

# Code of Practice for the Loading of Vehicles



運輸署  
*Transport Department*

February 2019

# Code of Practice for the Loading of Vehicles

TRANSPORT DEPARTMENT

*February, 2019*

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## 1. Introduction

### 1.1 General

1.1.1 The purpose of this Code is to ensure that owners, operators and drivers of goods vehicles are aware of their obligations with regard to the safe transport of goods in accordance with the law, and also to provide guidance as to the most appropriate means of achieving this.

1.1.2 Not every eventuality, or type of load, or method of restraint is or could be included in this Code. However, in normal situation, the general principles outlined in the Code have provided sufficient guidance for whatever type of load, or restraint used and should be followed.

1.1.3 Apart from the legal requirements that loads must be safely transported, unsafe loads, whether by reason of being improperly secured, or transported on the wrong type of vehicle, or badly loaded, constitute a potential danger to all road users. Loose material falling from a vehicle can cause serious or fatal injury to pedestrians or occupants of other vehicles. Overheight loads will collide with overhead structures causing damage to the structure and injury to the driver of the vehicle and any persons on or near the structure. Loads not properly stacked or positioned will affect the stability of the vehicle, causing it to lose control or overturn with obvious consequences to the driver, passengers and other road users. Moreover, overweight loads are a potential danger because of the instability that this can cause to the vehicle transporting the load, and they also cause considerable damage to the road resulting in frequent repairs having to be undertaken.

1.1.4 Unsafe loading poses an unacceptable risk to road users generally and it is the responsibility of all goods vehicle owners, operators and drivers to ensure that loads carried by their vehicles are safe.

1.1.5 The transport of dangerous goods or wastes such as toxic and corrosive chemicals and flammable substances will require additional and special precautions to be taken over those described in this Code and will require for certain substances that the vehicle has been issued with a licence for the conveyance of dangerous goods. Advice of manufacturers of the material and the appropriate authority such as the Director of Fire Services or the Director of Environmental Protection should be sought if there is any doubt as to the precautions to be taken, or licences required. It should also be noted that the transport of incompatible substances, such as waste oxidizing materials and

combustible materials, including domestic refuse, on the same vehicle is not to be allowed and advice on this may need to be sought from the authorities.

## 1.2 Legislation

1.2.1 The relevant legislation and subsidiary legislation currently in force governing the loading of vehicles are identified as follows: -

- (i) Road Traffic Ordinance, Cap. 374 (“RTO”)
- (ii) Road Traffic (Construction and Maintenance of Vehicles) Regulations, Cap. 374A (“RT(C&M)R”)
- (iii) Road Traffic (Registration and Licensing of Vehicles) Regulations, Cap. 374E (“RT(R&LV)R”)
- (iv) Road Traffic (Traffic Control) Regulations, Cap. 374G (“RT(TC)R”)
- (v) Fixed Penalty (Criminal Proceedings) Ordinance, Cap. 240
- (vi) Fixed Penalty (Criminal Proceedings) Regulations, Cap. 240A

Other Ordinances and Regulations may also contain laws applicable to matters relating to the loading of vehicles.

1.2.2 This Code of Practice is issued by the Commissioner for Transport (hereinafter referred to as “the Commissioner”) under section 109 of Cap. 374 for the loading of vehicles. Pursuant to section 109(4) of Cap. 374, the Commissioner may by notice in the Gazette prescribe and from time to time revise this Code. A failure on the part of any person to observe any provisions of this Code is in itself not an offence, but any such failure may be relied on by any party to the proceedings (whether civil or criminal and including proceedings for an offence under Cap. 374) to establish or negative any liability which is in question in those proceedings (see section 109(5) of Cap. 374).

1.2.3 Drivers/operators of vehicles shall operate and load goods vehicle in compliance with all the road traffic legislation and other legislation including subsidiary legislation in relation to the loading of vehicles to ensure safe transport of goods on the road.

1.2.4 The summary below provides some major points of legislative requirements in relation to the loading of vehicles and the information therein are for reference only. Should there be any discrepancies between the

summary and that of the legislation, the latter shall prevail. For a complete and definitive statement of the law, direct reference should be made to the relevant ordinances and regulations themselves.

(i) A goods vehicle must:-

<u>Requirements</u>	<u>Relevant provision</u>
(a) be provided with such compensating arrangement as will ensure that all the wheels will remain in contact with the road surface and under the most adverse conditions will not be subject to abnormal variations of load (the above does not apply to any steerable wheel of a motor vehicle if the load on such wheel does not exceed 3.5 tonnes and with respect to any properly constructed retractable axle while in the retracted position);	regulation 13 of RT(C&M)R
<u>Note</u> This also applies to a trailer having more than 4 wheels and having more than 2 wheels being part of an articulated vehicle.	
(b) have the permitted gross vehicle weight and the maximum permitted axle weight marked upon some conspicuous place on both sides of the vehicle/trailer, unless such information is contained in a valid vehicle licence displayed on the subject vehicle;	regulations 79 & 82 of RT(C&M)R
(c) be fitted with a rear marking as required by the regulations if its permitted gross vehicle weight exceeds 5.5 tonnes;	regulations 118, 119 & 120 of RT(C&M)R

Note

This also applies to a trailer with unladen weight exceeding 1 tonne.

- |  |  |
|--|--|
| (d) not carry any amber lamps unless for the purposes specifically permitted and authorised by the Commissioner;   | regulation 111 of RT(C&M)R   |
| (e) not carry passengers in excess of the number specified in the registration document or permitted by an excess passengers permit issued under the RT(R&LV)R and each passenger must sit in a properly constructed seat secured to the bodywork of the vehicle (unless the vehicle is used as a float in a parade and exempted under regulation 53A of RT(TC)G); and | regulation 53 of RT(TC)R<br>regulation 7 & Schedule 3 to RT(R&LV)R |
| (f) not be used for any purpose which it is so unsuitable as to cause or likely to cause danger to any person, or damage to a road or any property.  | regulation 58 of RT(TC)R   |

(ii) A goods vehicle must not be so loaded: -

<u>Requirements</u>	<u>Relevant provision</u>
(a) that the weight transmitted to the road surface exceeds: <ul style="list-style-type: none"> <li>- 4.5 tonnes by any one wheel where no other wheel is in the same line transversely,</li> <li>- 9 tonnes in total by any 2 wheels in line transversely,</li> <li>- 10 tonnes in total by any 2 double-tyred wheels in line transversely, or</li> <li>- 11 tonnes in total by more than 2 wheels in line transversely;</li> </ul>	regulation 14 of RT(C&M)R
(b) that the following be exceeded: <ul style="list-style-type: none"> <li>- its maximum gross vehicle weight,</li> <li>- its maximum axle weight, or</li> <li>- in the case of an articulated vehicle, its maximum gross combined weight in relation to the inner axle spacing;</li> </ul>	regulation 54 of RT(TC)R regulation 7 of RT(C&M)R Schedule 2 to RT(C&M)R

- |  |  |
|--|--|
| <p>(c) that, unless an appropriate permit has been issued, the load extends:</p> <ul style="list-style-type: none"> <li>- forwards more than 1.5 m from the foremost part of the vehicle (other than a trailer),</li> <li>- backwards more than 1.4 m behind the rearmost part of the vehicle,</li> <li>- sideways so that the total width of the load is more than 2.5 m, or</li> <li>- to a height of more than 4.6 m or such lesser height as may cause damage to any object or wires lawfully erected above the road;</li> </ul> | <p>regulation 55 of RT(TC)R</p>                                |
| <p>(d) that its dimensions exceed the overall dimensions specified in relation to that vehicle under the regulation, in particular the load with the vehicle shall not be higher than its specified overall height (e.g. light goods vehicle: 3.5 m, medium/heavy goods vehicle: 4.6 m); and</p>   | <p>regulation 6 of RT(C&amp;M)R Schedule 1 to RT(C&amp;M)R</p> |
| <p>(e) that its weight, distribution packing and adjustment of the load and including any trailer drawn by it and the number of passengers carried may cause or is likely to cause danger to any person, or damage to a road or any property.</p>  | <p>regulation 58 of RT(TC)R</p>                                |

(iii) Loads must: -

Requirements

- (a) if overhanging the vehicle, have a red flag of not less than 1 square metre attached at its rear extremity in daytime, or have a white light showing ahead at each side of its front extremity and a red light showing to the rear at its rear extremity during the hours of darkness or in poor visibility conditions;

Relevant provision

regulation 56 of RT(TC)R

Note

If the load overhangs and extends behind the rearmost part of the vehicle, the tailgate must be fully lowered or opened, and properly secured or fasten in position. Moreover, if the fully lowered or opened tailgate obscures any stop lamp, direction indicator, obligatory rear lamp, obligatory reflector, reversing lamp or registration mark and plate of the vehicle, it must be removed.

- (b) be properly secured and subject to regulations 55 and 56 of RT(TC)R, be contained on or inside the vehicle;
- (c) not, in whole or in part, be carried on or supported by the tailgate; and
- (d) not touch the road.

regulation 57 of the RT(TC)R

regulation 57 of the RT(TC)R

regulation 57 of the RT(TC)R

(iv) A goods vehicle which is first registered on or after 1 October 2014 must:-

Requirements

- (a) be fitted with a reversing video device that is maintained in good working order to display automatically and clearly to the driver in the driving position of the area behind the extreme rear of the vehicle that the current closed-circuit view of (i) an area behind the vehicle that extends in length to at least 3200 mm from the extreme rear of the vehicle, and (ii) extends in width to at least 500 mm from the outermost part on each side of the vehicle, when the vehicle is reversing or about to reverse.

Relevant  
provision

regulation 39A of  
the RT(C&M)R

### 1.3 Overloading

1.3.1 The legal requirements concerning overloading are summarised in sub-paragraph 1.2.4(ii) and explained in more detail in the following paragraphs, together with information on the effects of overloading.

1.3.2 An overloaded vehicle is a source of danger both to its occupants and to other road users. Overloading has a detrimental effect on the brakes, suspension and steering, making the vehicle difficult to control. The vehicle's behaviour is particularly affected in emergency situations, where its slow and irregular response to the driver's controlling actions, are a real source of potential accidents.

1.3.3 Pursuant to section 37 of Cap. 374, a person may be regarded as driving dangerously if it would be obvious to a competent and careful driver that driving the motor vehicle concerned in its current state including anything attached to or carried on or in it and to the manner in which it is attached or carried would be dangerous.

1.3.4 In addition to posing a direct threat to road users as described above, an overloaded vehicle will damage the road. Such damage detrimentally affects the surface characteristics of the road which may in turn, lead to accidents. The structure of the road pavement may also be damaged, leading to the need for rebuilding. Such rebuilding would cause unnecessary expense to the community, both in terms of construction costs and traffic disruption during reconstruction.

1.3.5 In order to avoid the above problems, it is the legal responsibility of the vehicle owner/operator/driver to ensure that the loaded vehicle does not exceed its maximum gross vehicle weight, its maximum axle weight and its maximum gross combined weight.

1.3.6 The maximum gross vehicle weight is very straight forward, being the maximum weight of the whole vehicle when loaded. Similarly, the maximum axle weight is simply the maximum weight of any axle of the vehicle when loaded.

1.3.7 The maximum gross combined weight (MGCW) of a vehicle is sometimes misunderstood and is therefore explained here in more detail. The MGCW refers to the combined weight of a tractor and trailer. In addition to not exceeding the maximum gross vehicle weights and maximum axle weights of the tractor and trailer when measured individually, the combined weight of tractor and trailer together must not exceed the MGCW.

1.3.8 The MGCW varies depending on the configuration of the combination of tractor and trailer and the axle spacing. The MGCW of a 2-axled tractor and 1-axled trailer is not the same as the MGCW of the same 2-axled tractor in combination with a 2-axled trailer. Diagram 1.3.1 shows the MGCW for different combinations of tractor and trailer and for different inner axle spacings.

1.3.9 As an illustration of how the MGCW for a particular combination is derived, consider Diagram 1.3.1. It can be seen that for a 2-axled tractor with a 3-axled trailer and an inner axle spacing of 4.2 m, the MGCW is 38 tonnes. It is likely that the MGCW on the licence and registration document of such a 2-axled tractor would be 38 tonnes, as this is the maximum that would ever be permitted. However if this same vehicle were to be coupled with a 1-axled trailer, with an inner axle spacing of less than 2.1 m, the MGCW would be only 20 tonnes, irrespective of the 38 tonnes recorded in the licence and registration document. It is obviously vital that vehicle owners and drivers understand this concept and thereby ensure that their loaded vehicle complies with the law.

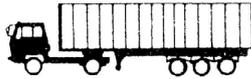
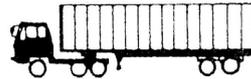
1.3.10 Cap. 374A regulates the construction and maintenance of vehicles, and their equipment. Regulation 7 of Cap. 374A deals with the maximum weight of vehicles, and the maximum weight and maximum combined weight in relation to different classes and types of vehicle are specified in the Schedule 2 to Cap. 374A.

1.3.11 Regulation 54 of Cap. 374G specially regulates vehicles exceeding the permitted gross vehicle weight and provides that no person shall drive or use, or cause or permit to be driven or use, on a road a goods vehicle or special purpose vehicle that is so loaded that its gross vehicle weight exceeds the permitted gross vehicle weight assigned to the vehicle under Cap. 374E.

1.3.12 Other than the above requirement, driver of a vehicle is also required to comply with the requirement indicated by a traffic sign of the type shown in figure no. 134 in Schedule 1 to Cap. 374G (see regulation 59 of Cap. 374G). The sign in figure no. 134 is a ‘weight limit’ sign which indicates that vehicles with a gross vehicle weight in excess of the weight indicated are prohibited from passing the sign and the numerals on the sign may be altered to suit different weight restrictions.



“Weight Limit” regulatory sign –  
no vehicles over gross vehicle weight shown (including load)

	Type of Combination of Articulated Vehicles	*Inner Axle Spacing (Metres)	Maximum Gross Combined Weight (MGCW)
	2 axled tractor with 1 axled trailer	Less Than 2.1 At least 2.1 At least 3.1	20 tonnes 22 tonnes 24 tonnes
	2 axled tractor with 2 axled trailer	Less than 2.9 At least 2.9 At least 3.1 At least 3.6 At least 4.0	24 tonnes 26 tonnes 29 tonnes 32 tonnes 34 tonnes
	2 axled tractor with 3 or more axled trailer	At least 4.2	38 tonnes
	3 or more axled tractor with 1 axled trailer	Less than 2.0 At least 2.0 At least 2.7 At least 3.0 At least 4.0 At least 4.4	22 tonnes 24 tonnes 26 tonnes 28 tonnes 30 tonnes 32 tonnes
	3 or more axled tractor with 2 or more axled trailer	Less than 2.0 At least 2.0 At least 2.3 At least 3.2 At least 4.0	24 tonnes 26 tonnes 30 tonnes 34 tonnes 38 tonnes
	3 or more axled tractor with 3 or more axled trailer	At least 4.7 At least 5.2 At least 5.7	40 tonnes 42 tonnes 44 tonnes

\* Inner axle spacing means the spacing between the rearmost axle of a tractor and the foremost axle of the trailer.

## MAXIMUM GROSS COMBINED WEIGHTS FOR ARTICULATED VEHICLES

DIAGRAM 1.3.1

## 1.4 Definitions

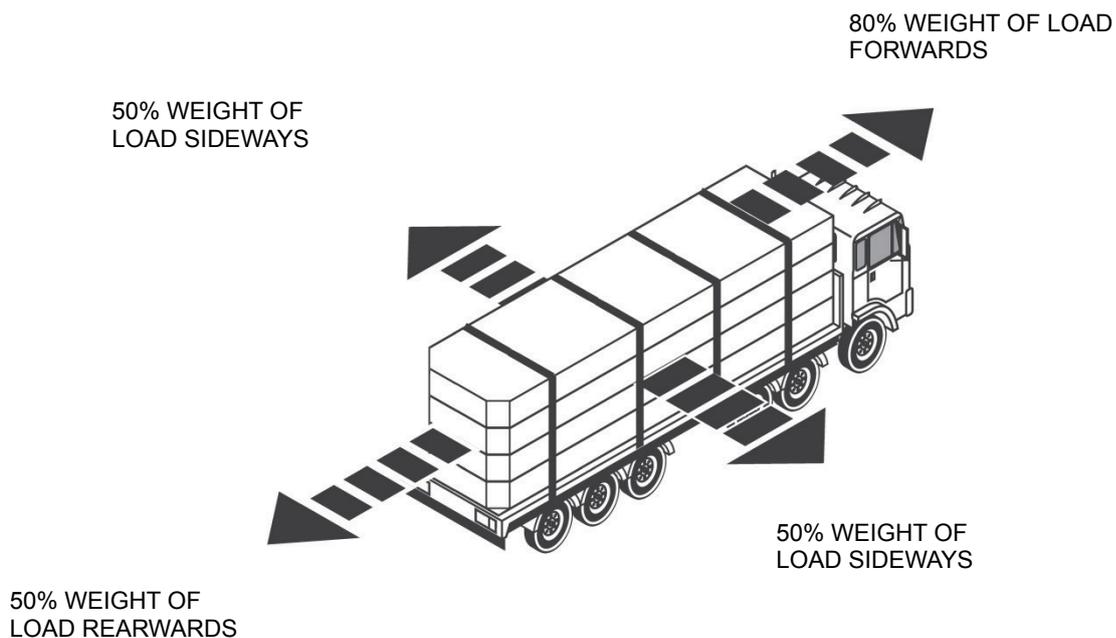
1.4.1 A number of different terms are used in this Code, most of which are self-explanatory, but for clarity definitions of the less common ones are as follows: -

- (i) banding - means metal strips or similar used to secure items, usually of the same type, together into a more convenient load for handling, e.g. as in the case of bricks.
- (ii) baulking - means stout timber lengths or similar butted against the wheels of vehicles, or the load being carried at platform level, to prevent horizontal movement.
- (iii) tensioners - means a device forming part of a lashing which enables that lashing to be tightened and held tight.
- (iv) overall height - means the height of a vehicle standing on a level surface with all tyres inflated to normal pressure, measured vertically from such surface to the highest point of such vehicle or of the load on such vehicle whichever is the higher (regulation 2 of Cap. 374A).

## 1.5 Principles of load safety

1.5.1 When a vehicle accelerates, brakes or changes direction, the friction between the load and the vehicle platform is normally not enough to keep unsecured loads from moving (sliding and tipping). The heavier the load or the sharper of the vehicle movement (e.g. acceleration, braking, turning, etc.), the more the load will try to move. To ensure load safety, a load must be securely restrained using blocking, locking, baulking, lashing or a combination of these techniques so as to prevent it from moving during transport.

1.5.2 As a minimum requirement, the combined strength of the load restraint system must be sufficient to withstand a force not less than 80% of the total weight of the load forwards, and 50% of the weight of the load backwards and sideways as shown in Diagram 1.5.1. This basic principle applies to all vehicles irrespective of their size.



### **MINIMUM LOAD RESTRAINT SYSTEM REQUIREMENT**

DIAGRAM 1.5.1

## 1.6 High loads

1.6.1 Particular attention should be paid to the dangers of high loads that might have to pass under bridges or overhead structures across roads. Please see further information on paragraph 2.3.11.

1.6.2 Drivers should be more cautious when transporting high loads or heavy loads placed at high points as high loads will affect vehicle stability and may cause it to overturn when turning. Please see further information on paragraphs 5.8.3 and 5.8.4.

## 2. Vehicle types and arrangement of loads

### 2.1 General

2.1.1 An offence is committed, as stated in sub-paragraph 1.2.4 (ii) and Section 1.3, if a vehicle is loaded beyond its maximum gross vehicle weight, axle weight, or gross combined weight, or a load extends beyond any side of the vehicle more than the permitted limit.

2.1.2 Having the right type of vehicle for the load intended to be carried will often avoid infringements to any regulations occurring and it is the responsibility of the owner of the load as well as the supplier/operator of the vehicle to ensure that the right type of vehicle is provided. The driver should also check and ensure that the load is adequately secured at all times.

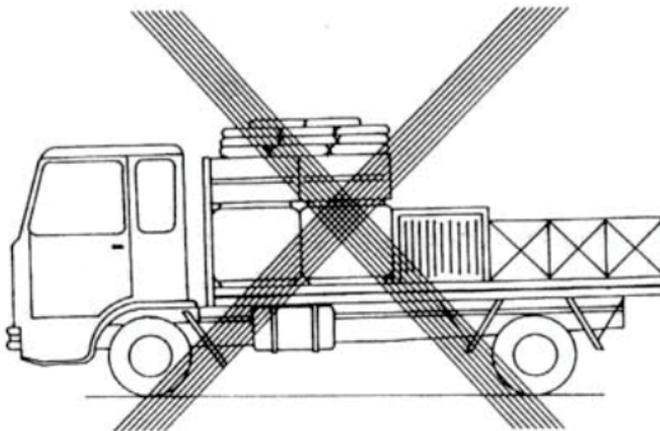
2.1.3 It is not sufficient for a vehicle owner/operator/driver to claim that the weight of the load was not known. It is their responsibility to ascertain this and ensure that the permitted limit is not exceeded. Apart from any offence that might be committed in respect of any over or incorrectly loaded vehicle, the risk of an accident which may result in injury to occupants of the vehicle or other road users, is considerably increased.

2.1.4 Badly distributed loads, such as heavy loads placed at the rear, at one side or at the front of the vehicle platform (see Diagram 2.1.1) can easily cause the maximum axle weight, which are marked on the sides of the vehicle or shown on the vehicle licence to be exceeded. The result of any axle failure which the vehicle is in motion can be extremely dangerous for the occupants of the vehicle and for other road users. Some examples of well distributed loads are shown in Diagram 2.1.2.

2.1.5 Where a vehicle platform is equipped with a roller loading device, it must be ensured that the arrangement of that device does not cause the maximum axle weight of the vehicle to be exceeded when the vehicle is loaded.

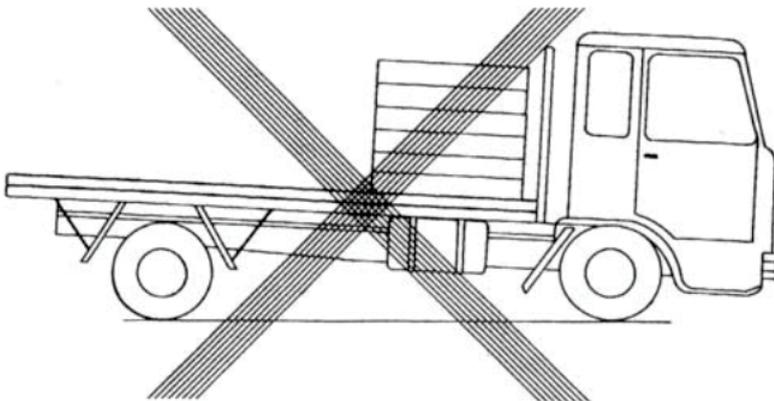
2.1.6 Any roof racks or similar construction must be firmly fixed to the body of the vehicle so that they will not become detached or blown off when the vehicle is in motion, and this should be regularly checked, particularly if they are any of the type that can be removed when required. It must also be ascertained that the roof rack or similar construction is capable of carrying the load, as most of the types that are used on goods vehicles in the territory are

generally only suitable for carrying lightweight equipment, such as canvas sheeting or spare lashings.

