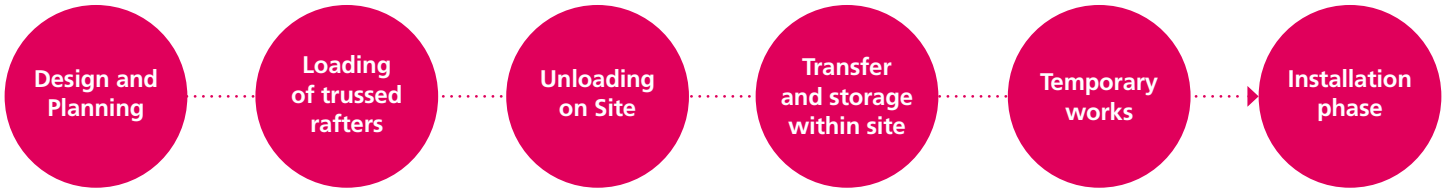
Trussed Rafter – Handling, Storage & Installation Roadmap

Introduction

TRA members offer a variety of services in addition to the design and supply of Trussed Rafters. Where Clients choose to engage TRA members for the installation of the Trussed Rafters then part of this service will be assistance with defining safe and effective systems of work to meet regulatory requirements.

Where Contractors or Clients choose not to employ TRA members in the installation of Trussed Rafters, then they should be aware that the legal responsibility of the manufacturer ceases at point of delivery and responsibility for unloading, storage and safe erection of the Trussed Rafters supplied rests with the contractor.

This Roadmap is intended to highlight what the TRA believe is the process to achieve the safe Handling, Storage and Installation of a Trussed Rafter Roof.



Site Design & Planning – Collaboration between the Building / Roof Designer and the Truss Designer

Buying from a TRA Member ensures you are dealing with reputable and highly experienced suppliers who can help you to appreciate the legal obligations and responsibilities that are placed on those in the roof construction process. Some considerations that contractors should take into account at the design and planning stage are given below, for further information:

- TRA Guide to CDM Regulations 2015 – Trussed Rafters
- Typical Roof Designs, Trussed Rafter Types and Weight / Size considerations
- Roof Construction options: Individual Trusses, Prefabricated Truss units, Full Roof assembly on ground
- Site Handling options: Crane, Telehandler, Forklift, Manual Team handling, Safe Routes/Obstructions
- Site Storage: On ground, at height, temporary racking design & capacity, weight limits
- Temporary Site Works Design and Planning including temporary bracing, wind factors, point loading.

TRA members provide information on Trussed Rafter dimensions, weights, configuration and location within the layout and erection sequence. In addition, they will provide schedules or drawings to enable the contractor to define their requirements in terms of delivery schedule, maximum bundle weight or size and the requirement for sacrificial slings if scheduled for crane offload. Where appropriate TRA members also provide the necessary fixing details to construct compound or multi-part structures.

Loading at Truss Fabricator – Truss Manufacturer responsible with information from Contractor

TRA provides its Members with defined Method statements, to ensure the safe loading and transport of Trussed Rafters. These procedures include:

- The need for competent, trained hauliers and suitably adapted vehicles / trailers.
- Differential colours of restraint banding to be used when loading, one colour to secure the bundle and a different colour for securing the bundles to the vehicle.
- Sacrificial one-way slings if scheduled for crane offload
- The need for appropriate training of the manufacturers Loading Staff and Delivery Drivers.

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Unloading at Site – Responsibility of Contractor

Contractors are responsible for unloading of vehicles at site. TRA assists its Members with generic method statements which can help sites develop safe methods of unloading either by crane or other forms of mechanical handling equipment. These documents are available from your chosen Trussed Rafter supplier upon request.

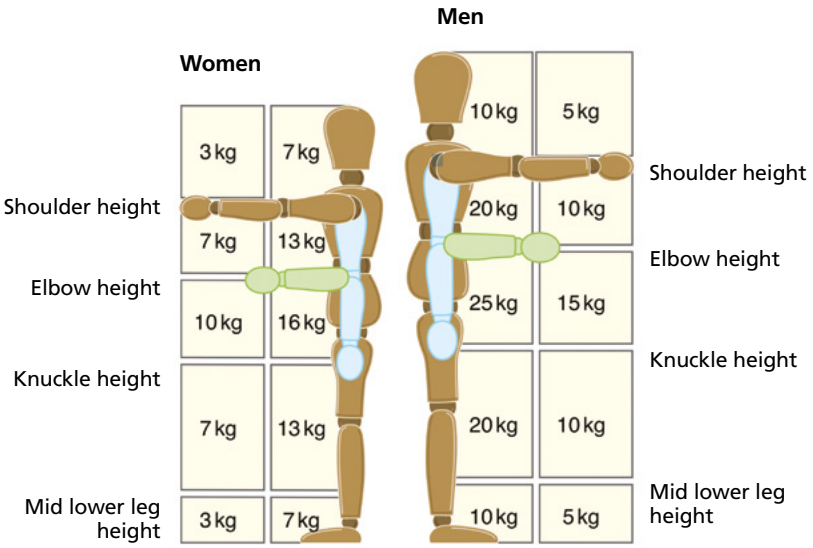
These procedures emphasise:

- Delivery scheduling, Vehicle type, size and routes for access, specific site restrictions or requirements
- Site Unloading method: Crane, Telehandler, Forklift, Manual Team handling, Safe Routes/Obstructions
- Site Storage method: On ground, at height, temporary racking design & capacity, weight limits
- Suitable level unloading areas safely segregated from pedestrians and site traffic
- All unloading is undertaken from ground level with no need for anyone to access lorry bed.
- The need for suitably trained, Banksman, Slingers, Crane Operators on site.

