TRAD
HIRE & SALES
SCAFFOLDING
SUPPLIER

20 YEARS
1998-2018

ALTRIX®
TEMPORARY ROOFING SYSTEM

USER GUIDE

FOCUSSED ON SERVICE

DISCLAIMER:

Whilst TRAD Hire & Sales Ltd and the author have made every reasonable effort to ensure that the information contained within this user guide is correct at the time of printing, you should be aware that TRAD Hire & Sales Ltd and the author do not accept any liability for any inconvenience, loss or damage caused by the result of any inaccuracy, or omission, within this publication.

PLEASE NOTE

You should read and ensure you understand this manual in its entirety prior to commencing work.

Only trained and competent operatives should erect, dismantle or modify the ALTRIX Temporary Roof System at all times.

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GUIDANCE NOTE

This manual is valid only for the use of

Genuine ALTRIX Temporary Roofing System supplied by TRAD Hire and Sales Ltd.

TRAD Hire & Sales Ltd reserve the right to alter or amend without notice the design and/or specifications of any of the equipment forming part of the ALTRIX system, in the interests of improvement.

ABOUT TRAD HIRE & SALES LTD

TRAD Hire & Sales, a member company of the TRAD Group, is one of the UK's market leaders for the supply of system scaffolding, scaffold tube, fittings, boards, stair towers, temporary roofing systems and associated equipment.

All the products we stock are of the highest quality and comply fully with all relevant British or European Standards. In addition, with our commitment to exceeding all safety standards, all our products, whether sourced internationally or within the UK, are subject to thorough testing by qualified external UK & European testing bodies.

From the smallest requirement to complete hire or sale packages, our UK-wide network of depots have the resources and capabilities to meet every demand.

TRAD Hire & Sales Ltd is a full non-contracting member of the National Access & Scaffolding Confederation (NASC) and is a fully accredited ISO 9001 company.

The TRAD Group is a member of the Altrad Group of companies.

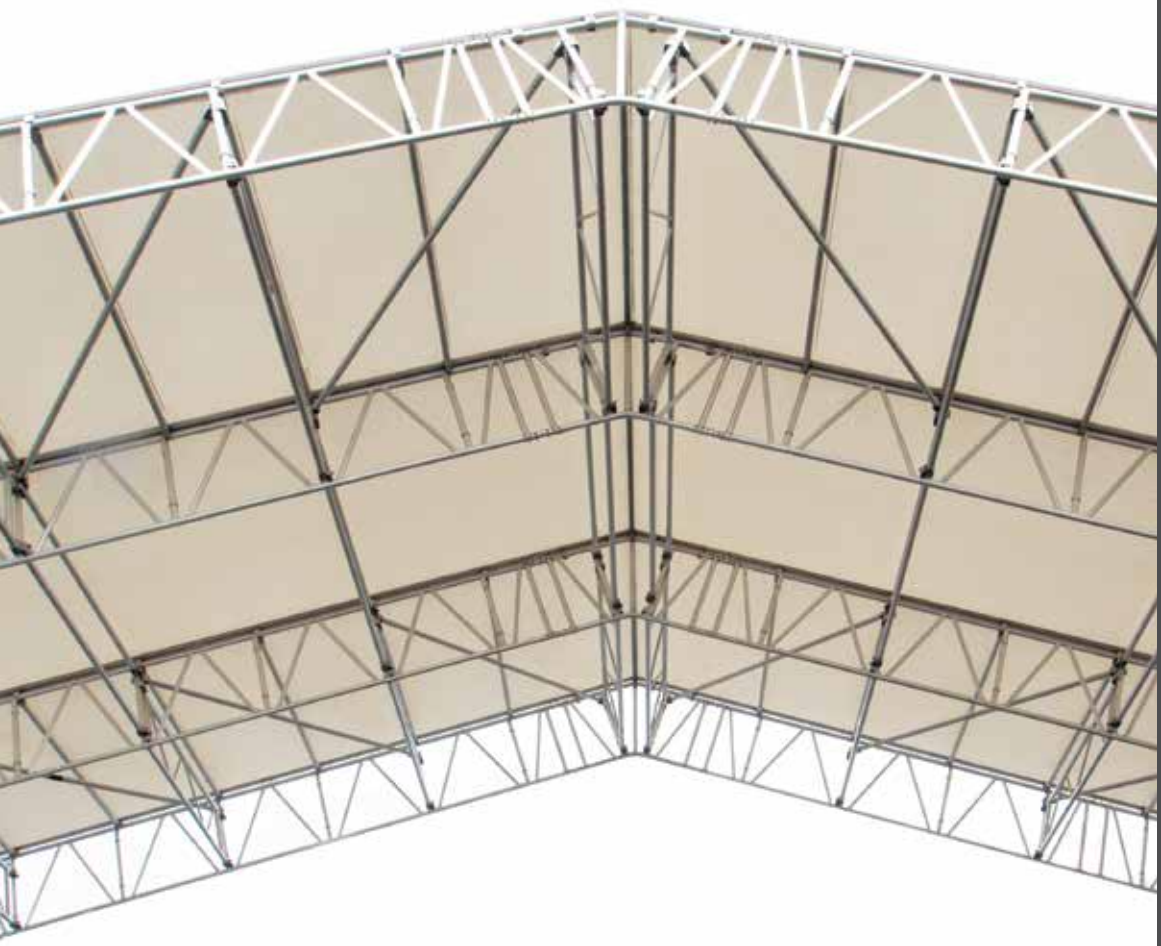
NASC National Access & Scaffolding Confederation

RoSPA

bsi. ISO 9001 Quality Management FS 614991

FORS ID: 002797

Scaffold Board Grading BM TRADA



GUIDANCE NOTE

Each temporary roofing project must be designed and certified by an appropriately qualified temporary works / scaffold design engineer.

Temporary roofs impart large forces onto their supporting structure, it is therefore imperative that these structures are included within the design scheme and calculations produced.

ABOUT ALTRIX

ALTRIX is an all-aluminium modular temporary roofing and weather protection system, which utilises the slide sheet keder model. This allows the roof sheets to be installed from the supporting structure below, in complete safety. Using the proven sliding button system to retain the sheet tracking, ALTRIX uses a heavy-duty 790mm deep structural beam ideal for demanding applications.

Although ALTRIX is designed to work particularly efficiently with PLETTAC METRIX System Scaffold, it is not limited to this application. ALTRIX can be used in conjunction with almost any scaffold type.

ALTRIX is more than just a roof. The chords and vertical posts of the beams are manufactured from 48.3mm diameter alloy tube. Because they do not require special fittings, they are suitable for use in many normal scaffold applications, such as bridge sections.

The 3.0m, 2.5m, 2.0m and 1.5m bay sizes, along with 2.0m brace frame centres, means that PLETTAC METRIX steel decking can integrate seamlessly within an ALTRIX structure, This setup is ideal for creating large flushed deck birdcages and gantries.

Because the brace can be used to connect any 48.3mm diameter tube, they can be used to set out standards, ensuring optimum locations to accommodate the roof above. The sheet tracks can be fixed to the side of a scaffold, to enable sidewall sheeting to be fixed, which is ideal for screens, temporary sheeting, etc.

ALTRIX is a complete solution, designed for practical application. Not only is ALTRIX a temporary roof used by scaffolders, it is a scaffolders' temporary roof.

This guide sets out the basic components of the system and explains how to use them. For information on ALTRIX components and applications not shown in this guide, please contact your nearest TRAD Hire & Sales Ltd. Branch (locations are detailed on the rear cover of this guide).

ALTRIX offers many advantages over other forms of temporary roof, including:

Weight	ALTRIX's all aluminium construction makes the system incredibly light and easy to handle.
Speed	ALTRIX's ease of use, along with its light weight makes the system exceptionally quick to erect.
Compatibility	ALTRIX can be supported by almost any scaffolding type.
Cost Savings	ALTRIX's versatility allows the bracing patterns to be application specific, making the system exceptionally cost effective.

ALTRIX has ISO 9001 and EN 1090 certified manufacturing processes.

When planning, designing and constructing an ALTRIX structure reference should be made to the current editions of the following:

Regulatory

Working at Height Regulations
Construction (Design and Management) Regulations
Management of Health and Safety Regulations

Normative

BS EN 12810-1	Façade scaffolds made of prefabricated components: Product Specifications
BS EN 12811-1	Scaffolds – Performance Requirements & General Design
BS EN 16508	Temporary works equipment – Encapsulation constructions – Performance requirements and general design
BS EN 13374	Temporary edge protection systems – Product specification, test methods.
BS EN 1991-1-3	Actions on structures. General actions, Snow loads
BS EN 1991-1-4	Actions on structures. General actions, Wind loads
BS EN 74-1	Couplers for tubes. Requirements and test procedures

Technical Guidance

NASC TG4	Anchorage systems
NASC TG9	Guide to the design and construction of temporary roofs and buildings
NASC TG14	Supplementary couplers and check couplers
NASC TG20	Guide to good practice for tube and fitting scaffold
iStructE	Temporary demountable structures

Safety Guidance

NASC SG4	Preventing falls in scaffolding operations
NASC SG6	Manual handling in the scaffolding industry
NASC SG9	Use, inspection & maintenance of lifting equipment
NASC SG19	A guide to formulating a rescue plan
NASC SG35	Handover of scaffold structures

ALTRIX AND SAFETY

1 Competence of Erectors

Competence of individuals working at height is now a direct requirement of the current "Work at Height" regulations. Consequently, employers have a duty to ensure that all individuals involved in the erection, modification or dismantling of any scaffolding equipment have received the training necessary to enable them to carry out their work in a safe manner.

Temporary roof structures can be amongst the most difficult and demanding scaffolding projects and while ALTRIX provides a safer, more effective alternative to other systems and traditional equipment, TRAD Hire & Sales Ltd recommends that a minimum of four trained and competent operatives be allowed to erect the system.

2 Work at Height / Fall Prevention / Fall Mitigation

The current edition of the Work at Height Regulations places a duty on employers to protect individuals from harm. Scaffolding inevitably carries a risk of falling from height and consequently, it is of paramount importance that all activities are assessed for risk, planned and a safe system of work is adopted during any scaffold activity. It is therefore strongly recommended that the procedures outlined in the NASC's guidance note SG4 – "Preventing Falls in Scaffolding Operations" are followed.

SG4 describes several safe working methods, including the use of collective fall protection systems, such as an advanced guardrail or scaffolder's steps. However, where these are impracticable – such as when scaffolders are required to lace beams together at high level – then, scaffolders should work in compliance with SG4's fall mitigation method by "crabbing" on beams.

3 Running Line, Harness and Lanyard Anchor Points

To ensure the safety of ALTRIX erectors, it is important that fall protection equipment is only attached to those components that are capable of withstanding any likely imposed loads. This section details the key components acceptable for attachment, based on all roofs being erected in accordance with this guide.

TRAD Hire & Sales Ltd strongly recommends that when erecting an ALTRIX roof, operatives should use a harness with a twin tailed energy absorbing lanyard, ideally, with a common energy absorber.

For guidance on the harness and lanyard anchor points on the support structure, please refer to the original supplier/manufacturer.

4 Rescue of Suspended Casualties

While the current Work at Height Regulations requires that work at height be carried out safely, they also require that contingency plans be made for any eventuality. This extends to making plans to rescue personnel suspended by fall arrest equipment. Personnel should be fully trained to use all relevant rescue equipment in the event of a suspended casualty.

Note: Details relating to rescue and what should be considered can be found in the latest editions of the NASC guidance notes SG4 & SG19 (SG19 – "A Guide to Fomulating a Rescue Plan"). A rescue plan for falls must be in place that complies with this guidance.

GUIDANCE NOTE

ATTACHMENT CAN ONLY BE MADE TO THE FOLLOWING COMPONENTS!

- **Top Chord of ALTRIX Beams**
- **Top Chord of ALTRIX Ridge Beams**
- **Top Chord of ALTRIX Brace Frames**
- **Vertical members of ALTRIX Beams (Running Line Only)**

MANUAL HANDLING

The following basic rules should be adhered to when manually handling the ALTRIX system and associated components.

- Plan lay down / storage areas in advance, to reduce the distance materials have to be manually handled.
- Always check the transit route before manual handling, to ensure that it is suitable and free from obstructions and any tripping hazards.
- When handling long materials, beware of damaging property, overhead electric lines, other people and moving vehicles.
- Only tackle loads that can be reasonably handled by the individuals involved – i.e. consider personal physical capabilities.
- Manual handling operations should be eliminated where possible, by using mechanical handling equipment and manual handling aids whenever possible. These include light-lines, gin wheel, forklifts and cranes etc.
- Where mechanical methods are not available, use the correct knots and hitches when using rope to hoist roofing components, as per NASC Safety Guidance SG9.

Note: Details relating to manual handling and what should be considered can also be found in the latest edition of the NASC guidance note SG6 – "Manual Handling in the Scaffolding Industry".

GUIDANCE NOTE

Always use the correct kinetic handling technique:

- **Make sure your feet are on a firm level base, a comfortable distance apart (Approx. 300mm).**
- **Use your legs and not your back to bend.**
- **Raise your head slightly and tuck in your chin to keep your spine straight.**
- **Avoid turning / twisting the trunk of the body.**

SAFETY ON SITE

As is the case with any scaffold, only trained and authorised scaffold operatives should carry out the erection, dismantling or modification of a ALTRIX structure. Consideration must always be given to those that may be affected by the works being carried out. To ensure that the highest standards of safety performance are maintained, consideration should be given to the following:

1 All roofing projects should be designed by a temporary works / scaffold design engineer, who is competent in the design of temporary roofs.

2 A copy of drawings and calculations must be kept on site.

3 A Safe System of Work should be drawn up for the project and documented in the site specific Risk Assessment / Method Statement (RAMS).

4 A visual check of the supporting scaffold, including roof support beams / ledgers, must be carried out prior to commencing roof erection to ensure the structure is built to the engineer's design.

5 A safe means of access to the level where the roof is to be installed.

6 A sufficient means of protection and safe system of work adopted. Work platforms must be fully boarded and guard-railed, or some other means of fall prevention / arrest must be in place.

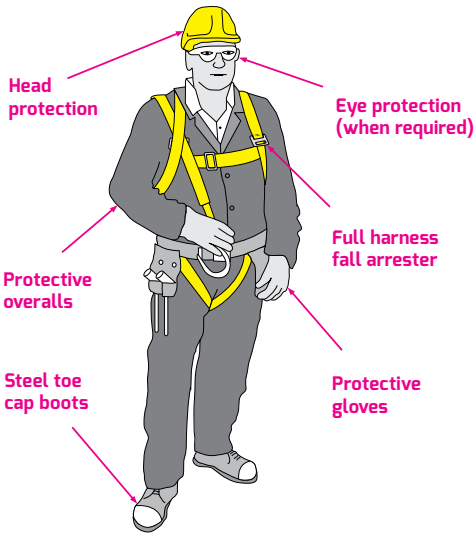
7 All ALTRIX roofs require adequate bracing, none should be removed without giving consideration to firstly installing alternative bracing, to ensure the continued safety of the roof (further design may be required).

