BMF Business Support

BUSINESS GUIDE



LOAD SECURITY

The UK Road Vehicles (Construction and Use) Regulations
1986 state: 'The load carried by a motor vehicle or trailer shall
at all times be so secured, if necessary by physical restraint
other than its own weight, and be in such a position, that neither
danger nor nuisance is likely to be caused to any person or
property by reason of the load or any part thereof falling or being
blown from the vehicle or by reason of any other movement of
the load or any part thereof in relation to the vehicle.'

Introduction

The purpose of this document is to provide advice, information and recommended best practice with regards to the security of loads carried and operated by builders merchants delivery vehicles only. This document does not apply to customer vehicles.

As a driver, you are ultimately responsible for your load. You should ensure that the right type of vehicle is being used to transport the load, and that you are happy with how the load is constructed and secured before setting off. If you aren't completely confident in the load, you shouldn't move the vehicle and must get the yard team to reload it appropriately.

Working together with your colleagues at your branch is key to ensure that goods are loaded in a manner that ensures the load can be transported safely. We have a moral and legal obligation to ensure our loads are safe and no one wants to be involved in an accident that causes serious injury or even death.

Please refer to the Glossary of Terms found in Appendix 1 for terms not defined within the main body of the text.

Load Types

As a driver in a merchant you need to plan for diminishing load (multi-drop).

You need to plan that when removed, gaps are minimised. Where gaps come about, use dunnage or blocking to fill the gaps.

If you are pulled over by the DVSA, the examiner will check the following:

- Can any part of the load slide, topple or bounce in any direction?
- Is the load causing the vehicle to be unstable or could it affect the handling?
- Can any part of the load fall off during transit?
- Is the load security equipment in poor condition and/or not appropriate for the load?
- Does any part of the load or the way in which it is secured present, or be likely to present, an immediate danger to road users during transit?

As the driver, and the person responsible for the security of the load, you need to be confident that you can satisfy each of these questions confidently and accurately. Remember braking causes significant forces. A standard laptop can take on the equivalent weight of one tonne in a sudden deceleration from 30mph.

INFORMATION FOR:

Business Owners

Directors

Health and Safety
Managers

Branch Managers

Operations Managers

Drivers

Yard and Warehouse teams

WHAT IT

As every delivery load is different in terms of product type, weight, size and cube plus the effect of differing weather conditions, guidance is given around securing a load suitably to minimise the chance of the load being dislodged and falling from the vehicle during transit.

This BMF Business Guide has been produced with the assistance of:

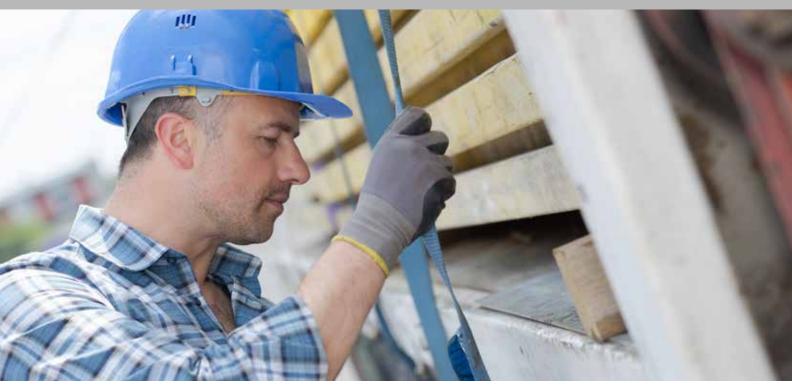












The on-road enforcement approach used by the Driver & Vehicle Standards Agency and the police changed on 1st May 2022. The biggest change in the categorisation of defects is the removal of the load security matrix which has now outlived its usefulness.

However, the fundamental principles of load security have not changed. Anything transported on or in a road-going vehicle or trailer must be secured so that it does not slide, tip, or bounce off the vehicle or move around inside it so that it affects the vehicle handling.

Employers whose work activities could put others at risk should consider load security in conjunction with work at height, manual handling, and other relevant issues when assessing the risks in their business.

