of 100kg to ensure the tracks are retained in place and are sat firmly against the Alloy Track Spigots. Once the handle has been compressed all spigot retaining bolts can be tightened to prevent any movement at the joint. **See DVA16010—Fitting of a Track Compressor.**

16 Roller Braces are then installed into the Track Compressor to allow for the sheet installation. **See DVA16011—Fitting a Roller Brace.**

17 With the bays and trusses in their correct locations the roof can now be connected to the supporting eaves beam by adding puncheons – this should be done one bay at a time. Once the trusses are secured in place using right-angled couplers the Trax Tube Holder and Castors can be removed, if required.



18 With the roof structure complete it is now ready for the PVC Sheeting. It is good practice to place all sheets under the bays they are required so that when it is time to raise them they are all prepared.

a) Firstly, send two ropes up and over the structure in preparation for raising the sheet. It is good practice to attach a second pair of ropes through the intermediate Sheet Pockets to the Sheet Tensioning Bar. These ropes are then pulled over the sheet in preparation for connecting to the subsequent sheet. **See DVA16014—Installing a Sheet.**

b) Next, install the Sheet Pulling Bar through the Sheet – **See DVA16013—Using the Old Sheet Pulling Bar**, or, insert the Sheet Pulling Handles into the end of the Sheet Tensioning Bar in preparation for pulling the sheet. In an ideal situation Sheets will be pulled from both sides of the supporting structure, one from the left the next from the right, and vice versa. If this is not possible then the Sheet pulling device will need to be taken back to the side where the sheets are laid out. **See DVA16012—Using the New Sheet Pulling Bar**.

c) Once the Sheet Pulling Bar is in place the sheet is ready to be pulled. Ensure that the sheet is perpendicular to the bay, then instruct the two operatives at the opposite side of the structure to begin pulling. Pull the sheets up to the start of the Sheet Tracking and then stop. The remaining two operatives need to be at the eaves position of the bay to feed the Keder into the Sheet Tracking. Once in position the sheet should be pulled slowly through the tracking until it is running smoothly; if it jams, go back slightly and start again. It is very important at the initial stage to make sure the sheet runs parallel. Otherwise it will jam. Pull the sheet to the desired location and then remove the Sheet Pulling Bar. **See DVA16014**.

19 Once the sheets are in the desired location, they are ready to be secured. Slide the correct sized Sheet Tensioning Bar into the sheet ends to allow the connection of the Ratchet Straps. The sheets are secured using four Ratchet Straps (440045 or 440046, depending of the span length and the exposure factor) each side of the bay. Fasten the Ratchet Straps evenly from both sides, down to a supporting ledger. Care must be taken not to overtighten, and thus damage, the sheets. **See DVA16014—Installing a Sheet**.



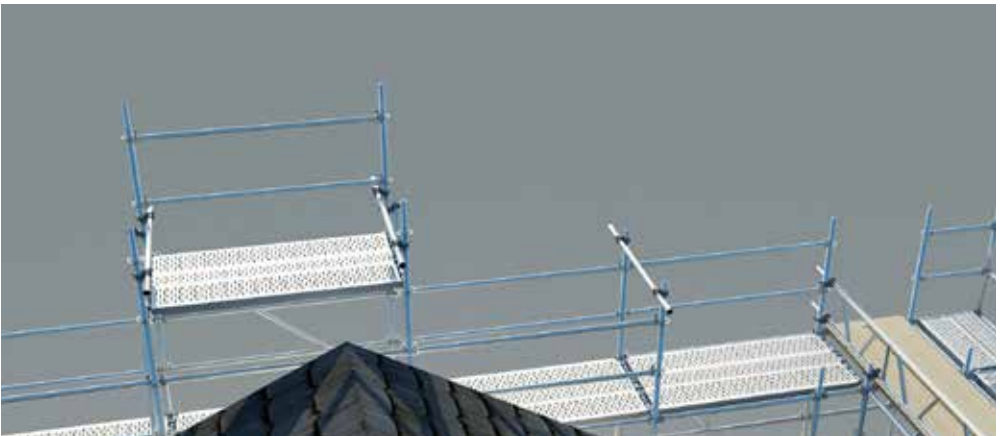
Roll-Out Method using Trax Universal Beam

Rolling-Out the UNI Roof, either in bays or as a complete structure, using the Trax Universal Beam provides the end user with a simple solution in moving complete roof structures with little effort. Once the bays are in position they are secured down to the Universal Beam using the Anti-Uplift Castor.



Roll-Out Method using Trax Universal Beam: Hand-Built Installation Guide using Trax Universal Beam

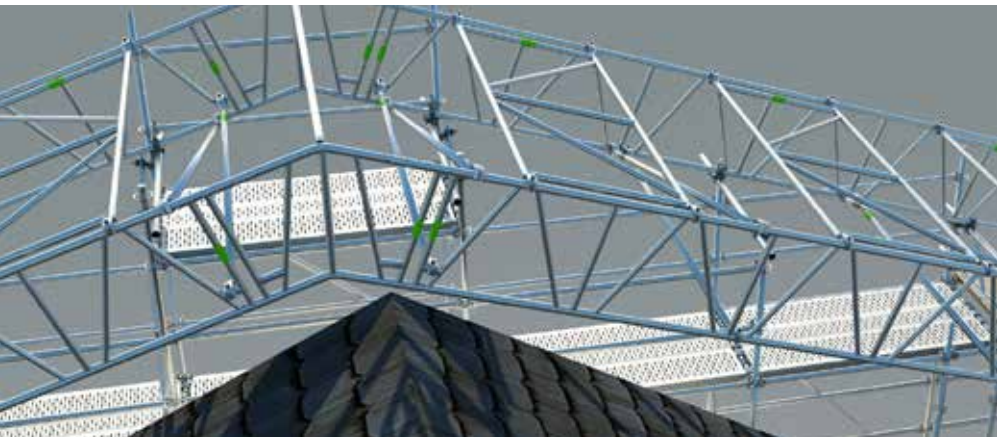
1 The first step of hand-installation is to create a platform at one of the gable-ends of the roof; this can be a gable hop-up on the Access Scaffold, or the installation of a beam span over the roof to link the front and rear scaffolds – one of these options will need to be adopted to enable the “close sheeting” of the gable-end(s) of the structure. Once this platform is established it enables the operatives to build the first roof bay from the safety of the scaffold.