8 All ALTRIX roofs must be erected in strict accordance with this user guide. Any configurations outside of this guide must be referred to a person competent in the design of ALTRIX.

9 Any unauthorised interference should be immediately reported to site management, with any incomplete or unsafe parts of the roof or supporting scaffold being clearly marked and access restricted.

10 All ALTRIX components require visual inspection before use. No damaged equipment should be used within the structure. Any equipment found damaged should be immediately set aside in a quarantined area, clearly marked and senior management informed. Maintenance and repair procedures should only be carried out by qualified / approved personnel.

11 Always wear appropriate PPE such as twin tailed energy absorbing lanyards, Hi-Vis and eye protection where required.



Typical PPE requirements

GENERAL RULES FOR SAFETY

Always

- Always ensure all who erect, adapt and dismantle the roof are trained and competent to do so.
- Always ensure that risk assessments and method statements have been carried out and communicated to those concerned. They should then be signed by all operatives and the records retained.
- Always ensure that there is adequate storage for the materials.
- Always ensure that there is clear access to the work area and that the supporting scaffold is sound and suitable for the roof.
- Always work to current SG4 guidelines.
- Always ensure loads are evenly distributed.
- Always ensure scaffold inspections are carried out and recorded as per current legal requirements.
- Always ensure that all defects are notified to the site management immediately.

Never

- Never let untrained persons erect, modify or dismantle the roof.
- Never remove guardrails or toe boards.
- Never remove bracing or tension bars without prior approval.
- Never tamper with beam support elements.
- Never remove restrictions or warning signs from the scaffold or roof structure.
- Never undermine the support scaffold by digging trenches underneath or near the base.
- Never add sheeting or netting onto the support scaffold without prior approval.
- Never use damaged materials.
- Never allow unqualified / unapproved personnel to repair damaged equipment.
- Never load directly on to the access scaffold's working platform (always use a loading tower).

GUIDANCE NOTE

Safety is no accident.
Don't risk it – if in doubt ask!

The information given in this ALTRIX user guide relates solely to genuine ALTRIX equipment supplied by TRAD Hire & Sales Ltd.

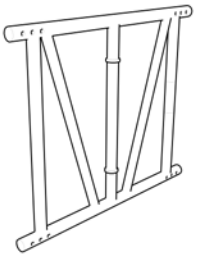
COMPONENTS MAIN COMPONENTS

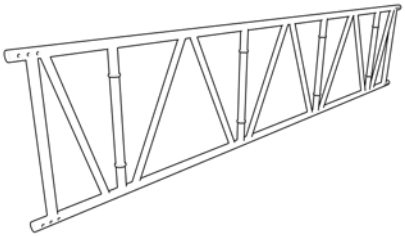
1 ALTRIX Aluminium Beams

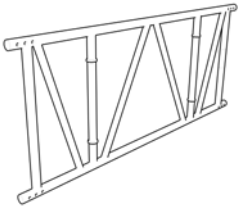
Manufactured from EN AW 6082 T6 Alloy, these form the main structural member of the ALTRIX roof. These beams have consistent nodal spacing, so that neighbouring spans can be made up from a differing combination of lengths. The verticals are always in the same location when viewed from the side, this allows the horizontal and plan bracing to be perfectly consistent.

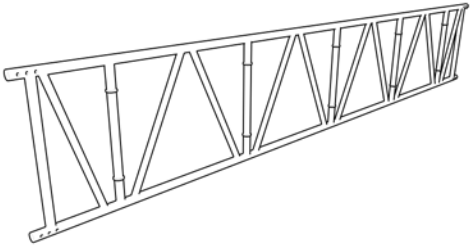
The 790mm depth increases capacity and when integrated into a PLETTAC METRIX Scaffold, the decking level remains equal with the supporting structure, enabling seamless access.

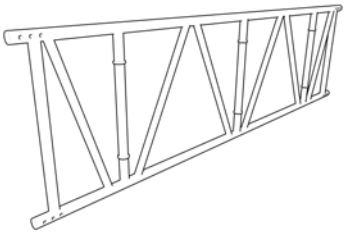
Code	Length (m)	Weight (kg)
105400	1.00	7.00
105405	2.00	12.53
105410	3.00	18.10
105415	4.00	23.60
105420	5.00	29.12
105425	6.00	34.66

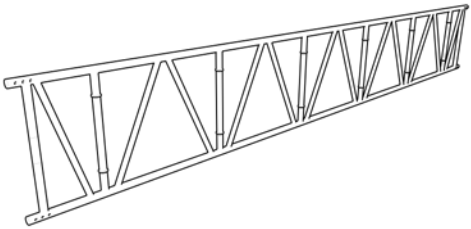








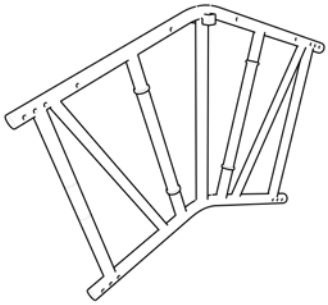




2 Ridge Beams

Used to connect two elevations of ALTRIX Beams at the apex of the roof.

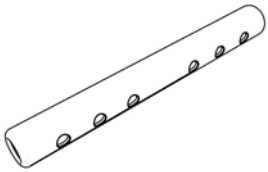
Code	Degrees	Weight (kg)
149700	18.00	10.40
149696	36.00	13.97



3 Beam Spigot

A six hole spigot used, in conjunction with 12mm quick release pins (or M12 x 60 Bolts and nuts), to connect differing lengths of ALTRIX Beams, Ridge Beams and Eaves Beams to one another. Two spigots are required per beam joint.

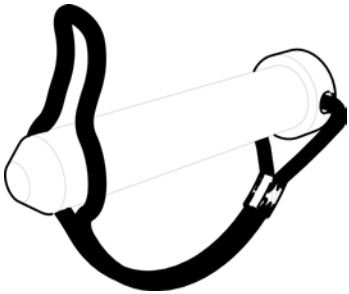
Code	Weight (kg)
149704	0.72



4 Quick Release Pins

Manufactured from Grade 8.8 steel, the 12mm quick release pins are used in conjunction with the six hole Beam Spigot, to connect differing lengths of ALTRIX Beams, Ridge beams and Eaves Beams to one another. Six pins are required per spigot, twelve per joint.

Code	Weight (kg)
149706	0.07



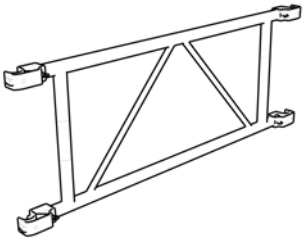
5 535mm Brace Frames

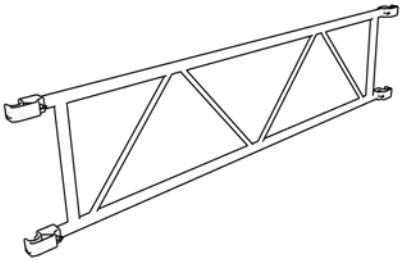
Used to connect two adjacent beam lines (trusses) together, attached to the vertical posts of the beams using a special claw casting. The frequency of Brace Frame bays is dependent on a number of factors:

- Span required
- Erection by hand or crane
- Location of roof
- Imposed loads

Please refer to pages 55 and 56 for frequency of Brace Frame bays.

Code	Length (m)	Weight (kg)
149750	1.50	6.50
149752	2.00	7.80
149754	2.50	9.20
149756	3.00	10.50





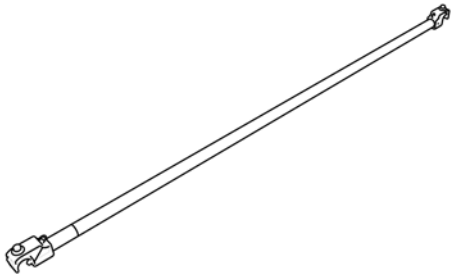
6 Horizontal Brace

Used to connect two adjacent beam lines (trusses) together, attached to the top and bottom chords of the beams. Ends include a special claw casting with track button. The frequency of Horizontal Brace is dependent on a number of factors:

- Fixed to top or bottom chord
- Span required
- Erection by hand or crane
- Location of roof
- Imposed loads

Please refer to pages 55 and 56 for frequency of Horizontal Brace.

Code	Length (m)	Weight (kg)
149758	1.50	2.64
149760	2.00	3.15
149762	2.50	3.66
149764	3.00	4.17



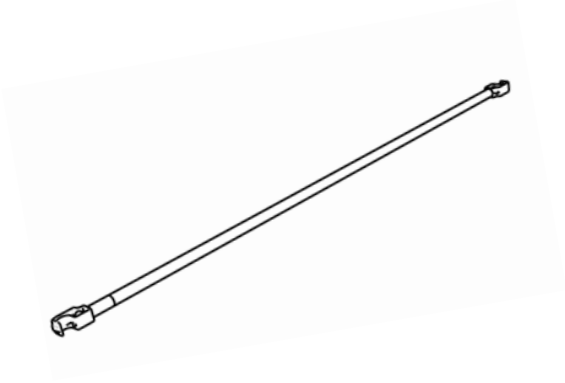
7 Plan (Diagonal) Brace

Attached diagonally between the top of the vertical posts of the ALTRIX beams at the position of the Brace Frames. Ends include a special claw casting, facing opposing directions. The frequency of plan brace is dependent on a number of factors:

- Span required
- Erection by hand or crane
- Location of roof
- Imposed loads

Please refer to pages 55 and 56 for frequency of Plan Brace.

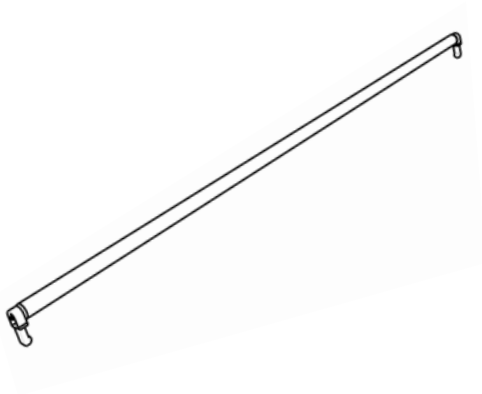
Code	Bay Size (m)	Weight (kg)
149766	1.50 x 1.00	2.81
149768	2.00 x 1.00	3.25
149770	1.50 x 2.00	3.51
149772	2.50 x 1.00	3.71
149774	2.00 x 2.00	3.84
149776	3.00 x 1.00	4.18
149778	2.50 x 2.00	4.22
149780	3.00 x 2.00	4.63



8 Roller Brace

Links adjacent beam lines (trusses) at the ridge and at eaves level. End hooks locate corresponding sockets on Ridge / Eaves Beam; Track Compressor; or Intermediate Roller Brace Coupler. The roller action aids sheet installation and tensioning.

Code	Length (m)	Weight (kg)
149782	1.50	6.10
149784	2.00	8.80
149786	2.50	11.40
149788	3.00	13.60



9 Sheet Tracks

This component provides the guide track and support for the sheeting and is located on top of each beam line via the track buttons on the Horizontal Brace.

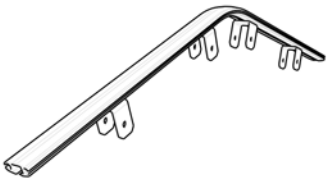
Code	Length (m)	Weight (kg)
149714	2.00	3.50
149716	3.00	5.30
149718	4.00	7.10
149720	5.00	8.90

10 Ridge Sheet Tracks

Either 18° or 36°, these components are attached to the top of the corresponding Ridge Beams to provide the guide track and support for the sheeting at the ridge.

Attachment is via the incorporated fixing plates and special Ridge Quick Release Pins, or M12 x 60mm bolts and hex nuts.

Code	Angle	Weight (kg)
149710	18°	3.70
149711	36°	1.89

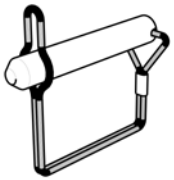


11 Ridge Quick Release Pins

Manufactured from Grade 8.8 steel, these special M12 x 70mm quick release pins are used to fix the Ridge Sheet Tracks to the Ridge Beams.

Also used to fix the Eaves Sheet Tracks to the Eaves Beams.

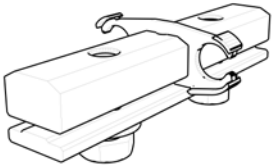
Code	Weight (kg)
149708	0.10



12 Track Spigot incl. Gasket

Used to join and seal the successive lengths of Sheet Tracks. Special design helps prevent twisting of tracks at the joint, keeping the integrity of the seal intact.

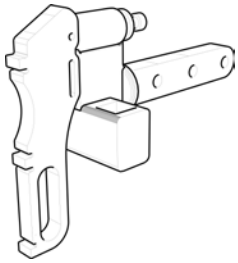
Code	Weight (kg)
149730	0.29



13 Track Compressor

Positioned within the top chord of the Altrix Beam at the eaves and fixed in position with a Quick Release Pin, this component tensions the sheet tracks and has location sockets for the Roller Brace.

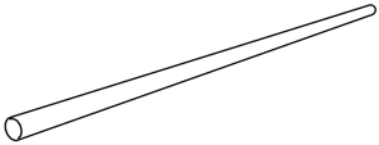
Code	Weight (kg)
149724	1.09



14 Sheet Tension Bars

These slide through the pockets in the ends of the sheeting to enable tensioning and fixing. Has drilled holes at either end to enable fixing of the Detachable Sheet Pulling Wheels and the Eaves Continuous Tube Connectors.

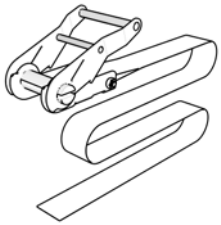
Code	Length (m)	Weight (kg)
149790	1.50	5.25
149792	2.00	7.12
149794	2.50	8.96
149796	3.00	10.86



15 Heavy Duty Ratchet Straps

Used in conjunction with the Sheet Tension Bars, these 2.0m long ratchet straps secure and tension the roof sheeting to the supporting structure at the eaves. They have a safe working load of 1000kg and a total of eight are required per sheet, four at each eaves position.