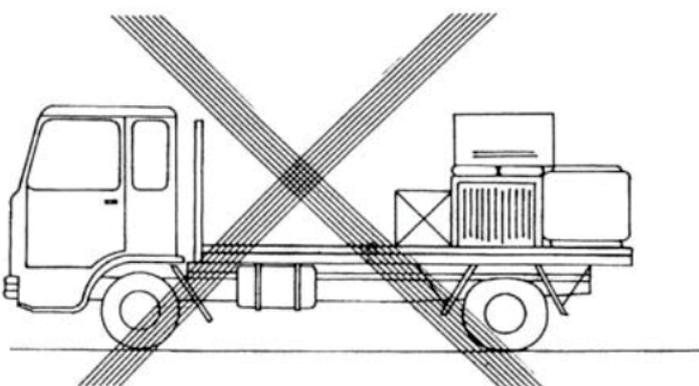


NOT ACCEPTABLE

BADLY DISTRIBUTED LOAD CAUSING FRONT AXLE TO BE OVERLOADED



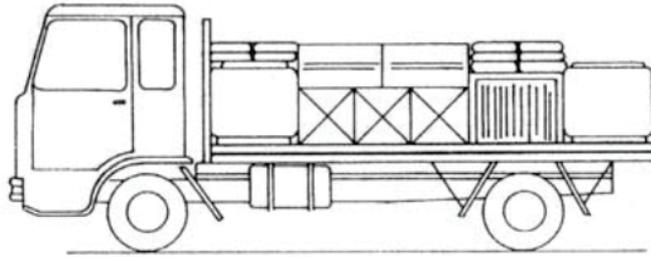
NOT ACCEPTABLE



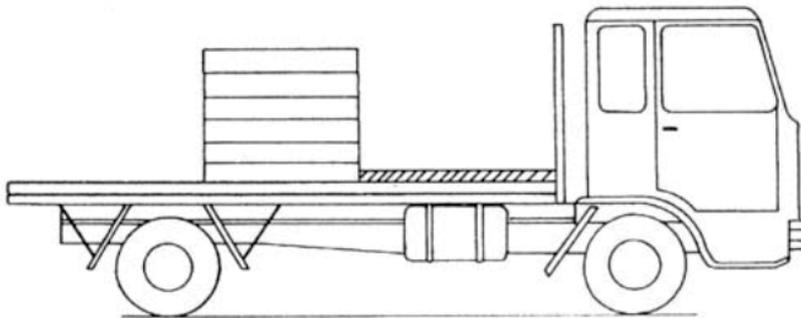
NOT ACCEPTABLE

**BADLY DISTRIBUTED LOADS**

DIAGRAM 2.1.1



ACCEPTABLE



ACCEPTABLE

DIAGRAMS SHOW DISTRIBUTION OF LOADS ONLY. ADEQUATE RESTRAINTS AS DETAILED IN SECTION 5.2 ARE ALSO REQUIRED.

### **WELL DISTRIBUTED LOADS**

DIAGRAM 2.1.2

## 2.2 Choice of vehicle

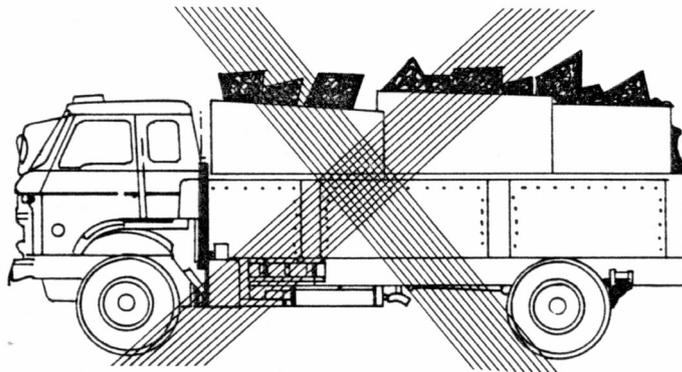
2.2.1 Certain vehicles, such as petrol tankers, refuse collection vehicles or ready-mix concrete lorries are specially constructed for the sole purpose of carrying such loads. However for the majority of loads carried in the territory, general purpose vehicles are usually used.

2.2.2 In respect of general purpose vehicles, or any adaptation of these, it is most important that:

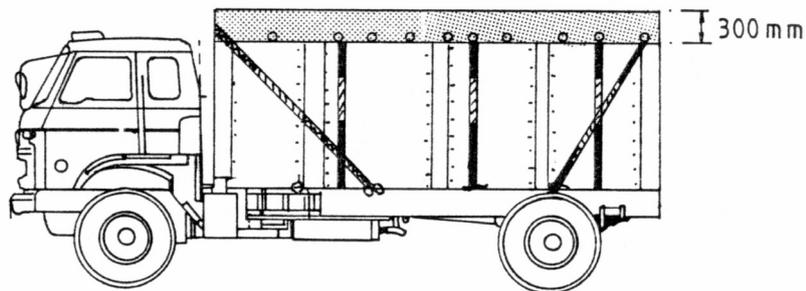
- (i) the design and construction of the vehicle and its bodywork is appropriate for the loads which it is likely to carry, and in this respect the strength and characteristics of the materials used in the construction must be adequate, and load bearing components should have rot proofing and anti-corrosion treatment;
- (ii) the maximum expected load on the floor should be ascertained in order to ensure that the floor itself and the section and spacing of supporting cross beams is sufficient. Strength calculation should account not only for the load itself but also any extra forces during loading such as that exerted if fork lift trucks are to be used on the floor of the vehicle platform; and
- (iii) the relationship between the vehicle's wheel base, body length and body overhang in relation to the composition of the loads to be carried needs to be carefully considered particularly if the maximum axle weights are nearly fully used.

2.2.3 For particular loads, general purpose vehicles will not be suitable or economical. For loose bulk loads, a high sided vehicle will be necessary and although body height extensions are permitted these should be purposely designed and constructed, and able to be attached to the existing body by appropriate fixings and not rely on the load for support. In this latter respect, plywood or similar supported by the load itself, as shown in Diagram 2.2.1, must not be used as body height extensions. In addition, the loads should be properly covered to prevent the risk of being blown off or jumping out of the vehicle during transport.

NOT ACCEPTABLE



NOT SATISFACTORY AS LOAD PROTRUDES ABOVE SIDES, AND PLYWOOD PIECES HAVE BEEN USED AS HEIGHT EXTENSIONS.



CORRECT METHOD USING PURPOSE DESIGNED VEHICLE FOR LOOSE BULK LOADS, AND COMPLETELY COVERED WITH SUITABLE SHEETING TO PREVENT ANY SPILLAGE.

### **TRANSPORTING LOOSE BULK LOADS**

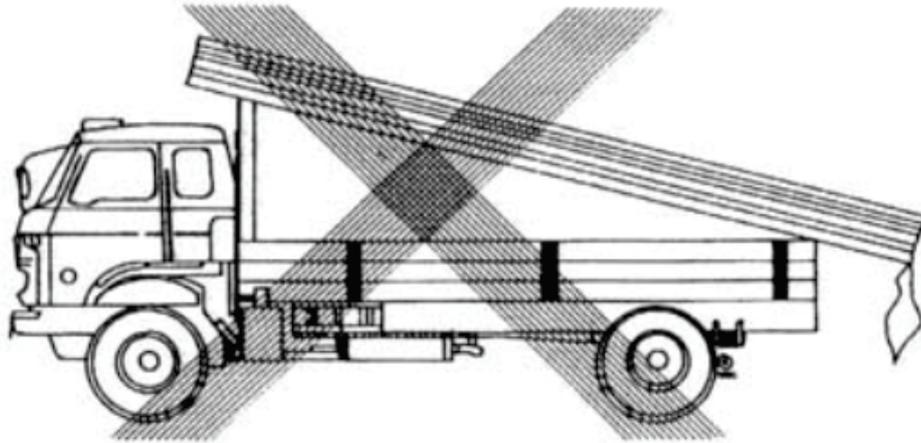
DIAGRAM 2.2.1

2.2.4 Permits for long loads will only be given to vehicles over 9.1 m in length. Therefore any vehicle below this length cannot have any load protruding more than the permitted amount. For any vehicle where a load is likely to extend beyond the rear of a vehicle, the load should normally be laid flat, as shown in Diagram 2.2.2, and not inclined at an angle from the rear to the front, as with this latter method there is generally insufficient restraint to prevent the load from sliding backwards.

2.2.5 Where a vehicle platform is equipped with a roller loading device, it must be ensured that this device is firmly and securely attached to the vehicle platform and that the device or any part of it is incapable of moving sideways, forwards or backwards relative to the vehicle platform whilst goods are being loaded or unloaded or whilst the vehicle is in motion.

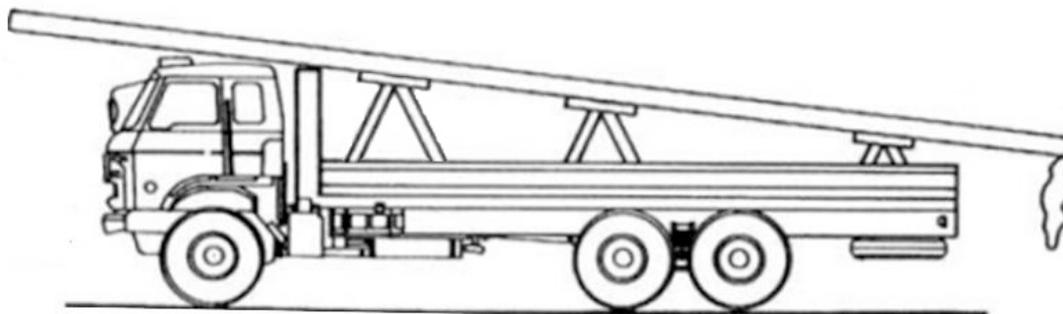
2.2.6 In using a vehicle equipped with tail lift, it should be noted that the opened tail lift of the vehicle parked at the road side for loading/ unloading may pose a serious hazard to its operator and other road users in particular at night or in poor visibility conditions as it may be so thin that it is quite difficult to be seen. With a view to improving the conspicuousness of an opened tail lift while loading/unloading, vehicle owners should fit additional lighting and retro-reflective aids for the tail lift of their vehicles. Drivers and vehicle operators should also take necessary safety precautions against other road users bumping into the opened tail lift such as to place a pair of retro-reflective traffic cones about 5 m behind it to alert other road users, and not to carry out loading/unloading activities near a street corner.

2.2.7 Reversing video device is a closed circuit television system with its camera being mounted at the vehicle rear to capture the rear view of a vehicle. The image is displayed automatically on a monitor usually in front of the driver when the vehicle is reversing or about to reverse. All goods vehicles should be fitted with the reversing video device.



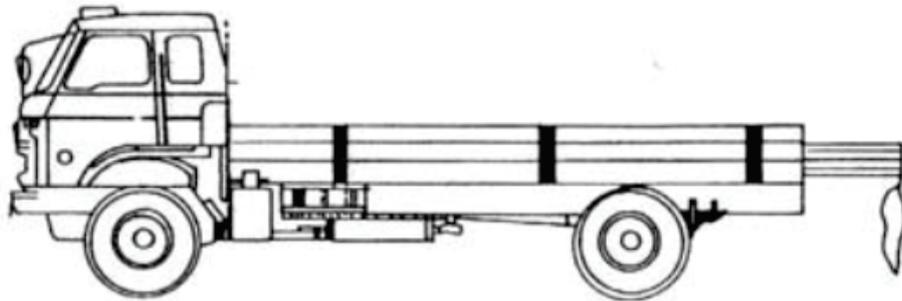
UNACCEPTABLE METHOD

LOAD TOO LONG FOR VEHICLE AND INCLINED SUCH THAT REAR OF LOAD NOT ADEQUATELY RESTRAINED AND LOAD DISTRIBUTION NOT SATISFACTORY.



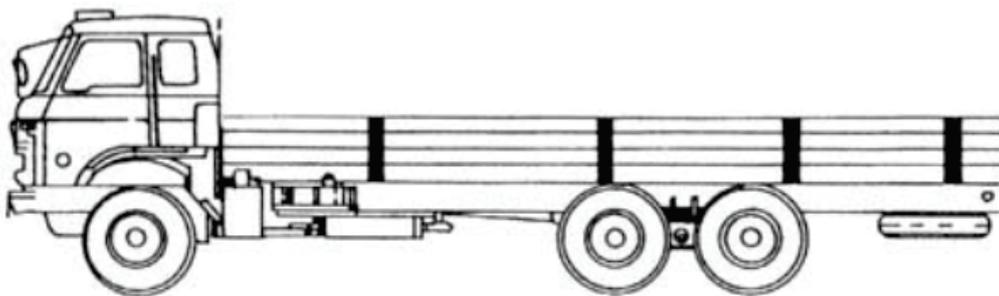
ACCEPTABLE METHOD

LOAD IS EXTENDED OVER THE HEADBOARD AND SUPPORTED BY SUITABLE TRESTLES FIRMLY FIXED TO THE VEHICLE. THE LOAD SHOULD ALSO BE SECURELY LASHED TO THE HEADBOARD AND ALL THE TRESTLES BUT NOT TO THE TAILGATE.



BETTER METHOD

LOAD IS LAID FLAT, HOWEVER STILL HAS DISADVANTAGE THAT LOAD IS TOO LONG FOR VEHICLE.



BEST METHOD

LOAD LAID FLAT AND COMPLETELY CONTAINED BY VEHICLE.

**TRANSPORTING LONG LOADS**

DIAGRAM 2.2.2

## 2.3 Arrangement of loads

2.3.1 Before a vehicle is loaded, it should be inspected by the driver to ensure that all the legal requirements are complied with, and the loading platform, bodywork, anchorage points, twist locks, and other relevant parts are in a satisfactory condition.

2.3.2 Consideration must be given when loading the vehicle that the load is not so arranged that the removal or pickup of any part of it in the course of a journey will adversely affect any axle weight, or the stability of the vehicle. For example, removing a part of the load from behind the rear axle of a vehicle or trailer will reduce the gross vehicle weight, but it will increase the weight on the front axle and may cause individual axles to exceed their weight limit. In this respect, it is essential to know the weight of the load and the weight of the individual items so that it can be readily ascertained whether or not this problem is likely to occur. The arrangement for multi-drop or multi-pickup loads should be well planned beforehand to ensure easy drop-off or pickup, provision of adequate restraint, even weight distribution across the platform, permitted weight limits not to be exceeded and stability of the vehicle for each stage of transporting the loads. If necessary, the loads may need to be suitably rearranged and/or restrained after each drop-off or pickup.

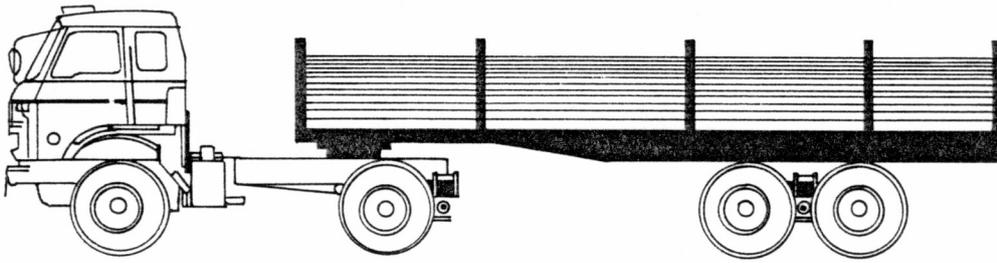
2.3.3 Any load must be arranged so that it does not obstruct the driver's field of vision including the view to the rear. Installation of rear view camera system would help improve the driver's view to the rear. For overhanging of load at the rear, it must be ensured that any stop lamp, direction indicator, obligatory rear lamp, obligatory reflector, reversing lamp or registration mark and plate of the vehicle would not be obscured.

2.3.4 Wherever possible, the load should be placed in contact with a headboard. Otherwise, additional means of securing the load will be necessary, such as: -

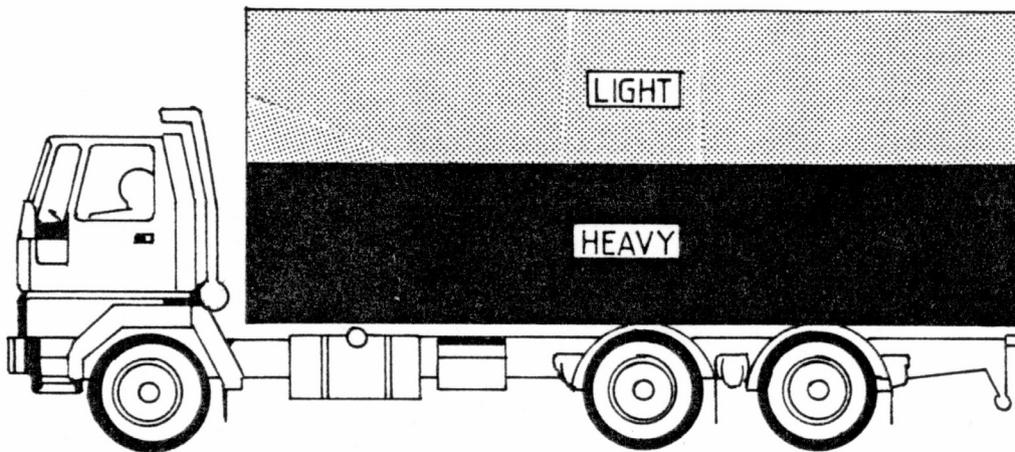
- (i) a partition or baulking device fitted transversely across the vehicle platform and firmly attached so that all loads imposed on it are transmitted to the chassis frame;
- (ii) additional lashing; and
- (iii) blocks, bolsters or wedges preventing individual items of a load moving in any direction.

2.3.5 As shown in Diagram 2.3.1, vehicle stability should be aimed for and to achieve this, the load should be placed so that the centre of gravity is kept as low as practicable and near to the vehicle's longitudinal centre line. This means that: -

- (i) the load should be spread so that an even weight distribution over the whole floor area is obtained;
- (ii) loads inclined and supported only at the front and rear of the loading platform should be avoided;
- (iii) stacked loads should be arranged so that the larger and heavier items are placed at the bottom and also the lower packages should be strong enough to support the upper ones when the vehicle is braking, turning or accelerating; and
- (iv) heavier items should be placed nearer to the longitudinal centre line of the vehicle and lighter ones to the sides.

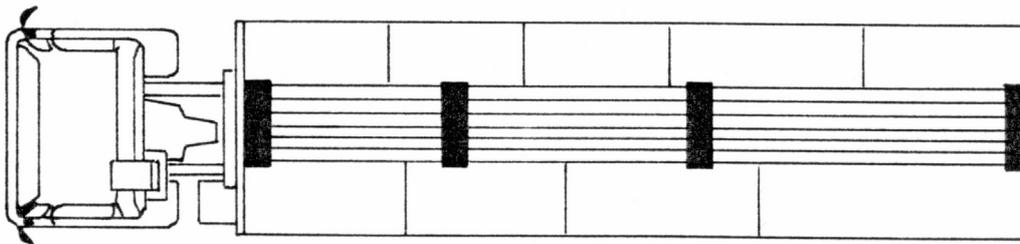


LOAD LAID FLAT IN PURPOSE DESIGNED VEHICLE



SIDE VIEW

PROPER DISTRIBUTION OF LOAD WITH HEAVIER ITEMS AT THE BOTTOM



PLAN VIEW

HEAVIER ITEMS SHOULD BE PLACED NEARER THE LONGITUDINAL CENTRE LINE

**ARRANGEMENT OF LOADS FOR VEHICLE STABILITY**

DIAGRAM 2.3.1

2.3.6 The weight of heavy loads having small dimensions should be distributed across the vehicle platform by the use of load spreading devices such as pallets.

2.3.7 When a semi-trailer, not attached to its tractor unit, is being loaded and has only the retractable leg as its support, trestles or similar supports should be used beneath the fifth wheel coupling plate to prevent any collapse of the trailer, as illustrated in Diagram 2.3.2.

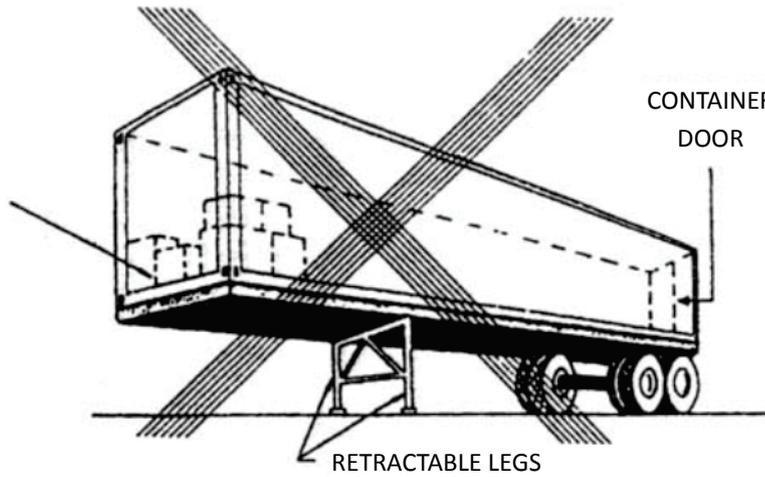
2.3.8 Before setting off, the driver should check that the vehicle is properly loaded and that any tensioners are tightened in accordance with the manufacturer's instructions. Also at appropriate intervals during the journey, the load should be checked to ensure that it is secured and lashings are adequately tensioned. Any unused chains, hoses or lashings should be properly stored away.

2.3.9 Where covers are used, they must be properly secured and should not be able to flap when the vehicle is moving. Similarly, the loose ends of ropes and other means of lashing should be secured.

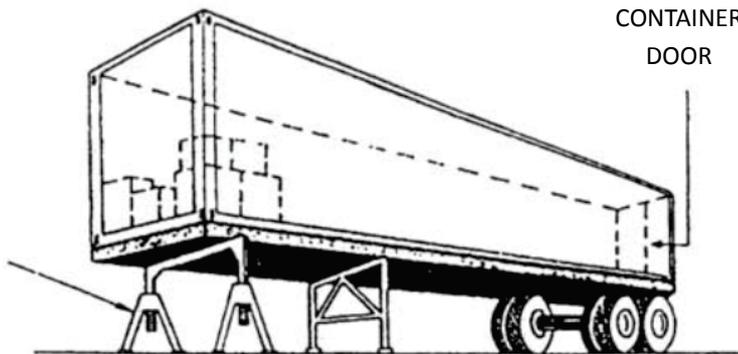
2.3.10 Any loose bulk loads must be properly covered, not only to prevent dust or spillage of parts of the load, but also in wet weather to prevent water retention as certain loose loads will absorb rain, and this may result in the vehicle exceeding its maximum axle or gross vehicle weights.