- 2** The second step is to install the Trax UB to the supporting structure using the correct components.

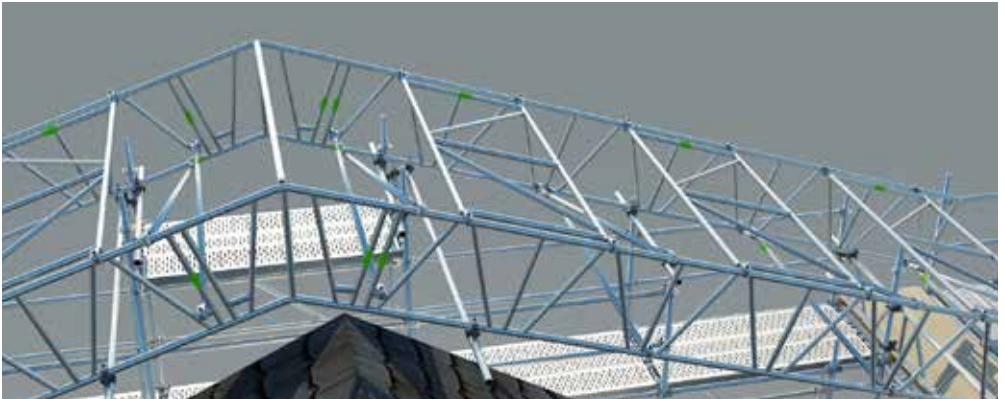


- 3** The third step is to build the first Truss Beam from the gable-end platform. The base of the truss is secured to the beam connector, Castor Top Plate 18 degrees, and Anti-Uplift Castor. The middle of the truss can be supported at several points along its span by installing temporary transoms between the standards up to ridge level on one side. The beams can then be secured to these transoms along the bottom-chord using right-angled couplers – it is important at this stage that the first Truss Beam is secured level in the vertical plane. This can be achieved by levelling the post near a node point and then fastening the right-angled coupler to hold it in place. As a secondary measure, a section brace should be installed from the scaffold lift to the top-chord of the beam. Now that both chords are secure, and the Ridge Beam is installed - if it is a duo-pitched or domed roof – the process is mirrored to form the first Truss Beam. This process is further repeated to form the second Truss Beam.



4 Following the completion of the first pair of Truss Beams, the first UNI Roof Bay is ready to be assembled.

- a)** Firstly, the Truss Beams must be correctly spaced and secured in place in readiness for the brace and frame assembly. With the first Truss Beam secured in place, as mentioned above, the second Truss Beam is ready to be moved into position.
- b)** It is recommended that five operatives perform this operation; two at either end of the truss and one in the centre. The operative in the centre stands on the gable hop-up and attaches a Horizontal Brace to the upper part of the ridge-post of the second truss, then, in unison, the operatives at either end and the operative in the centre slide the truss out to the desired location – the operative in the centre only has to stop the truss from “overturning”.
- c)** Once in position, the operative in the centre fixes the Horizontal Brace to the first truss and the second truss is now secure at its centre. Once secured at its centre the operatives at either end land the trusses on the beam connector, Castor Top Plate 18 degrees, and Anti-Uplift Castor. Three Horizontal Braces are then secured to the top-chords of the first and second trusses, thus ensuring that the spacing is correct. With these three Horizontal Braces in place, the first bay can be filled in.



5 Following the connection of the first Roof-Truss pair, 2 UNI Horizontal Braces are secured to the bottom-chord of the Roof Trusses at 2m centres, as shown. **See DVA 16004—Fitting of a Horizontal Braces.**

6 Once these are in place a Diagonal Brace is installed at the position of the first frame to keep the truss true. **See DVA 16005—Fitting of Diagonal Braces.**

7 A UNI Frame is then installed at the first “V” position on the truss, directly over the Diagonal Brace. The above process is then repeated at 2m intervals so that the UNI Frames are at 1m centres on the top-chord of the truss and the Horizontal Braces on the bottom-chords and the Diagonal Braces are at 2m centres – see image. **See DVA 16006—Fitting of UNI Frame.**

8 The completed bay is now moved along the structure by 3.5m and out of the way of the gable-end scaffold.

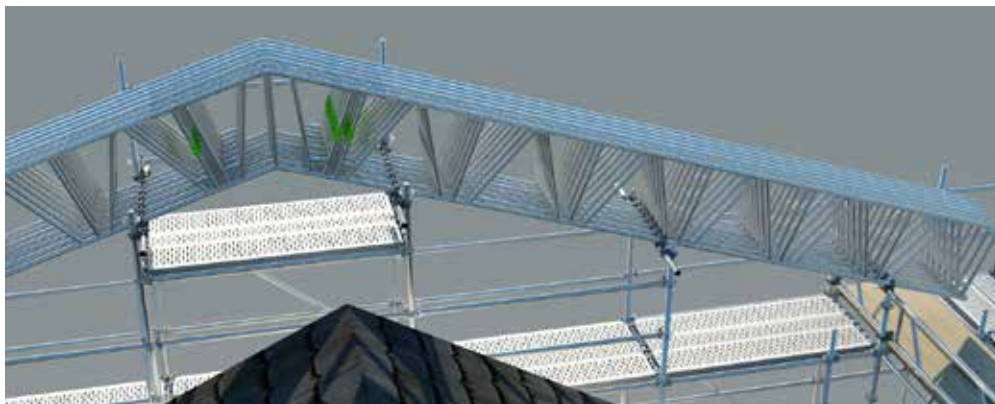
9 It is good practice to build all subsequent Roof Trusses on the gable-end scaffold and secure them in place using right-angled couplers.

10 Once all trusses are constructed and stored at the gable-end, they can be moved one at a time, following the procedure above, and connected to the Braced Bay using Horizontal Braces. Four bays can be installed in this manner before the next braced and framed bay needs to be installed.