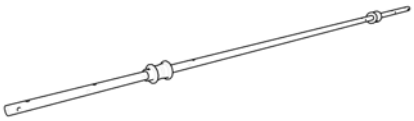
Code	Weight (kg)
149732	0.52



16 Sheet Pull Bar Assembly

Inserted through the Sheet Tension Bar at one side of the sheet, the nylon wheels of the assembly are positioned on top of the Sheet Tracks at either side, guiding the sheet smoothly over the roof. This component is variable in size, only one is required per roof and is simply removed once a sheet is installed.

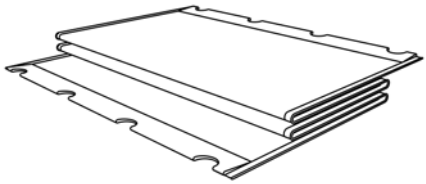
Code	Weight (kg)
149799	8.20



17 Roof Sheeting

610gsm flame retardant sheeting, with Keder beading to both the left and right hand edges, for location into the sheet tracks. Pockets are positioned at each end to receive the Sheet Tension Bars.

Exact lengths can be cut and additional pockets can be fitted upon request. Gable sheets and different grades of sheeting may also be available. For further details, please contact your local TRAD Hire & Sales depot, details of which can be found on the rear cover of this guide or visit **www.tradhireandsales.co.uk**



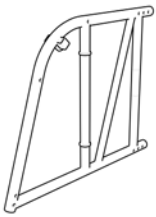
Code	Size (m)	Weight (kg)	Code	Size (m)	Weight (kg)
179800	10.00 x 1.50	9.80	179832	10.00 x 2.50	16.30
179802	15.00 x 1.50	14.60	179834	15.00 x 2.50	24.40
179804	20.00 x 1.50	19.50	179836	20.00 x 2.50	32.50
179806	25.00 x 1.50	24.40	179838	25.00 x 2.50	40.60
179808	30.00 x 1.50	29.30	179840	30.00 x 2.50	48.80
179810	35.00 x 1.50	34.10	179842	35.00 x 2.50	56.90
179812	40.00 x 1.50	39.00	179844	40.00 x 2.50	65.00
179814	45.00 x 1.50	43.90	179845	45.00 x 2.50	68.53
179816	10.00 x 2.00	13.00	179846	10.00 x 3.00	18.30
179818	15.00 x 2.00	19.50	179848	15.00 x 3.00	27.45
179820	20.00 x 2.00	26.00	179850	20.00 x 3.00	36.60
179822	25.00 x 2.00	32.50	179852	25.00 x 3.00	45.75
179824	30.00 x 2.00	39.00	179854	30.00 x 3.00	54.90
179826	35.00 x 2.00	45.50	179856	35.00 x 3.00	64.05
179828	40.00 x 2.00	52.00	179858	40.00 x 3.00	73.20
179830	45.00 x 2.00	58.50	179859	45.00 x 3.00	82.35

This section details components not covered by other categories, and completes the ALTRIX range of products.

1 18° Eaves Beam

Used as an alternative to the Track Compressor for sheet termination at the eaves.

Code	Weight (kg)
149702	6.52

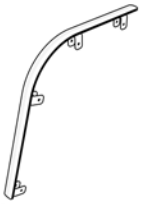


2 18° Eaves Sheet Track

Used in conjunction to the 18° Eaves Beam for sheet termination at the eaves. They provide the guide track and support for the sheeting at this position.

Attachment is via the incorporated fixing plates and the special Ridge Quick Release Pins, or M12 x 60mm bolts and hex nuts.

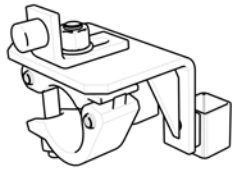
Code	Weight (kg)
149712	3.40



3 Intermediate Roller Brace Coupler

A special coupler for terminating the sheeting at intermediate positions. Fits to the top chord of the ALTRIX Beams, and has sockets to receive the Roller Brace.

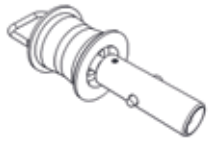
Code	Weight (kg)
149726	1.65



4 Integrated Pull Bar Wheel

Used as an alternative to the Sheet Pull Bar Assembly, these wheels are fitted directly into the Sheet Tension Bars and are secured using the integral spring pin. Like the Sheet Pull Bar Assembly, the wheels are positioned on top of the Sheet Tracks at either side, guiding the sheet smoothly over the roof. Two are required per roof, and they are simply removed once the sheet is installed.

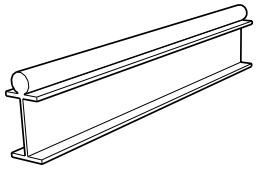
Code	Weight (kg)
149798	1.51



5 Trax UB Runway Beam

A galvanised steel H-Beam with a tube runner welded to the top flange. Attached to the support scaffold with Boltless Girder Clamps, these components provide support for the rolling castor assembly. Maximum support centre is 3.07m but actual centres are job specific, to be determined by calculation and the supporting structure's capacities. Joints must be positioned at no more than 150mm from a support.

Code	Length (m)	Weight (kg)
149846	2.00	40.00
149847	3.00	60.00

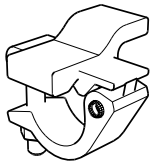


6 Boltless Girder Clamp

This fitting is used to connect the Trax Runway Beams to the supporting scaffold structure.

Note: This component must be used in pairs, one on either side of the Trax Runway Beams' bottom flange.

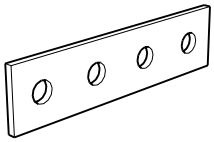
Code	Weight (kg)
149851	1.10



7 Trax UB Joint Plate

Two of these plates are used in conjunction with four M16 x 40mm bolts and hex nuts to join the Trax Runway Beams.

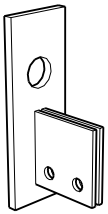
Code	Weight (kg)
149850	0.50



8 Trax UB End Closer

One of these closers is used at each end of a length of Trax Runway Beams, they prevent the castors from rolling off the track. They are attached with two M16 x 40mm hex bolts, washers and hex nuts.

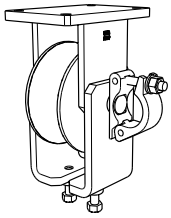
Code	Weight (kg)
149849	2.60



9 Castor Body

Sits on top of the Trax Runway Beams to allow the roof structure to be rolled out. Depending on the preferred support method, the castor is attached to differing support components via four M12 x 40mm bolts and nuts. Castors are linked with scaffold tube and have locking nuts to prevent movement when roof is in final position.

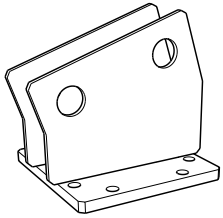
Code	Weight (kg)
149855	15.00



10 18° Castor Top Plate

This component is attached to the castor via four M12 x 40mm bolts and hex nuts. Provides connection to the 0.7m Beam Bearer with 30mm Locking Pins and 30mm R Clips.

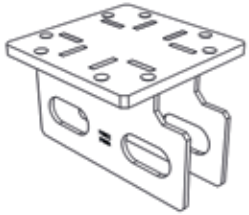
Code	Weight (kg)
149857	5.20



11 0° Castor Top Plate

This product has various uses but is mainly used in conjunction with the castor body and 0.7m Beam bearer to provide horizontal support for mobile crash decks. Connection is made to the castor, via four M12 x 40mm bolts and hex nuts. And to the 0.7m Beam Bearer with 30mm Locking Pins and 30mm R Clips.

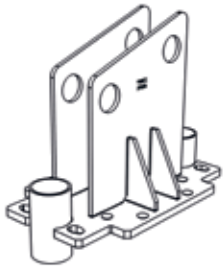
Code	Weight (kg)
149865	5.00



12 18° Castor Top Plate with PLETTAC METRIX Ledger Connection

Similar to the 18° Castor Top Plate (left), this component comes complete with connection points for PLETTAC METRIX Ledgers, creating a stable series of units working in tandem, while ensuring spacing between roof beam lines.

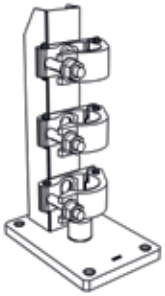
Code	Weight (kg)
149867	7.34



13 Castor Top Plate C/W 3 Half Couplers

Attached to the castor, via four M12 x 40mm bolts and hex nuts. Used where tube and fittings are utilised to support the ALTRIX Beams.

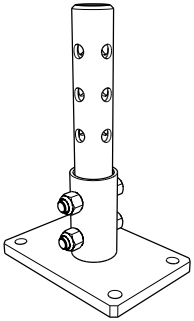
Code	Weight (kg)
149856	3.40



14 Castor Tube Stem

A versatile component which is generally used as the support connection for vertical beams, Eaves Beams and 36° Ridge Beams (when used at the eaves). It is attached to the castor, via four M12 x 40mm bolts and hex nuts.

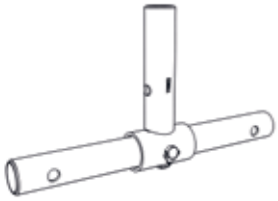
Code	Weight (kg)
149853	3.02



15 Eaves Continuous Tube Connector

This steel component provides a consistent tensioning point when used in conjunction with a second set of Sheet Tension Bars. The component is comprised of two elements; a sleeve and spigot. The male end of the sleeve slots into the bottom chord of an ALTRIX Beam, while the spigot fits through the sleeve into the ends of the Sheet Tension Bars. All parts are secured using the 12mm Quick Release Pins via the pre-drilled holes.

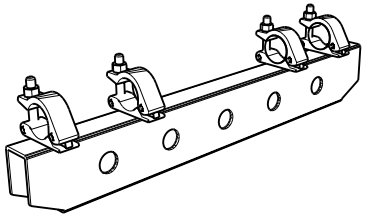
Code	Weight (kg)
149800	1.96



16 0.7m Beam Bearer

This product comes complete with four half couplers to connect to the bottom chord of the ALTRIX Beam. Connect to either of the 18° Castor Top Plates, or the Beam Support Unit, with 30mm x 90mm Locking Pins and 30mm R Clips.

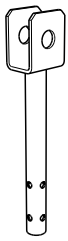
Code	Weight (kg)
149842	7.30



17 U-Head for PLETTAC METRIX Open Ended Standards

Used when supporting an ALTRIX roof directly from PLETTAC METRIX Open Ended Standards. Two spigots are bolted inside the top of a pair of standards, using M12 x 60mm bolts and hex nuts. The U-Head is connected to the Beam Support Unit with the 30mm x 90mm Locking Pin and 30mm R Clip.

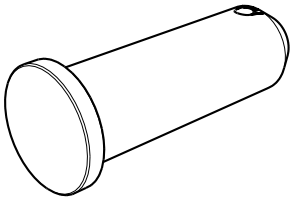
Code	Weight (kg)
149840	2.10



18 30mm x 90mm Locking Pin

A heavy duty pin used to connect various components, made from Grade 8.8 steel. Used in conjunction with the 30mm R Clip.

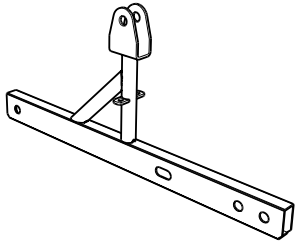
Code	Weight (kg)
149820	0.55



19 Beam Support Unit

This component is attached to a pair of the U-Heads for PLETTAC METRIX Open Ended Standards, with 30mm Locking pins and 30mm R Clips. The unit spans from inside to outside of the scaffold. A 0.7m Beam Bearer is then attached to the top, again using the 30mm x 90mm Locking pins and R Clip. Each successive Beam Support Unit is connected with a PLETTAC METRIX Ledger of the appropriate size.

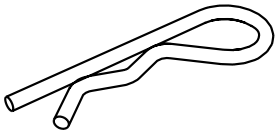
Code	Weight (kg)
149838	17.20



20 R Clip

A clip used to secure the 30mm x 90mm Locking Pin in place.

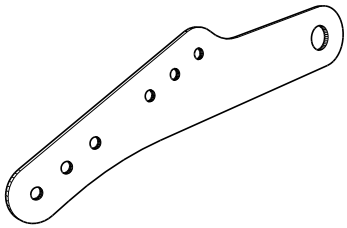
Code	Weight (kg)
149822	0.02



21 Tension Tube Connection Plate

These provide the starting point of the Tension Tube Assembly. A pair of these are fixed to the bottom chord beam at the joints with M12 x 90mm bolts and hex nuts. These are connected to the Tension Tube End Piece with a 30mm x 90mm Locking Pin and R Clip.

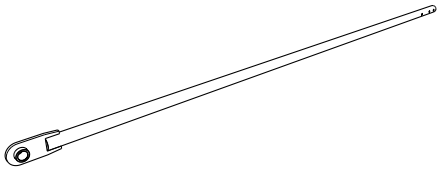
Code	Weight (kg)
149828	1.79



22 Tension Tube End Piece

Connected to a pair of Tension Tube Connection Plates with a 30mm x 90mm Locking Pin and R Clip. Connection is then made to the required size of Tension Tube using ALTRIX Beam Spigots and M12 x 60mm bolts and hex nuts.

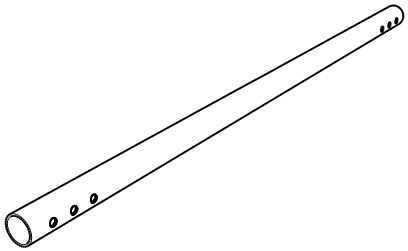
Code	Weight (kg)
149830	9.80



23 Tension Tubes

These 48.3mm diameter tubes are cut to an exact size and are joined together in the required configuration and at either end to the Tension Tube End Pieces, using ALTRIX Beam Spigots and M12 x 60mm bolts and hex nuts or M12 x 60mm Quick Release Pins.

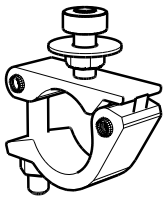
Code	Type	Weight (kg)
149832	1.90	7.11
149834	2.85	10.66
149836	5.71	21.32



24 Track Couplers (Short & Long)

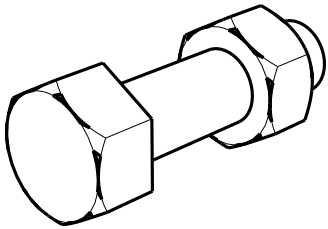
Special couplers for attaching sheet tracking to 48.3mm diameter tube. Comes in two versions, the longer, second version is for attachment to system scaffolds.

Code	Weight (kg)
149728	0.65
149729	0.65



25 Hex Bolts and Nuts

Different lengths of hex bolt are used to connect various components and secured with an appropriate sized hex nut. M12 size nuts are lock nuts. All made from Grade 8.8 steel.