The updated categorisation of vehicle defects document can be accessed here: How vehicle defects are categorised in roadside checks and vehicle tests - GOV.UK (www.gov.uk)

Key points to note

- Palletised goods should be securely attached to the pallet and must be stable on it before they are loaded onto the vehicle or trailer and secured. A load that is fundamentally unstable can never be secured correctly.
- Loads such as poles, pipes, and boards that are loaded at an angle over the headboard of a flatbed or sided flatbed must be secured using a minimum of two loop (choke) lashings unless they are individually clamped to the headboard. It is not sufficient to use frictional lashing, where the strap passes up and over the load, as this will not necessarily prevent load movement once the vehicle is moving. Several fatal incidents have occurred where items have slid off the headboard and struck oncoming vehicles.
- Lifting equipment including lorry-mounted cranes and their attachments should not be used for load securing. Doing so risks damaging the lifting equipment, which is usually not designed to be used for this purpose.
- The gap between the front of the load and the headboard must be less than 30cm. DVSA examiners will take action once the gap or gaps exceeds 30cm and they would expect the gap to be blocked or the use of additional strapping/security.
- Where the vehicle or trailer structure is used as part of the load securing system, it must be constructed to BS EN 12642 XL or technical equivalent and the load must be a positive fit inside it. For heavy loads such as bricks or blocks, particularly on multi-drops, it will usually be necessary to lash the load inside the trailer and the XL rating will be a back-up in case of failure of the primary restraints.

A positive fit being applicable to a full load only, and if any part of the load is removed the load needs to be secured irrespective of BS EN 12642 XL.

- Positive fit measurements of less than 80mm air gaps down the side and 300mm front and rear
- Loads carried in skips, bulk tippers, and any other open-topped vehicle, trailer, or container must be sheeted or netted for transport.
- Stacked empty skips must be lashed to the carrying vehicle.
- Goods carried in a bulk tipper must not be loaded over the height of the sides unless sheeted with either a rigid cover or a rated sheet that completely covers the load area.
- Goods carried in vans must be secured and a
 bulkhead fitted between the load compartment
 and the cab to prevent injury to the driver and
 any passenger/s in the event of the load moving
 forward, unless another means of preventing forward
 movement of equal efficacy to a bulkhead is used.

As a driver it is vital you understand the equipment available for use.

Load Securing Methodology and Equipment

Tie Down Lashing/Strapping Down/Frictional Lashing - is where downward force on the load is increased so that the friction created between the load and bed of the vehicle prevents the stock from moving.



Loop Lashing/Barrel Strapping/Hangman's Noose - lashings are passed over the top in opposing pairs to create a locking effect and prevents the load moving sideways, Wrap the strap around the product. Need one from the other side to equal forces.



Figure 1: Full Loop Lashing



Figure 2: Half Loop Lashing

Cross Strapping/Spring Lashing - used to stop movement of cargo forwards and/or towards the rear. The angle between the load bed and lashing strap must not exceed 45 degrees. Often used to create a 'false bulkhead' and stop the product moving forward and backwards. Used if the load cannot be positioned against a headboard.



Direct Lashing - Direct connection with the load itself - creates force in the opposite direction on inertia forces. Often used on hire equipment and plant being transported. Lashings must be fixed within 30-60 degrees of the load bed.

Friction Enlarging Equipment:

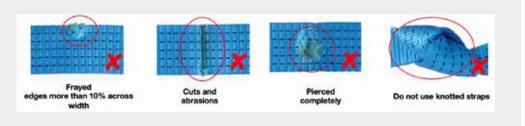
Increase friction between load bed and cargo, and between layers of cargo where required. High friction materials include: coatings, rubber mats, and anti-slip sheets of paper. Best used in conjunction with other securing methods.

Load Bed Coatings - material often fixed to the load bed to maximise friction with the products.

Rubber Anti-Slip Mats - vulcanised rubber or agglomerated rubber can be used with additives and reinforcements between 2mm and 30mm thick. Consider wet vs dry friction. If damaged, it can lose friction. Mats smaller than 10cm by 10cm should not be used as they can roll under force. Ensure the flatbed is free from sand, gravel, dust, snow, ice and oil that could reduce friction.



Straps - it is important you know when not to use a strap.



Strap Details - use the label to ensure you have the correct strap for the job. The label provides vital information about the capabilities of the ratchet strap.

The driver/operator should make sure the strap or straps are not damaged or excessively worn to the extent that it reduces their effectiveness and for every load always check the condition and the effectiveness/number of straps to make sure the load is secure.



Ratchets - check they are in good condition, and function correctly. Further information can be obtained from the load strap manufacturer/supplier.