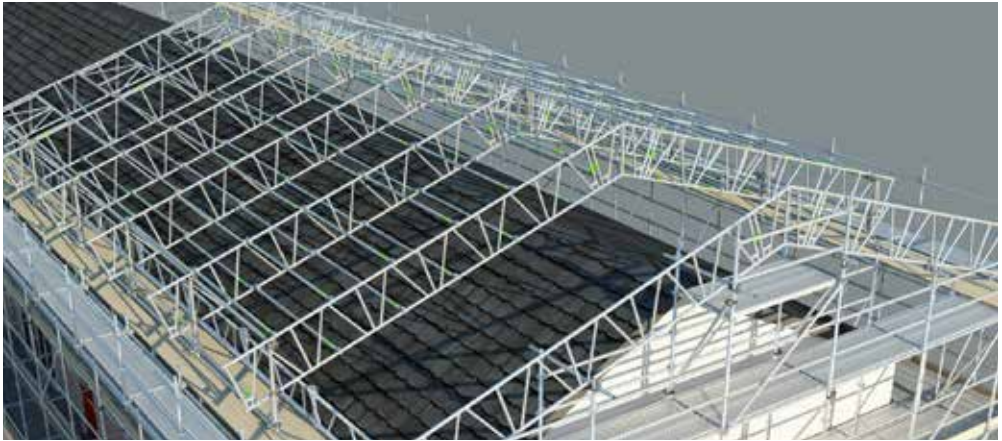
11 The rolling-out process is repeated until all bays are installed and in their correct locations. All subsequent bays are then completed following the points described above. It is important to note that after every fourth intermediate bay a further braced bay needs to be installed.



12 The Trax Anti-Uplift Castors are now tightened to prevent any vertical or horizontal movement.



13 Once the bay is braced and framed it is time to install the Sheet Tracking. The first track to install is the Ridge Track – if not already pre-installed. This is positioned and entered over the Ridge Beam and then connected using two Ridge Track quick release pins. **See DVA16007— Fitting Ridge Tracks.** It is possible to install all braces/frames on the top-chord of the trusses, but care needs to be taken as differences in level between adjacent beams can cause difficulties when trying to install tracking over double button nuts.



14 An Alloy Track Spigot is then inserted into one end of the Ridge Track and the retaining bolt is loosely tightened to hold the spigot in place. **See DVA16008—Fitting an Alloy Track Spigot.** A length of track is then “fed over” the buttons from the end of the roof and located over the Alloy Spigot. Again, the retaining bolt is loosely tightened to hold the track in place. This process is repeated until all tracks are installed up to the Track Compressor. **See DVA16009—Fitting a Length of Track.**

15 With the Sheet Tracks in place on both sides of the Roof Truss it is now possible to connect the Track Compressors. The Track Compressor is inserted into the end of the truss, the handle is raised and the spring clip is located. The handle is then compressed, exerting a pressure of 100kg to ensure the tracks are retained in place and are sat firmly against the Alloy Track Spigots. Once the handle has been compressed all spigot retaining bolts can be tightened to prevent any movement at the joint. **See DVA16010—Fitting of a Track Compressor.**

16 Roller Braces are then installed into the Track Compressor to allow for the sheet installation. **See DVA16011—Fitting of Roller Brace.**

17 With the roof structure complete it is now ready for the PVC Sheeting. It is good practice to place all Sheets under the bays they are required so that when it is time to raise them they are all prepared.

- a) Firstly, send two ropes up and over the structure in preparation for raising the Sheet. It is good practice to attach a second pair of ropes through the intermediate Sheet Pockets to the Sheet Testing Bar. These ropes are then pulled over the Sheet in preparation for connecting to the subsequent Sheet. **See DVA16014—Installing a Sheet.**
- b) Next, install the Sheet Pulling Bar through the Sheet – **See DVA16013—Using the Old Sheet Pulling Bar**, or, insert the Sheet Pulling Handles into the end of the Sheet Tensioning Bar in preparation for pulling the sheet. **See DVA16012—Using the New Sheet Pulling Bar.** In an ideal situation Sheets will be pulled from both sides of the supporting structure, one from the left the next from the right and vice versa. If this is not possible then the Sheet pulling device will need to be taken back to the side where the sheets are laid out.
- c) Once the Sheet Pulling Bar is in place the Sheet is ready to be pulled. Ensure that the Sheet is perpendicular to the bay, then instruct the two operatives at the opposite side of the structure to begin pulling. Pull the Sheets up to the start of the Sheet Tracking and then stop. The remaining two operatives need to be at the eaves position of the bay to feed the Keder into the Sheet Tracking. Once in position the Sheet should be pulled slowly through the tracking until it is running smoothly; if it jams, go back slightly and start again. It is very important at the initial stage to make sure the Sheet runs parallel otherwise it will jam. Pull the Sheet to the desired location and then remove the Sheet Pulling Bar. **See DVA16014—Installing a Sheet.**

18 Once the Sheets are in the desired location, they are ready to be secured. Slide the correct sized Sheet Tensioning Bar into the Sheet ends to allow the connection of the Ratchet Straps. The Sheets are secured using four Ratchet Straps (440045 or 440046, depending of the span length and the exposure factor) each side of the bay. Fasten the Ratchet Straps evenly from both sides, down to a supporting ledge. Care must be taken not to overtighten, and thus damage, the Sheets. **See DVA16014—Installing a Sheet.**

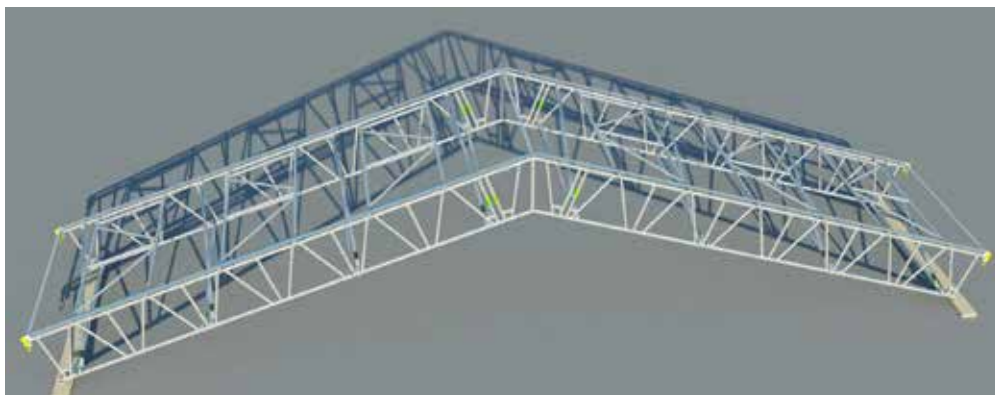
Crane-Assisted Method



Bays are built in a designated area near the supporting structure and are then lifted into place. The additional equipment can be loaded onto the built bays so that very little material has to be raised by hand.