Hex Bolts

Code	Length (m)	Weight (kg)
149852	M16 x 40mm	0.09
149861	M12 x 40mm	0.05
149862	M12 x 60mm	0.06
149824	M12 x 90mm	0.09

Hex Nuts

Code	Type	Weight (kg)
149859	M16	0.04
149826	M12	0.02

COMPONENTS BAY SIZE COLOUR CODING

For every bay size there is a corresponding colour code on the 0.535m Brace Frames, Horizontal Brace and Plan Brace, making each corresponding size easily identifiable, and leaving no room for error in the preparation of works.

3.0m Brace Frames and Horizontal Brace

2.0m Brace Frames and Horizontal Brace

3.0m x 2.0m Plan Brace

2.0m x 2.0m Plan Brace

3.0m x 1.0m Plan Brace

2.0m x 1.0m Plan Brace

2.5m Brace Frames and Horizontal Brace

1.5m Brace Frames and Horizontal Brace

2.5m x 2.0m Plan Brace

1.5m x 2.0m Plan Brace

2.5m x 1.0m Plan Brace

1.5m x 1.0m Plan Brace

ERECTION & DISMANTLING GUIDANCE

This section describes the basic erection and dismantling procedures for ALTRIX structures.

Only competent operatives should erect, dismantle or modify ALTRIX structures at any time.

TRAD Hire & Sales Ltd recommends, that as a minimum, the working practices for all scaffold activities set out in the NASC's document SG4 – "Preventing Falls in Scaffolding Operations" are applied at all times. The NASC's Technical Guidance Note TG9 on temporary roofing should also be consulted for guidance.

ALTRIX is suitable for symmetric and asymmetric duo pitch spans along with mono pitch spans, domes and temporary buildings.

ALTRIX temporary roofs can pass large forces onto their supporting structures. Therefore it is imperative that each roof, and supporting structure is designed and certified by an appropriately qualified temporary works engineer, who is fully versed in this form of design.

ALTRIX Roof structures can be erected in several different ways. To ensure safety and efficiency it is important that the correct method is chosen for each installation. Job specific risk assessments should be developed to assist in this decision.

Prior to commencing work, make sure all method statements, risk assessments and permits are in place and that the supporting structure is built to the correct design.

It is recommended that erecting and dismantling ALTRIX temporary roofs and buildings is carried out by a minimum of four operatives.

When complete an ALTRIX structure is required to be inspected:

- Before being used for the first time.
- Following significant alteration.
- At least every seven days from the date of the last inspection.
- Following adverse weather or any event likely to have affected its strength or stability.

Further advice on inspection and handover requirements can be found in the current edition of the NASC's publication SG35 "Handover of Scaffold Structures".

BASIC ERECTION PROCEDURE

Tools Required

Most of the components of the ALTRIX range can be fixed without the aid of tools, however, the following tools are required in the construction and perhaps the connection of the ALTRIX roof to the supporting structure.

- 19mm flat spanner, or an adjustable spanner
- Scaffold spanner with spike
- Spirit Level

Eaves to Ridge Walkways

Eaves to ridge walkways can easily be formed by installing PLETTAC METRIX decks. The hooks on the end of the decks are fixed over the bottom chord of the brace frame, or to the lower Horizontal Brace on infill bays, Horizontal Brace must be placed over the top of the bottom chord of the ALTRIX beam. The decks must be placed as close to the claw ends as possible, with a maximum of two 0.3m wide decks side by side. It is possible to place four decks within the width of one bay, two at either side.

Beam, Ridge and Eaves Connections

All beams should be connected together using the six hole ALTRIX Beam Spigot and either the 12mm Quick Release Pins (Figs. 1 to 4), the M12 x 60 Hex nuts and bolts, or a combination of both.

The beams should be connected with the end diagonals angled towards one another at the top chord.

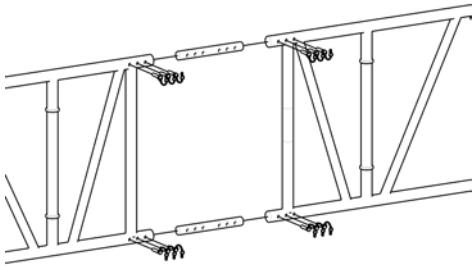


Fig. 1

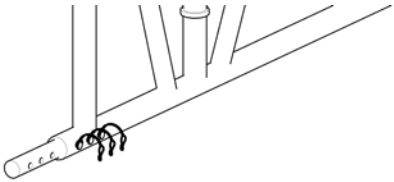


Fig. 2

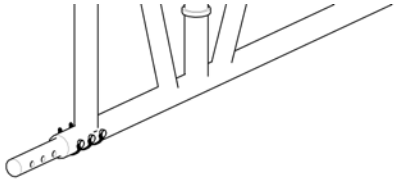


Fig. 3

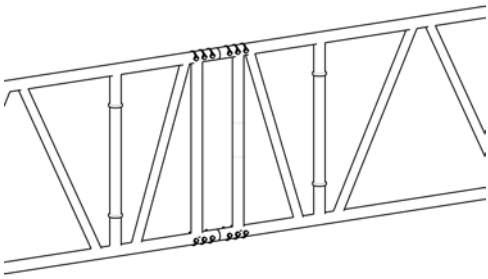


Fig. 4

Brace Frame Connections

All Brace Frames are connected by push fit and are only connected to the vertical posts of the beams, which are complete with collars.

Sit the Brace Frames on the bottom chord of the ALTRIX Beams and rest them against the diagonals (Fig. 5).

Ensure the bottom claws are engaged partially onto the post and, in one movement, rotate the Brace Frame away from the diagonal until all four claws engage with the beam posts (Fig. 6).

Check the clearance of the claw post/chord weld. The Brace Frame must be located so that the upper claws are below the top collars on the verticals of the ALTRIX Beams (Fig. 7).

Brace Frames must be connected to the Ridge Beams. The positions of the Brace Frames is then calculated from the ridge taking into account the required brace pattern.

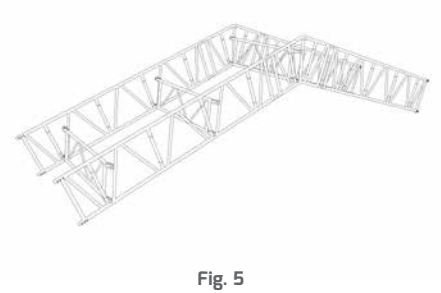


Fig. 5

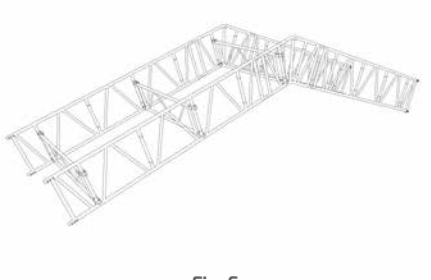


Fig. 6

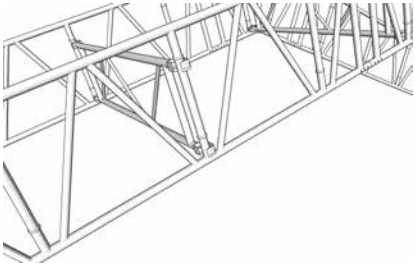


Fig. 7

Horizontal Brace Connections

Horizontal Brace are used to link two adjacent beam lines (trusses) together structurally. There are three alternative fixing positions to the ALTRIX Beam, over the chord, under the chord and to the vertical post (Figs. 8 to 10).

The button to the top of the claw provides the location point for the keder sheet track, therefore the brace must be fixed over the top chord of the ALTRIX beams at least every second bay.

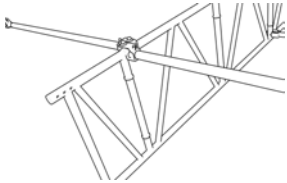


Fig. 8

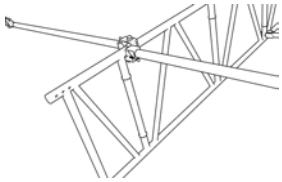


Fig. 9

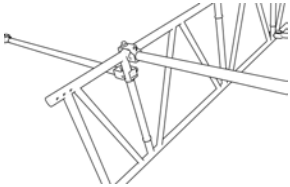


Fig. 10

All horizontal brace are connected by push fit. Ensure each brace is held at 90° to the beam line prior to installation. To find the 90° position fully connect the brace on one side only, disengage the steel securing pin on the opposing side and move the brace up slope, then down slope, until the claw bites. Half way between these two bite points (shown A & B below) will be the 90° position (Fig. 11).

Following installation, ensure that the steel securing pin is fully extended so that the ring pull is in contact with the claw as shown, a tap on the pin head may be necessary to fully engage (Fig. 12).

Horizontal Brace must be fitted upslope from the vertical post.

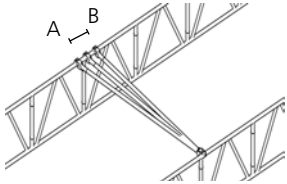


Fig. 11

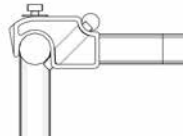


Fig. 12

GUIDANCE NOTE

If the steel securing pin does not fully engage, this is a clear indication that the brace is not square to the beam and should be re-aligned. It is not necessary to use a hammer to fit the brace as, if aligned correctly, it will click into position with ease.

Plan Brace Connections

Plan Brace should be installed in each brace framed bay. They span diagonally across, and are connected to the vertical posts each subsequent Brace Frame is attached. They sit above the top collars on the vertical posts (Fig. 13).

Where the Brace Frame spacing is reduced to 1.0m to accommodate at the eaves, it is preferable to use the appropriate 1.0m Plan Brace size. If this size of brace is not available, it is possible to use the 2.0m brace.

Connection is made at the lower Brace Frame position, with the Plan Brace over lapping the penultimate Brace Frame diagonally and connecting to the vertical post 2.0m above (Fig. 14).

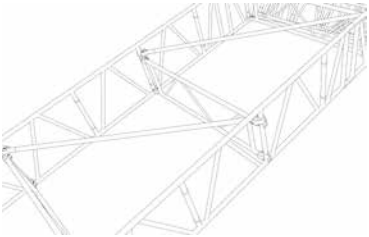


Fig. 13

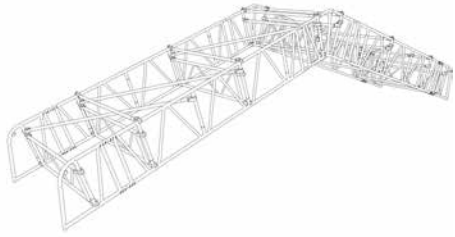


Fig. 14

GUIDANCE NOTE

All bracing components should be installed at the frequencies appropriate for the project. They should be detailed on a job-specific drawing prepared by an appropriately qualified temporary works / scaffold design engineer. The alternative bracing patterns and frequencies are shown on pages 55 and 56.

Sheet Track Installation

The Ridge Track is installed first by attaching it to the Ridge Frame using the Ridge Quick Release Pins, or M12 hex nuts and bolts (Fig. 15). Track spigots are then connected to the ridge track (Fig. 16).

Appropriate lengths of Sheet Tracks are then fed over the buttons of the Horizontal Brace (Fig. 17), then connected to the Ridge Track using the Track Spigots (Fig. 18). Ensure the gasket of the spigot is snug, secure and there are no gaps before tightening the bolts (usually after the connection of Track Compressors).

Attach further lengths of Sheet Track as required, until full length is complete (Fig 19).

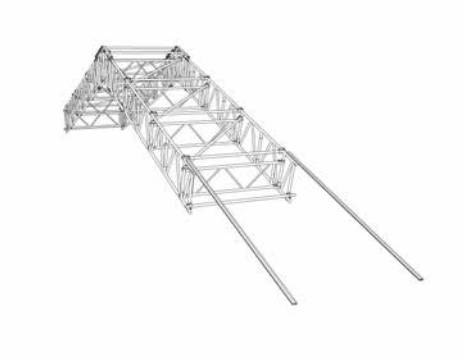


Fig. 17

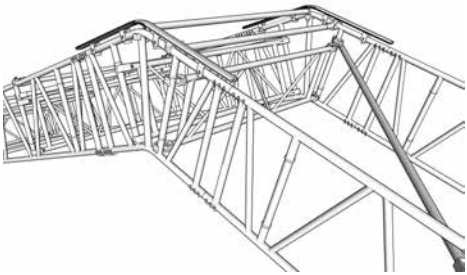


Fig. 15

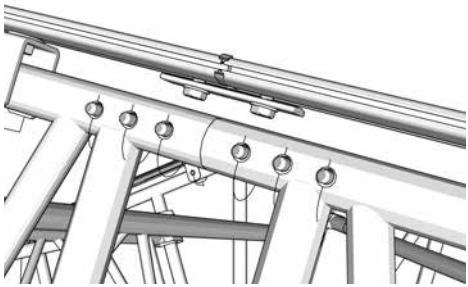


Fig. 18

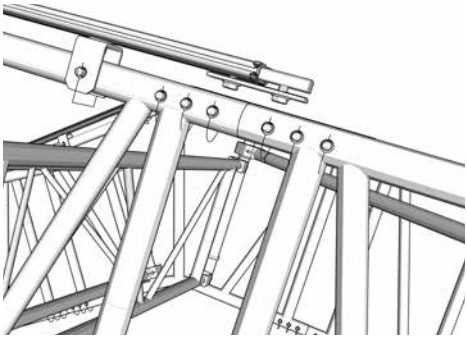


Fig. 16

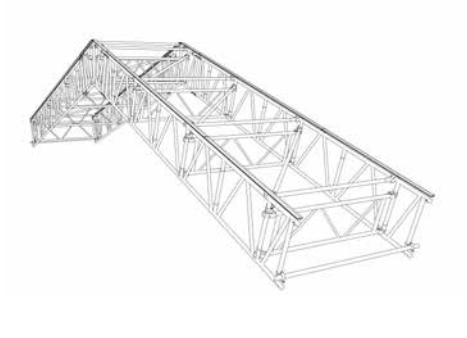


Fig. 19

Track Compressor Installation

The Track Compressor, with the yellow handle made loose, is slid fully into the end of the beam line and secured using a Quick Release Pin (Figs. 20, 21 & 22). The yellow handle is then pushed downwards into the closed position, releasing the spring and bearing pressure onto the Sheet Tracks, holding them in position (Figs. 23 & 24).