**NOT ACCEPTABLE**

LOADING ACTIVITY  
IN THIS AREA MAY  
CAUSE COLLAPSE AS  
THE RETRACTABLE  
LEGS MAY NOT  
PROVIDE  
SUFFICIENT SUPPORT



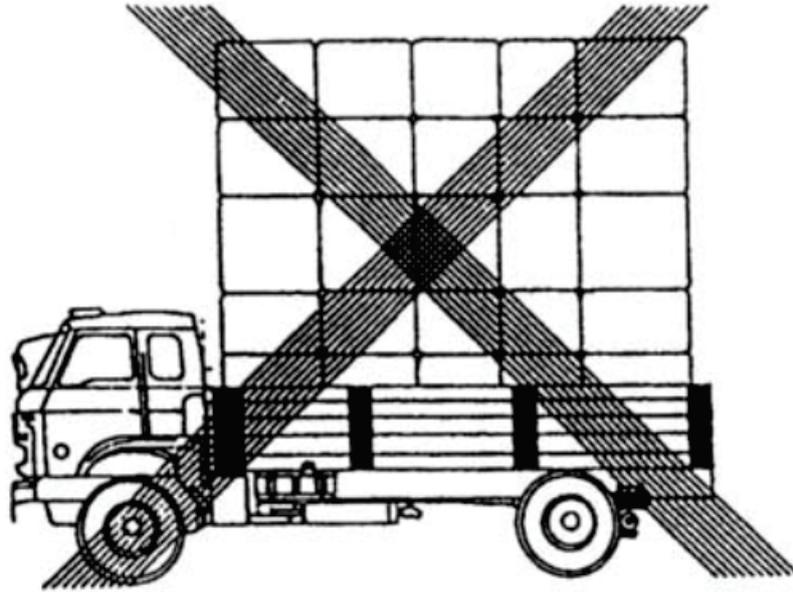
ADDITIONAL SUPPORT  
TO AVOID ANY  
COLLAPSE PROVIDED  
BY SUITABLE TRESTLES  
BEING PLACED  
BENEATH THE FIFTH  
WHEEL COUPLING  
PLATE



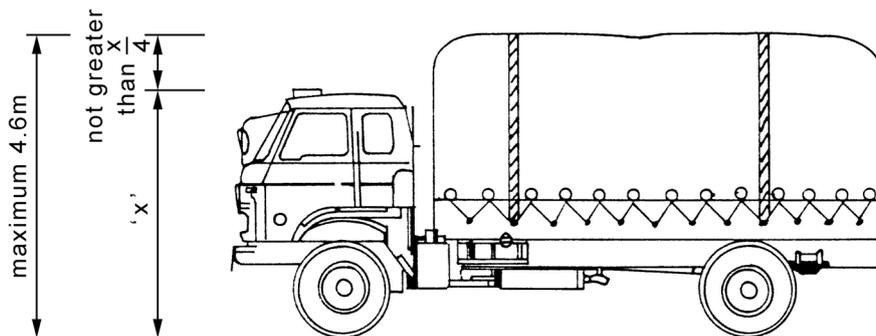
**LOADING A SEMI-TRAILER NOT ATTACHED TO ITS TRACTOR**

DIAGRAM 2.3.2

**NOT ACCEPTABLE**



CARTONS STACKED TOO HIGH AFFECTING STABILITY OF VEHICLE, UNIFORM ARRANGEMENT OF BOXES ALSO CAUSES LOAD TO BE LESS STABLE.



HEIGHT OF LOAD SHOULD NOT NORMALLY EXTEND ABOVE THE ROOF OF THE CAB BY MORE THAT  $\frac{1}{4}$  OF THE HEIGHT OF THE CAB ROOF FROM THE GROUND, EXCEPT IN THE CASE OF SPECIALLY DESIGNED AND ENCLOSED VEHICLES. ALSO, THE LOAD MUST NOT EXTEND BEYOND THE SPECIFIED OVERALL HEIGHT OF THE VEHICLE (4.6 m FOR MEDIUM/HEAVY GOODS VEHICLE OR 3.5 m FOR LIGHT GOODS VEHICLE).

### **RESTRICTING HEIGHT OF LOADS**

DIAGRAM 2.3.3

2.3.11 As illustrated in Diagram 2.3.3, loads must not be such that the specified overall height of the vehicle (see sub-paragraph 1.2.4 (ii)(d)) is exceeded, and also must not, even if this height is not exceeded, be such that the height of the load is disproportionate to the vehicle, causing the stability of the vehicle to be affected. Such loaded vehicles are particularly vulnerable to being overturned at bends, in high wind situations such as typhoon conditions, or in exposed locations such as the Tsing Ma Bridge where even under relatively normal conditions, high cross winds can be experienced. Beneath some bridges, gantries and other structures, the clearance provided may be less than the standard minimum requirement of 5 m, or even less than the maximum permitted vehicle height of 4.6 m. In such situations, regulatory and/or warning traffic signs are erected to inform drivers of the restriction/prohibition. Drivers transporting high loads should pay particular attention to such signs and some examples are shown below:



‘Height limit’  
regulatory sign – no  
vehicles over height  
shown



‘Height restricted  
ahead’ warning sign  
– restricted  
headroom on road  
ahead



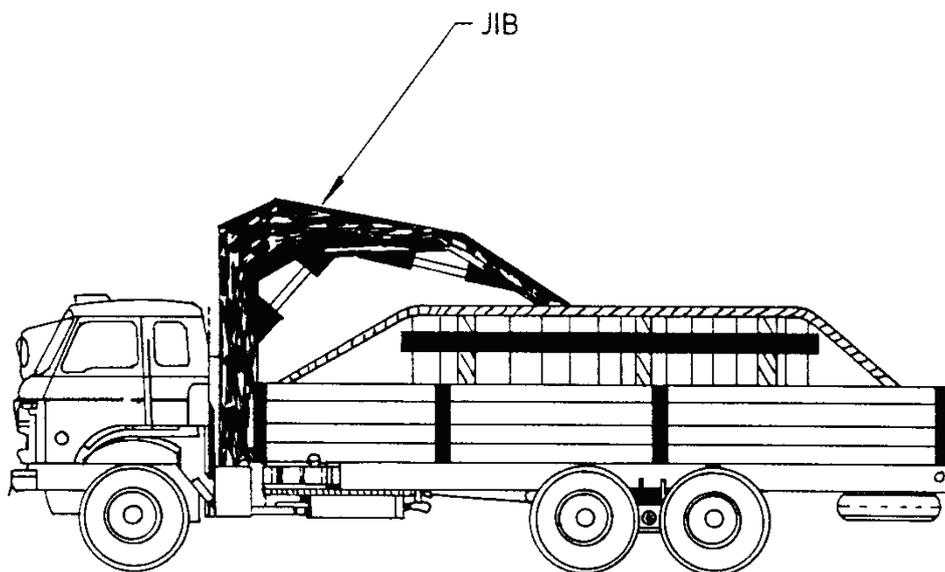
‘Height restriction’  
warning sign – mounted on  
structure with restricted  
headroom over a road

2.3.12 Vehicles having a jib, crane, grab or similar attachment, should be loaded similarly to other vehicles, and the jib, crane or grab should be lowered and returned to its stowed position as recommended by the manufacturer after use. Warning systems to alert drivers if these devices are out of their stowed position when vehicle is in motion should be provided. If used to support any load, as shown in Diagram 2.3.4, the jib or similar attachment should be regarded as additional to and not a replacement for any securing devices normally required. For loads such as oil drums or drums carrying other similar inflammable material, the jib must be stowed away and not used as a restraint in order to avoid any vibration causing the jib to puncture any of the drums.

2.3.13 Whilst the advice in this Code is intended to be applicable over whatever distance a load is to be carried, it is particularly relevant for longer

journeys and especially where the route may include trunk roads on which higher speeds can be maintained. The likelihood of a badly arranged or secured load coming loose is considerably increased, not only due to the length of the journey but also because the acceleration and deceleration of the vehicle under these conditions will have a greater effect on the load.

2.3.14 Where a vehicle platform is fitted with a roller loading device, it must be ensured that the use of this device does not affect the stability of the vehicle where as a result of the device, goods cannot be arranged so that an even weight distribution over the floor is obtained or heavier items cannot be placed near the longitudinal centre line of the vehicle.



JIB MAY ONLY BE REGARDED AS AN ADDITIONAL RESTRAINT AND NOT A REPLACEMENT FOR NORMAL SECURING DEVICES REQUIRED. FOR OIL DRUMS OR SIMILAR, THE JIB MUST NOT BE USED AS A RESTRAINING DEVICE. JIB SHOULD BE PROPERLY STOWED TO PREVENT THE VEHICLE FROM EXCEEDING THE SPECIFIED OVERALL HEIGHT (SEE DIAGRAM 2.3.3)

**USING JIB AS ADDITIONAL RESTRAINT TO PREVENT LOADS FROM FALLING OFF**

DIAGRAM 2.3.4

### 3 Anchorage points and headboards

#### 3.1 Anchorage points

3.1.1 Rope hooks should not be used to anchor loads except very lightweight ones.

3.1.2 Loads should be secured to dedicated anchorage points which are integrated into the structure so that the forces imposed on them are transmitted to the main chassis frame of the vehicle.

3.1.3 It must be ensured that the required restraint force should not exceed the capacity of each anchorage point as indicated on the vehicle. Anchorage should be installed properly. The party responsible for the installation of the anchorage point, such as the vehicle manufacturer or bodybuilder, should provide information on the capacity of each anchorage point and indicate the said capacity on the vehicle accordingly.

3.1.4 The anchorage points must be compatible with the type of securing equipment likely to be used.

3.1.5 Sufficient load anchorage points should be provided. The number of anchorage points actually used on a particular journey will depend on the type, weight and dimensions of the load being carried and its location on the platform in relation to the headboard or other additional means of restraint.

## 3.2 Headboards

3.2.1 When headboard functions as load restraint device, the following should be observed:-

- (i) The strength of headboard should be known for assessing the additional restraint required. Additional lashings or other means of restraint are required so that the combined strength with the headboard could provide a force resisting not less than 80% of the total weight of the load forwards.
- (ii) Apertures on headboard should not allow penetration of any part of the loads.
- (iii) For loads such as metal bars, beams, girders, sheet metal etc. which could penetrate the cab in the event of hard braking or failure of the securing devices, the headboard must be adequately reinforced to resist damage from individual elements of the loads.
- (iv) Load restraining capacity of headboard will be significantly reduced if loads are not in contact with it, and so the loads should be in contact with the headboard for maximising the load restraining efficiency. If necessary, packing blocks can help to fill any gaps, provided that they are suitably restrained themselves.

3.2.2 Headboard should be examined regularly, and damaged ones should not be used for load restraint purposes and should be replaced as soon as possible.

#### 4. Load securing equipment and requirements for securing loads

##### 4.1 General

4.1.1 The selection of the best means of securing a load to a vehicle will depend on the type and composition of the load to be carried. Operators should equip themselves with the correct securing equipment for the types of load carried and where general cargoes are carried, various types should be available. Clamps, special bolts, steel wire ropes, chains, webbing slings, sheets, nets, ropes and shoring bars are all suitable devices for use in load restraint, but it is essential to ensure that they are strong enough for the weight of loads carried. Other coupling equipment used must also be of corresponding quality and strength.

4.1.2 All equipment used for securing loads should be regularly inspected for wear or damage. Inspection arrangements should be in accordance with the manufacturers' instructions.

4.1.3 In general, sharp corner will reduce the effective strength of securing equipment. Suitable sleeves and/or corner protectors should be used to prevent damage to both the load and the securing equipment caused by sharp corners.

## 4.2 Types of load securing equipment

4.2.1 All load securing equipment should frequently be inspected for signs of any wear or damage. They should also be semi-annually examined by professional engineer (who is a corporate member of the Hong Kong Institution of Engineers in the mechanical engineering discipline, or equivalent) to ensure their fitness for use.

4.2.2 Steel wire rope made up into special straps or slings is suitable for securing a load when used in conjunction with other devices such as shackles and thimbles. Wire ropes having a diameter of less than 8 mm will not be suitable for load restraint purposes. Sharp corners will also reduce the effective strength of wire rope.

4.2.3 Chains are suitable for direct lashing of loads when used in a similar manner to steel wire ropes, particularly those strong rigid loads such as heavy machinery equipped with lashing eyes compatible with the strength of the lashing. The strength of a chain mainly depends on the thickness of its links and the quality of the metal used. The chain should connect the lashing eye of the load to the anchorage point on the vehicle direct. At corners or sharp edges, protective sleeves or bevelled sections should be used. Lashing chains must not be used when knotted or connected with a pin or screws.

4.2.4 Webbing assemblies are suitable for securing many types of load. They usually consist of a webbing strap with some form of end fittings and incorporate a tensioning device. Information indicated on the attached label or tag of the webbing strap particularly the design strength/capacity which must not be exceeded, the chemical resistance to acid/alkali and the effect when wet should be checked before use.

4.2.5 Nets securing or retaining some types of load may be constructed from webbing straps or ropes of either natural or man-made fibres or steel wire. Webbing nets are generally used as barriers to divide the load space into compartments. Rope or cord nets may be used to secure loads either to pallets or direct to the vehicle as the primary restraint system. Lighter nets can be used to cover open bodied vehicles and skips when the type of load makes it unnecessary to use a sheet. The mesh size of the net must be smaller than the smallest part of the load.

4.2.6 Rope used for securing loads should preferably be manufactured from polypropylene and polyester. Polyamide (nylon) ropes are not suitable, as they tend to stretch under load. Sisal or manila ropes are also unsuitable as

their strength can be reduced by water saturation. Ropes should be of 3-strand construction and must have a minimum nominal diameter of at least 10 mm.

4.2.7 Purpose made clamps are suitable for securing loads which are fitted with lifting pockets, brackets or other specially designed attachments. In most cases it will be necessary to reinforce the deck of the vehicle in the vicinity of the clamp position. The design of the clamp and reinforcement should be carried out in accordance with the recommendation of the vehicle manufacturer or bodybuilder. A minimum of four clamps should be used and any three of these must be strong enough to restrain the load if one clamp fails to function correctly.

4.2.8 ISO freight containers are secured to vehicles by means of special container locks commonly known as “twist locks”. Twist locks should be inspected regularly for wear, damage and correct operation. Locking devices which are intended to prevent the operating levers from moving during the journey should be given special attention. A minimum of four twist locks should be provided for each container carried.

4.2.9 Sheets are of two types:

- (i) Tarpaulins, which provide weather protection only and should not be used as part of a restraint system.
- (ii) Purpose made load sheets incorporating webbing straps are satisfactory up to their rated load capacity provided the straps are secured to body attachments of equivalent strength.

4.2.10 Banding (steel or plastic), commonly used for binding loads together, is not an adequate method for securing loads to vehicles. The wide range of banding available makes it difficult to ensure that the type to be used has sufficient strength for the task and there is a real risk that it will work loose during the journey. If this happens, the driver has no means of retightening it.

### 4.3 Requirements for securing loads

4.3.1 In general, it would be appropriate to obtain the majority of the total load restraint from lashings secured to anchorage points attached to the vehicle body including cross bearers, outriggers, etc. and the remaining part from baulking arrangements including headboard, transverse beams, spigots, shoring bars, etc. which are securely attached to the vehicle.

4.3.2 Where possible, all the loads should be blocked or baulked in addition to lashing. Blocking involves positioning the load, or parts of the load directly to the adequately constructed headboard, sideboards, stanchions, supports, walls or parts of the load to stop it from moving. However, in calculating the number of additional lashings required to secure the load, only those headboards, sideboards and tailgates clearly marked with payload strength should be taken into account.

4.3.3 Light loads may be carried without additional restraint provided that the height of the load is less than the height of the headboard, sideboards and tailgate fitted to vehicles, and that there is no risk of the load moving and breaking through any of the boards or bouncing off the vehicle. In any instance where the load exceeds the height of any of the boards, some form of lashing must be used to prevent tipping.

4.3.4 On open platform vehicles, that is, those without tailgate or sideboards, some form of load restraint will always be required.

4.3.5 The load must be packed tightly before applying the restraints, which should be arranged so that no part can accidentally be released by vibration or road shocks while the vehicle is in motion.

4.3.6 The restraints should be arranged so that failure or slackening of a single component does not render the remainder of the system ineffective.

4.3.7 All items of loose equipment not in use (sheets, ropes, hoses, dunnage, rope ends, etc.) must be securely restrained at all times.

4.3.8 Always check that cargo doors are locked and that locking mechanisms are in good condition before moving off. Preferably, the load should be checked for security and the lashings tested for adequate tension again at suitable intervals throughout the journey. Weather conditions such as raining can affect the tension of lashings, which may lead to loss of security and damage to the load if not correctly re-tensioned.

4.3.9 To avoid movement of loads, lashings must be properly tensioned at all times using appropriate tensioning device. Never over tension lashings by the use of levers. It is most important that for direct lashings to provide forward or rearward restraint, they should be as near to the horizontal and to the restrained direction as possible and never at an angle with the platform of more than 60° (see Diagram 5.2.1); and for top-over lashings to prevent the load from sliding, the load should not be lashed top-over in an off-centred manner to avoid possible slackening of the lashings caused by any movement of the offset load towards the longitudinal centre line of the body platform, and the angle between the lashing and the loading platform should be between 75° and 90° so as to obtain maximum effect. An offset of the load will require a longer restraint than if it was positioned centrally. This means that even if the restraint of an offset load is initially tight, any movement of it towards the centre will result in a loss of tension leaving the load insecure (see Diagram 4.3.1).

4.3.10 Lashings must be protected against abrasion and/or cutting by the use of corner protectors or protective sleeves, and there should be at least one lashing every 1.5 m along the length of the load. If the load is not placed directly against a headboard or baulked, a minimum of two lashings must be used.

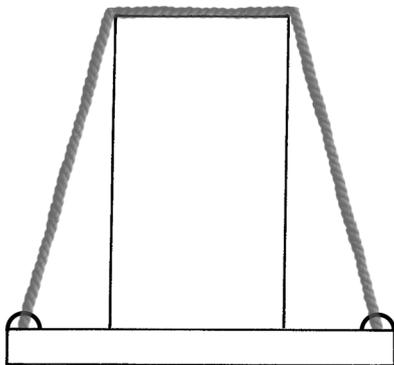
4.3.11 All loose rope ends should be tied up after the sheeting and roping is completed. Lights, reflectors, number plates and rear markings should not be obstructed by any part of the sheet. Sheet overlaps should not face forwards to prevent rain and wind getting between sheets, i.e. the rearmost sheet should be positioned first.

4.3.12 Nets and their attachments should be in sound conditions. Tension in netting should be applied with appropriate equipment, and the maximum rated loading must not be exceeded. Protection against abrasion and/or cutting at sharp edges should be provided by the use of corner protectors or sleeves. Mesh size of net should be smaller than the smallest part of the item the net is expected to retain.

4.3.13 Chocks and wedges used to prevent individual items of loads from horizontal movements should be strong enough and are adequately secured to the vehicle platform.

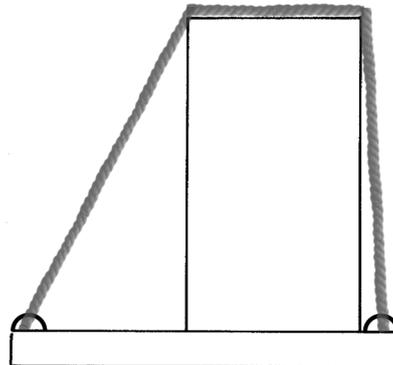
4.3.14 Dunnage should be used to fill any gaps between parts of the load or between the load and the vehicle, when it is impractical to pack the individual units or packages of load closely together. Dunnage itself should be secured to prevent movement during the journey. The use of loose dunnage between the load and the platform should be avoided unless it must be used to support an awkwardly shaped load. A number of materials are suitable for use as dunnage, the most common being timber, folded cardboard, hardboard, high-density foam, and air bags. Care must be taken to choose suitable material so as not to damage the load. Timber dunnage should be of uniform thickness and of the maximum possible width. The minimum width should, where practicable, be twice the thickness and it is always preferable to use only a single layer.

**ACCEPTABLE**



Load positioned at centre  
(Shortest length of lashing)

**NOT ACCEPTABLE**



Load offset to one side  
(Longer length of lashing)

**EFFECT OF LOAD POSITION ON LENGTH OF RESTRAINT**

DIAGRAM 4.3.1

## 5. Advice on loading

### 5.1 General

5.1.1 The advice in this Chapter is only intended to provide general guidelines as to how different types of vehicles may be loaded. It obviously cannot include for every eventuality, and it must be for the operator and driver to ensure that any load is properly secured and the load is carried in accordance with any relevant regulations.

5.1.2 The carriage of any dangerous goods, conforming to or regulated by the Dangerous Goods Ordinance, Cap. 295, is a specialist subject outside the scope of this Code, and therefore advice on the loading of such material other than in very general terms is not included.

5.1.3 It is extremely important that loads are properly secured and that the securing equipment, fixings, and method of applying lashings are adequate for the particular load. In this respect, the method whereby a lashing is passed around and underneath the body of the vehicle and then over the load is not entirely satisfactory as the lashing is not actually secured to the vehicle, and because of this, damage to the chassis frame or other parts of the vehicle can occur; also any forward restraint is only provided by friction which may be inadequate to restrain the load during heavy braking. If this method is used, one lashing alone is certainly not sufficient, and for any long sections at least four must be used, but preferably an alternative means of restraint whereby lashings are secured to anchorage points should be used. Where possible, all restraint tensioners should be arranged on the nearside of the vehicle, so that adjustment to them need not take place in exposed positions in the centre of the road. When not in use, all restraints should be stored safely, so as not to present a danger to other road users, including pedestrians.

5.1.4 The proper security of a load on a vehicle is particularly important where the vehicle's loading platform is equipped with any form of roller loading device. Apart from the fact that this device must be firmly fixed to the vehicle platform, it must also be ensured that during transit the load cannot move across the rollers, and reliance on the headboard, sideboards or tailgate to prevent this is not sufficient. Ideally the rollers themselves should be capable of being locked so that they cannot rotate, however even if this can be achieved this alone will not be enough as the smooth surface of the rollers will considerably reduce the friction between the load and the platform. Therefore additional restraint generally in the form of lashings will be required to prevent the load or any part of it from sliding over the locked rollers.

Where rollers cannot be locked then further restraint over that described above, possibly incorporating baulking, will be necessary so that the load or any part of it does not move. Care will also be required when the goods are being unloaded to ensure that when the restraints are released and the rollers unlocked, the load or any part of it can be prevented from inadvertently moving. In this latter respect, unloading goods when the vehicle is parked on a gradient should be avoided wherever possible.

5.1.5 Where roof racks are used for the storage of equipment, such equipment must be properly secured such that it cannot fall or be swept off.