Crane-Assisted Method: Crane-Built Installation Guide

- 1** The first step of a crane installed UNI Roof is to establish a space where roof bays can be made on the ground. Once established, the space should be segregated to ensure the safety of the public.
- 2** The second step is to build the first Truss Beam and secure it in position using temporary bracing, ensuring the truss is level in the vertical plane – the truss should be supported on scaffold boards to prevent damage to the end of the beams.
See DVA 16003—Joining Beams. With the first truss secured, the second truss is then constructed and secured to the first truss using 1 Horizontal Brace, 1 Diagonal Brace, and 1 Braced Frame at each end. **See DVA16004—Fitting of Horizontal Brace**, DVA 16005—Fitting of Diagonal Brace and DVA 16006—Fitting of UNI Frame.
- 3** Following the connection of the Roof-Truss pair, Horizontal Braces, Diagonal Braces, and Braced Frames are installed at 2m intervals so that the UNI Frames are at 1m centres on the top-chord of the truss and the Horizontal Braces on the bottom-chords and the Diagonal Braces are at 2m centres – see image. **See DVA 16006—Fitting of UNI Frame.**

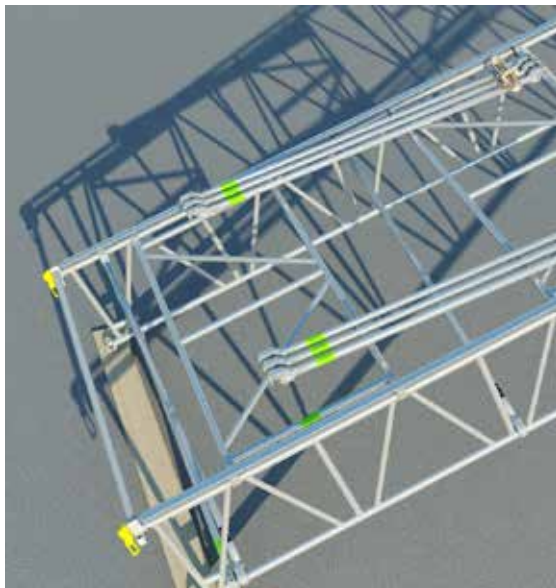


- 4** Once the bay is braced and framed it is time to install the Sheet Tracking. The first track to install is the Ridge Track – if not already pre-installed. This is positioned and centred over the Ridge Beam and then connected using four spring clips.
See DVA16007—Fitting of Ridge Tracks.
- 5** An Alloy Track Spigot is then inserted into one end of the Ridge Track and the retaining bolt is loosely tightened to hold the spigot in place. **See DVA16008 Fitting an Alloy Track Spigot.** A Length of Track is then “fed over” the buttons from the end of the roof and located over the Alloy Spigot. Again, the retaining bolt is loosely tightened to hold the track in place. This process is repeated until all tracks are installed up to the track compressor.
See DVA16009—Fitting a Length of Track.

6 With the Sheet Tracks in place on both sides of the Roof Truss it is now possible to connect the Track Compressors. The Track Compressor is inserted into the end of the truss, the handle is raised and the spring clip is located. The handle is then compressed, exerting a pressure of 100kg to ensure the tracks are retained in place and are sat firmly against the Alloy Track Spigots. Once the handle has been compressed all spigot retaining bolts can be tightened to prevent any movement at the joint. **See DVA16010—Fitting of a Track Compressor.**

7 Roller Braces are then installed into the Track Compressor to allow for the sheet installation. **See DVA16011—Fitting of Roller Brace.**

8 Equipment for the subsequent “in-fill” bays is then loaded onto the completed bays ready for lifting into place – it is not advisable to install the Roof Sheeting at this stage, as it could compromise the lifting capabilities of the crane.

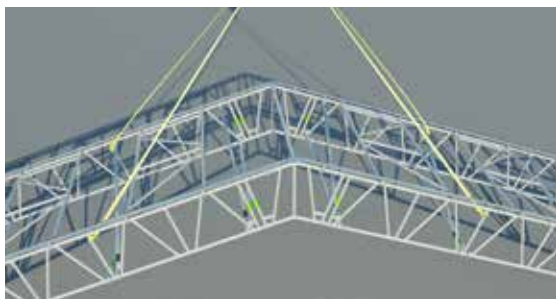


9 All subsequent bays are then built following the methodology above.

10 The finished roof bays are then ready to be lifted by the crane and placed on the supporting structure.

a) All UNI Roof Bays are to be lifted from the bottom-chord next to a post, as this is the strongest point.

b) Once the bays are lifted into place they are secured to the supporting structure using right-angled couplers, if connected to an eaves beam, or, to a Trax UB using the correct Castors, if that is the preferred method. There are several options for support structures, and the weights of the bays will vary depending on size, so therefore, in each case a competent Scaffold Design Engineer should be consulted.