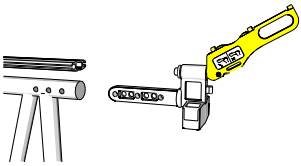


Fig. 20

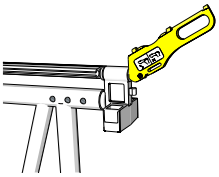


Fig. 21

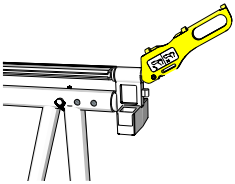


Fig. 22

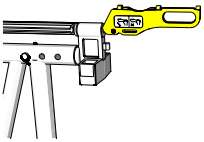


Fig. 23

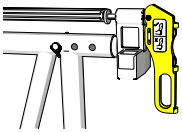


Fig. 24

Roller Brace Installation

The male ends of the Roller Brace are slotted into the corresponding pockets of the Ridge Beams, Eaves Beams, Intermediate Roller Brace Couplers, or the Track Compressors (Fig. 25 & 26). The shape of the male ends provide a secure fit.

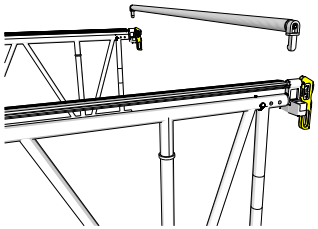


Fig. 25

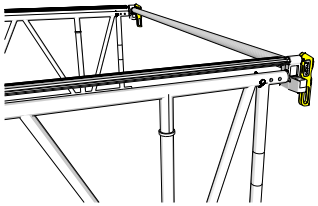


Fig. 26

Sheet Installation

Prevailing weather conditions may determine whether it is safe to commence the sheeting operation, as loose sheets are vulnerable to high winds.

Sheeting is ideally carried out by four operatives, two on each side of the roof.

Two ropes must be deployed over the roof from one side to the other, prior to commencing sheeting.

Ensure sheets are leaf-folded, clean and fit for use. Visually check the keder bead for cuts / damage. Do not use if damaged. Place the sheeting on the boarded lift directly below the bay to be sheeted.

Insert the sheet tension bar through the pockets of the leading edge of the sheet, attach the previously deployed ropes securely to the sheet tension bar at the two outer cutaways.

Remove one roller from the Sheet Pull Bar and insert the bar through the sheet tension bar, then refit the roller. The rollers need to be positioned over the tracking on each side (Fig. 27).

Insert the keder beads into the tracking up to 1.5m, to ensure correct alignment. Gradually and evenly pull the ropes to slide the sheeting across the roof within the tracking (Fig. 28, 29 & 30).

When the sheet is fully pulled over, fit another sheet tension bar into the trailing edge pockets. Secure the sheet tension bar at each side with four of the Heavy Duty Ratchet Straps, see page 37 for details.

Sheets can be installed sequentially as each bay is complete, or all together once the full roof is assembled.

Note: It may be necessary to provide a temporary platform to the outside of the supporting structure, to enable the safe and efficient installation of roof sheets.

Fig. 27

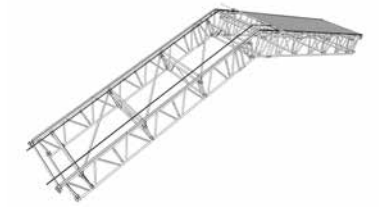


Fig. 28

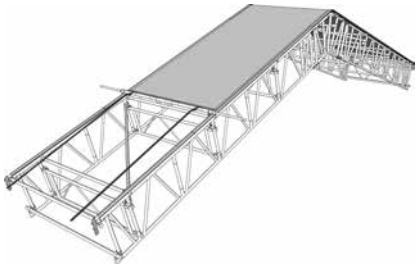


Fig. 29

Fig. 30

Eaves Termination Details

There are three methods of eaves termination; using the Track Compressor (Fig. 31), the Eaves Beam (Fig. 32), or the Intermediate Roller Brace Coupler (Fig. 33).

Details on the installation of the Track Compressor is described on page 35. This is the most common way of eaves termination.

The Eaves Beam provides an aesthetically pleasing finish to the roof. It should be fitted with Beam Spigots and the special Eaves Sheet Track, using the relevant Quick Release Pins (or nuts and bolts), prior to connection to the end beam. Connect a Track Spigot, complete with gasket, to the last track of the beam line. Now slide the Beam Spigots into the end beam and fix in place using the Quick Release Pins (or nuts and bolts). Tighten the Track Spigot. Once adjacent Eaves Beams are in place, connect a Roller Brace of the appropriate size, via the specially formed pockets at the top chord.

Using the Intermediate Roller Brace Coupler, adjacent sheets can be terminated at alternative locations to the end of a beam line. Track sections should be arranged so a joint corresponds to the required termination point. When using this method it must be ensured that the connections between tracks are snug, secure, and the track spigots are tightened correctly.

Once a sheet has been fully pulled over the roof, and the Sheet Tension Bars fitted, four of the Heavy Duty Ratchet Straps must be used at each side to secure (and tension) the sheet to either:

1. System ledgers.
2. Secondary Sheet Tension Bars connected to the bottom chord of the beams, via Eaves Continuous Tube Connectors.
3. A scaffold tube ledger, which is fixed using inverted Class B right angle fittings to:
    a. The vertical of the Altrix Beam just above the bottom chord (Fig. 31)
    b. Tube spigots fixed to the Eaves beam (Fig. 32).
    c. The main scaffold structure.

Note: Where the Heavy Duty Ratchet Straps are to be fixed to a system ledger, advice must be sought from the manufacturer / supplier of the system used, whether the ledgers are suitable for this application.

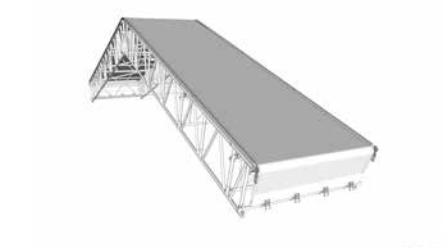


Fig. 31

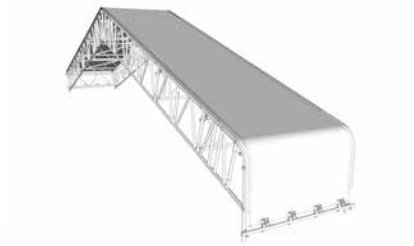


Fig. 32

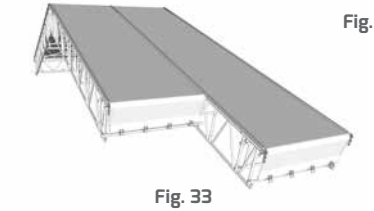


Fig. 33

SPAN TYPES

ALTRIX is suitable for the construction of duo or mono pitch spans and shelters. Duo pitch spans can either be symmetric or asymmetric.

Duo Pitch Symmetric

Fig. 34, 18° Pitch

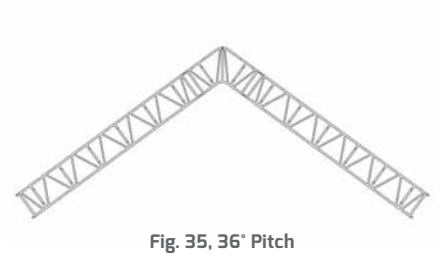


Fig. 35, 36° Pitch

Shelters / Arches

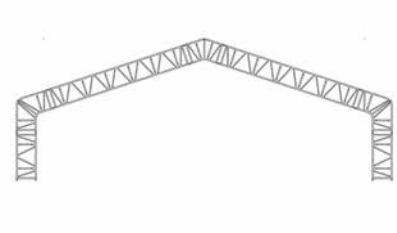


Fig. 37, Shelter

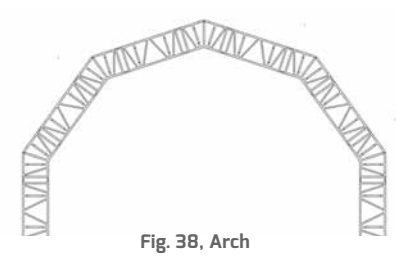


Fig. 38, Arch

Duo Pitch Asymmetric

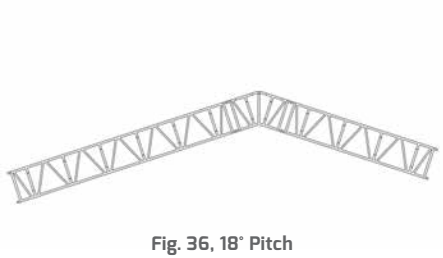


Fig. 36, 18° Pitch

Mono Pitch

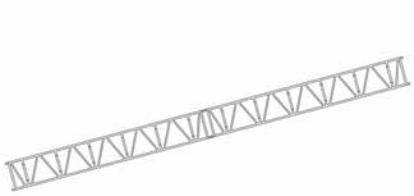


Fig. 39, Mono Pitch

The recommended minimum pitch for a mono pitch roof is 15°.

SCAFFOLD CONNECTIONS

These details are indicative only, actual connections should be determined by calculation and a design should be produced by a qualified temporary works / scaffold design engineer, prior to work commencing on site.

1 Runway Trax

For use with mobile roofs and facilitating the 'Roll-Out' Method of erection, which allows the roof to be built from the safety of a boarded platform at one end.

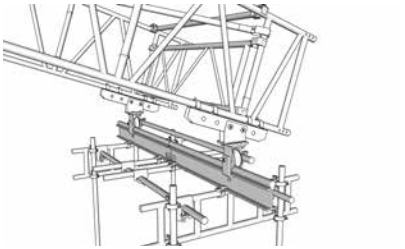


Fig. 40

2 Roof Support Beam

Traditional support method for tube and fitting scaffolds, as well as system scaffolds. This connection is suitable for both crane and hand erection methods.

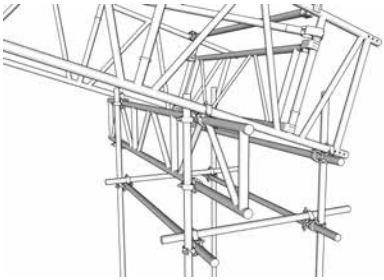


Fig. 41

3 Metrix Beam Support

For use with PLETTAC METRIX System Scaffold. This enables each beam line to be positioned precisely at the standard locations, ensuring optimal load transference through the structure.

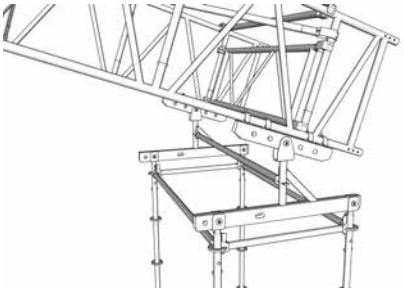


Fig. 42

ROLLING ROOFS

Step 1

The support frequency for the Trax UB Runway Beams is to be in accordance with a design produced by a qualified temporary works/scaffold design engineer.

Connect the desired lengths of Trax UB Runway Beams together using the Trax UB Joint Plates and M16 x 40mm Hex Bolts and Nuts. Attach the Trax UB End Closer at one end only. Secure the runway into position using the Boltless Girder Clamps, one pair at either side of the beam, at each support position (Fig. 43).

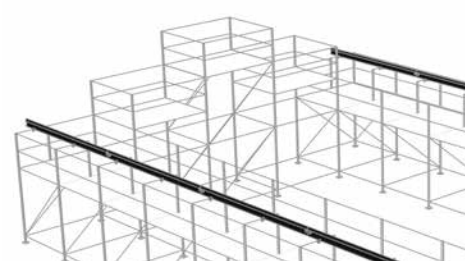


Fig. 43

Step 2

Create a castor assembly by connecting the Castor Body to the 18° Castor Top Plate using four sets of M12 x 40 Hex Bolts and Nuts. Now attach the 0.7m Beam Bearer to the 18° Castor Top Plate using two 30mm x 90mm Locking Pins and R Clips (Fig. 44).

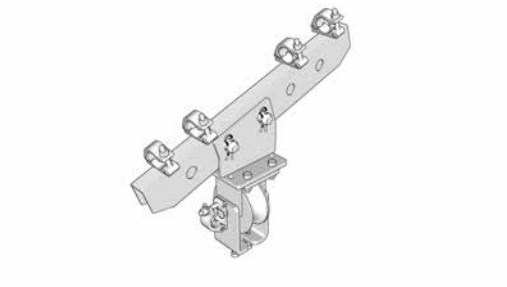


Fig. 44

Step 3

Slide a castor assembly along both runway beams to an appropriate position to conduct the erection of the first truss (Fig. 45).

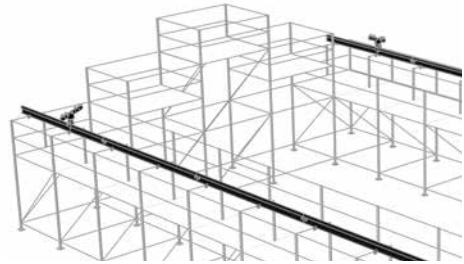


Fig. 45

Step 4

Using a stepped working area at the gable (which should at least be equal in width to the largest roof bay), assemble all ALTRIX Beams and Ridge Beams for the first truss, as described on page 30. Temporarily support the truss with short length of tube and right-angled fittings. Secure the assembled truss to the 0.7m Beam Bearer, on both sides (Fig. 46), making sure the castor assembly is in the vertical position using a spirit level.

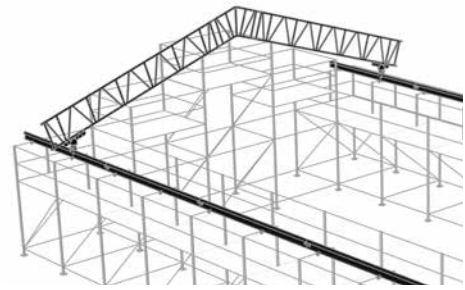


Fig. 46

Step 5

Slide another Castor assembly along each of the runway beams to the desired bay width distance from the first truss. Now complete a new truss section, temporarily supporting as before and connect to the new pair of castor assemblies (Fig. 47).

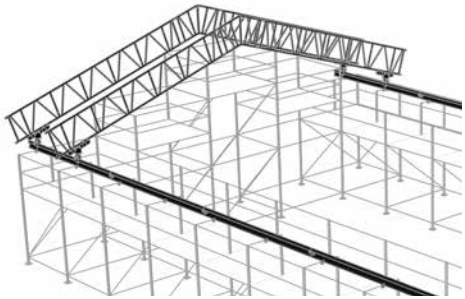


Fig. 47

Step 6

Connect the two truss sections with the correct size of 535mm Brace Frames at the eaves position, as described on page 31 (Fig. 48).

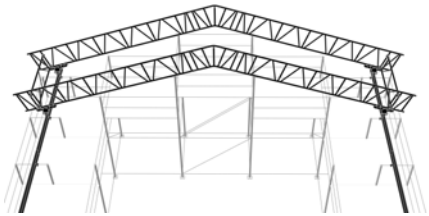


Fig. 48

Step 7

Fix the next Brace Frame at the next required upslope position (as determined by the desired bracing pattern), remembering Brace Frame positioning is calculated from the ridge downwards. Connect a Diagonal Plan Brace from truss to truss, between the Brace Frames (Fig. 49).