Anchor Points - Anchor Points - Make sure you check the capacity of yours, as each vehicle can be different. The maximum rating can often be found stamped on the anchor point (e.g. side rave bars and floor fixings).



Over the top lashings should never be attached to the rope hooks. The tensioning of the lashing could damage the hook and cause the load to become insecure.



HGV floor fixings generally have a low rated capacity of 500kg. LCVs will have a lower rated capacity.

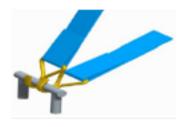


HGV side rave bars are generally at a rated capacity of 2500kg. LCVs will have a lower rated capacity.



Some HGV vehicles have the twobolt mounting lashing points.

These are often fitted under the bed of the vehicle and bolted on to the cross bearers running down the underside of the body (under the floor).



Capacity of webbing strap is reduced by 50% when both ends of the same strap are attached to the same anchor.

DO NOT anchor a webbing strap into the hook of another strap.



Edge Protection - used to protect straps and product from damage.



Sleeves - used to protect straps against cuts, tears and abrasions on all sharp or abrasive products. Ensure the in cab indicator reflects the overall height of the vehicle and load.



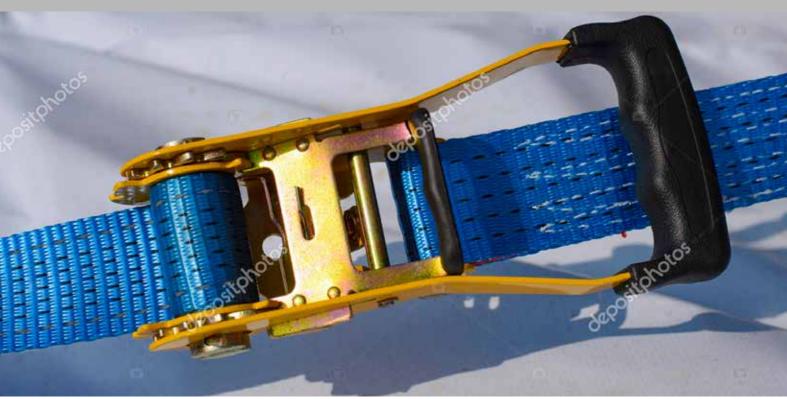
Safety of a Load

As a driver it is vital that you understand your load, its characteristics and requirements for safe securing. The table below is a summary of the key 'Do and Don't' factors to remember and be aware of. You will know your load best, but if you are in any doubt, STOP and ask a suitable colleague for a second opinion before you drive off.

Risk assess on a continual basis and it is the operators responsibility to keep up to date with HSE and DVSA regulatory guidance updates and releases from industry trade bodies and their working groups.

Do	Don't	
Preparing To Load		
Check straps prior to use and carry spare straps, ensuring they are suitably rated for the load to be secured. Store unused straps safely, such as in a cabinet, to keep them in a good condition. Remember to check the straps when rolling them up.	Use damaged or frayed straps.	
Inspect the headboard and load bed for damage prior to loading.	Load a damaged load bed or where there are defects with the headboard.	
Have methods in place, such as covers, to prevent straps being damaged e.g. from sharp edges of products.	Tighten straps against sharp edges of materials that could damage them.	
Product should be loaded and secured with consideration for: - the order of drops to be completed. - aiming to place the heavier, sturdier stock at the bottom of the load, and lighter, softer products on top. This creates a lower and upper deck. Make sure you are happy with the load configuration.	Forget that a poorly configured load can negatively affect the stability of products.	
Check the weight of the load to be carried and plan how it will be loaded to the bed. Make sure you know how much weight can be carried.	Exceed the axle and gross weight limits of the vehicle.	
Work with yard teams to ensure the products are prepared for loading in the correct order. E.g. Plasterboard on chipboard, not the other way around. Make sure the load is prepped correctly i.e. using banding / shrink wrap to help towards the load integrity - especially with bricks, blocks, timber and sheet materials and plasterboard on chipboard, not on the other way around.	Be afraid to ask for guidance from other colleagues / your manager if you are unsure about the load you are carrying.	
Pre-sling loads where possible and practicable.		