11 With the roof structure complete it is now ready for the PVC Sheeting. It is good practice to place all Sheets under the bays they are required so that when it is time to raise them they are all prepared.

a) Firstly, send two ropes up and over the structure in preparation for raising the sheet. It is good practice to attach a second pair of ropes through the intermediate Sheet Pockets to the Sheet Testing Bar. These ropes are then pulled over the sheet in preparation for connecting to the subsequent sheet. **See DVA16014—Installing a Sheet.**

b) Next, install the Sheet Pulling Bar through the sheet – **See DVA16013—Using the Old Sheet Pulling Bar**, or, insert the Sheet Pulling Handles into the end of the Sheet Tensioning Bar in preparation for pulling the sheet. In an ideal situation Sheets will be pulled from both sides of the supporting structure, one from the left the next from the right and vice versa. If this is not possible then the Sheet pulling device will need to be taken back to the side where the sheets are laid out. **See DVA16012—Using the New Sheet Pulling Bar.**

c) Once the Sheet Pulling Bar is in place the sheet is ready to be pulled. Ensure that the sheet is perpendicular to the bay, then instruct the two operatives at the opposite side of the structure to begin pulling. Pull the sheets up to the start of the Sheet Tracking and then stop. The remaining two operatives need to be at the eaves position of the bay to feed the Keder into the Sheet Tracking. Once in position the sheet should be pulled slowly through the tracking until it is running smoothly; if it jams, go back slightly and start again. It is very important at the initial stage to make sure the sheet runs parallel otherwise it will jam. Pull the sheet to the desired location and then remove the Sheet Pulling Bar. **See DVA16014—Installing a Sheet.**

12 Once the sheets are in the desired location, they are ready to be secured. Slide the correct sized Sheet Tensioning Bar into the sheet ends to allow the connection of the Ratchet Straps. The sheets are secured using four Ratchet Straps (440045 or 440046, depending of the span length and the exposure factor) each side of the bay. Fasten the Ratchet Straps evenly from both sides, down to a supporting ledger. Care must be taken not to overtighten, and thus damage, the sheets. **See DVA16014—Installing a Sheet.**

Techniques

Staggered Bays

Dealing With Excess
Sheets

Forming Openings in
Completed Roofs

Rain-Water
Management



Techniques

There are several techniques that can be applied to the finished roof structure which make it more adaptable to site-specific needs. This sets the UNI Roof apart from its competition as few of them are able to offer this service. The UNI Roof:

- 1 Can be installed with Staggered Bays.
- 2 Can utilise sheets that are longer than the actual constructed bay.
- 3 Enables the user to create openings in the completed roof.
- 4 Offers options for managing rain-water coming off the structure.

This user guide will now give a description of each of the above techniques.

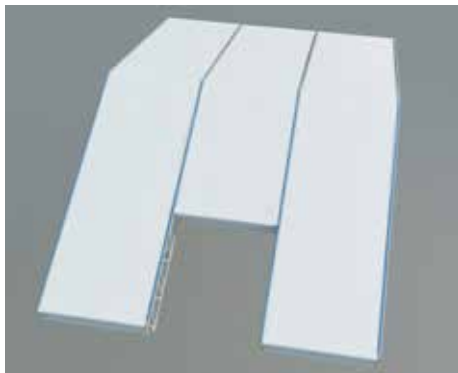
Staggered Bays

Staggered Bays are used predominantly in two situations:

- 1 When installing a bay around an obstacle, such as a chimney,
or
- 2 When it is necessary to follow a natural step in the building.

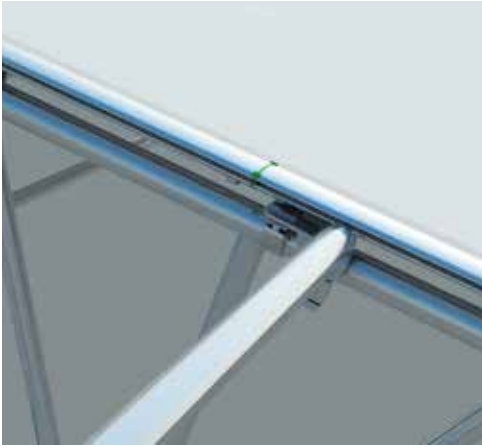
Staggered Bays are installed in the same fashion as regular UNI Bays already alluded to, but the bay changes when it comes to installing Sheet Tracks and PVC Sheeting. Through the use of the intermediate Roller Brace Coupler adjacent sheets can be terminated at different points.

All trusses are installed at the same level and in the same line horizontally, but in the Staggered Bay(s) the beams are finished shorter – a shorter beam is installed on the end or the last beam line is not installed.



This bay is then “filled-in” as a normal bay up to the point where the last beam finishes. At this point, as it is not possible to install a Track Compressor, an intermediate Roller Brace Coupler is installed to enable the connection of Roller Brace and the termination of the Sheet Tracking – the “stop” part of the coupler must be removed to enable it to fit between the tracks and the trusses. The track sections are arranged so that a joint corresponds with the desired termination point.

This process can then be repeated for all Staggered Bays. Once all Staggered Bays have been installed following the method above, the PVC Sheets can be installed. The sheets are installed as detailed above, but the difference with the Staggered Bay is that the sheet comes out of the track profile at the junction with the track spigot of the adjacent bay.



Dealing with Excess Sheets

An exciting feature of the UNI roof is that the PVC Roof sheets can be re-used again and again. As a consequence not all Roof Sheets will fit the bay lengths for subsequent temporary-roofing projects, so it is necessary to deal with sheet excess in order to use the sheets. The best way to deal with this excess is to pull the sheets down the façade of the scaffold on one, or either, side and connect them to the supporting structure as normal. In order to achieve this, Sheet Tracking must be installed in the vertical plane so that the sheets will be restrained – if this tracking is not installed and the excess is simply secured to lower-level fixing then it will almost certainly become damaged when the wind strength increases.

There are two ways to achieve this depending on the supporting structure type:

- 1** Installation of structural transoms, ledgers, and puncheons to carry Sheet Tracking.
- 2** Direct fixing of Sheet Tracking to scaffold standards – bay sizes must correspond to UNI Roof Bays. This will be pre-dominantly on system scaffolding.

Option 1

Structural transoms from the supporting scaffold are extended away from the building façade at two different levels, and offsets, so that an angle is created. A ledger is then installed on top of these transoms using right-angled couplers. Puncheons are subsequently attached to these ledgers at the centres of the roof bays above using right-angled couplers. Sheet Tracking is then secured to these puncheons using either the long or short UNI Track Couplers.