5.1.6 If the vehicle has a jib, crane, grab or similar attached for loading goods on and off it, it should be ensured before any loading or unloading takes place that the equipment is maintained and functioning properly. In particular, if the clamp or similar equipment has been changed or added to the crane, then it must be tested before use to see that the supply pressures to the new clamp are properly adjusted.

5.1.7 When loading or unloading goods using the jib, crane or grab attached to the vehicle, loads should not be left suspended from the crane or grab for long periods, and when in this position must not be left unattended.

5.1.8 All types of machinery and vehicles, including motorcycles, when being transported (whether new or used, whole or in parts), which have any fuel in any tank, body or component, must be drained of all fuel and flammable vapour to the utmost extent prior to loading and fuel containing parts securely and tightly sealed to prevent the escape of any residual fuel or flammable vapour. Batteries of such machinery and vehicles should be removed or disconnected with terminals suitably covered with non-conductive material before loading. Such loads should be properly and securely fastened in an upright position so as to avoid leakage of corrosive hazardous materials and impact between loads which may cause sparks and possible explosion. It should be noted that the risk of explosion of such loads will remain and such loads should not, therefore, be loaded into any sealed container or truck body. All such loads should, instead, be carried in 'open' and well ventilated transport.

## 5.2 General freight

5.2.1 The loading and proper security of general freight loads can be difficult because of differences in size, shape and nature of such loads.

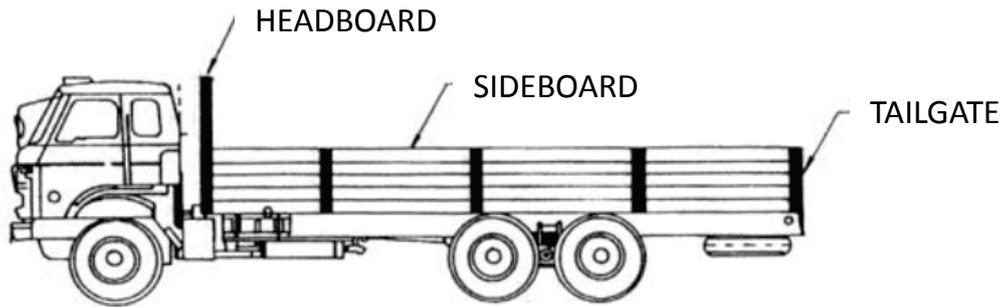
5.2.2 Vehicles having headboard, tailgate, sideboards, or van bodies will offer some restraint to the movement of the load, but additional load restraining devices will be necessary:-

- (i) if there is any risk that the load may break through the headboard, sideboards or tailgate of the vehicle;
- (ii) if the load is higher than the headboard, sideboards or tailgate of the vehicle;
- (iii) if the load is liable to be damaged should it move during transit; or
- (iv) if there is a risk of the load being blown off, or bouncing out of the vehicles.

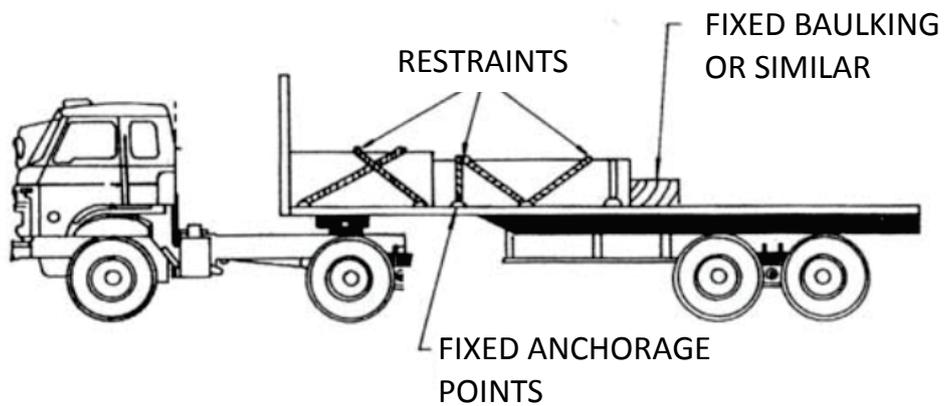
5.2.3 On open platform vehicles, that is those vehicles without tailgate or sideboards, some form of load restraining device will always be necessary as illustrated in Diagram 5.2.1.

5.2.4 As with all types of loads, it is essential that general freight loads are distributed so that: -

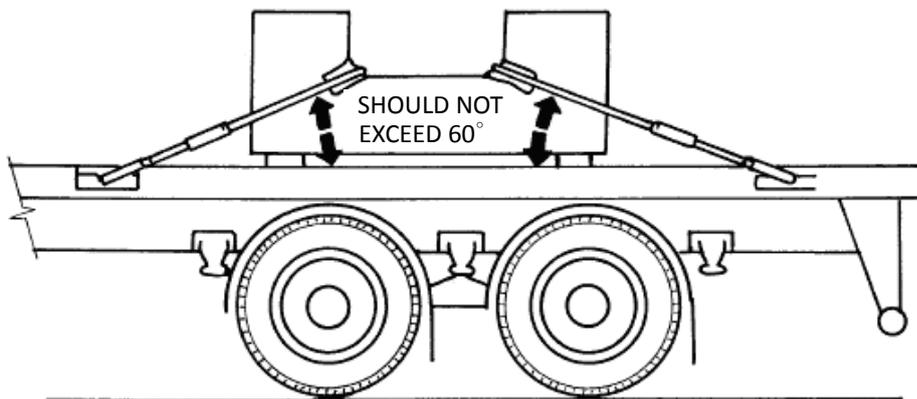
- (i) the permitted gross vehicle weight and axle weights of the vehicle are not exceeded, and
- (ii) the centre of gravity of the load is kept as low as possible to achieve maximum stability under all conditions, e.g. when the vehicle brakes, accelerates or turns.



WHERE GENERAL FREIGHT LOADS EXCEED THE HEIGHT OF ANY HEADBOARD, SIDEBOARDS OR TAILGATE, LOAD RESTRAINING DEVICES WILL BE NECESSARY.



GENERAL FREIGHT CARRIED ON ANY PLATFORM TYPE VEHICLES MUST HAVE LOAD RESTRAINING DEVICES.



THE ANGLE BETWEEN THE LASHING PROVIDING FORWARD / BACKWARD RESTRAINT AND THE PLATFORM SHOULD NOT EXCEED 60° .

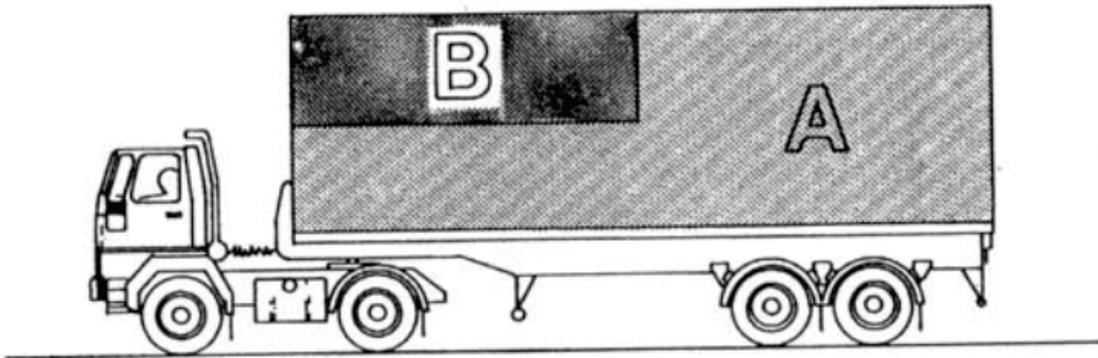
**TRANSPORTING GENERAL FREIGHT**

DIAGRAM 5.2.1

5.2.5 For mixed loads, the following are advised: -

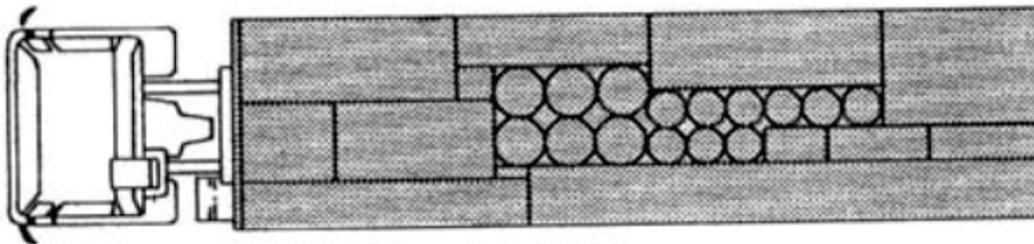
- (i) as shown in Diagram 5.2.2, heavy articles should be placed at the bottom and to the rear whilst light crushable boxes or similar should be located at the top and to the front;
- (ii) where the load is composed of different sized containers, small items should be placed centrally and the larger items should form the outer walls of the loads, as also illustrated in Diagram 5.2.2;
- (iii) irregular shaped items, if it is not possible to place them centrally, should be located in the upper part of the load and secured properly by suitable restraints;
- (iv) the load must be packed tightly before applying restraints, and the restraints must be suitable for the type of mixed items being carried. Longitudinal lashings must be adequate for at least 80% of the total load, and it should be ensured that no part of the load can move forwards separately;
- (v) any baskets or similar transporting equipment, or spare covers, should be properly secured to the vehicle, preferably in their own enclosed compartment. Loose baskets or similar should not be carried on the cab roof, as shown in Diagram 5.2.2, where they are in danger of being swept off;
- (vi) even if the load does not protrude above the tailgate or sideboards, it is essential to cover the load with sheeting, as shown in Diagram 5.2.3, in order to prevent spillage, and as a protection for the load;
- (vii) as illustrated in Diagram 5.2.4, vehicles transporting palletised drink crates should preferably have sliding partitions or at least adequate covers and restraints;
- (viii) the tailgate when in the raised position must not be used to support any load or any part of a load; in the lowered position the tailgate should not be used to support any individual load; and in the case of a load extending beyond the rear of a vehicle, the tailgate should be lowered and secured so that the load only rests on the rear of the vehicle platform, however the lowered tailgate must not obscure any brake, rear or indicator lamps, or reflectors, etc. and if it does, the tailgate will need to be removed; and

- (ix) where several sheets are required to cover a load, the sheets should be laid from the rear to the front, so that the overlapping portions face rearwards, thus preventing penetration by wind or driving rain. Moreover, the sheets should not be over tightened or they will be drawn up to expose the loads at the rear or at the front.



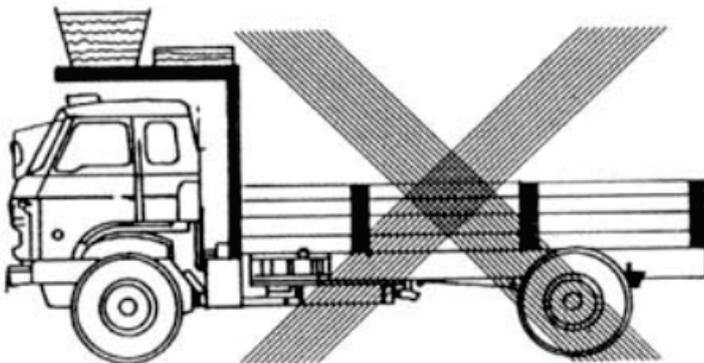
SIDE VIEW

MIXED LOADS –  
LIGHTER CRUSHABLE ITEMS TO THE TOP AND AT THE FRONT, 'B'. HEAVY ARTICLES TO THE BOTTOM AND REAR, 'A'.



PLAN VIEW

MIXED LOADS –  
SMALL CONTAINERS IN CENTRE, LARGER CONTAINERS AROUND THE OUTSIDE



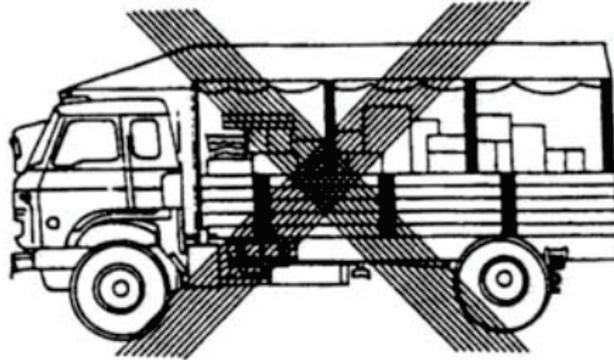
NOT ACCEPTABLE

LOOSE BASKETS SHOULD NOT BE CARRIED ON CAB ROOF.

**TRANSPORTING MIXED LOADS**  
**(ARRANGEMENT OF LOADS)**

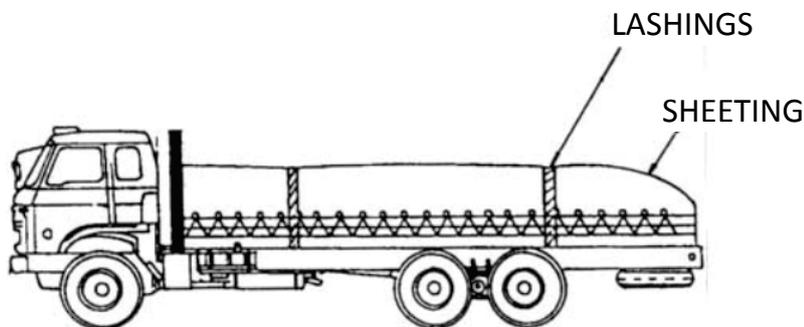
DIAGRAM 5.2.2

**NOT ACCEPTABLE**



**MIXED LOADS –**

THIS LOADING METHOD IS NOT ACCEPTABLE AS ROOF SUPPORTS ARE NOT SUFFICIENT ON THEIR OWN AS RESTRAINT DEVICES, AND LASHINGS OR SIMILAR MUST BE PROVIDED TO PREVENT ANY PART OF THE LOAD FROM FALLING OFF.



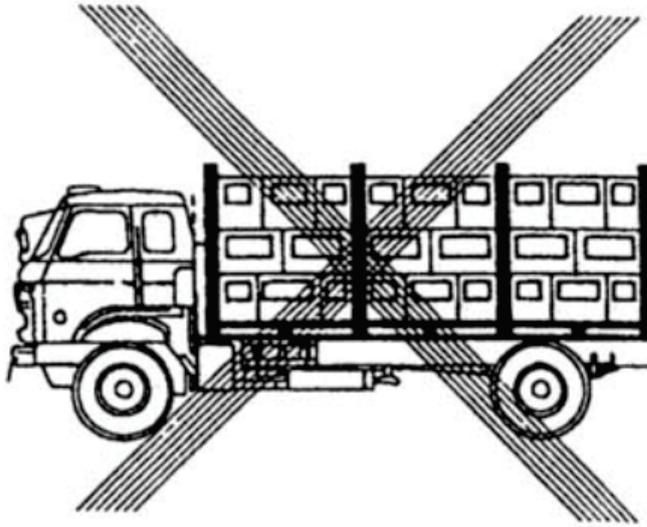
**MIXED LOADS –**

SHOULD ALWAYS BE COVERED BY SUITABLE MEANS TO PREVENT SPILLAGE AND PROVIDE PROTECTION FOR LOAD.

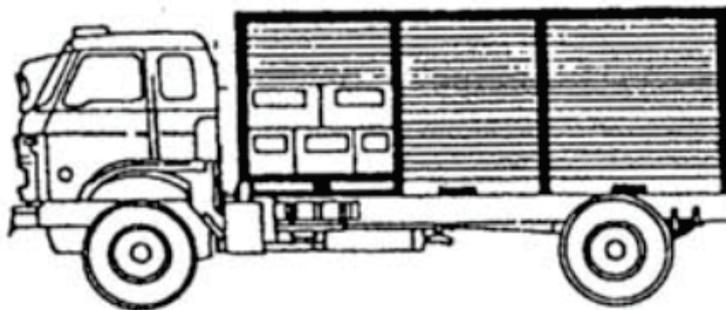
**TRANSPORTING MIXED LOADS**  
**(PROVISION OF ADEQUATE RESTRAINT)**

DIAGRAM 5.2.3

**NOT ACCEPTABLE**



VEHICLE HAS INSUFFICIENT SIDE RESTRAINT TO PREVENT ANY LOOSE PALLETISED DRINK CRATES FROM FALLING OFF.



SLIDING PARTITION COVERS OR LASHINGS ENSURE ANY LOOSE CRATES ARE SECURELY RESTRAINED WITHIN THE VEHICLE WHEN BEING TRANSPORTED.

**TRANSPORTING CRATES**  
**(PROVISION OF ADEQUATE RESTRAINT)**

DIAGRAM 5.2.4

5.2.6 Subject to any other advice in the following sub-paragraphs, rolls, drums, or cylindrical items should normally be loaded with their axis across the vehicle in order that any rolling tendency will be to the front or rear, and chocks and lashings should be used to ensure the stability of individual items and the rolls, drums or cylindrical items should be generally loaded in accordance with the following: -

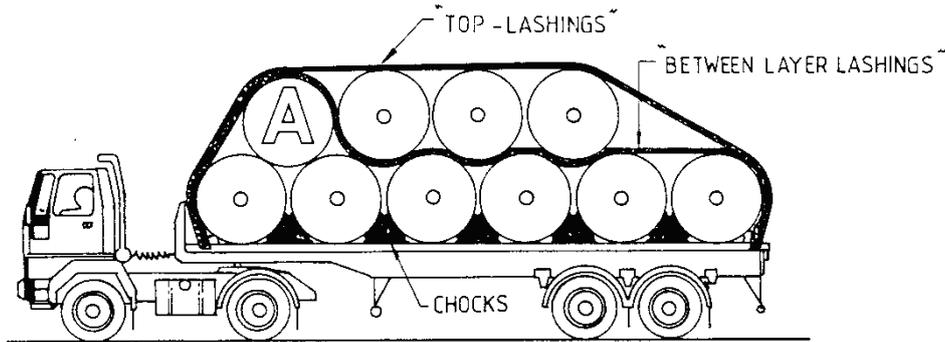
- (i) As shown in Diagram 5.2.5, rolls loaded with their axis across the vehicle should have: -
  - (a) the bottom layer loaded first and secured by chocks;
  - (b) the second layer started with the roll nearest the vehicle cab being loaded first and a "between layer lashing" pulled over this roll and the remaining bottom layer rolls, but the lashing should not be tensioned at this stage;
  - (c) the remaining rolls for the second layer loaded, and a "top-lashings" pulled over the whole load, and this and the "between layer lashing", tensioned and secured to the rear of the vehicle; and
  - (d) finally the whole load covered with sheeting to assist lateral restraint and to provide weather protection.

“Between layer lashing” however may be omitted: -

- (a) when the load is formed from metal or concrete pipes, since the weight and abrasive nature of the load would damage the lashings;  
or
- (b) if the lashings are likely to damage the load because of the weight of the top layer of the load pressing the lashing onto the bottom layer.

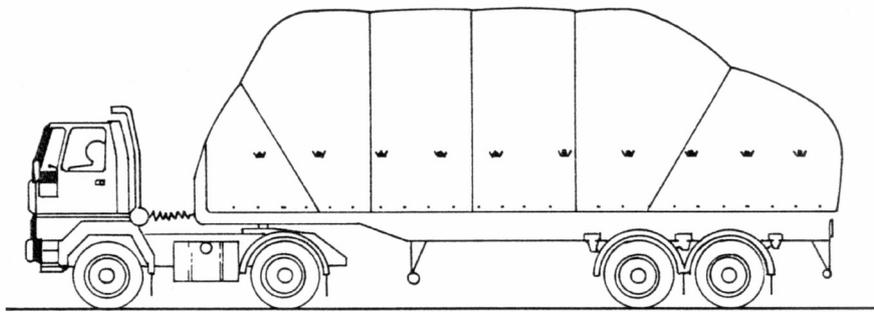
In both cases, however, additional chocks and “top lashings” should be used to compensate for the lack of the “between layer lashing”.

- (ii) Where the length of a cylinder is less than twice its diameter, it is preferable that such cylinders should be placed on end, subject to this not being contrary to any manufacturer's advice on the carriage of such cylinders, nor adversely affecting the safe carriage of the cylinders. In the latter case, for example if the placing of a large cable reel on end meant that it projected beyond the sides of the vehicle it would generally be preferable not to do this providing the reel could be adequately lashed and chocked to prevent movement, and the maximum height of 4.6 m is not exceeded.
- (iii) If the length of a cylinder is greater than twice the diameter but less than the width of the vehicle, then, unless they have been designed to stand vertically, or are drums or similar as described in (iv), the cylinders forming the load should be positioned to roll forwards. Each row must be in contact with the one in front and the rear ones must be chocked to prevent them from rolling backwards or forwards.
- (iv) Drums with liquid or liquefied material should be stood on end, as shown in Diagram 5.2.5, to reduce the chance of spillage occurring. If open platform vehicles are used, drums must be lashed together to prevent lateral movement and cross lashings applied across the drums to secure the drums to the platform floor. For sided vehicles, drums should be stood one against the other and if necessary suitable packing used to prevent any movement. Double or multiple layers of drums should be avoided unless lashings or similar can be used to firmly secure the upper layers in place.

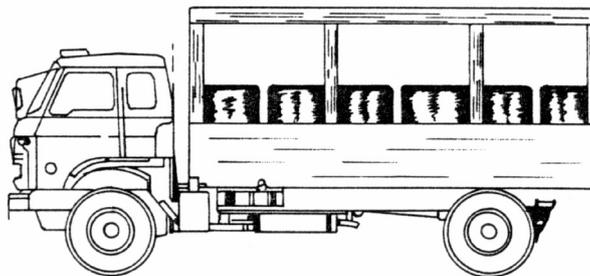


**ROLLS -**

BOTTOM LAYER SECURED BY CHOCKS, ROLL ' A ' THEN LOADED AND "BETWEEN LAYER LASHINGS" THEN LAID OVER 'A' AS SHOWN. SECOND LAYER SHOULD THEN BE LOADED, AND BOTH "TOP - LASHINGS" AND "BETWEEN LAYER LASHINGS" ARE TENSIONED AND SECURED.