Do	Don't	
Loading Vehicles		
Treat each product as individual when strapping. Don't forget that you'll need to ensure the dunnage used is also secured properly.	Rely on the side boards of a lorry to keep the load secure in transit.	
When stacking products on the bed, ensure the first layer is secured with straps first before loading the next 'tier'.	Rely on 'over-strapping' for tiered products where the upper load is placed to one side. The product may naturally slide into the middle of the load & the straps will become loose.	
Throw straps canvass-end first, not the metal clasp.	Throw straps over the other side of the vehicle without checking that nobody is stood there.	
Place loads as close to the headboard as possible, without exceeding weight limits. Any gap up to 30cm between headboard and product must only exist if a false headboard or dunnage is used. Use additional security as an alternative, for occasions where there is a need to load away from the headboard to avoid overloading etc. Where non-XL rated curtain side vehicles are used you should not rely on the curtains for security.	Load items above the height of the headboard. The headboard height should be sufficient to obstruct forward movement of the type of load that the vehicle is designed to carry unless adequate load restraint is provided by other means.	
Gaps greater than 50mm should be filled with dunnage.	Leave gaps more than 50mm between products loaded on the bed.	



Do	Don't	
Pay attention to the gap void that will run from the headboard to the back of the vehicle. This should either be filled with dunnage or with loop lasing / barrel strapping applied.		
If necessary, create a false headboard or use pallets as dunnage to prevent movement during transit.	Stack incompatible products on top of each other.	
If other products are under the same strap with different heights, downward force is not sufficient and therefore you may need additional straps. Better security can be provided by the angle of straps, which is relevant if loads diminish from the top down and use pallets on top of loads to increase the angle of straps too.		
Use the appropriate type of lashings for the product characteristics and load configuration. Some loads are more 'slippery' than others.	Travel with products that could 'pivot'. E.g. long timber on top of sheet materials.	
Strap within the inside of the load bed (where possible) to ensure maximum downward force and prevent stretching/weakening of the fastenings.	Reduce the load on the steered axles by positioning the load too far back. You should aim to place the heaviest part of the load at the front end of the load bed. Remembering that it is a legal requirement that the maximum permitted axle and gross weights are not exceeded.	
Secure the lorry crane (where applicable). It is part of the load you are carrying and must be suitably secure for transport.	Leave site without ensuring the crane is secured in place (where applicable).	
Making Drops		
Remember that you may need to re-configure loads following a drop in order to distribute the load evenly and safely on the bed.	Exceed axle weight limits when re-configuring the load.	
Check the tightness of all ratchets after each drop to maintain load security. Complete an overall inspection of the load security.	Drive-off unless you are fully satisfied that the load is suitably secured.	
Drive according to the load you are carrying. Driving styles should be dictated by what products are being carried & the road conditions.	Brake sharply or take corners quickly.	
Check the load at regular intervals and after heavy braking or sudden changes of direction.	Ignore straps that have become loose in transit.	



Products and Considerations

The table below lists common products you may come across. Please note: This is not an exhaustive list and consideration should be put towards other products safety. There are lots of ways to secure a load correctly but this table gives you some pointers as to what to focus on.

Product	Considerations
Bulk Bags	Best practice is to single stack. Consult and check your company's policy for double stacking securely. A caveat is that different bag manufacturers and their contents may require different degrees of strapping and their lashing system rated capacities will vary due to the different type of material and weight of the bulk bags. With the ratchet strap(s) fed through the bulk bags lifting pockets or lifting eyes by folding the top of the bag inwards may then help to prevent any loose materials e.g. sand being blown out of the bag when in transit.
Travis Travis Travis Travis	The best practice way to secure bulk bags is to place the ratchet strap through the bulk bag lifting pocket(s) or the bag lifting eyelets closest to the headboard/front of the vehicle as shown in the images opposite. The other good thing with this is you pull the bag loop back over the open top of the bulk bag reducing spillage in transit. By feeding the strap(s) through the lifting pockets or the eyelets the ratchet strap(s) cannot slip off the bag as it is threaded through the bags lifting pockets/eyelets. It is recommended that operators complete their own risk assessment for alternative load securing equipment for Bulk Bags such as Cargo nets to ensure that they meet the standards of load securing, with the risks of bag contents becoming ejected in transit also being considered.
	Bagged products may settle over time under vibration of the bed to fill air spaces. This may lead to straps loosening and loss of product in transit. In addition, it is not advised to place cement bags on top of products such as slate, as these could damage the bags during transit, leading to loss of contents and affect the stability of the bulk bag.
	Care should be taken to ensure there is adequate depth in the bulk bag design to allow cement bags to be fitted properly into the top of the bulk bag. Please be advised that if you are loading cement bags into bulk bags, that you do not exceed the safe maximum load of the bulk bag - as this can lead to bag failure during loading/unloading them.