The sheets are then pulled over the bay and secured to the supporting structure using four Ratchet Straps.

Option 2

UNI Track Couplers are secured directly to the standards of the supporting structure in order to accept the Sheet Tracking. If using system scaffolding it will be necessary to use the long UNI Track Coupler to extend the tracks past any rosettes or cups. If this option is used then Truss lines will need to be positioned directly over standard positions using the brackets specified above.



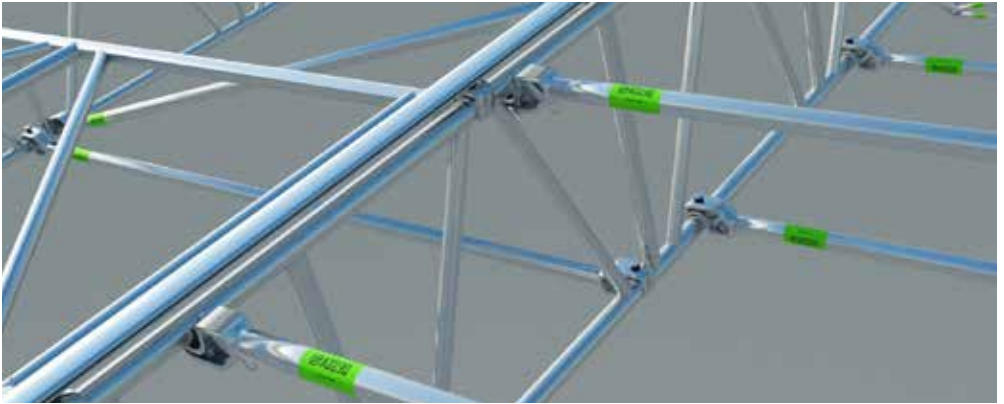
The sheets are then pulled over the bay and secured to the supporting structure using four Ratchet Straps.

Forming Openings in Completed Roofs

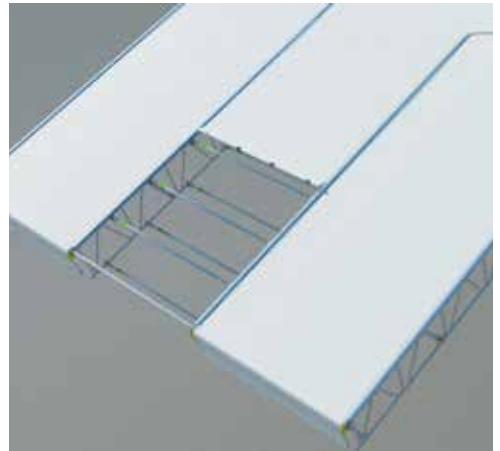
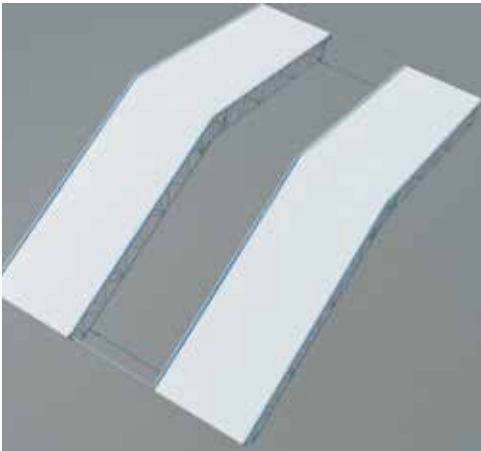
A key feature of the UNI roof is that openings can be formed in completed roof bays by removing the sheeting and Horizontal Braces. Prior planning is essential to ensure a smooth and speedy adaptation to the roof structure.

All bays selected to be opened at a certain point in the project should be intermediate bays with no Diagonal Braces or Braced Frames, as once the Sheet Tracking is installed these components cannot be removed without the prior removal of the Sheet Tracking. As a consequence, all of the Roof Sheets would need to be removed.

However, if planned correctly, all bays to be opened should be constructed with the Horizontal Braces under the top-chord of the trusses and not on top.



The installation of the Horizontal Braces under the top-chord of the trusses allows for their removal without disturbing the Sheet Tracking, and subsequently, the sheeting of adjacent bays.



Firstly the Roof Sheet is removed by releasing the Ratchet Straps and pulling it back through the Sheet Tracking. All Horizontal Braces are then removed in one bay thus creating a large opening to allow for the lifting of materials in or out of the structure. Once the lifting operations are complete the Horizontal Braces are re-installed and the sheet pulled back into place, and re-secured. This method offers the client a quick and easy solution to opening up the temporary-roof structure to facilitate the necessity of lifting materials in or out of the structure.

Rain-Water Management

It is possible to secure domestic or commercial guttering to the end posts of the UNI Roof Trusses to manage the rain-water collected on the roof structure.

Scaffold boards can be secured to the end posts of the trusses using single couplers or board-retaining couplers, with the guttering being secured to these using wood-screws.



The Roof Sheeting is then secured to a suitable location just above the gutter so that the rain-water will run straight in. The Sheeting is returned around the Roller Brace and secured to a steel scaffold tube positioned internally, and then secured with band and plate couplers. Gutter sizes and angles should be determined by separate calculation. Please contact us with your queries and we will be happy to help.

Weather Protection Considerations

The Uniroof system is designed to eliminate water ingress to an encapsulated or covered structure. When installed correctly in normal conditions* and using well maintained components the system will achieve exactly that.

However, certain factors can give way to the possibility of minimal water ingress, some listed here:

- Poor Track Coupler installation (not following correct sequence for tightening).
- Heavy rainstorms (storm sheets available to remedy this, please contact your local branch).
- Damage to sheeting caused by mishandling during installation or unexpected wear after installation.

If there is any concern regarding a particular project or any of the points mentioned above, advice and full training is available.

Please speak to your local Branch.

* 'Normal conditions' implies compliance with relevant codes (BS EN12811-1, BS EN16508, BS EN1991-1-3, BS EN1991-1-4).