WHOLE LOAD SHOULD THEN BE COVERED WITH SHEETING TO PROVIDE ADDITIONAL LATERAL RESTRAINT AND WEATHER PROTECTION



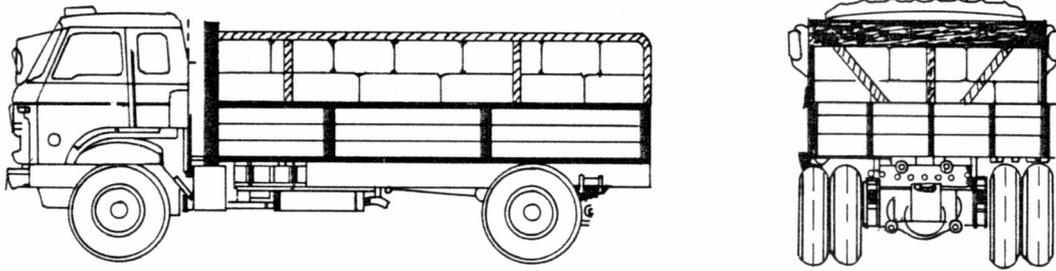
DRUMS CONTAINING LIQUID OR LIQUEFIED MATERIAL SHOULD BE STOOD ON END WITH SUITABLE PACKING IF NECESSARY TO PREVENT MOVEMENT

**TRANSPORTING ROLLS AND DRUMS**

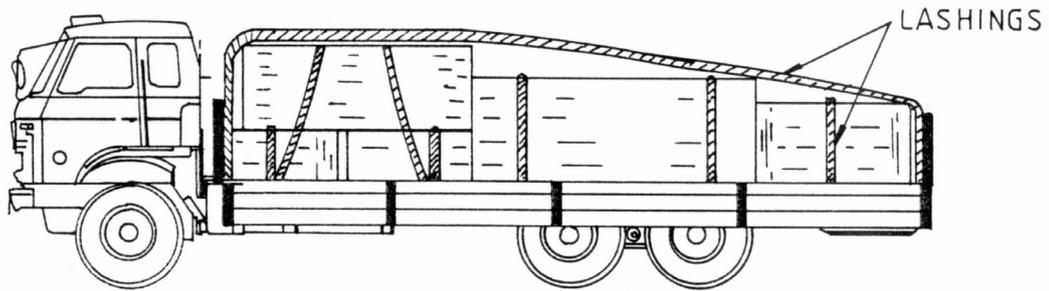
DIAGRAM 5.2.5

5.2.7 As shown in Diagram 5.2.6, boxes must be loaded so that they are prevented from moving in any direction and in this respect: -

- (i) boxes should interlock if possible;
- (ii) boxes should be loaded to a uniform height;
- (iii) heavier boxes should be placed at the bottom;
- (iv) there must be at least one lashing for each row of boxes across the vehicle;
- (v) any box which is loaded higher than the other loads must have at least one cross lashing; and
- (vi) the load should be sheeted to provide further restraint and as a protection.



BOXES SHOULD INTERLOCK AND BE COVERED



BOXES AND CRATES MUST BE SECURED TO FLOOR OF PLATFORM WITH AT LEAST ONE LASHING FOR EACH ROW, AND THE WHOLE LOAD SHOULD BE COVERED

**TRANSPORTING BOXES AND CRATES**

DIAGRAM 5.2.6

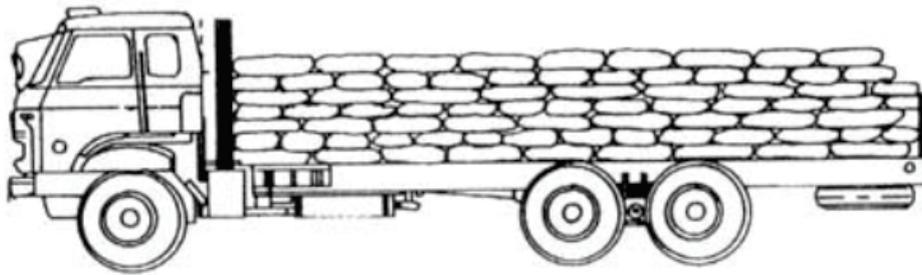
5.2.8 As illustrated in Diagram 5.2.7, sealed sacks should be loaded in the following manner: -

- (i) where possible laid on their sides with alternate layers in opposite directions, and no more than two successive layers should be in the same direction;
- (ii) the load should be of uniform height whenever possible; and
- (iii) the load should be sheeted and cross lashed.

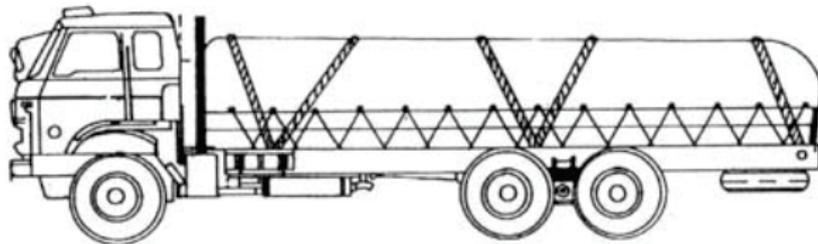
5.2.9 Open sacks should not be used as far as practicable, and if the use is necessary, the load should similarly be secured with cross lashings for each layer and also be sheeted to prevent loose materials falling off from the vehicle. For empty sacks, they must be properly stowed in their compartment securely restrained to the vehicle platform to prevent falling off from the vehicle.

5.2.10 Loose bricks or similar must be restrained in respect of both the bulk mass of the load and the individual bricks or similar items. Purpose made restraint systems may be used provided their strength is sufficient for the load being restrained. Providing the vehicle has load restraining sides, headboard and tailgate, additional restraint devices and sheeting are not necessary if the load height does not exceed the height of the surrounding body, as shown in Diagram 5.2.7.

5.2.11 Sheet or plate glass should normally be carried on purpose built vehicles having specially designed glass clamps and supports. Where sheet or plate glass is carried in crates, similar load restraint precautions as for general freight should apply.

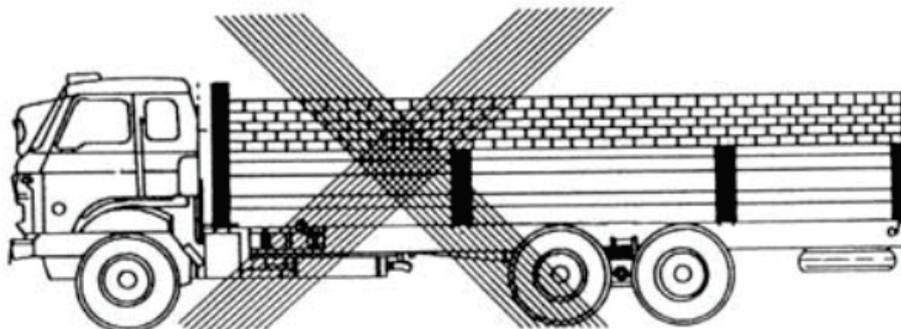


SACKS SHOULD BE LAID ON THEIR SIDES WITH ALTERNATE LAYERS IN OPPOSITE DIRECTIONS



THE LOADED SACKS SHOULD WHERE PRACTICABLE BE COVERED WITH A SUITABLE SHEETING AND THEN CROSS LASHED

**NOT ACCEPTABLE**



LOOSE BRICKS MUST NOT BE LOADED ABOVE THE SIDE OR TAIL BOARDS.

### **TRANSPORTING SACKS AND LOOSE BRICKS**

DIAGRAM 5.2.7

### 5.3 Metal loads

5.3.1 With metal loads, the friction between individual items will generally be low particularly if the metal is oiled, and therefore this should be disregarded when assessing the total load restraint required. Similarly if the vehicle platform is wet or greasy, the friction between the load and the platform will be considerably reduced and therefore should not be regarded as providing any restraint. In fact where either the vehicle platform or the load or both are wet or oily, extra care will be needed to ensure that adequate restraint has been provided.

5.3.2 Where lashings pass over corners of the load, it will be necessary to ensure that the lashings will not be damaged by sharp edges. Suitable corner protectors and sleeves should be used whenever necessary.

5.3.3 Banding which is commonly used for binding other types of loads together is not suitable for metal loads, as it is difficult to ensure that the right type has been used and once loosened during the journey, there is no means by which the driver can re-tighten it.

5.3.4 Small relatively heavy castings or similar, unless palletised or caged, should be securely restrained and carried on sided vehicles whose headboard, sideboards, and tailgate must be higher than the load and sufficiently strong to withstand the forces generated when the vehicle is moving. A large mass can be restrained more effectively than a number of small items, and therefore whenever possible loads should be aggregated into the largest or heaviest unit.

5.3.5 Flat sheets should be laid flat on the vehicle platform taking into account the following:

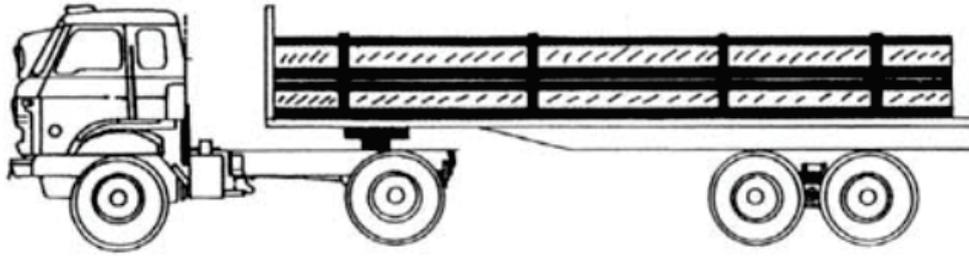
- (i) where mixed sizes of sheets or plate are being carried, the smallest should normally be loaded on top and at the front of the vehicle so that they cannot slide forwards;
- (ii) oiled flat sheets should be bundled and packed onto pallets or in steel sheets, which form a box around the bundle; and
- (iii) lashings should always be in firm contact with the top surface of the load and if the load is too low making the lashings ineffective, suitable timber packing should be used.

5.3.6 Long metal sections should be carried along the length of the vehicle and be suitably restrained to prevent them from moving. It is essential that these sections are loaded such that the complete load forms a unit and no single item can move independently. In transporting these loads, the following should be noted: -

- (i) As shown in Diagram 5.3.1, vehicle used should be sufficiently long so that the load can be carried in a horizontal position, without extending beyond the rear or front of the vehicle if possible.
- (ii) Where a load does extend beyond the front or rear, then a long load permit will be necessary if the load extends by more than 1.4 m at the rear or 1.5 m at the front (also see sub-paragraph 1.2.4 (iii)(a)). Apart from any other considerations that may be applied, long load permits will only be issued to vehicles over 9.1 m in length.
- (iii) Where headboard is required to support long metal loads, it should be ensured that the load capacity, both vertically and horizontally, of the headboard is not exceeded. Loads supported by the headboard will also need to have suitable trestles firmly attached to and along the platform of the vehicle in order to properly secure and distribute the load. Supporting the load only on the headboard and the extended tailgate, as shown in Diagram 5.3.1, is not acceptable and in fact the use of the tailgate to support any part of the load or as an anchorage point for the lashings is not acceptable. The load must be securely lashed to the headboard and the trestles such that any forward, rear or lateral movement is not possible (see Diagram 2.2.2). For low-friction load items such as reinforcement steel bars or plastic pipes, the load should also be packed with end wraps or blocks to prevent individual the items from sliding or spearing out of the pack particularly when the vehicle is braking sharply (see Diagram 5.3.2).
- (iv) Long metal loads carried on the vehicle platform should be secured by lashings, preferably of the chain or suitable webbing type, which should in turn be attached to the vehicle by load anchorage points provided for this purpose. To allow a greater tension to be applied to the lashings, it can be advantageous to place a piece of timber at a convenient point between the lashings and the load.
- (v) If the load is stacked, it should be kept as low as possible with the heavier items at the bottom and the lighter ones on top. No layer should be bigger than the one underneath it.

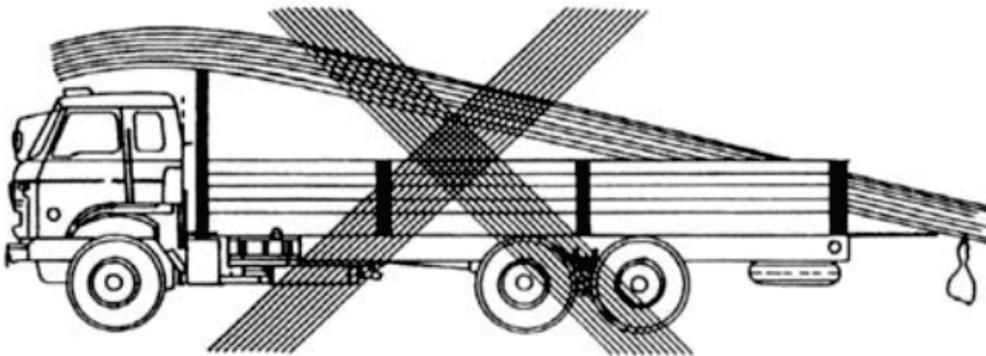
- (vi) To prevent forward movement, the load should be placed in contact with the headboard and securely restrained. Additional restraints are also needed to be provided at the rear and sides.
- (vii) If stanchions, either attached to the vehicle or to specially made bolsters, are used to prevent sideways movement, they should extend to the height of the load. Sideboards should not be relied upon to provide more than a minimum of sideways restraint. Stanchions reaching the height of the load are to provide the necessary additional sideways restraints and also facilitate safe unloading. Stanchions and their locating devices should be of sufficient strength or safe working loads to ensure that they can provide sufficient sideways restraint should the lashings fail.

5.3.7 Reinforcement steel bars or steel sections over 12 m in length will require particular attention and most rigid vehicles will not be suitable as the rods would need to extend over and in front of the cab as well as to the rear. These extra long rods should be transported on articulated vehicles and laid flat longitudinally down the length of the trailer. Additionally, if the load exceeds the permitted length, a long load permit is required. Transport of long steel bars to construction sites with difficult access by long vehicles should be avoided and consideration should be given to cutting and bending of the bars at factory before transport.



LONG METAL LOADS SHOULD BE TRANSPORTED ON SUITABLE VEHICLES WHICH ENABLE THE LOAD TO BE LAID FLAT WITHOUT OVERHANGING THE REAR OF THE VEHICLE IF POSSIBLE.

**NOT ACCEPTABLE**

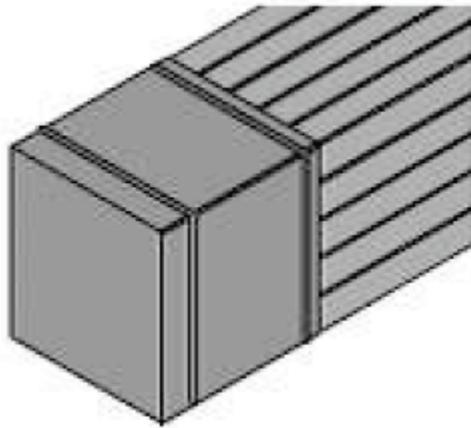


USE OF THE HEADBOARD AND/OR TAILGATE TO SUPPORT LONG METAL LOADS IS NOT ACCEPTABLE. SECURING THE LOAD TO ANY PART OF THE TAILGATE IS ALSO NOT ACCEPTABLE.

AN ACCEPTABLE ARRANGEMENT IS SHOWN IN DIAGRAM 5.9.1.

## **TRANSPORTING METAL LOADS**

DIAGRAM 5.3.1



**PACKED END WRAPPED FOR LOADS THAT ARE AT RISK OF SLIDING  
OR SPEARING**

DIAGRAM 5.3.2

5.3.8 Large units and castings should normally be carried in purpose built cradles which must be sufficiently strong to withstand the forces likely to be imposed on it during the journey. The following factors should also be taken into account: -

- (i) For a satisfactory weight distribution, it will often not be possible to place the load against the headboard and therefore use of securely fixed baulking in addition to the lashing to prevent any movement will be necessary.
- (ii) Because these loads are usually fairly high, the lashings to prevent toppling will need to be pulled over the top or attached to points high on the load in addition to the baulking and lashings applied at the lower levels to provide the major part of the restraint.

5.3.9 Scrap metal should be carried in sided vehicles, such as those with skips, with the tailgate, sideboards and headboard being higher than the load. The load should be properly covered with either sheets or nets of sufficient strength to prevent any of the loose metal from falling off.

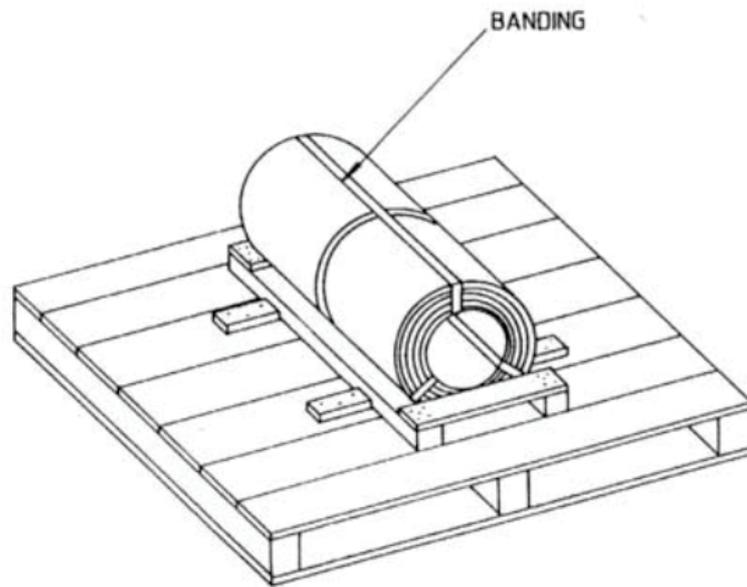
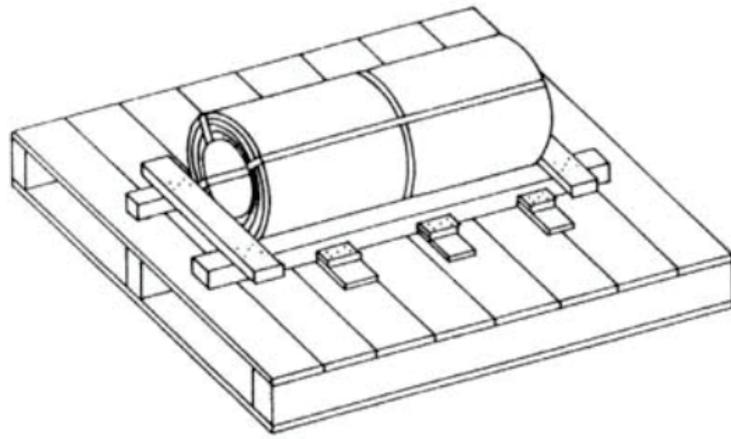
5.3.10 Scrap vehicles are likely to be difficult to transport safely on platform vehicles because the tyres and suspension will permit the load to move making it inherently unstable. They should not be stacked on top of each other unless the carrying vehicle has large sides that extend above the height of the load. Chain or webbing lashings equipped with suitable tensioning devices should be used to secure these loads.

5.3.11 Larger pieces of machinery and equipment should be placed in contact with the headboard whilst smaller items such as tools should be boxed and secured to the vehicle's body by use of anchored restraints.

5.3.12 Coils of wide metal sheets, when loaded with its axis horizontal (bore horizontal), will preferably be carried on specialised vehicles having a coil well built into the loading platform or alternatively be carried packed on cradles or pallets as shown in Diagram 5.3.3. The coils must be securely attached to the pallet by at least two webbing lashings or by an approved steel strapping. The lashings must be in contact with the surface of the coil and the softwood wedges. Additional lashings or other restraint measures will be necessary to ensure that both the pallets and the goods are secured to the vehicle platform. For Large cable drums, they should not rely solely on the headboard for forward restraint and chocks must be used to assist the lashings to restrain the load.

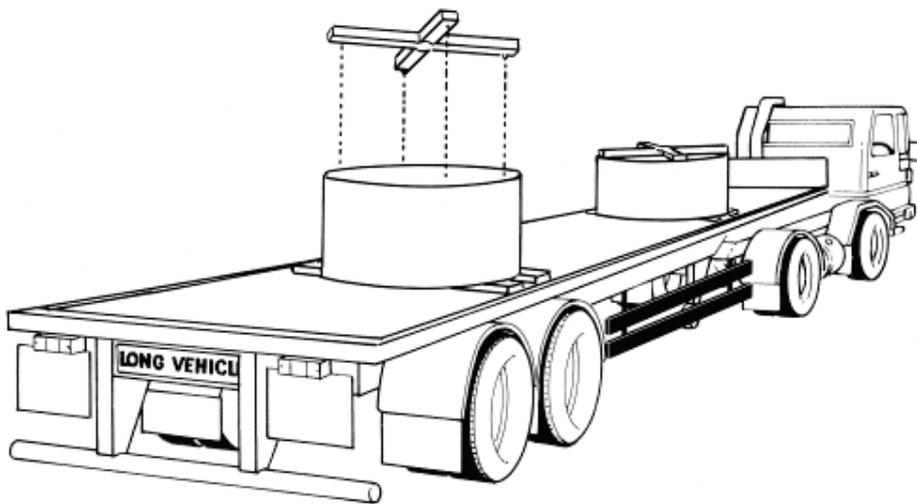
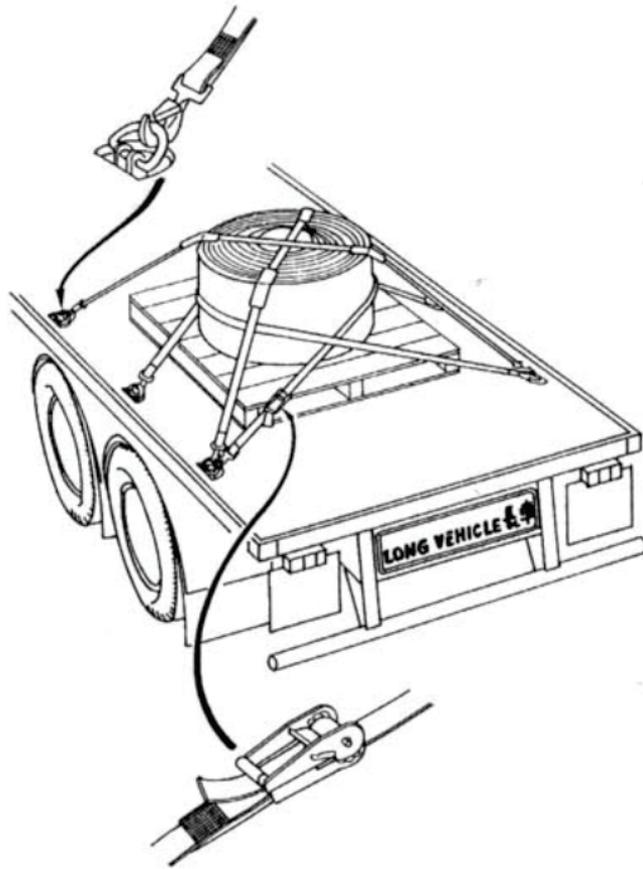
5.3.13 Coils of wide metal sheets, when placed on end (bore vertical), are usually loaded onto platform vehicles. Diagram 5.3.4 shows a suitable restraint system employing a cruciform that can be used with chains or webbing to secure the larger diameter coils. The coil is placed on the longitudinal centre line of the vehicle and the cruciform placed on top of the coil with the spigots located inside the bore. The cruciform should be positioned with the open through channel on the longitudinal centre line of the vehicle to accommodate a conventional securing chain lashing. Lashings should be attached to the vehicle anchorage points and tensioned in the usual way. Great care must also be exercised in positioning the webbing or chain lashings to ensure they are fully capable of preventing movement as shown in Diagram 5.3.4.

5.3.14 Coiled rod and bar should be carried bore horizontal in a single layer loaded either transversely or longitudinally. These loads should be carried on a vehicle fitted with special loading frames or cradles designed to contain the coils. If not possible, then all the restraint will have to be provided by lashings, preferably chains or webbing fitted with tensioning devices.