Product

Considerations

Concrete Lintels



Strap every metre (minimum of two straps), do not stack more than 1m high. Protect straps from damage with edge protectors and spread the downward force.

Make sure the lintels are loaded up to the headboard and use blocking/dunnage where this cannot be achieved due to potential problems with axle weights.

Check the weight of the load to be carried and plan how it will be loaded to the bed. Make sure you know how much weight can be carried.

Two tier stacking may be used if the lintels are stable and in contact with other products.

HSE have advised that load consignors and vehicle operators are asked to check that their block and brick products are secured in compliance with existing guidance, particularly on open flatbed trailers. Specifically, cross-strapping alone must not be used to secure the front or rearmost row of product: these rows should be lashed to the bed with appropriate tie-down lashing, with cross-strapping or other secondary restraint used for additional security if that is required by the load configuration.

Steel Lintels

Do not stack on top of each other without wooden chocks between them to reduce sliding.

Palletised goods



Always shrink wrap and use tape to prevent it unravelling. Secure the entire load, not just the pallet.





If the load is uniform and creates a flat base, pallets may be stacked two high. Consider using at least two straps or applying edge protection, as depending on the product(s), a single strap can cut through the wrapping and break open the load.

Placing a pallet on top of a pack can spread the downwards force of the straps. This can also raise the height of the pack to match that of other products on the load bed.



Product

Considerations

Bricks & Blocks



Two straps per pack. Use edge protectors to prevent damage to straps and to spread the downward force.

Fully banded and/or wrapped packs recommended.

Where cross strapping is used to prevent rearward movement a strap over the top of the load is still required. If cross strapping is not used to prevent rearward movement an additional strap over the top is acceptable.

HSE have provided the following information particularly to brick and block products, but you may wish to bear it in mind for any products you transport on flatbed vehicles or trailers.

It is normal for forces to be applied to the load when the vehicle is moving. The securing system must be able to withstand these forces so that the load does not shift when the vehicle accelerates, brakes, or changes direction. If cross-strapping alone is used at the rear of the load, there is a risk this will not be sufficient to prevent load movement. We believe these incidents would not have occurred if the last row of product had also been secured with a tie-down lashing.

For this reason, HSE recommends that every row of the load is secured using tie-down lashings if you use this method of load securing, with cross-strapping used only for additional load restraint and never as the sole means of securing.

HSE have also identified some additional issues we want to make you aware of:

- Edge protectors and boards can be a useful way
 of preventing damage to both lashing straps and
 crushable product, but protectors must be strong
 enough to withstand the forces likely to be exerted on
 them. Damaged edge protectors should be discarded
 and not re-used.
- Webbing straps used for tie-down lashing are selected based on the Standard Tension Force (STF) that is marked on the label. In the UK, the STF is usually between 250 and 500 daN. It is a good idea to make sure that all the straps used on the same vehicle have the same or very similar STF rating. You may need to use more straps if the STF is low.



Product

Considerations

Timber



For securing packs of timber, apply a strap for every 1.5m along its length, plus one additional strap. For example, a 3 metre long pack would be secured with 3 ratchet straps.

Avoid carrying packs of timber upon sensitive materials or products that are liable to shift in transit. A common one could be timber packs on bulk bags.

Avoid overhanging the ends of the packs, as they can bounce in place and work themselves free from the lashings.

Timber Sheeting, Doors & Featheredge



Be aware that sheet products can slide.

Strap each pack. Minimum of two straps per pack.



Check packaging (where applicable) before securing.

Edge protectors protect product and aid downward distribution of force of straps.

Sheet Insulation



Minimum of two straps due to the slippery nature of the product.

Consider using edge protectors to help spread the downward force of the straps.

If insulation is to be carried above the height of the headboard, additional shrink wrap should be used to protect them from the winds.

Also consider weighing down with a full sheet of ply or similar.



Product

Considerations

Round Products (e.g. stakes or underground pipes)



stillage or similar container.

Where a stillage cannot be loaded, use loop/barrel lashing. As a minimum, use shrink wrap at the ends of

Consider whether products can be loaded within a

the lengths to combine the pack.