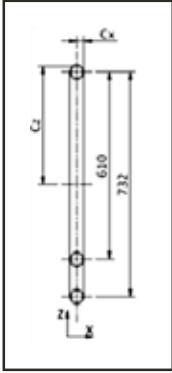
Technical

Technical Data



Technical Data

Cross Section:



Cx: 2.415cm

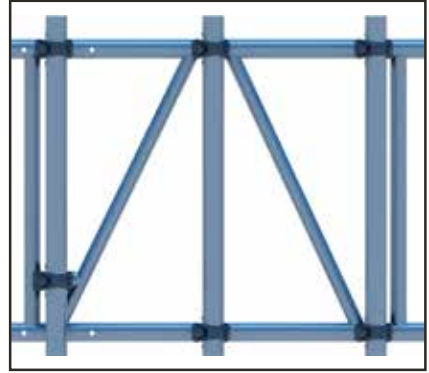
Cz: 36.60cm

Ax: 12.3cm²

Ixx: 16519.9cm⁴

Izz: 29.9cm⁴

Puncheon Locations:



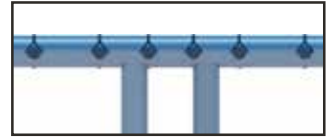
Connections:



BS0001, BS0002, BS0003,
BS0004



BS0001, BS0002, BS0003,
BS0004



BS0001, BS0002

	PERMISSIBLE BENDING MOMENT (KNM)
Joint, 1 bolt each side, all lacing intervals (not recommended)	18.80
Joint, 2 bolts each side, all lacing intervals	36.70
Joint, 3 bolts each side, all lacing intervals	54.50
Beam, compression chord lacing at 1.0m c/c (See Note 9)	38.84 *requires 6 bolts total at each joint
Beam, compression chord lacing at 1.2m c/c (See Note 9)	31.86 *requires 4 bolts total at each joint
	PERMISSIBLE SHEAR FORCE (KN)
All restraint intervals	23.71

Compression chord lacing at 1.0-1.3m c/c :-

		SPAN (M)				
		4.0	6.0	8.0	10.0	12.0
Uniform Load	(KN/M)	11.86	7.89	4.83	3.08	2.13
	DEFLECTION (MM)	3.42	11.52	22.26	34.64	49.62
Single point load at mid span	(KN)	23.70	23.70	19.31	15.38	12.75
	DEFLECTION (MM)	2.73	9.22	17.81	27.71	39.70
Two point loads at third spans	(KN)	23.70	19.37	14.48	11.54	9.56
	DEFLECTION (MM)	4.66	12.84	22.76	35.41	50.72
Three point load at quarter spans	(KN)	15.81	12.92	9.66	7.69	6.38
	DEFLECTION (MM)	4.33	11.94	21.15	32.91	47.14
Maximum single point load limited to 23.7kN across all load conditions.						

Notes

- 1 Safe load data given for guidance only and assumes simple supports each end.
- 2 This TI sheet is to be read in conjunction with the Beam User Guide USG001.
- 3 Data provided is calculated in accordance with EN 1999 and factored to EN 12811.
- 4 Data provided assumes spigoted connections using DESSA steel spigot 277501 or aluminium 396900.
- 5 All spigoted connections secured using quick release pin 277631 or G8.8 M12x60 Bolt with nut.
- 6 All loads must be applied across 2 chords within 150mm from a node point.
- 7 All supports must have a minimum width of 35mm.
- 8 Lacing tubes must be connected using a minimum 3kN connection.
- 9 For 4 bolt connections joint moment is decisive. Higher values may only be used where joint positions can be planned.

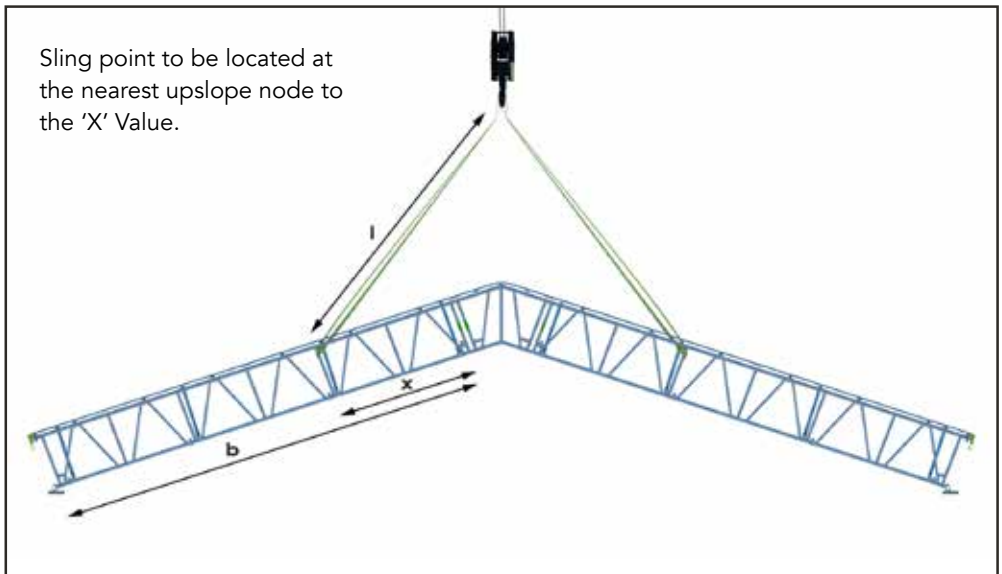
Crane Lift Sling Points: Recommended Locations for Single Bay

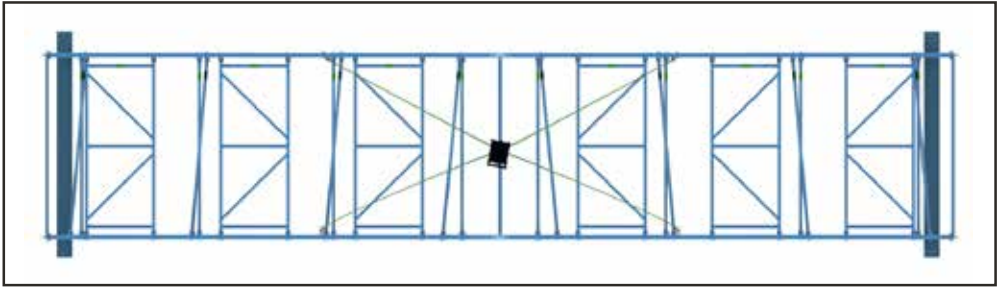
Assumptions Made

- 1m c/c Horizontal Braces
- 2m c/c Plan Braces
- 2m c/c Brace Frames
- No Sheets
- Roller Braces at Eaves and Ridge



Sling internally and to the underside of chord, to avoid damage to Sheet Track.