**SECURING GOODS TO PALLET**

DIAGRAM 5.3.3



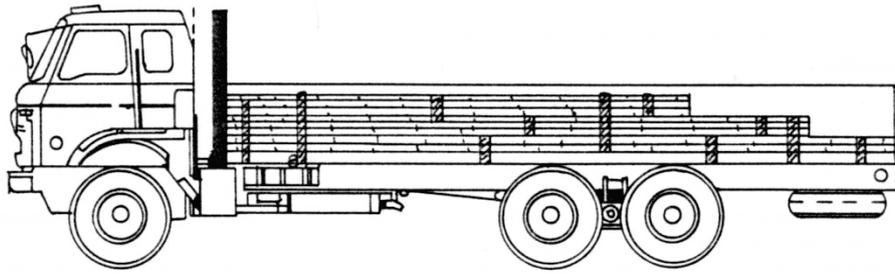
**SECURING PALLET AND GOODS TO VEHICLE PLATFORM**

DIAGRAM 5.3.4

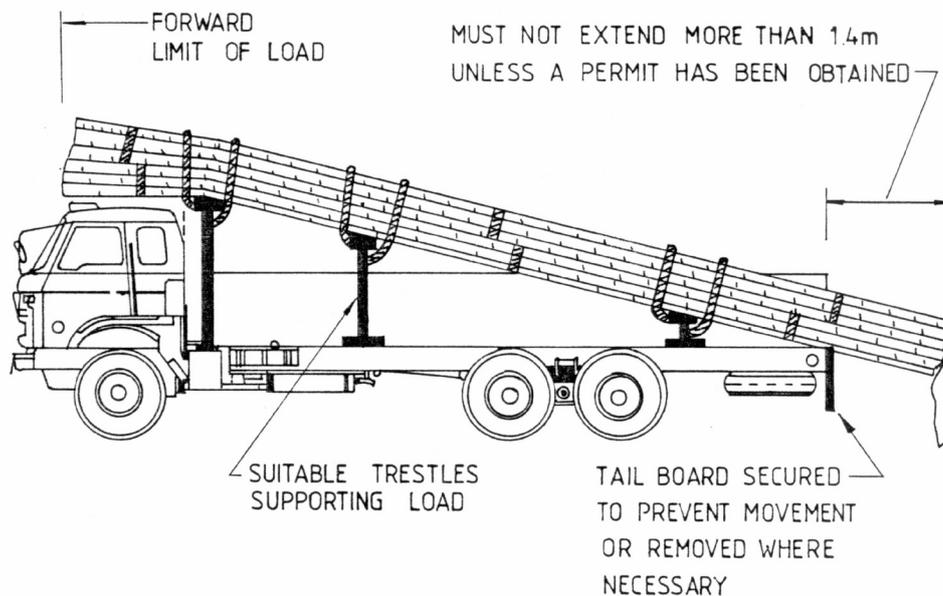
## 5.4 Bamboo poles and timber

5.4.1 As illustrated in Diagram 5.4.1, bamboo poles used for scaffolding or other purposes which are about 6 m long should be carried similarly to other long loads, that is in a vehicle of sufficient length so that the bamboo can be placed horizontally along the length of the floor of the vehicle, and without overhanging any parts of the vehicle. The following are also relevant:

- (i) Poles should be tightly secured in bundles with poles in individual bundles having approximately the same dimensions and diameters. Bundles should be bound at both ends and at least one intermediate point. Where poles vary in diameter throughout their length, it may be advantageous to arrange the poles alternately, so that the bundle formed has roughly the same overall diameter at both ends.
- (ii) Bundles should be stacked in contact with the headboard, with bundles having the largest diameter and longest poles at the bottom. The whole load should be adequately secured to the vehicle, but providing the load is not higher than the headboard, tailgate or sideboards, securing the bundles together should generally be sufficient. However, if it is necessary for the tailgate to be down to allow the load to extend over it, it will be necessary to lash the bundles to the vehicle to prevent any rearward movement of the load. Using any part of the tailgate or its hinges as anchorage points for lashings is however not acceptable.
- (iii) It is preferred that bamboo poles are not carried such that they are supported by the headboard, but where this cannot be avoided the following are relevant:-
  - (a) it should be ensured that the headboard has a sufficient load capacity to support the load;
  - (b) even though the regulations may permit loads to extend in front of the vehicle by not more than 1.5 m, in the case of bamboo poles which are liable to bend, the load should not extend further forwards than the foremost portion of the driving cab roof in order to ensure that the driver's view is not obscured; and



BAMBOO POLES SHOULD BE LOADED HORIZONTALLY ALONG THE FLOOR OF THE VEHICLE, IN APPROPRIATE SIZED BUNDLES, ARRANGED WITH THE LONGEST AND HEAVIEST AT THE BOTTOM OF THE LOAD. IF THE LOAD IS NOT HIGHER THAN THE HEADBOARD, TAILGATE OR SIDEBOARDS, SECURING BUNDLES TOGETHER SHOULD PROVIDE SUFFICIENT RESTRAINT.



WHERE BAMBOO POLES HAVE TO EXTEND OVER THE HEADBOARD, THEY SHOULD NOT BE POSITIONED ANY FARTHER FORWARD THAN THE FRONT OF THE CAB, AND THE WEIGHT OF THE LOAD SHOULD BE SUPPORTED BY SUITABLE TRESTLES FIRMLY FIXED TO THE VEHICLE. THE LOAD SHOULD BE SECURELY LASHED TO THE HEADBOARD AND TRESTLES AND NOT TO ANY PART OF THE TAILGATE OR ITS HINGES.

### **TRANSPORTING BAMBOO POLES**

DIAGRAM 5.4.1

- (c) the load must be securely lashed to the headboard to prevent any forward movement, and also to intermediate trestles firmly attached to the vehicle and provided to support and distribute the weight of the load throughout its length. On a sided vehicle where the load does not extend beyond the tailgate in the raised position, the tailgate can be considered as providing partial restraint but other means of restraint will also be required. If the load extends across the tailgate in the lowered position, no part of the tailgate or its hinges may be used as anchor points for lashings.

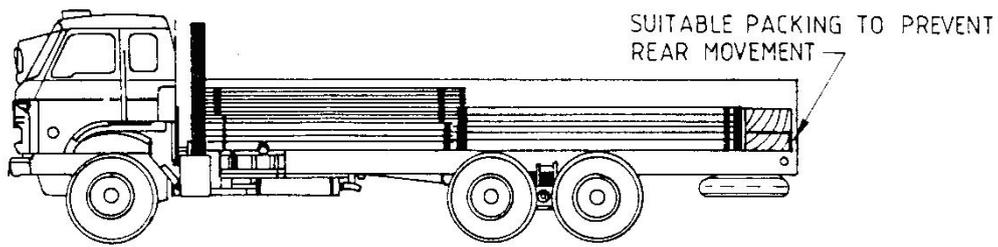
5.4.2 As shown in Diagram 5.4.2, sawn timber should wherever practicable be placed against the headboard or similar fixed restraint, but if this is not possible all restraint will need to be applied by lashings. For particular types of sawn timber, the following are relevant: -

- (i) Bulk packaged sheets such as plywood or chip-board are generally banded, strapped or wired at each end and before loading, these should be checked to see that they are secure. If the wires or straps are damaged or insecure, other means of restraint will be necessary. The packaged sheets should be laid flat on the vehicle platform. If light loads of timber with suitable netting are not higher than the headboard, tailgate or sideboards, the sides of the vehicle should provide sufficient restraint and no lashing is normally needed for these packages, otherwise additional lashings securing the load to the vehicle will be necessary. Suitable packing or baulking may also be necessary to prevent the load from sliding; and
- (ii) Long sawn timber and some types of timber loads can present a particular problem in that the outside of the load tends to lift and to spread sideways causing the load to belly outwards. To avoid this, the vehicle should be fitted with side stanchions that reach the height of the load and are capable of resisting any outward movement of the load.

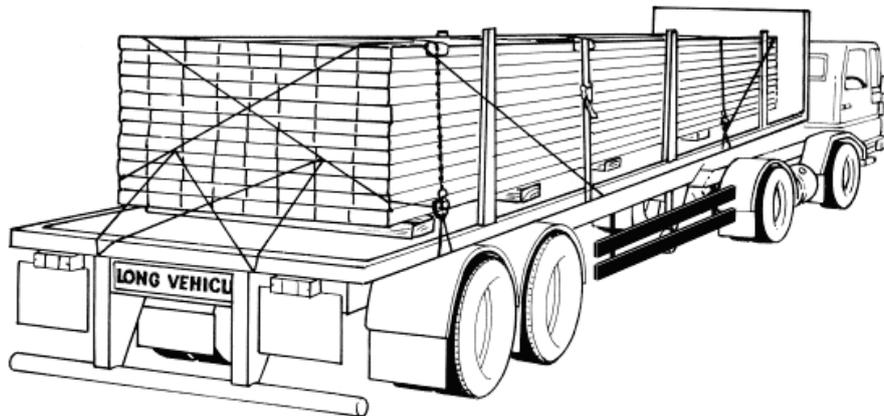
5.4.3 The carriage of large whole trees, whether live trees or unsawn trunks, is generally a specialised operation normally using pole vehicles. The vehicles concerned should be fitted with bolsters and stanchions of sufficient strength to restrain the load and chains or webbing lashings are necessary for securing the load. However, in the territory, as most trees are relatively small, these should be able to be accommodated on normally available vehicles for which restraint precautions described in preceding paragraphs will be adequate.

5.4.4 Round timber or logs should be loaded similarly to cylindrical loads; they are placed longitudinally and evenly, and securely lashed in position, either individually or in groups. If the load is higher than any of the vehicle boards, then the vehicle should be fitted with side stanchions that reach the height of the load and are capable of resisting any outward movement of the load, and the following should be noted:-

- (i) Each outer log shall be restrained by at least two upright supports and the ends of the outer log should extend at least 300 mm beyond the uprights.
- (ii) Sections of log shorter than the distance between two uprights should be placed in the interior of the load. The upright supports should either be of sufficient strength or fitted with top chains (at least two numbers) to prevent them from being spread apart by the load.
- (iii) Each pile should be lashed together securely with a suitable device.
- (iv) The centre of either top outside log must not be higher than the stanchion. The top middle log must be higher than the side log to crown the load and enable it to be properly tensioned by the lashings as shown in Diagram 5.4.3.



PACKAGED SHEETS OF PLYWOOD OR SIMILAR SHOULD BE LAID FLAT AND PREFERABLY NOT BE LOADED ABOVE THE HEADBOARD, TAILGATE OR SIDEBORDS. ADDITIONAL LASHINGS WILL BE REQUIRED IF LOAD PROTRUDES ABOVE ANY OF THE BOARDS.

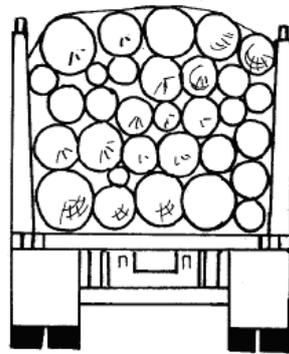


VEHICLE FITTED WITH SIDE STANCHIONS TO PREVENT LATERAL MOVEMENT OF LONG SAWN TIMBER.

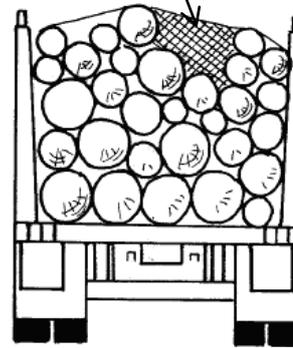
### **TRANSPORTING SAWN TIMBER**

DIAGRAM 5.4.2

UNEVEN HEIGHT OF TIMBER CAN RESULT IN MOVEMENT OF TIMBER, AND CAUSE LASHINGS NOT BEING TENSIONED.



**ACCEPTABLE**



**NOT ACCEPTABLE**

PLACEMENT OF ROUND TIMBER TO ALLOW PROPER TENSIONING BY LASHINGS.

### **TRANSPORTING ROUND TIMBER**

DIAGRAM 5.4.3

## 5.5 Loose bulk loads

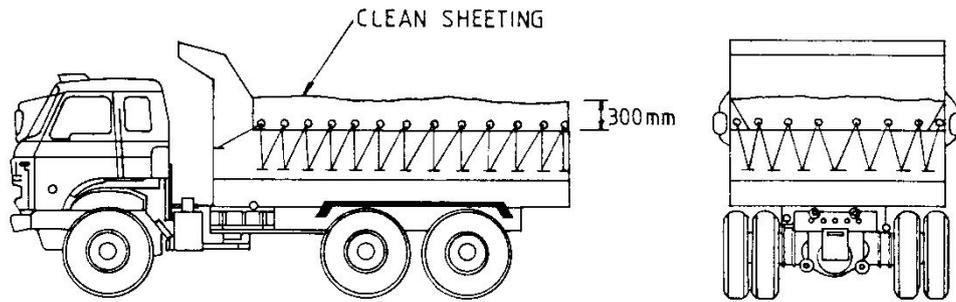
5.5.1 Loose bulk loads are generally those loads such as sand, ballast, aggregate, waste etc. which do not readily lend themselves to any form of packaging and are usually transported in skips or open topped vehicles.

5.5.2 Shedding of loose bulk loads generally occurs easily because of possible leakage through gaps in the bodywork, or material being blown from the top of the load compartment. To avoid these problems occurring, account should be taken of the following: -

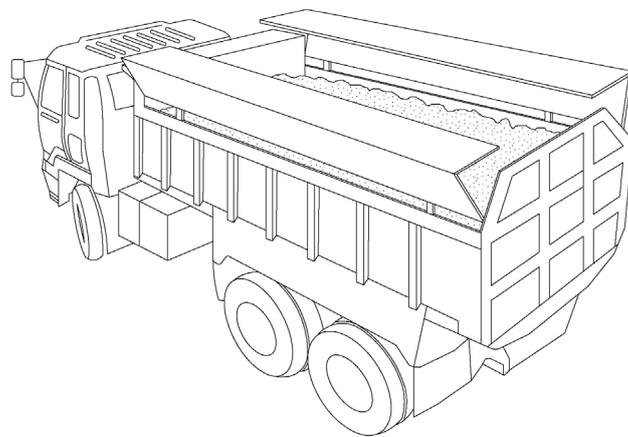
- (i) The load compartment should be kept in good condition, and any drop sides and tailgate to which damage or distortion can easily occur should be regularly inspected and maintained to ensure shutting tightly and prevent leaking of load.
- (ii) Chassis attachment points, hinges, pins, brackets, tailgate locking mechanisms and drop side fasteners should be secure and in good condition.
- (iii) The body sides should be of sufficient height to completely contain the material, and hence reduce the likelihood of any of the load from falling or being blown off during the journey.
- (iv) Body height extensions should only be used where conditions and type of load permit. Where used, they should be of the types that are purpose made and can be attached to the existing body by specially provided fixings for this purpose. Height extensions which rely only upon the load itself to support them are not acceptable. It may be necessary when body extensions are used to have transverse tie chains at the top of the extensions to prevent sideways spread.
- (v) For open topped vehicles, all loads must be properly covered to prevent loads from falling or being blown off from the top. Diagram 5.5.1 shows some typical types of covers that may be used on goods vehicles to carry loose bulk materials such as sand, gravel, debris, ash, metal swarf, construction waste, etc. Mechanical dump truck cover, which has been promulgated in public works contracts in step since 2007, is the preferred cover type for loose bulk loads. For load of larger items such as scrap metal, waste etc., nets with adequate strength to contain the items and mesh size smaller than the items being carried may be used. For liquid sludge or similar load, specially designed tanks or containers to prevent

spillage must be used. The tank should be of adequate size so that it could be nearly completely filled with the liquid load to avoid load movements encountered with partly filled tanks that would affect the stability and control of the vehicle. Further advice on liquid loads is given in Section 5.10.

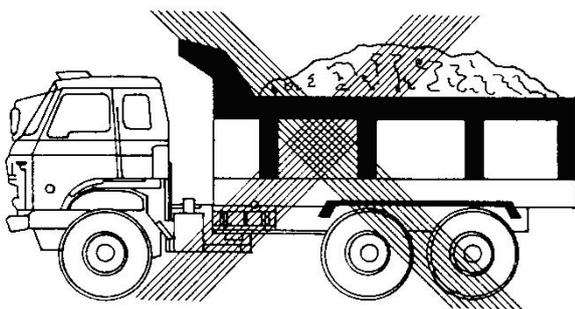
- (vi) Loose bulk loads of any description must be levelled off and not be loaded above the headboard, sideboards or tailgate.



LOOSE BULK LOADS MUST ALWAYS BE COVERED, AND THE COVERS MUST EXTEND OVER THE SIDE AND TAIL BOARDS AND MUST BE FIRMLY SECURED.



MECHANICAL DUMP TRUCK COVER IS SUPERIOR TO SHEETING FOR COVERING LOOSE BULK LOADS.



NOT ACCEPTABLE

LOOSE BULK LOADS MUST NOT PROTRUDE ABOVE SIDE OR TAIL BOARDS EVEN IF COVERED. LOOSE MATERIALS MUST BE LEVELLED OFF.

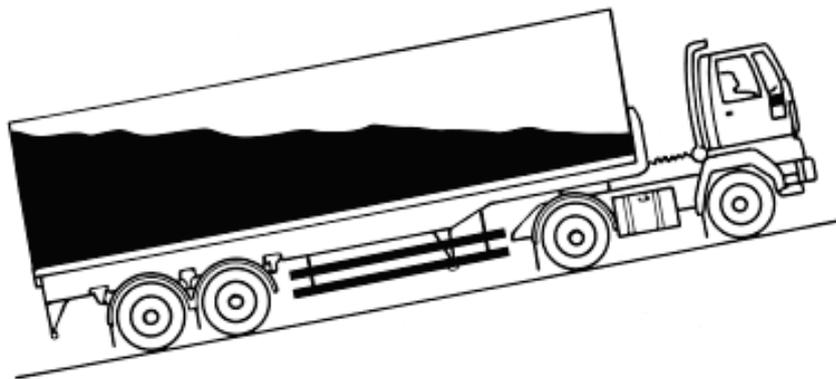
**TRANSPORTING LOOSE BULK LOADS**

DIAGRAM 5.5.1

5.5.3 Large skips are commonly used for the collection of construction waste or similar materials and these skips must be transported by purpose designed vehicles to prevent any movement of the skip relative to the carrying vehicle. The lifting arms should be correctly positioned in their designed travelling position and the loading chains must be properly stowed before moving the vehicle. The skip itself must also be adequately covered/sheeted prior to being loaded onto the bed of the carrying vehicle, similarly to that described in paragraph 5.5.2(v).

5.5.4. Where loaded vehicles have to be covered/sheeted before leaving a workplace or unsheeted after the journey, suitable precautions such as use of automated, mechanical or manual sheeting system that do not require the driver or any worker to go up on the vehicle should be taken against falls.

5.5.5 It should be noted that axles can be overloaded when vehicles travel up and down steep gradients or brake severely due to loose loads moving. In particular, bulk loads can easily transfer from one end of the container to the other, so loose loads should adequately be covered or netted or installed with purpose made baffles to minimise their movements inside the container (see Diagram 5.5.2).



LOAD SHIFT DUE TO VEHICLE NEGOTIATING STEEP INCLINE

## **TRANSPORTING LOOSE BULK LOADS ON STEEP ROAD**

DIAGRAM 5.5.2

## 5.6 Pallets

5.6.1 Pallets serve a double purpose in that they enable goods of similar nature and size to be made up into unit loads and also facilitate handling loads by mechanical means to reduce the effort required for transportation.

5.6.2 There will be a wide variation in the weight and size of pallets and their loads, and because of this, the situation will often arise where the full loading space cannot be utilized as either the permitted gross vehicle weight or axle weight of the vehicle would be exceeded. For these circumstances therefore it is essential that the pallets and their loads are adequately secured in order to avoid them moving when braking or cornering, as tight packing will not be possible in these cases.

5.6.3 In respect of the transport of palletised goods, it is first necessary to consider the stability of the items packed on the pallet, and secondly the method of securing the pallet and its goods to the vehicle platform.

5.6.4 Banding is often used to strap goods and pallets together but it should be noted that the banding, because of its limited strength, can only secure the goods and pallet together. Additional lashings or other restraint measures will be necessary to secure both the pallet and the goods to the vehicle platform.

5.6.5 Before loading, the pallets should be examined to ensure that they are not defective or damaged, and are of sufficient strength to withstand the goods carried on them. Loads with sharp corners may cause a concentrated load and break the pallet even the loads are within the capacity of the pallet. Such loads should be so placed that the sharp corners in contact with the pallet do not bear substantial loads.

5.6.6 If sided or box-type vehicles are used to transport palletised loads, it is not sufficient to rely only on the sides of the vehicle to restrain the loads and the loads must be lashed or wedged to prevent any movement. If there is any space between the load and the sideboard or headboard, and the pallets are not secured, then sufficient momentum could be developed for the load to break through the sideboard or headboard when the vehicle is braking or turning. Where, for practical reasons, lashings cannot be used, then the space must be filled with suitable dunnage to prevent movement of the pallets provided that the headboard, tailgate or sideboards are of sufficient strength to retain the load horizontally.

5.6.7 Stacking of palletised loads is acceptable in order to utilise fully the capacity of the vehicle. However, the upper pallet layers must be positioned so that they are stable and adequately secured to prevent them from falling off the vehicle. Interlocking between layers could improve the stability of the load. Additionally, unless the upper pallets are directly supported by the lower pallets, the goods on the lower pallets must be of sufficient structural strength or be banded with sheet material such as plywood to withstand the weight of the upper pallets without becoming distorted.

5.6.8 Individual items in the load must be firmly secured to the pallet to ensure that they are not to be dislodged when the vehicle is in motion. Movement of the goods on the pallet may lead to a failure of the restraint system attached to the pallet and those adjacent to it. Bagged items, for example, tend to settle under vibration to fill air spaces between the bags and this may cause strappings to be loosened if they have not been properly tightened.

5.6.9 Palletised soft drinks or similar are often carried on specially provided vehicles where the loading platform is inclined at an angle of about 9 degrees towards the centre. Whilst this does prevent the general movement of the load sideways, further restraint in the form of lashings or similar should also be provided in order that during transit, the load can be prevented from lifting up or falling off under all operating conditions.

5.6.10 Before transporting any palletised loads, a check should be made to ensure that the following are complied with: -

- (i) that the arrangement of pallets on the vehicle does not cause the permitted gross vehicle weight or the axle weights to be exceeded;
- (ii) that the sides of the vehicle alone are not the only means to restrain the pallets and additional means of preventing horizontal and vertical movement have been provided;
- (iii) that pallets are positioned so that the load is balanced across the vehicle;
- (iv) that where the load space is not fully utilised and where weight distribution is a problem, pallets have been placed along the longitudinal (front to back) centre line of the vehicle and butted up to one another;

- (v) that where pallets are stacked on open platform vehicles, suitable restraining lashings or webbing nets have been provided to prevent movement of each layer of pallets carried. Rope nets, tarpaulin sheets or covers are generally not adequate for this purpose;
- (vi) that if the vehicle has a roller loading system, precautions have been taken to ensure the pallets are adequately restrained and cannot move in any direction across the vehicle; and
- (vii) that if part of the load is required to be removed in transit, the remaining pallets will not cause the maximum axle weight to be exceeded or the lateral stability of the vehicle to be impaired (see further advice on paragraph 2.3.2).