Pipe should not exceed 2m off the end of vehicle. If the product does extend from the bed, highlight it clearly e.g. with bright tape.



Reinforcing Mesh



Store horizontally with a strap at each end of the pack. Smaller sheets should be placed on top to avoid overhang.

Other products may be placed upon the mesh (tier 2), but each of these must be treated individually and be secured suitably.

Be conscious that products on the mesh may bounce slightly during transit.

Bundles of Reinforcing Bar



Carry laid along the length of the vehicle.

Ensure the product can't penetrate the headboard or drivers cab if it moves.

Usually secured with webbing/mesh.

Can be bundled together with plastic wrap, as pictured on the left. Wrapping should fully encapsulate the ends of the bars.



Product

Considerations

Chamber Rings



Where the chamber ring lifter is part of the load, a single ratchet strap should be secured over the chamber ring. The chamber ring lifter is attached to the ring itself, which is secured with two direct lashes – pulling it in opposing directions to prevent movement.

Where lifter is absent, two straps should be used on the chamber ring to prevent movement forwards and backwards on the bed.



If lightweight items are too long to lie flat upon the load bed and need to lean against the vehicle's headboard, the foot of the load should be placed against the rearmost part of the vehicle bed (i.e. backboard). The upper end of the product must not project beyond the front of the vehicle.

Secure the product in three places as a minimum; the top, middle and bottom. Ensure the product(s) don't rest on any material other than the headboard itself.

For products that are prone to flexing/bending, consider whether an alternative vehicle is better suited to transport it. Having decided on the correct vehicle to use, make sure the individual lengths of product liable to flexing/bending are:

- Strapped together with banding/shrink wrap or packing tape at the top, middle and bottom sections.
- Securely strapped to a rigid and sturdy product with ratchet straps also located at the top, middle and bottom sections.
- As per photo on the left, load is secured by loop/ choke lashing.

Remember:

- Operators should risk assess the product for strength and suitability for any loads being placed on the headboard.
- The headboard is only designed to have a limited weight imposed upon it from above. Make sure you know the weight rating of the vehicle's headboard!
- Check the height of the vehicle before you leave the branch, particularly if a product is protruding beyond the headboard. You must consider overhead hazards on the road, such as powerlines, overhanging trees and low bridges.

BMF LOAD SECURITY



BMF Business Support 'Business Guides'

This new Load Security Guide is part of a series of BMF Business Support 'Business Guides' covering a range of subjects pertinent to BMF members. They mostly seek to outline standards and provide expert guidance to members as to what constitutes industry best practice in the areas covered, many of which relate to health & safety or changes in UK law.

Some examples of these Guides include:

- Workplace Transport in Branch
- Material Storage and Handling
- Tool Hire
- Customer Deliveries on Site
- Working at Height
- Sawmills and Woodworking Machinery
- Overarching Standards

- Occupational Road Risk
- Pricing Practices
- Zero-Rated Products (VAT)
- Modern Slavery Law
- Selling Fire Doors
- Rebates & Refunds (VAT)
- Criminal Finance Act

Get the Guides

Please email Richard Ellithorne at **richard.ellithorne@bmf.org.uk** for a PDF or printed copy of any of the guides.





Conclusions and Key Points to Remember

Remember if in doubt, stop and check your load. This could prevent a loss of load that as a minimum will lead to lost time and damaged product. However the outcome could be far more serious and cause an injury or even death.

As a driver, remember 5 key points with every

- Can any part of the load slide, topple or bounce in any direction?
- 2. Is the load causing the vehicle to be unstable or could it affect the handling?
- 3. Can any part of the load fall off during transit?
- 4. Is the load security equipment in poor condition and/or not appropriate for the load?
- Does any part of the load or the way in which it is secured present, or likely to present, an immediate danger to road users during transit.

APPENDIX 1 Glossary of Terms

Not defined within the body of text.

Dunnage:

Is a form of packing that is used to fill voids that exist between parts of the load or between the load and vehicle sides.

Blocking:

Chocks, wedges and scotches may be used to prevent individual items of a load from moving in any horizontal direction. Care must be taken to ensure that these are stout enough and are adequately secured to the vehicle platform.

Load Anchorage Points:

Lashings used to restrain the load must always be attached to anchorage points that have sufficient strength to absorb the expected loading.

False Headboard:

Where dunnage is used to fill the void (if present) between the load and the vehicle's headboard.

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