BEAM LENGTH B (M)	SLING DISTANCE X (M)	2072 BAY SIZE		2572 BAY SIZE		3072 BAY SIZE	
		SLING LENGTH L (M)	WEIGHT (KG)	SLING LENGTH L (M)	WEIGHT (KG)	SLING LENGTH L (M)	WEIGHT (KG)
6	2	3.68	397	3.76	425	3.85	451
7	3	5.00	464	5.06	495	5.13	525
8	3	5.00	510	5.06	543	5.13	574
9	4	6.32	559	6.37	594	6.42	629
10	4	6.32	605	6.37	641	6.42	678
11	5	7.65	653	7.69	692	7.73	732
12	5	7.65	699	7.69	739	7.73	780
13	6	8.91	767	8.95	811	8.99	855
14	6	8.91	813	8.95	858	8.99	904
15	7	10.31	861	10.35	909	10.38	958
16	7	10.31	907	10.35	957	10.38	1007
17	8	11.66	956	11.68	1009	11.71	1062
18	8	11.66	1002	11.68	1056	11.71	1111
19	9	13.00	1069	13.02	1126	13.04	1184
20	9	13.00	1115	13.02	1174	13.04	1233

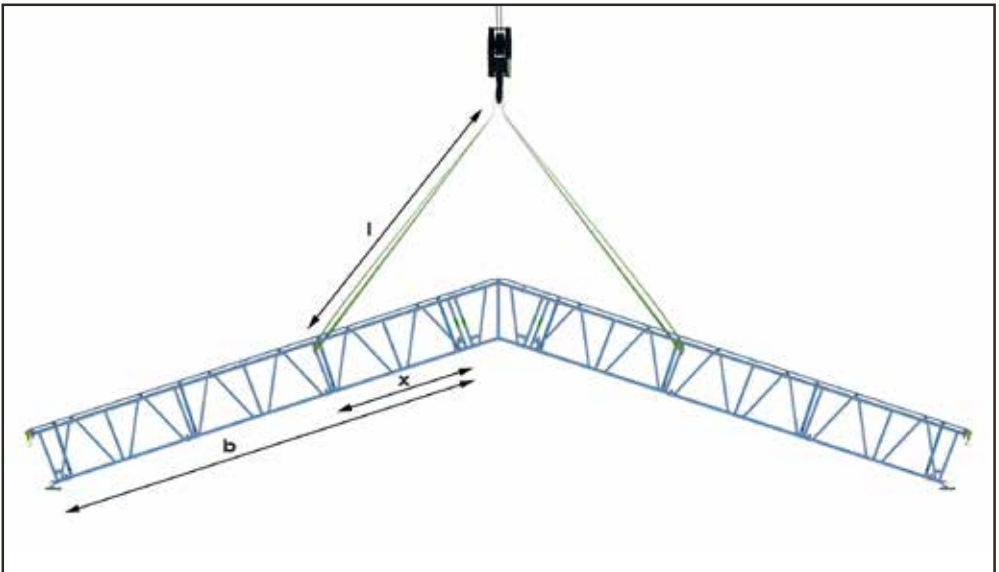
Crane Lift Sling Points: Recommended Locations for Double Bay

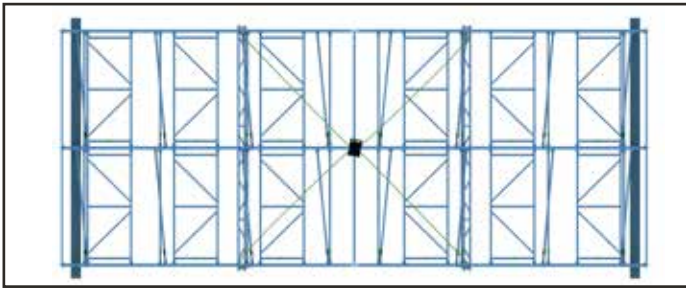
Assumptions Made

- 1m c/c Horizontal Braces
- 2m c/c Plan Braces
- 2m c/c Brace Frames
- No Sheets
- Roller Braces at Eaves and Ridge



Sling internally and to the underside of chord, to avoid damage to Sheet Track.





BEAM LENGTH B (M)	SLING DISTANCE X (M)	2072 BAY SIZE		2572 BAY SIZE		3072 BAY SIZE	
		SLING LENGTH L (M)	WEIGHT (KG)	SLING LENGTH L (M)	WEIGHT (KG)	SLING LENGTH L (M)	WEIGHT (KG)
6	2	4.10	677	4.37	732	4.68	786
7	3	5.31	789	5.53	849	5.78	910
8	3	5.31	866	5.53	929	5.78	993
9	4	6.57	948	6.74	1019	6.95	1088
10	4	6.57	1026	6.74	1098	6.95	1172
11	5	7.86	1108	8.00	1187	8.18	1266
12	5	7.86	1186	8.00	1267	8.18	1349
13	6	9.09	1298	9.22	1385	9.37	1474
14	6	9.09	1376	9.22	1466	9.37	1557
15	7	10.47	1458	10.58	1553	10.72	1651
16	7	10.47	1535	10.58	1634	10.72	1732
17	8	11.79	1618	11.89	1723	12.01	1830
18	8	11.79	1696	11.89	1803	12.01	1914
19	9	13.12	1807	13.20	1920	13.31	2037
20	9	13.12	1884	13.20	2001	13.31	2120

Notes

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