5.6.11 Types of restraint equipment suitable for securing palletised loads are:

- (i) chains
- (ii) steel wire
- (iii) fiber rope
- (iv) webbing lashings
- (v) webbing or rope nets

5.6.12 If using stronger metal restraining devices with end attachments such as shackles, thimbles etc., care is necessary to ensure that the load will not be damaged or destroyed, causing slackening of the restraint system.

5.6.13 Webbing or rope nets are suitable both for securing the goods to the pallet and for securing the palletised load to the vehicle.

5.6.14 The most appropriate restraining method for palletised loads will depend on the type and size of the vehicle, the position and number of anchorage points, and the size, weight and number of pallets in the load. Even so, the following principles should be followed whatever method is used: -

- (i) vertical and tipping motions should be prevented by a lashing placed across the top of the pallet load;

- (ii) lashings should be positioned to prevent movement of the pallets in any direction;
- (iii) the pallet lashings should not be attached to or pass under the strapping or binding used to secure the pallet to the goods; and
- (iv) where pallets are stacked, cross lashings must be such that each pallet of the top layer has at least one cross lashing. Any pallets which are above the general height of the load should have at least two cross lashings.

5.6.15 Empty pallets should always be restrained and secured to the vehicle as they can easily be blown out of the vehicle.

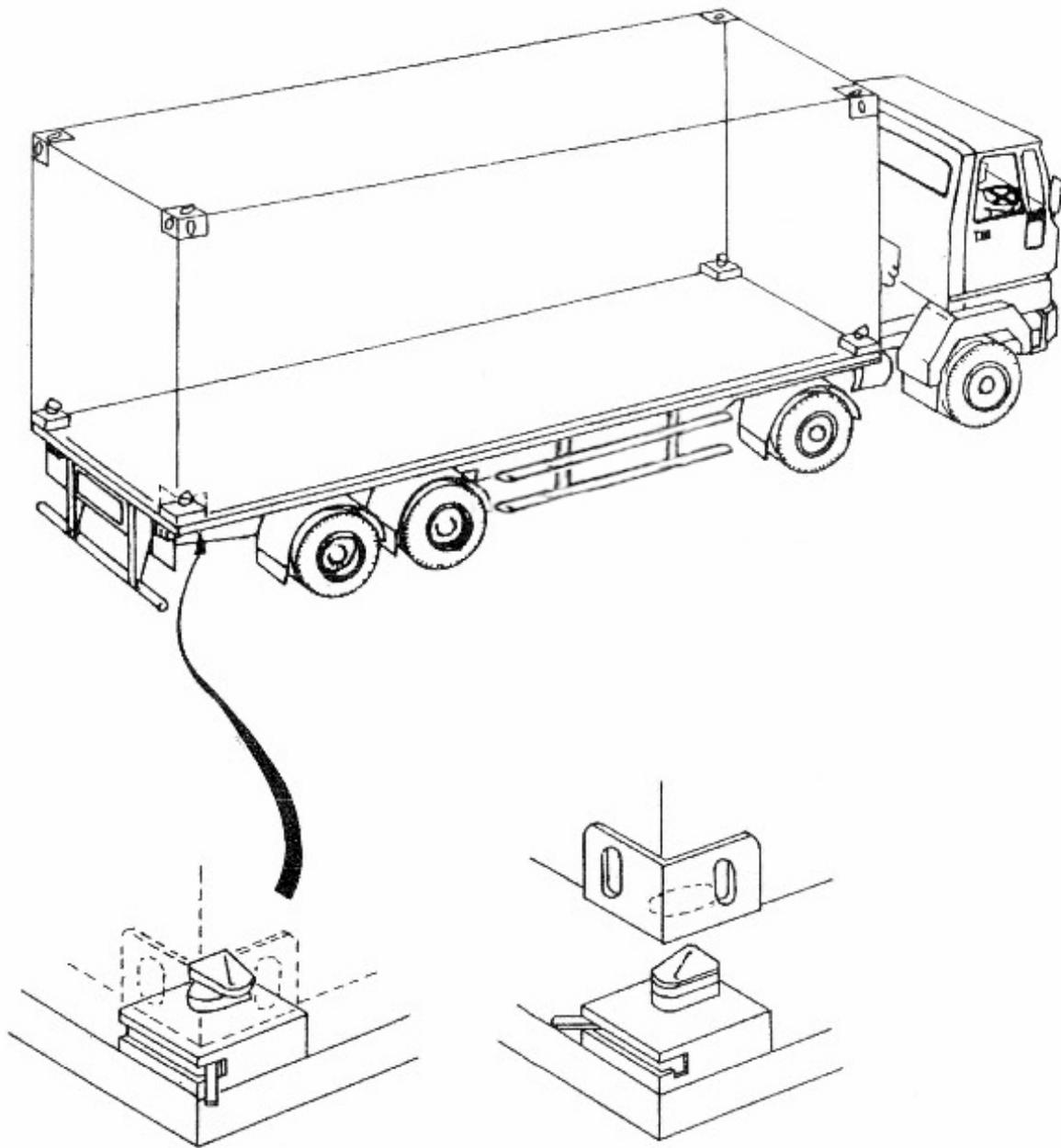
## 5.7 Containers

5.7.1 Containers are generally constructed with specially designed corner castings which with the twist locks, as shown in Diagram 5.7.1, fitted to vehicles specially provided for the transport of containers, enable a very simple and positive means of restraint to be obtained.

5.7.2 Twist locks should be inspected regularly for wear, damage and correct operation, and repairs as necessary should be made to any defective parts. A minimum of four twist locks should be provided for each container to be carried. If all four twist locks can be properly engaged and locked in position, then no further means of restraint is necessary.

5.7.3 Containers should only be transported on vehicles equipped with twist locks or similar devices. If however a container has to be transported on another type of vehicle or any of the twist locks are not functioning properly, then a retention system must be used to adequately secure the container to that vehicle. The retention system needs to meet the requirements as mentioned in other parts of this Section in respect of other types of loads, and the following points are particularly relevant: -

- (i) Containers are designed to stand on the twist lock sockets or feet that protrude down at each corner. With heavy containers, this produces high point loading that could over-stress a normal platform floor. It must be ensured that the vehicle platform is structurally adequate to withstand the loading.
- (ii) Securing lashings around and beneath the body of the vehicle, whether the lashings are attached to special rings on the container or passed over the top of the container, is not an acceptable means of securing the container.
- (iii) Lashings should only be attached to those points on the container intended for that purpose or alternatively provided for lifting or mechanical handling, though fork lift facilities provided along the base of containers will not be suitable for this purpose.
- (iv) All attachment points on the container should be examined to ensure they are in sound condition.



**TWIST LOCK SYSTEM FOR RESTRAINING CONTAINERS**

DIAGRAM 5.7.1

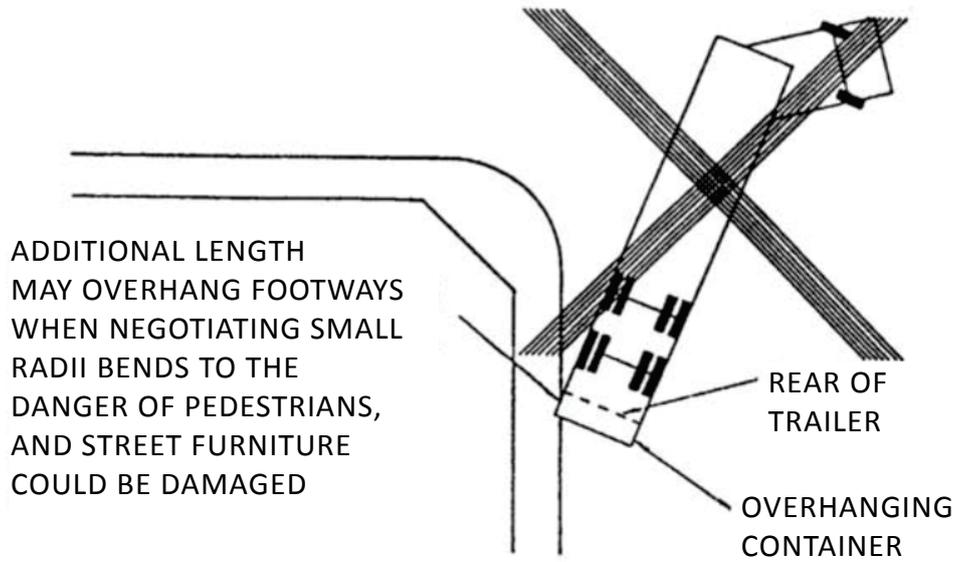
- (v) All the suitable available attachment points on the container should be used to secure it to the vehicle platform.
- (vi) Vehicle sides will not on their own provide sufficient restraint for a container, and therefore must not be relied upon for this purpose.
- (vii) Any lashings should be attached to the vehicle by anchorage points specifically provided for that purpose.

5.7.4 Although the relevant legislation does not have specific provision to prohibit a container from extending beyond the rear of a vehicle, it is strongly advised that containers should not be allowed to project beyond the sides or the rear of the vehicle loading platform because, as shown in Diagram 5.7.2: -

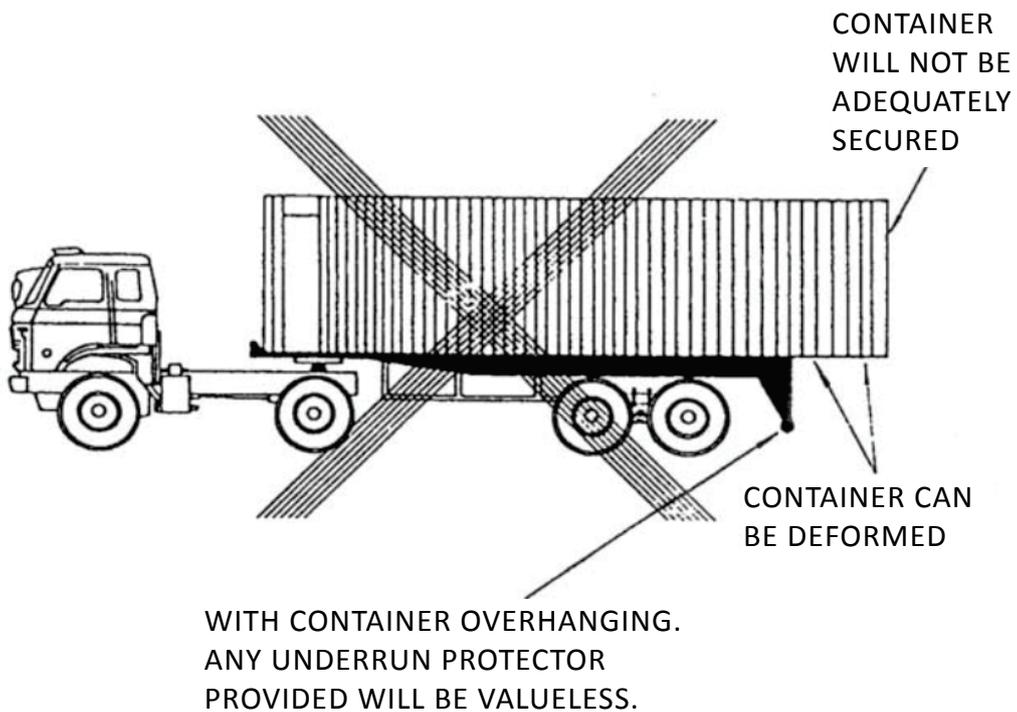
- (i) permanent distortion of the container may occur;
- (ii) the twist locks or similar devices will not function properly and even with additional lashing, the stability of the load will be at risk;
- (iii) any underrun protectors provided at the rear or sides of the vehicle will not be effective such that the projected container could seriously injure the occupants of any out-of-control car that runs under the container; and
- (iv) with articulated vehicles, any extension caused by the container extending over the rear will affect the maneuverability of the vehicle and increase the likelihood of the rear of the container, particularly when negotiating a small radius bend, extending over any adjacent footways to the obvious danger of pedestrians, or onto adjacent traffic lanes to the danger of vehicles in these lanes.

5.7.5 If a 'forty-five foot' container is carried on a 'forty foot' trailer and overhangs the trailer symmetrically at both ends, the additional twist locks fitted will overcome problems (i) and (ii) above, but problems (iii) and (iv) are still relevant. Additionally, it should be remembered that in accordance with the Road Traffic (Traffic Control) Regulations, any overhanging load must be within the specified limits and carry either a red flag in daylight or lights during the hours of darkness or in poor visibility conditions (see sub-paragraphs 1.2.4 (ii)(c) and (iii)(a)).

**NOT ACCEPTABLE**



**NOT ACCEPTABLE**



**CONTAINERS SHOULD NOT OVERHANG TRAILER**

DIAGRAM 5.7.2

5.7.6 The carriage of a single 'twenty foot' container on a 'forty foot' trailer, as shown in Diagram 5.7.3, results in an uneven distribution of the load and is extremely dangerous. This practice must not be adopted. The length of the trailer should be compatible with that of the container to achieve an even distribution of load. However, if two 'twenty foot' containers are carried on a 'forty foot' trailer and one of them has been delivered to a drop-off point, then the remaining container should be re-arranged to be placed in the middle of the trailer as shown in Diagram 5.7.4 before the journey continues.

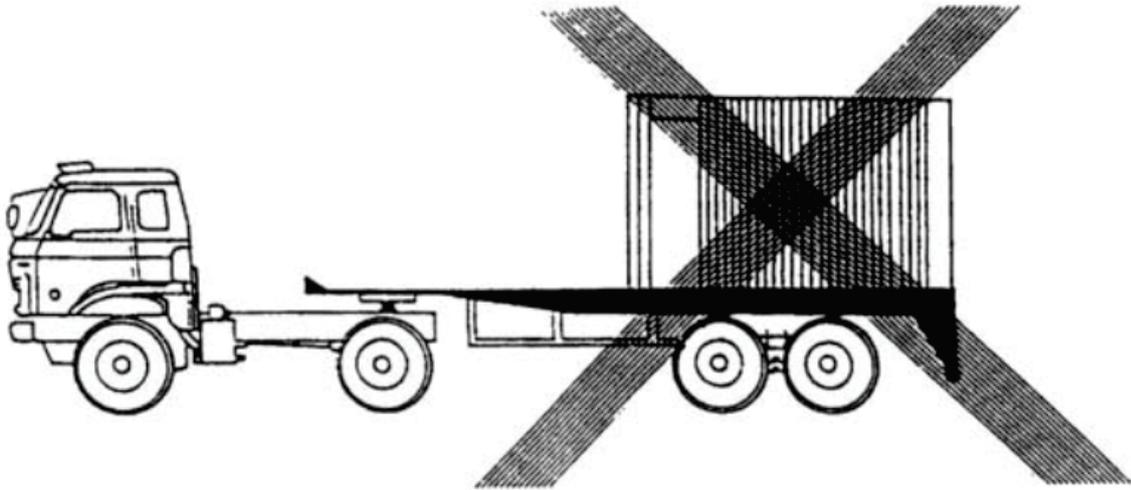
5.7.7 Whilst the driver of the vehicle will have little control over the packing of a container particularly imported from abroad, if it is apparent that the container has not been safely packed, it should not be accepted. Incorrectly packed containers can affect the stability of the vehicle with very serious consequences, causing the vehicle to lose control or overturn. Therefore, all the relevant parties should take every care to ensure that the highest standards of safety in packing of containers are achieved.

5.7.8 It is not possible to provide guidance to cover every situation and in some cases, specialist advice from the goods manufacturers will need to be sought but the following paragraphs provide general information which if followed should allow most loads to be loaded to an adequate standard of safety. However, it should be stressed that the advice in this Section is concerned mainly with achieving a load which is stowed such that the stability of the container when being transported is not detrimentally affected. Matters such as control of temperature differences between the outer and inner container skins, or contamination as a result of residue from previous cargoes, or incompatible substances, or pest infestation, all of which will need to be taken into account are not dealt with as they are outside the scope of this Code.

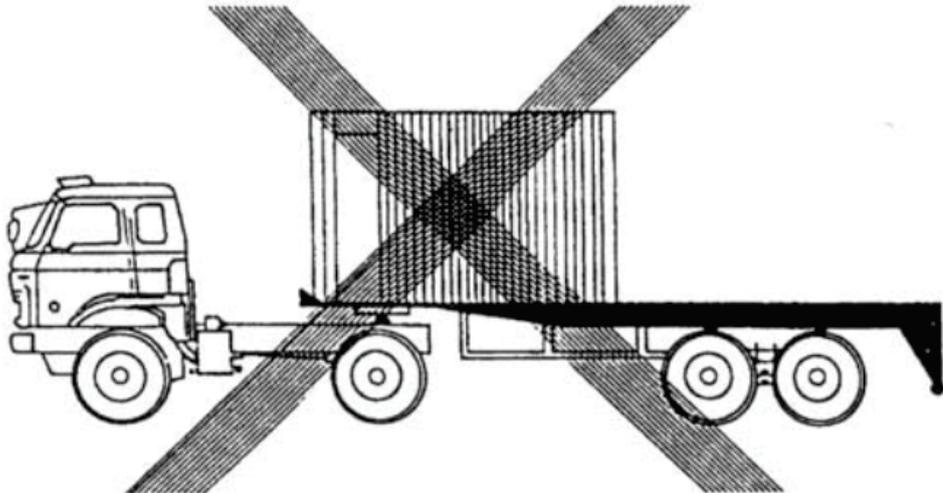
5.7.9 The aim when loading a container is to produce either a tight or a secured load. A tight load being one where individual items are packed hard against one another to prevent movement, and a secured load is one where the load or individual parts of it are secured by suitable lashings to anchorages within the container.

5.7.10 In order to achieve a tight or secured load, a loading plan should be prepared which takes into account the items being loaded, particularly with regard to their compatibility and the type and strength of any packages or packaging used.

**NOT ACCEPTABLE**



**NOT ACCEPTABLE**

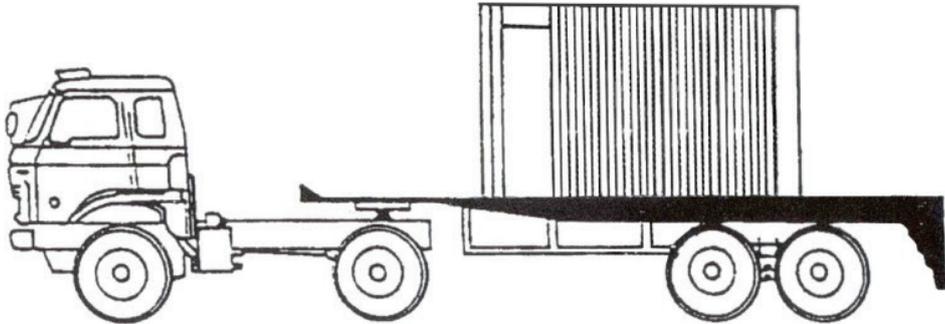


THE CARRIAGE OF A 'TWENTY FOOT' CONTAINER ON A 'FORTY FOOT' TRAILER RESULTS IN UNEVEN DISTRIBUTION OF LOAD AND IS EXTREMELY DANGEROUS.

**CONTAINER AND TRAILER SIZES TO MATCH**

DIAGRAM 5.7.3

**ACCEPTABLE**



**TWENTY FOOT CONTAINER PLACED IN THE MIDDLE OF**  
**FORTY FOOT TRAILER**

DIAGRAM 5.7.4

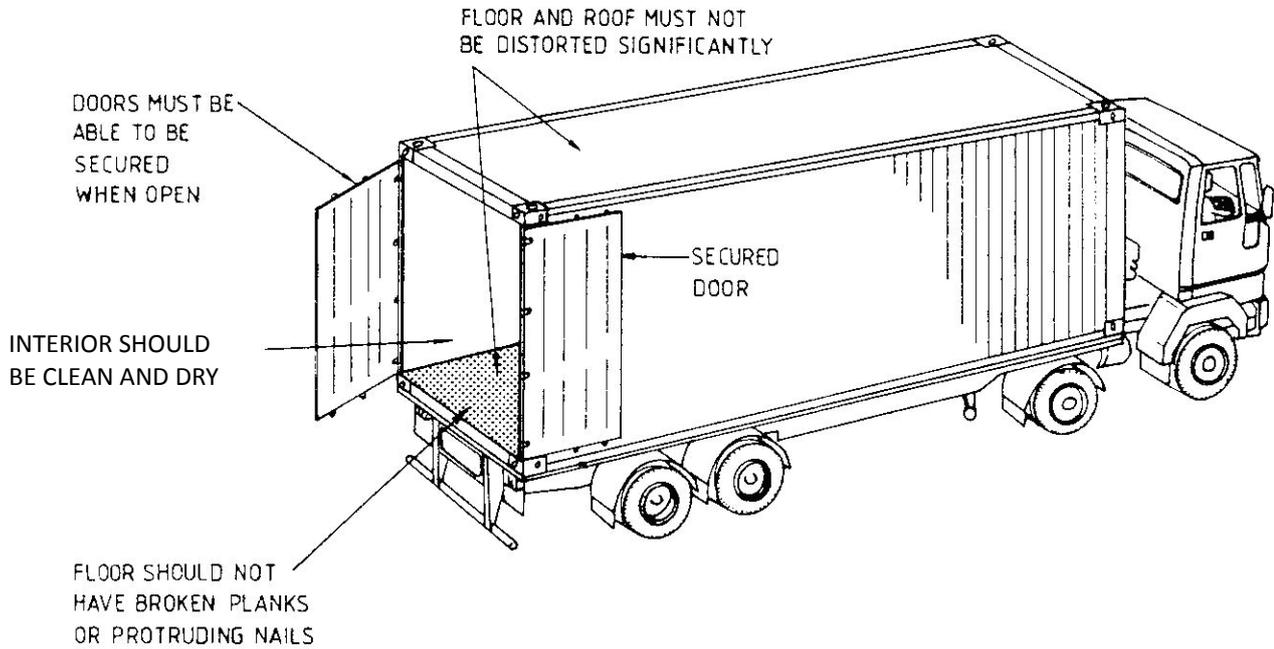
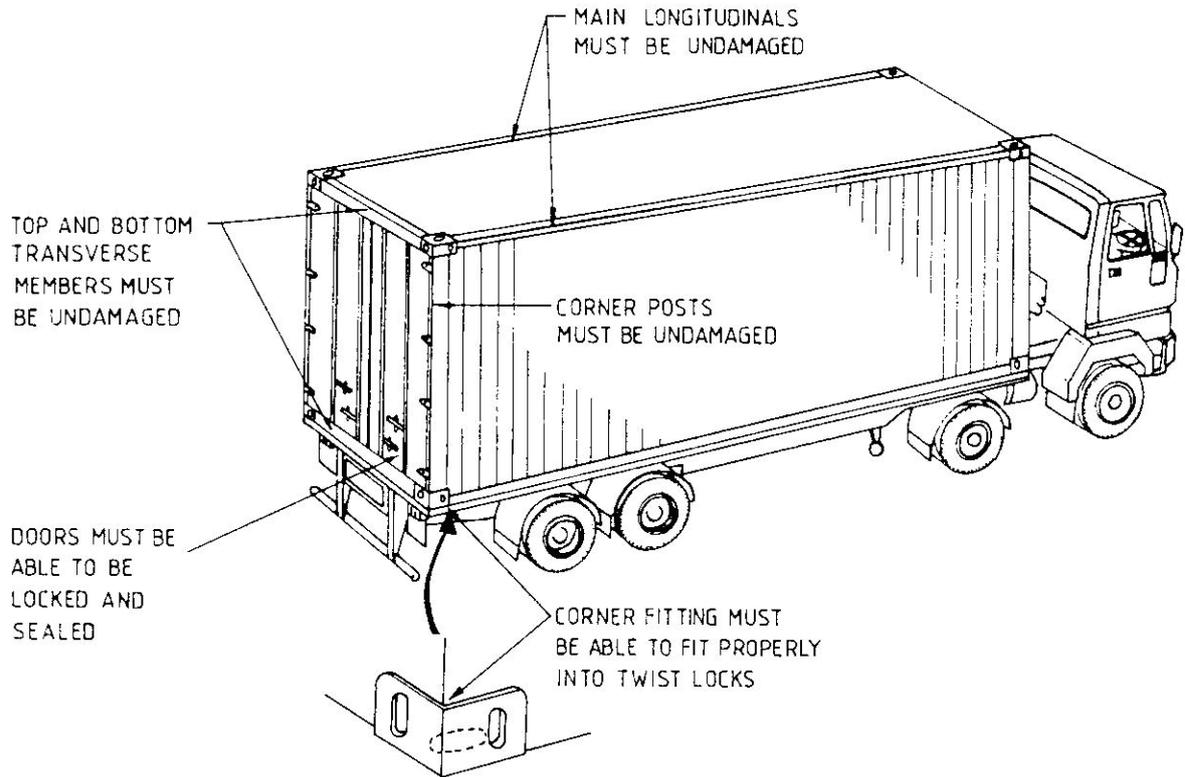
5.7.11 Loading plans will need to take account of the fact that containers are designed assuming the load to be evenly distributed over the entire floor area, but if uniform loading cannot be achieved, specialist advice will need to be obtained.