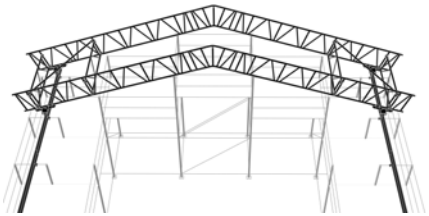


Fig. 49

Step 8

Fix Horizontal Brace to the top chord of the ALTRIX Beams, again at the centres determined by the bracing pattern (Fig. 50).

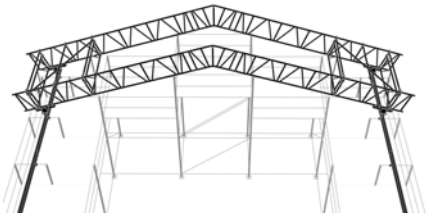


Fig. 50

Step 9

Moving up towards the ridge, connect the Brace Frames, Diagonal Plan Brace and Horizontal Brace at the required centres, completing each section before moving to the next (Fig. 51).

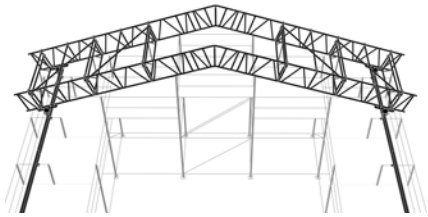


Fig. 51

Step 10

When all bracing elements of the bay are complete, attach Ridge Tracks, Sheet Tracks and Track Compressors, engage the track compressors, then secure all Track Spigots (Fig. 52).

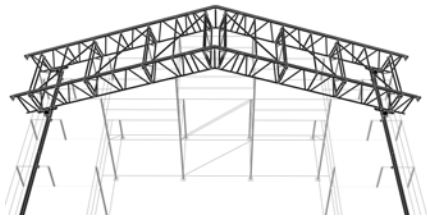


Fig. 52

Step 11

Fix the Roller Brace to both eaves and the ridge (Fig. 53).

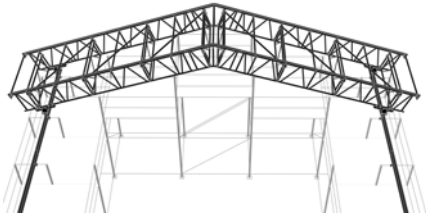


Fig. 53

Step 12

Once the first bay is complete, disconnect the trusses from their temporary tube and fitting support and roll out. The second truss line should now be in the position vacated by the first (Fig. 54).

Note: It may be necessary to remove guardrails to roll the roof. If this is the case, suitable fall arrest equipment must be employed and all guardrails

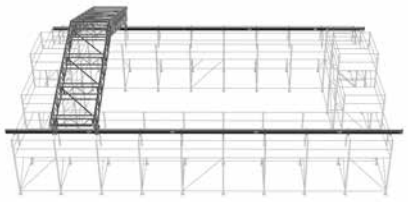


Fig. 54

Step 13

Complete the second bay by the methods previously described, using only Horizontal Brace with centres determined by the chosen brace pattern (Fig. 55).

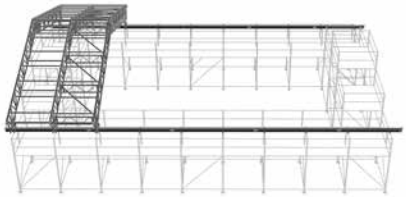


Fig. 55

Step 14

Continue to erect and subsequently roll out the completed bays, fixing Brace Frames and Diagonal Plan Brace at a maximum of one in every five bays and to pattern specified by design (Fig. 56). Ensure the Horizontal Brace is positioned correctly, giving the Sheet Tracks the required number of track buttons to connect to.

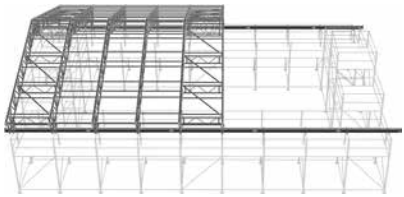


Fig. 56

Step 15

Continue erecting the roof until all bays are complete, making sure the last bay is fully braced. Now attach Trax UB End Closers at the open ends of each Trax UB Runway (Fig. 57).

Castors should now be connected with scaffold tube and / or PLETTAC METRIX Ledgers fixed using the integral fittings. / connection points.

Secure all the castor locking nuts to prevent movement along the Trax UB Runway.

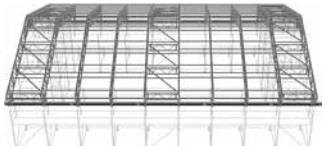


Fig. 57

Step 16

Pull the roof sheets over and secure, using the methods described on pages 36 and 37 (Figs. 58 and 59).

Roof sheeting can be installed sequentially as each bay is erected, or all together once the roof structure is complete.

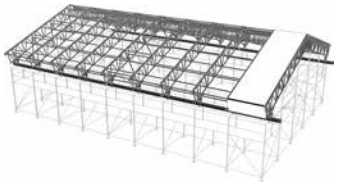


Fig. 58

Fig. 59

ERECTION BY CRANE

Step 1

The connection between the ALTRIX Roof and any support structure is to be in accordance with a design produced by a qualified temporary works/scaffold design engineer. For illustrative purposes only, this example shows a roof support beam connected to the inner standards, whilst the eaves of the roof supported by a ledger tube (Fig. 60).

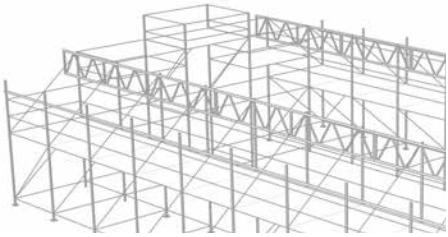


Fig. 60

Step 2

At ground level, connect two Ridge Beams (complete with ridge tracks) with the desired length of brace frames. Connection must be made to the posts with collars. Secure the ridge Roller Brace into the pockets provided (Fig. 61).

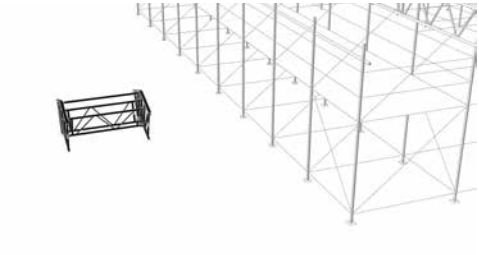


Fig. 61

Step 3

Lift the Ridge Beams with the crane and connect the first set of ALTRIX Beams to the ridges, as described on page 30 (Fig. 62). Carefully lower the assembly to the ground taking care not to damage the beam ends.

Note: Slings must be attached to the top of the same vertical posts to which the Brace Frames are also attached.

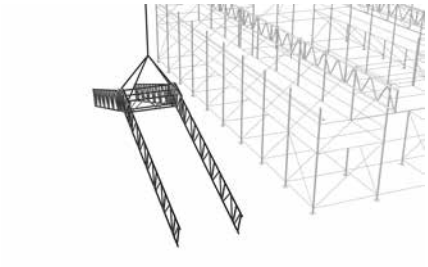


Fig. 62

Step 4

Starting from the ridge and working downslope, follow the chosen brace pattern and attach all further Brace Frames, Plan Brace and Horizontal Brace, completing each section before moving to the next. Horizontal Brace should be fixed to the top chord of the truss with the track buttons facing upwards on all crane slung sections to allow Sheet Tracks to be connected prior to lifting (Fig. 63).

Fig. 63

Step 5

For larger spans, reposition the slings, lift and add further beams and bay components until desired length is complete. If no further beam connections are to be made, fix all Sheet Tracks, Track Compressors (or preferred track / eaves termination detail) and Roller Brace (Fig. 64).

Note: Sheet Tracks may be fitted before further beam connections to a truss.

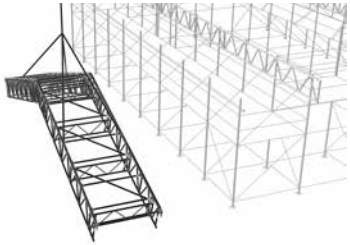


Fig. 64

Step 6

Install PLETTAC METRIX decks to create a walkway on both sides of the ridge, to one truss only. Securely attach the adjoining infill bay components (except Roller Brace) to the top of the bay using the claw ends. Reposition the crane slings to the correct position (Fig. 65).

Note: Crane lifting points are detailed on pages 57 and 58.

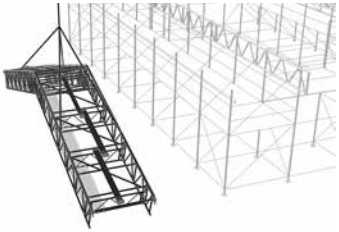


Fig. 65

Step 7

Lift the first fully braced bay into position with the PLETTAC METRIX Decks to the inside (Fig. 66). Now connect to the scaffold, ensuring the bay is correctly aligned, using the method detailed within the design produced by a qualified temporary works / scaffold design engineer.

Note: Hand lines may be tied to the beams at the eaves, prior to lifting, to help guide the bay when lowering into position.

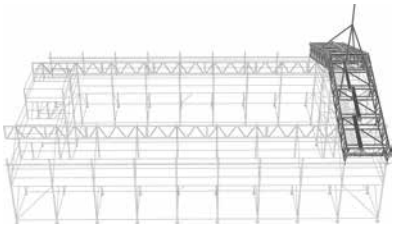


Fig. 66

Step 8

Create a second fully braced bay at ground level, by repeating steps 2 to 6, placing PLETTAC METRIX Decks to both sides (Fig. 67).

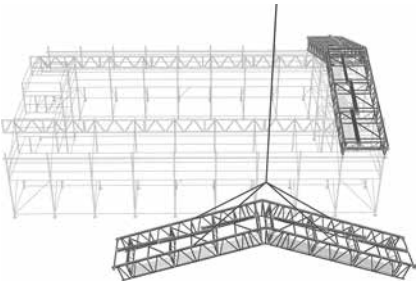


Fig. 67

Step 9

Lift the second fully braced bay into position (Fig. 68), Horizontal Brace can be used at the eaves to establish the correct distance from the first bay. Again, connect the trusses to the support structure using the method detailed within the design produced by a qualified temporary works/scaffold design engineer.

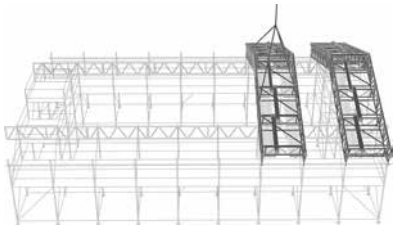


Fig. 68

Step 10

The infill bay between the braced bays can now be completed. Operatives can walk up to the ridge on the PLETTAC METRIX Decks, taking care to attach their harness and lanyard to the positions described on page 8. Working progressively from the ridge down, with one operative on either side, the Roller brace and Horizontal Brace can be installed to the correct positions on the infill bay (Fig. 69).

Note: The PLETTAC METRIX Decks should be removed as the operatives move from the ridge downslope.

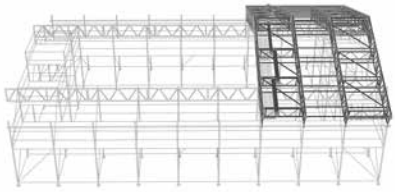


Fig. 69

Step 11

Repeat steps 2 to 6, and complete a third fully braced bay at ground level. Lift into position and secure, using the same process in step 9 (Fig. 70).

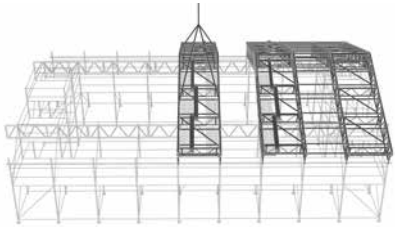


Fig. 70

Step 12

Continue the process until all bays are complete, and fixed to the supporting structure (Fig. 71).

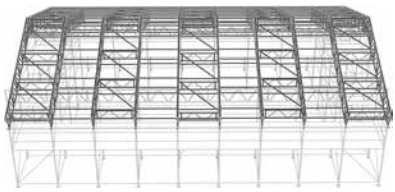


Fig. 71

Step 13

Pull the Roof Sheets over and secure using the methods described on pages 36 and 37 (Fig 72).

Roof sheeting can be installed sequentially as each bay is erected, or all together once the roof structure is complete.

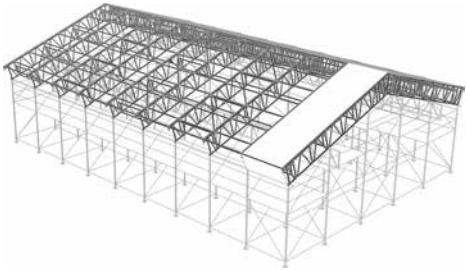


Fig. 72

Step 14

Continue the process until all bays are complete and sheets secured (Fig. 73).

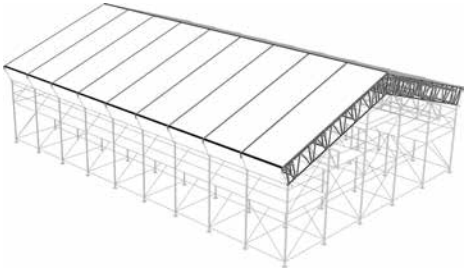


Fig. 73

GUIDANCE NOTE

It is not recommended to attach the roof sheets prior to lifting by crane. Sheets can act as wind-sails causing the bay to become unstable during the lifting operation.

ERECTION BY HAND

Step 1

The connection between the ALTRIX Roof and any support structure is to be in accordance with a design produced by a qualified temporary works/scaffold design engineer.

For illustrative purposes only, this example shows a roof support beam connected to the inner standards, whilst the eaves of the roof are supported by a ledger tube (Fig. 74).

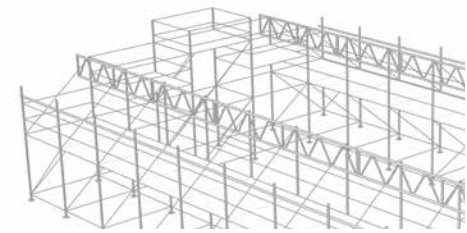


Fig. 74

Step 2

Using a stepped working area at the gable, assemble all ALTRIX Beams and Ridge Beams for the first truss, as described on page 30. Move the completed truss into position (Fig. 75) and secure to the support structure using the method detailed within the design produced by a qualified temporary works/scaffold design engineer.