Trussed rafters will be delivered in tight bundles using bindings. This will require mechanical handling equipment, such as a crane or forklift, to enable the safe unloading and manoeuvring of these large units. Where requested in advance bundles can be pre-slung to assist with crane offload.

Due to the size and weight of trussed rafters, TRA recommends that manual handling is avoided wherever possible. This recommendation is based on:

Hierarchy for Manual Handling as defined in the - Manual Handling Operations Regulations 2002.



The Regulations set out a three-step approach which each employer should take:

Step 1: avoid the need for any manual handling involving risk of injury, "so far as is reasonably practicable" ... **The provision of mechanical handling equipment such as crane or forklift will avoid the need for manual handling of trussed rafters** "so far as is reasonably practicable"

Step 2: where manual handling tasks cannot be avoided, assess the risks. ...

Step 3: reduce the risk of injury.

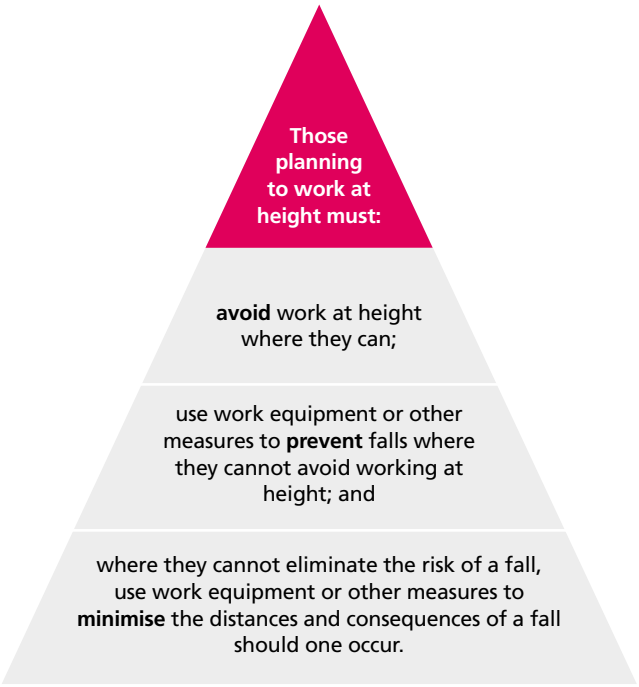
Transfer and Storage within Site – Responsibility of Contractor

Multiple handling and site storage increase the risk of damage, so where practicable trussed rafters should be unloaded directly from vehicle to roof erection. Where this is not possible then alternative is unloading to a specifically designed storage rack or loading bay as close as possible to their end location and time for use. Other considerations for the contractor are:

- TRA Introduction to the Storage and Installation of Trussed Rafters
- Site Handling method: Crane, Telehandler, Forklift, HIAB, Manual Team handling. Safe Routes
- Site Storage: Location On ground, at Height, Flat, Upright, Racking design & capacity, weight limits, Weather protection. **Stability & Safety within Storage**
- Site Staff Training /Qualification for handling and installation of Trussed Rafters

Installation on Site – Responsibility of Contractor

Hierarchy for work at height is defined in the Work at Height Regulations 2005.



The hierarchy	Example solutions
Avoid the need to work at height	Temporary Works Engineer to Plan and Design lifting frame for pre-assembly of trussed rafters at ground level.
Where work at height cannot be avoided	
Prevent a fall	Use edge protection boarded scaffold with guard rails/netting and suitable safe access onto the roof, e.g. a stair tower. Internally to building temporary working platform immediately beneath the underside of the trusses. Safe access to high level truss bracing and top hat installation. e.g. additional designed members within trusses to support platform or proprietary access equipment e.g. DTE Safe Step or STA safe access
Where the risk of a fall cannot be prevented	
Minimise consequences of a fall, should one occur	Internally to building temporary working platform immediately beneath the underside of the trusses. Personal fall-arrest systems are the last resort as they do not prevent the fall, only mitigate the consequences, and only protect the individual worker.

Other considerations for the installation process

- **Trained Installers / Kit Erectors fully informed of Site Temporary Works procedures**
- Site Risk Assessment/ Method Statements
- Access Decking, Access above head height, Guarding, Top Hat installation
- Lifting Plan, Procedures and Weight limits, Temporary holding/ storage area
- Trained Banksman, Slingers, Crane Operators plus adequate personnel resources
- Truss Spacing and placement, Fixing Metal work e.g. Truss Clips, Shoes, Hangers
- Temporary Bracing Plan, Design, Strength/ Adequacy, Material Quality & Size, fixing; Method/Type/Number
- Permanent Bracing Plan /Installation, Sheathing/Sarking Boards Membrane /Felt / Batten installation.
- Examples of Good Practice for Trussed Rafter Erection - TRA Installation Guide

Reference Documents

- HSE document- HSG 33 Health and Safety in Roof Work
- TRA Technical Handbook – Issue 2 May 2007
- TRA Members Method Statements – Loading / Unloading
- BS.5975: 2008 + A1: 2011 - Code of practice for temporary works procedures and the permissible stress design of falsework.
- Home Builders Federation – Guidance on Manoeuvring of Roof Trusses - July 2012