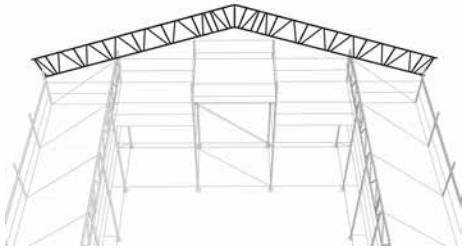


Fig. 75

Step 3

Assemble a second truss and attach the correct size of 535mm Brace Frames at the eaves. Manually move into the required position using the Brace Frames to help prevent overturning, a Horizontal Brace may also be used at the ridge. Connect the two truss sections at the eaves position with the Brace Frames as described on page 31 (Fig. 76). Again, secure to the support structure using the method detailed within the design produced by a qualified temporary works/scaffold design engineer.

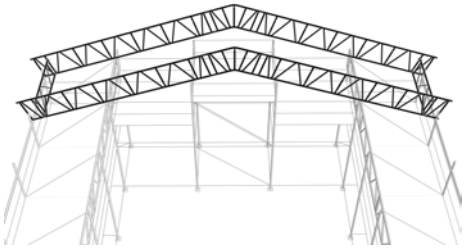


Fig. 76

Step 4

Fix the next Brace Frame at the next required upslope position (as determined by the desired bracing pattern), remembering the Brace Frame positioning is calculated from the Ridge downwards (Fig. 77).

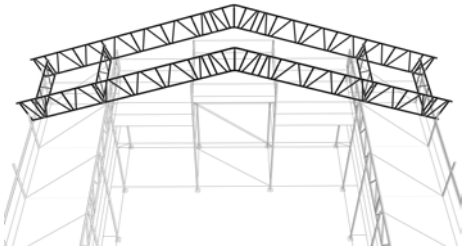


Fig. 77

Step 5

Connect a Diagonal Plan Brace from truss to truss between the Brace Frames. If required, temporarily unsecure the truss frames to allow for movement then re-secure all connections, making sure the bay is correctly aligned (Fig. 78).

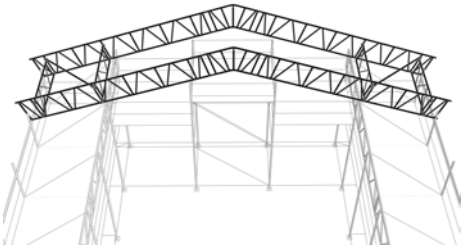


Fig. 78

Step 6

Fix Horizontal Brace to the top chord of the ALTRIX Beams, again at the centres determined by the bracing pattern (Fig. 79).

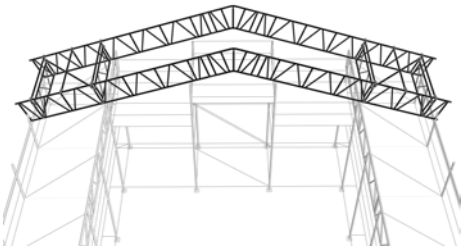


Fig. 79

Step 7

Moving up towards the ridge, connect the Brace Frames, Diagonal Plan Brace and Horizontal Brace at the required centres, completing each section before moving to the next (Fig. 80).

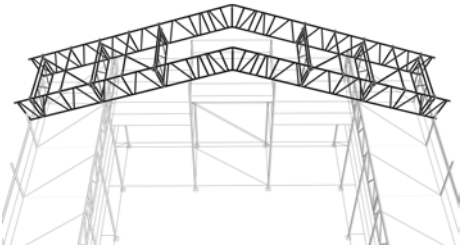


Fig. 80

Step 8

When all bracing elements of the bay are complete, attach Ridge Tracks, Sheet Tracks and Track Compressors to the first truss only, engage the Track Compressors, then secure all track spigots (Fig. 81).

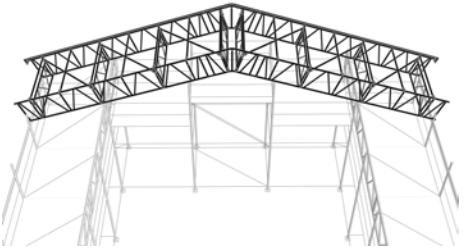


Fig. 81

Step 9

Install PLETTAC METRIX decks to create a walkway (next to inside truss only). Operatives can then walk up to the ridge on the decks, taking care to attach their harness and lanyard to the positions described on page 8.

Load the horizontal components (except Roller Brace), for the next adjoining section on the top of the bay, secure using the claw ends (Fig 82).

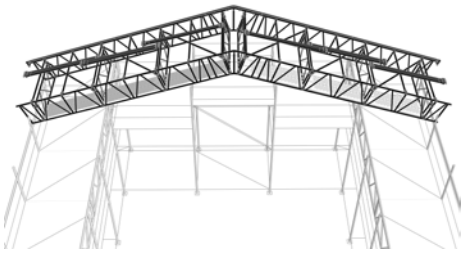


Fig. 82

Step 10

Create a new truss using ALTRIX Beams and a Ridge Beam (Fig 83).

During the construction of the new truss it can be supported by 'needle' scaffold tubes connected to the preceding two trusses by load bearing right angled couplers.

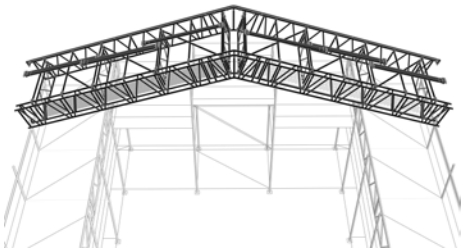


Fig. 83

Step 11

Connect Horizontal Brace to the lower positions of the new truss, plus one to the upper position at the ridge. Manually push the truss outwards until the brace claws can be connected to the previous truss (Fig. 84). Secure the new truss to the supporting structure.

Note: Brace Frames may be fixed at the eaves temporarily while the trusses are being manually handled, to help prevent overturning.

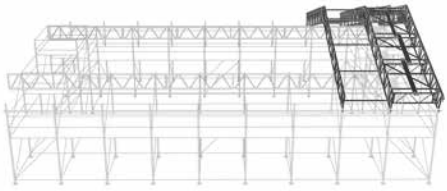


Fig. 84

Step 12

Create a walkway on either side of the roof, to the ridge, using PLETTAC METRIX decks. Connect all remaining Horizontal Brace required for the chosen brace pattern. Now attach Ridge Tracks, Sheet Tracks and Track Compressors to the second truss. Engage the Track Compressors and secure all track spigots (Fig 85).

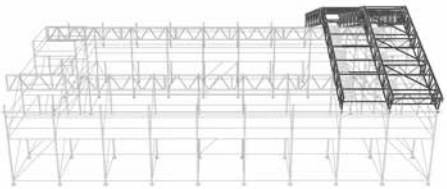


Fig. 85

Step 13

Fix the Roller Brace to the ridge and eaves of the first bay.

Again for ease, load the horizontal components (except Roller Brace) for the next adjoining section on the top of the bay, secure using the claw ends (Fig 86).

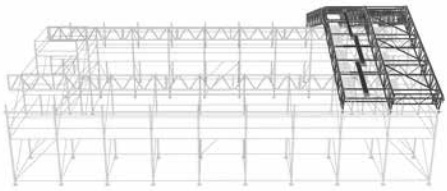


Fig. 86

Step 14

Continue to erect further bays following the method described, ensuring the Horizontal Brace is positioned correctly. Make sure track buttons are facing upwards on each of the trusses to allow the fixing of the Sheet Tracks.

Only remove the PLETTAC METRIX Decks once a bay is fully complete (Fig. 87).

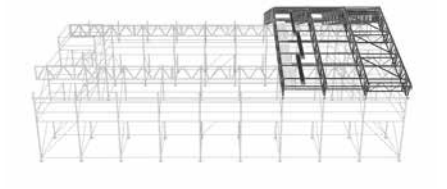


Fig. 87

Step 15

Complete the roof structure, fixing Brace Frames and Diagonal Plan Brace at a maximum of one in every five bays and to pattern specified by design (Fig. 88).

When erecting the Brace Framed bays, use the frames to push the new truss into position, rather than Horizontal Brace.

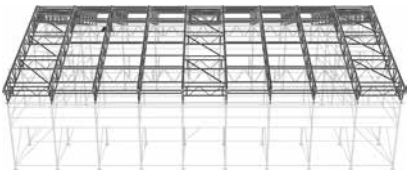


Fig. 88

Step 16

Pull the roof sheets over and secure using the methods described on pages 36 and 37 (Fig. 89 & 90).

Roof sheeting can be installed sequentially as each bay is erected, or all together once the roof structure is complete.

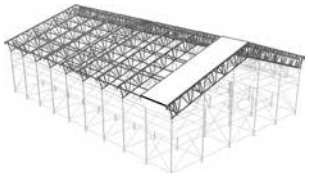


Fig. 89

Fig. 90

BASIC DISMANTLING GUIDANCE

Step 1

Prior to commencing work, always ensure risk assessments and method statements have been carried out. They should then be communicated to those concerned and signed by all operatives with records retained.

The Safe System of Work document, contained within the site-specific risk assessment / method statement (RAMS), should be reviewed and amended as necessary for the dismantle operation.

Step 2

Check that the integrity of the ALTRIX roof and the supporting structure has not been compromised in any way and that all connections between the supporting structure and roof are sound.

Make sure that all components and ties have not been interfered with and all working platforms are clear of any loose material and debris prior to dismantling.

Step 3

Decide which safe lowering method will be used to lower the components to the ground. For example, hand to hand, crane, hoist, forklift truck or hand-line, as per NASC Safety Guidance SG9.

Under **no** circumstances should 'bombing' be used to lower equipment.

Once components are safely on the ground they should be stacked neatly ready for transportation.

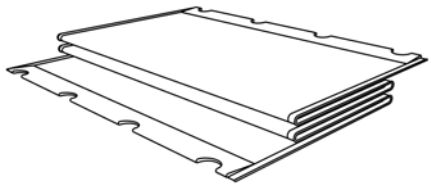
Step 4

Undo the ratchet straps of the first sheet and remove the sheet tension bars.

Pull the sheet through from one side, leaf folding as you go (Fig. 91).

All roof sheeting can be removed at the commencement of the dismantling process, or as each bay is sequentially dismantled.

Note: A minimum of 2 bays must have their sheets removed at any one time to allow for the removal of the Sheet Tracks.



Step 5 - Rolling Roof

Unsecure all the castor locking nuts, then roll the roof along so the first bay is positioned over the stepped working area at the gable.

Temporarily support the first truss with short length of tube and right-angled fittings.

Remove the roller brace from the ridge of the first bay and also from the first two bays at the eaves.

Disengage and remove the track compressors from the first two trusses, or if an alternative eaves detail has been used, remove those.

Disassemble the Sheet Track components from both trusses.

Moving from the ridge downwards, dismantle all bay components.

Unsecure the first truss from the castor assemblies and disassemble all beam elements of the first truss.

Unsecure and remove the ALTRIX beams from the temporary tube and fitting support.

Remove the Trax UB End Closer and slide both castor assemblies off the open end of the Trax UB Runway Beam.

All components should now be lowered to ground level.

Step 5 - Dismantle by Crane

Dismantling by crane is only possible when every second bay is fully braced (or if double bay lifting is possible, every third bay).

Create walkways using PLETTAC METRIX Decks from the eaves to the ridge on fully braced bays, to either side of the first infill bay. Operatives can walk up to the ridge on the walkways, taking care to attach their harness and lanyard to the positions described on page 8.

Working progressively from the ridge down, with one operative on either side, the roller brace and horizontal brace of the infill bay can be removed.

Load the removed horizontal components (except Roller Brace), on the top of the first braced bay that needs to be lifted and secure using the claw ends.

Attach the crane slings to the appropriate lifting point for the span (see pages 57 and 58), then if they are required for later use, remove the PLETTAC METRIX Decks.

Unsecure all the connections from the first braced bay to the support structure and commence the crane lift of this first section to the ground.

Once at ground level, support the bay using the crane and dismantle all sections removing all components, working progressively from the eaves to the ridge.

Reposition the crane slings as necessary.

Note: Hand lines may be tied to the beams at the eaves prior to lifting, to help guide the bay when landing at ground level.

Step 5 - Dismantle by Hand

Starting at one end of the roof, create two walkways, using PLETTAC METRIX Decks. Position the walkways within the first and second bays next to the first two trusses, from the eaves to the ridge. Operatives can walk up to the ridge on the walkways, taking care to attach their harness and lanyard to the positions described on page 8.

Remove the roller brace from the eaves of the first two bays.

Disengage and remove the track compressors from the first two trusses, or if an alternative eaves detail has been used remove those. Dismantle all Sheet Track components.

Moving from the ridge downwards, remove the ridge Roller Brace, all Plan Brace and the Horizontal Brace attached to the top chord of the trusses within the first bay (on an infill bay leave one horizontal brace connected to the top chord, to help prevent overturning).

Remove the walkway next to the first truss and place in the same position next to the third truss.

Unsecure all connections from the first truss to the support structure.

Disconnect the Brace Frames (or the remaining Horizontal Brace on infill bays) from the second truss and manually pull the first truss towards the second.

Temporarily support the first truss and disconnect the Brace Frames (or the Horizontal Brace on infill bays).

Dismantle all ALTRIX Beam elements of the first truss.

All components should now be lowered to ground level.

Note: When dismantling infill bays, it is advised to attach Brace Frames to the eaves on the truss section to be manually moved, this aids the handling and helps to prevent overturning.

Step 6

Repeat step 5, dismantling the roof progressively and lowering all components to ground level.

Step 7

If any element of this dismantling sequence cannot be complied with, please seek advice from your local TRAD Hire & Sales Ltd depot, details of which can be found on the rear cover of this guide.

BRACING

With all bracing patterns, both end bays MUST be fully braced.

Maximum spans and snow / wind loads are for guidance only, all temporary roofs must have a design and supporting calculations produced, prior to any work starting on site (including a suitable risk assessment / method statement for installation). These designs and calculations must be carried out by a temporary works / scaffold design engineer, who is competent in the design of temporary roofs. The bracing pattern required will be determined by this design.

1 2 / 2 Brace Pattern

This pattern is the most economical brace configuration (Fig. 92). It can be used when the wind pressure / speed does not exceed the parameters set out for top chord (horizontal) bracing in the table below.

Brace Frames are fixed at 2.0m c / c from the ridge down, one bay in every five. Plan Brace are fixed on all Brace Frame bays, top chord.

Top chord (horizontal) bracing at 2.0m c / c, on all bays. All brace are fitted in line with the Brace Frames.

Bottom chord (horizontal) bracing is fixed in line with the Brace Frames at 2.0m c / c on infill bays only.

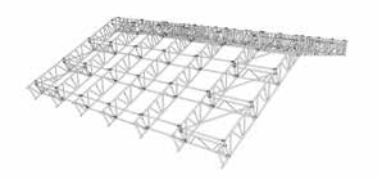


Fig. 92

2 1 / 2 Brace Pattern

This pattern is used where heavier snow and / or wind loads are expected (Fig. 93). It can be used when the wind pressure / speed does not exceed the parameters set out for top chord (horizontal) bracing in the table below.

Brace Frames are fixed at 2.0m c / c from the ridge down, one bay in every five.Plan Brace are fixed on all Brace Frame bays, top chord.

Top chord (horizontal) bracing at 1.0m c / c, on all bays. All brace are fitted in line with the Brace Frames and an equal distance between.

Bottom chord (horizontal) bracing is fixed in line with the Brace Frames, at 2.0m c / c on infill bays only.

Fig. 93

Max permissible wind pressure / speed				
Bay Size	Top Chord (Horizontal) Brace Centres			
	1.00m		2.00m	
	daPa*	m/s*	daPa*	m/s*
1.50m	360	76.6	90	38.3
2.00m	270	66.4	68	33.3
2.50m	216	59.4	54	29.7
3.00m	180	54.2	45	27.1

*daPa = decaPascals; m/s = metres per second

3 1/1 Pattern

This heavy duty bracing pattern is required when top and bottom chords are working to maximum values. It is used where large spans are required, or in locations where heavy snow and/or wind loads are expected (Fig. 94).

Brace Frames are fixed at 1.0m c/c from the ridge down, one bay in every five.

Plan Brace are fixed on all Brace Frame bays, top chord.

Top chord (horizontal) bracing at 1.0m c/c, on all bays. All brace are fitted in line with the Brace Frames.

Bottom chord (horizontal) bracing is fixed in line with the Brace Frames at 1.0m c/c on infill bays only.

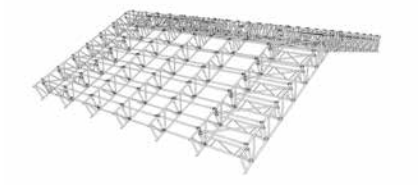


Fig. 94

4 Brace Patterns for Crane Erection

When erecting a roof by crane, the required frequency of Brace Frame bays (complete with Plan Brace) increases. Horizontal Brace can be fitted according to the 2/2; 1/2; or 1/1 patterns.

For single bay crane lifts, Brace Frame bays are required one bay in every two (Fig. 95), and for double bay crane lifts, one Brace Frame bay in every three is necessary.

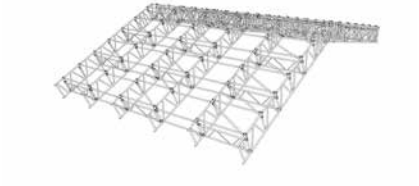


Fig. 95

Typical Max Spans (m)
Based upon bay widths of 2.5m, Wind load 50daPa, Snow load 50daPa

Type	Bracing Pattern		
	2/2	1/2	1/1
15° Mono	14.0	16.0	17.0
18° Symmetric	29.0	32.0	34.0
18° Symmetric with Tension Bar	29.0	34.0	36.0
36° Symmetric	28.0	30.0	31.0
18° Asymmetric	24.0	27.0	28.0
18° Shelter	19.0	22.0	24.0
18° Arch	27.0	32.0	34.0

18° Asymmetric span assumes the short side length is 50% of long side.
All cases are simply supported except:
18° Shelter, 3.0m vertical side wall, beams anchored each side.
5 x 18° Arch, 3.0m vertical side wall, equal length roof segments, beams anchored both sides.

CRANE LIFTING POINTS

1 Single Bay

All completed bays must be lifted from a minimum of 4 sling points, all at the nearest upslope node position to the Sling Distance (x). Straps, not chains, must be used and are located round the verticals of the beams at the top chord. Care must be taken not to damage the Sheet Tracks (Fig. 96).

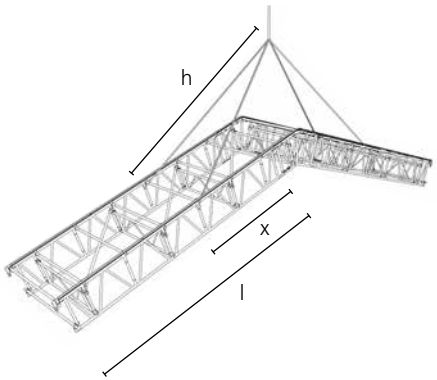


Fig. 96

Beam Length l (m)	Sling Distance x (m)	2.0m Bay		2.5m Bay		3.0m Bay	
		Sling Length h (m)	Bay Weight (kg)	Sling Length h (m)	Bay Weight (kg)	Sling Length h (m)	Bay Weight (kg)
6.0	2.5	4.67	423	4.73	461	4.80	495
7.0	2.5	4.67	498	4.73	541	4.80	580
8.0	3.5	5.99	537	6.03	582	6.09	623
9.0	3.5	5.99	598	6.03	648	6.09	693
10.0	4.5	7.32	637	7.36	689	7.40	735
11.0	4.5	7.32	698	7.36	755	7.40	807
12.0	5.5	8.65	737	8.68	796	8.72	849
13.0	5.5	8.65	813	8.68	877	8.72	935
14.0	6.5	9.99	852	10.02	918	10.05	977
15.0	6.5	9.99	913	10.02	984	10.05	1048
16.0	7.5	11.33	952	11.35	1025	11.38	1090
17.0	7.5	11.33	1013	11.35	1091	11.38	1161
18.0	8.5	12.67	1052	12.69	1132	12.72	1203
19.0	8.5	12.67	1128	12.69	1212	12.72	1289
20.0	9.5	14.01	1167	14.03	1253	14.05	1331

Assumptions made: 1.0m c/c top horizontal brace; 2.0m c/c plan brace; 2.0m c/c brace frames.
No infill bay equipment or PLETTAC METRIX Decks are included in the bay weights.

2 Double Bay

Up to a maximum span of 18m, with a beam length of 9m at either side, a double bay can be lifted. Extra Brace Frames must be fixed at the lifting points in both bays to support the inside beam line. (Fig. 97).

For all spans, it is acceptable to support the inside beam line with 450mm deep alloy beams, or ladder beams, fixed with right angle couplers. These support beams must be positioned at the lifting points. Slings can be located on these extra beams as an alternative, although advice must be sought from the original supplier / manufacturer prior to any lifting operation (Fig. 98).

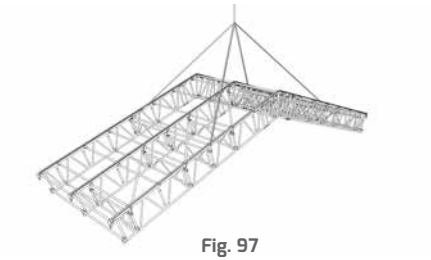


Fig. 97

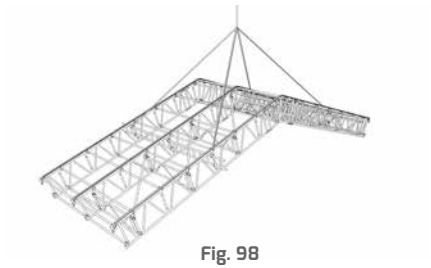


Fig. 98

Beam Length l (m)	Sling Distance x (m)	2.0m Bay		2.5m Bay		3.0m Bay	
		Sling Length h (m)	Bay Weight (kg)	Sling Length h (m)	Bay Weight (kg)	Sling Length h (m)	Bay Weight (kg)
6.0	2.5	4.98	732	5.20	808	5.46	876
7.0	2.5	4.98	861	5.20	948	5.46	1026
8.0	3.5	6.23	925	6.41	1015	6.62	1095
9.0	3.5	6.23	1031	6.41	1132	6.62	1222
10.0	4.5	7.52	1095	7.67	1198	7.85	1292
11.0	4.5	7.52	1202	7.67	1316	7.85	1419
12.0	5.5	8.82	1266	8.95	1383	9.10	1489
13.0	5.5	8.82	1395	8.95	1523	9.10	1638
14.0	6.5	10.14	1459	10.25	1590	10.38	1708
15.0	6.5	10.14	1565	10.25	1707	10.38	1835
16.0	7.5	11.46	1630	11.56	1775	11.68	1905
17.0	7.5	11.46	1736	11.56	1891	11.68	2032
18.0	8.5	12.79	1800	12.87	1959	12.98	2102
19.0	8.5	12.79	1928	12.87	2098	12.98	2251
20.0	9.5	14.12	1992	14.20	2165	14.29	2321

Assumptions made: 1.0m c / c top horizontal brace; 2.0m c / c plan brace; 2.0m c / c brace frames.
No infill bay equipment or PLETTAC METRIX Decks are included in the bay weights.

TECHNIQUES

1 Staggered Bays

The Intermediate Roller Brace Coupler can be used to create sheet termination points at almost any desired location, this allows adjacent sheets to be terminated at different positions.

Track sections should be arranged so that a joint corresponds to the required termination point. Pull the lower track section back slightly so that the sheet bead may be disengaged from the track and pull the sheet down. Remove the L-shaped track stop from the intermediate Roller Brace Coupler, and fit the coupler under the track at the termination point.

The Intermediate Roller Brace Coupler provides a housing for the Roller Brace and enables the sheet to be supported at the eaves. It may be necessary to support the sheet track with extra horizontal brace in the adjacent bays, either side of the Intermediate Roller Brace Coupler.

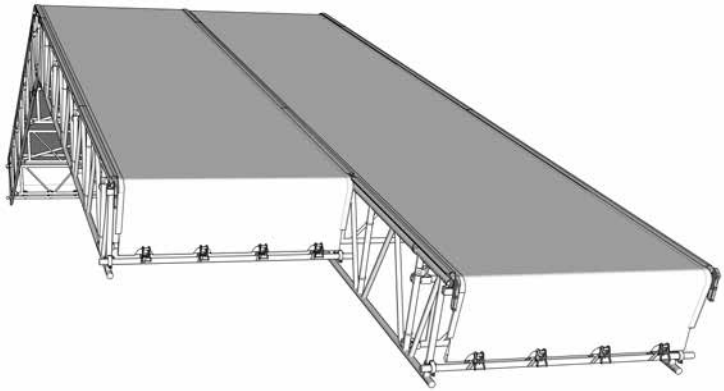


Fig. 99

2 Forming Openings in Completed Roofs

It is possible to form openings in completed roofs to allow materials and equipment to be passed through. Openings need to be planned in advance, as it is necessary to position an infill bay in the correct location, with the horizontal brace fixed upside down to the top chord or to the vertical posts of the beam (Figs. 9 & 10, page 32).

Design input should be sought from the Temporary Works / Scaffold Design Engineer prior to works commencing. This may limit the amount of bays that can be opened at any one time.

If it is necessary to open a bay, ensure the weather conditions are appropriate for handling roof sheets.

Release the Heavy Duty Ratchet Straps on each side and, working from a safe platform, pull the sheet back over the roof, leaf folding as you go to open the required area. Repeat this process on each of the bays either side of the chosen bay. Secure the sheets safely on the working platform to prevent wind uplift.

Fix two PLETTAC METRIX Steel Decks between the bottom chord of the brace frames, or the lower horizontal brace, within the two side bays to create a walkway, parallel to the beam line and next to the chosen bay. Attaching their harness & lanyard to the appropriate points, operatives can now ascend the walkways to remove the horizontal brace of the chosen bay, to create an opening. If desired, the roof sheets for the two side bays can now be reinstated to their correct position.

The roof should be re-closed at the end of each working day, or before the onset of unfavourable weather.

Note: Openings cannot be made to brace framed bays. Horizontal brace can only be fitted upside down to the top chord, or to the verticals of the beam, one in every two bays.

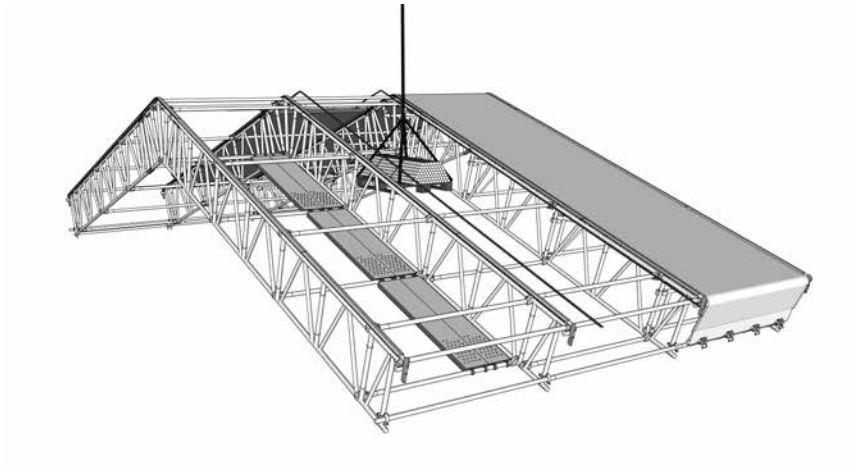


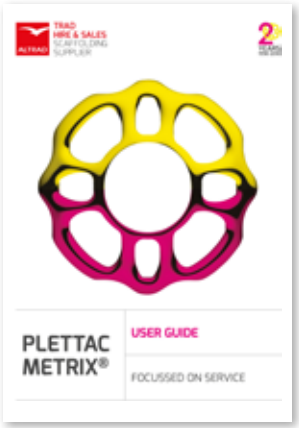
Fig. 100

OTHER PRODUCTS

1 PLETTAC METRIX

PLETTAC METRIX is a revolutionary rosette system with some significant advantages over other ring based systems, such as its unique divisibility of horizontal components. This concept allows the use of extra vertical members within the bay length or width, for ease of adaptability.

PLETTAC METRIX also has an optional Permanent Advanced Guardrail which is installed from the safety of the lift below. The guardrail gives collective protection rather than personal, complying fully with SG4 and Work at Height regulations.

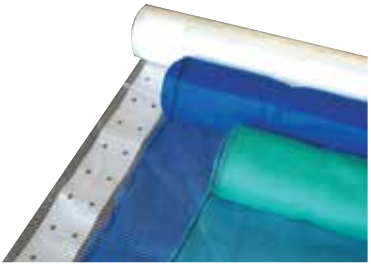


2 Scaffold Sheeting and Netting

TRAD Sheeting and Debris Netting are cost effective and versatile solutions.

TRAD Sheeting is manufactured from clear low-density polythene, reinforced with high-density polythene yarn.

TRAD Debris Netting is manufactured from high-density polythene monofilaments that have been UV stabilised.



3 Tools & Tool Holders

4 Harnesses & Lanyards

5 Galvanised Tubes BS EN 39

6 Steel Bins

7 Scaffold Fittings

8 Post Pallets

9 Alloy Beams

10 Tags & Signs

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