5.7.12 It is important that loading plans also consider the effects of unloading, and that efforts are made to avoid any problems arising with regard to this.

5.7.13 Prior to any loading of a container, it is essential that the container is itself examined to see that it is safe to use, as shown in Diagram 5.7.5, with particular emphasis being placed on the following: -

- (i) If there is any evidence that the container has been severely weakened because of damage to its main framework, that is the corner posts, corner fittings, main longitudinal, or the top end and bottom end transverse members which form the end frame, the container must not be used.
- (ii) The walls, floor and roof of the container should be in good condition and not significantly distorted.
- (iii) The doors of the container should be checked to see that they work properly and can be locked and sealed in the closed position and properly secured in the open position.
- (iv) Internally the container should be free from major damage, without broken planks or protruding nails and should be clean and dry.
- (v) Any cargo tie-down cleats or rings should be in good condition and properly anchored. In the situation that securing points are not adequate for the securing arrangements proposed, alternative arrangements should be decided with the supplier of the container, and additional fittings should not be added unless the supplier agrees.

5.7.14 The stability of the container when it is being loaded is extremely important and this has already been referred to previously in paragraph 2.3.7. The general advice given in Section 5.14 on the location of loading/unloading activities is particularly relevant to containers and should therefore be followed closely.

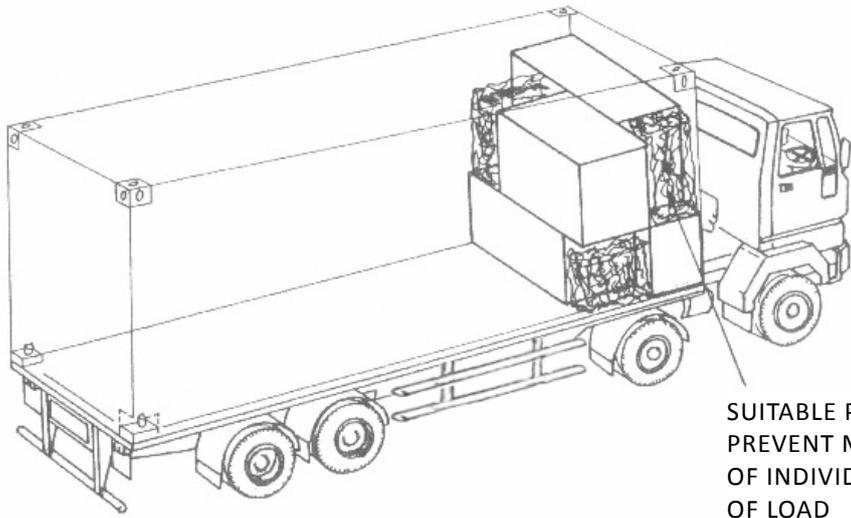


**CONTAINER TO BE FREE FROM DEFECTS**

DIAGRAM 5.7.5

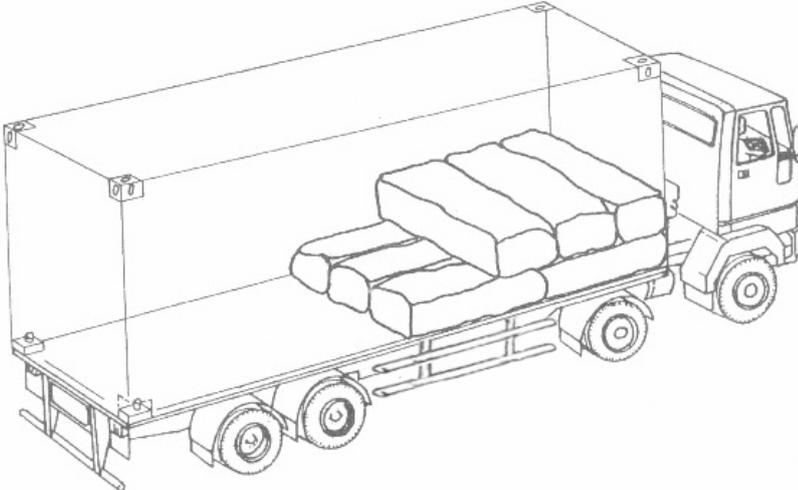
5.7.15 When actually packing the load in the container, regard should be had to the following: -

- (i) The container should be adequately illuminated internally in order that loading activities can be carried out safely and efficiently.
- (ii) The total goods to be loaded must not exceed the permitted payload of the container, and of course must not cause the permitted gross vehicle weight of the vehicle transporting the container to be exceeded.
- (iii) The load should be evenly distributed across the floor area and in no case should more than 60% of the load be in less than half the length of the container.
- (iv) Heavy goods should not be packed on top of lighter goods, and the centre of gravity of the loaded container should be below the mid-point of its height, and close to its mid-length and mid-width.
- (v) The load should be secured and tightly packed in the container against any forces that might be reasonably expected to occur during the journey. As shown in Diagram 5.7.6, a tightly packed load can be achieved where goods and packages are of a regular shape and size by building individual items one against the other from one side wall to the other. Any minor voids that occur can generally be tolerated, but if there is any doubt, the voids should be filled with suitable material such as timber, folded corrugated board, hard board or high density foam. Cartons of a similar shape and size, but of a size which is not a convenient module for the container should be packed with one row starting from one side of the container and the next row starting from the other. Each successive layer is staggered in a similar way to obtain a tight load. With bagged cargo, a tight load can be achieved by alternating between layers with the bags lengthwise and layers with the bags crosswise.
- (vi) Where cargo is secured by lashings or netting, these must be attached to the lashing points provided for this purpose, and it is essential to ensure that the lashing points are not overloaded.
- (vii) For heavy indivisible units, it may be necessary to spread the weight over the container floor by using timber baulks or similar as shown in Diagram 5.7.7. However, the localised pressures of the load spreading devices must be within the design capabilities of the container, and if there is any doubt on this, expert advice must be sought.



SUITABLE PACKING TO PREVENT MOVEMENT OF INDIVIDUAL PARTS OF LOAD

LOAD PACKED IN ALTERNATE LAYERS TO PROVIDE A TIGHT LOAD



**ARRANGEMENT OF LOADS IN CONTAINERS**

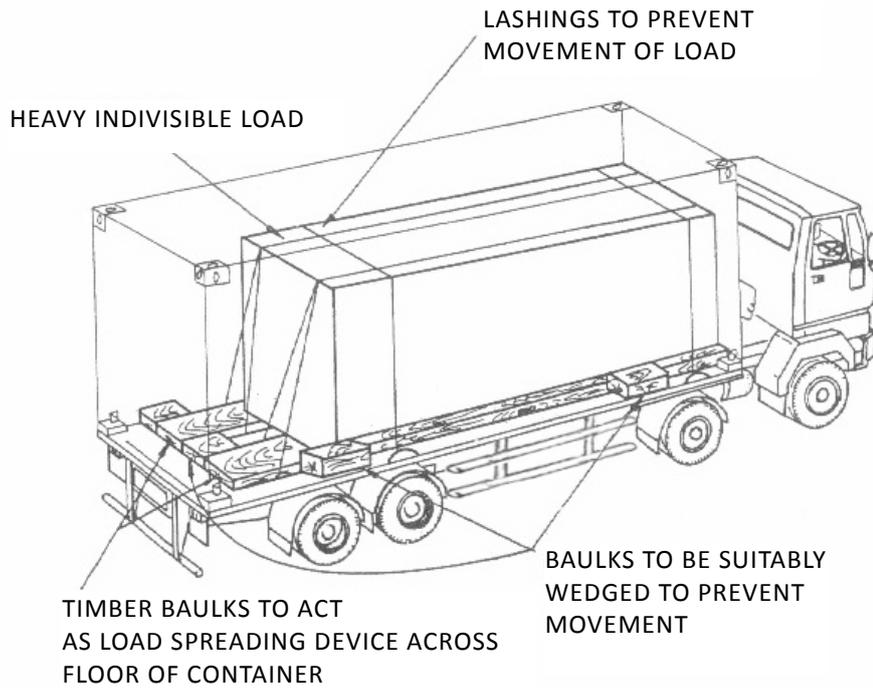
DIAGRAM 5.7.6

- (viii) Where heavy objects have been slid over the floor of the container and wax or similar substances has been used to assist this, measures will need to be taken to compensate for the reduction in the friction effect caused by the application of such substance, generally by using chocks or lashings to restrain the load.
- (ix) Vertical crushing effects, which may cause the load to move, can be significant with certain loads such as fibre board packages. Some reduction in this effect can be obtained by laying planks or boards horizontally between layers to spread the load.
- (x) When the packing has been completed, it should be checked that it is not possible for the load and dunnage to fall out when the door is reopened at any time. Lashings, nets, timber or metal gates at the rear and adjacent to the doors are sound safety precautions to take in the event that the load does shift, and will prevent goods from falling onto operatives when the rear doors are opened. However, it is preferable that reliance is not entirely placed on these measures but instead, it should be ensured that the items are properly packed so that they cannot move.
- (xi) Always make certain that the doors are properly locked and that the locking mechanisms are effective and in good condition before the journey.

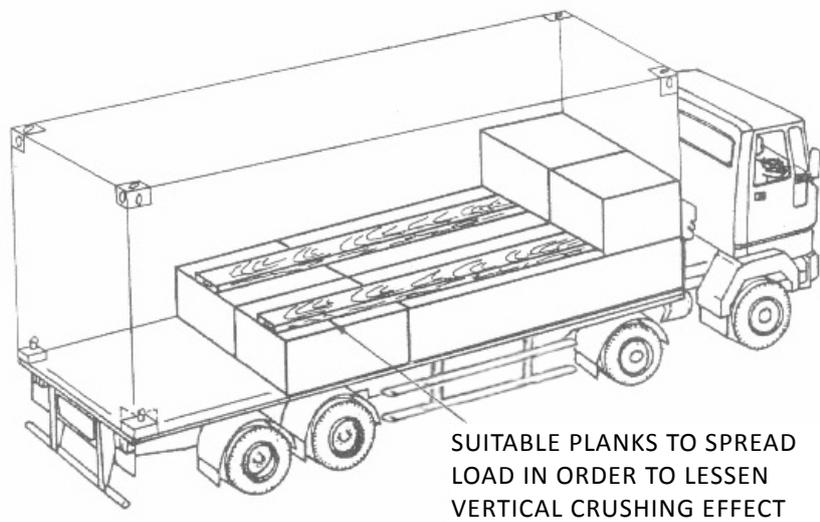
5.7.16 Whilst the advice in paragraph 5.7.15 is generally suitable for most types of loads, there are situations of course when it is not sufficient and further precautions must be taken. For example, additional precautions will be necessary if the container is to be air transported, and in these matters the air cargo authorities should be consulted. Also, special requirements will be necessary where goods require temperature or atmospheric control to be provided and where the provision of optimum air circulation paths is necessary. For these latter situations, specialist advice from the goods manufacturers should be sought as to the packing arrangements to be made.

5.7.17 In respect of the actual transportation of the container, and particularly if it is open-topped or being carried on a vehicle not specially designed for its carriage, it is essential that the top of the container or, if any item is allowed to project out of the container, the top of that item is not higher than 4.6 m above the road surface. Failure to ensure this will not only mean that an offence will be committed because the legal height has been

exceeded, but also that the load could cause serious damage to any bridges or gantries it attempts to pass under.



### CARRIAGE OF HEAVY INDIVISIBLE LOAD



### CARRIAGE OF CRUSHABLE LOAD

## LOAD SPREADING DEVICES IN CONTAINERS

DIAGRAM 5.7.7

## 5.8 Engineering plant

5.8.1 Heavy engineering plant should be transported on purpose built vehicles specially designed to provide easy loading and unloading facilities, and equipped with adequate anchorage points for attaching the lashings.

5.8.2 Light engineering plant may be carried on general purpose vehicles provided that the load can be adequately secured.

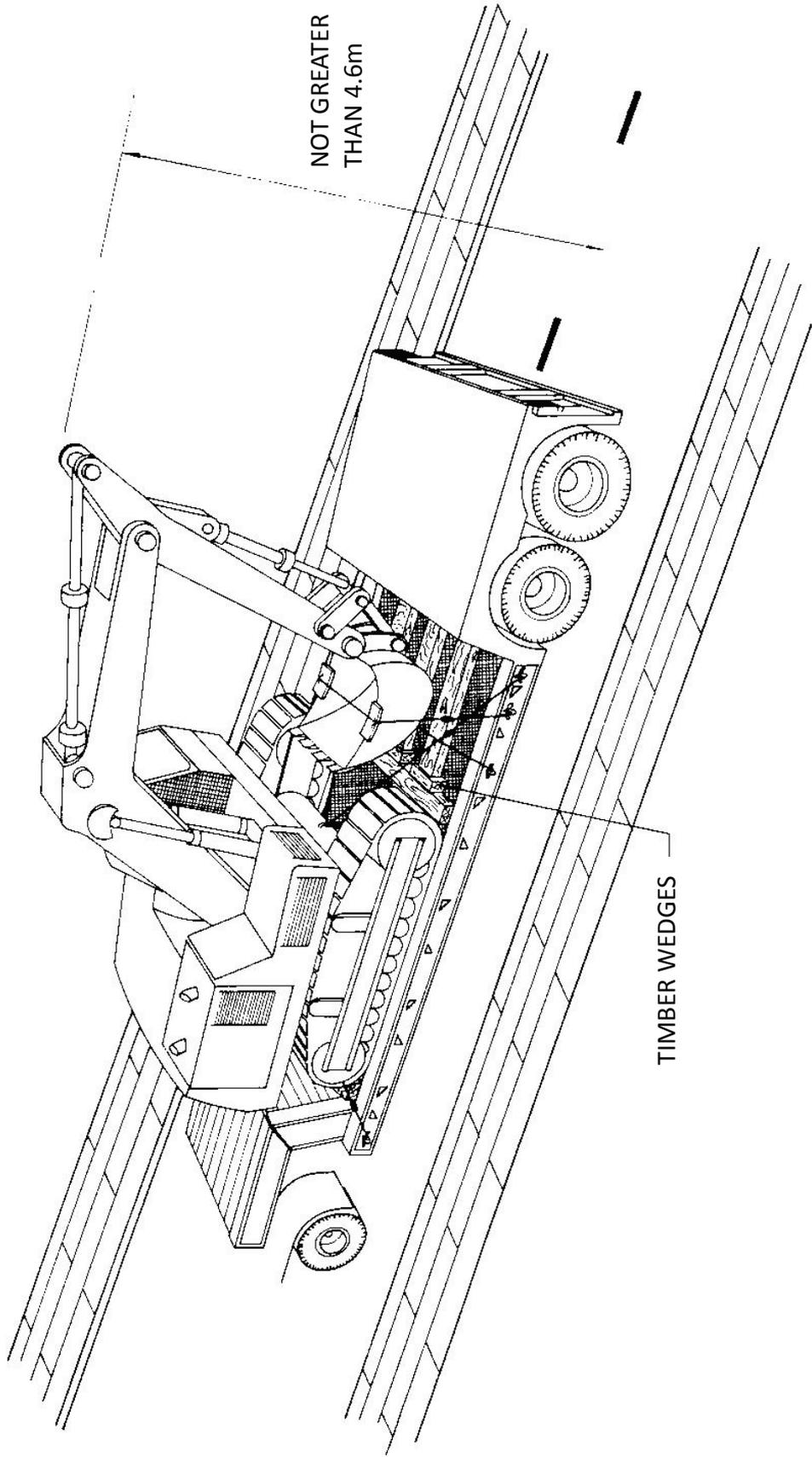
5.8.3 The Road Traffic (Traffic Control) Regulations prohibit any load on a vehicle being higher than 4.6 m above the adjacent carriageway surface, as shown in Diagram 5.8.1, therefore it is essential that the driver should check the exact height of any engineering plant being carried on a vehicle to ensure that this is not exceeded (also see sub-paragraphs 1.2.4(ii)(c) & (d)). Apart from committing an offence, an overheight vehicle may not be able to pass under any bridges or gantries along the route, and in trying to do so will seriously damage these structures, and cause injury to passers-by. Beneath some bridges, gantries and other structures, the clearance provided may be less than 4.6 m. In such situations, traffic signs are erected to warn drivers. Those drivers transporting high loads should pay particular attention to such signs and inspection of the selected route prior to the transportation should be conducted (also see paragraphs 2.3.11 & 2.3.12).

5.8.4 Loads with a high centre of gravity can seriously affect the vehicle's stability, therefore engineering plant of this type should only be transported on vehicles with a low platform height of the type illustrated in Diagram 5.8.1. It will however be necessary to ensure that the clearance between the undersides of the vehicle and the road surface will be sufficient for the roads to be travelled over. Roads with undulating surfaces such as construction access, and those having sharp humps will need greater clearances to prevent vehicle grounding.

5.8.5 Engineering plant must not, unless a wide load permit has been obtained, extend over the sides of the vehicle such that the total width of the load and the vehicle is greater than 2.5 m.

5.8.6 In respect of engineering plant extending over the rear or front of the vehicle on which it is being carried, whilst the Road Traffic (Traffic Control) Regulations do permit loads to extend forwards by 1.5 m and to the rear by 1.4 m without the need for a long load permit, care will need to be taken where this occurs that the stability of the vehicle is not affected and that the driver's view is not impaired. Engineering plant should only be carried on vehicles

where no part of it needs to extend over the front, rear or sides of the vehicle. In this respect engineering plant should, if necessary, be dismantled and securely fastened to the vehicle body in order to keep its dimensions within the width and length limits of the carrying vehicle.



**TRANSPORTING AN ENGINEERING PLANT**  
**(MAXIMUM HEIGHT OF LOAD)**

DIAGRAM 5.8.1

5.8.7 All movable assemblies such as jibs, brackets, booms, and cabs must be secured in the position recommended for transportation by the plant manufacturer in order that they do not move when being transported. For pivot steer machines, pivot locking bar should always be bolted in position to prevent articulation.

5.8.8 Hydraulic booms, arms or similar must be lashed down to prevent any movement during transit. When the machine has been loaded onto the vehicle and the engine stopped, the pressure in the hydraulic system should be relieved by moving all the control levers at least twice through all their positions. Controls should then be locked to prevent movement during transit.

5.8.9 Bags, tool kits or other heavy objects should not be left loose in the cab of the plant being carried, and all items dismantled from the plant such as buckets, grabs, blades, shovels or lifting apparatus should be securely lashed to the deck of the carrying vehicle.

5.8.10 The positioning of the engineering plant and any of its detached equipment must be arranged on the carrying vehicle such that the maximum axle weight are not exceeded.

5.8.11 Wheeled or tracked engineering plant after being loaded onto the carrying vehicle must have the parking brake applied, but this alone will not be sufficient and the plant must also be lashed to the carrying vehicle or securely restrained by other means. It will also be necessary to provide baulking against the front and rear wheels or tracks of the plant being carried to prevent it moving forwards or backwards.

5.8.12 Wheeled and light tracked machines should be restrained so that the effect of bouncing caused by road shocks transmitted from the carrying vehicle and amplified by the machine's tyres or suspension units is minimised. Where possible, the suspension unit of the machine should be locked and vertical movement limited by lashings or other means of restraint. Alternatively, the machine's frame or chassis should be supported on blocks.

5.8.13 The full contact area of the tyres, tracks or rollers of any machine, unless it is being supported, should rest on the deck of the carrying vehicle. If the tracks of a machine extend outside the frame of the carrying vehicle, then the machine's frame or chassis should be supported.

5.8.14 Apart from any specialised fixing devices, lashings used for restraining engineering plant against any movement must be of the following types: -

- (i) chains,
- (ii) steel wire rope not less than 8 mm diameter, or
- (iii) webbing,

all of which should incorporate a suitable tensioning device to ensure the lashings are properly tightened.

5.8.15 Lashings or other securing devices for restraining the engineering plant should only be attached to those parts of the plant which are of sufficient strength to withstand the stresses likely to be imposed and the anchorage points on the carrying vehicle.

5.8.16 Where a transverse beam is used as a baulk, it must be securely fixed so that all loads imposed on it are transmitted to the carrying vehicle's chassis frame.

5.8.17 Where individual wheels or rollers of engineering plant are baulked with blocks or chocks, the baulking must be robust enough to resist crushing and be securely attached to the carrying vehicle's platform.

5.8.18 Not less than four anchorage points should be used to secure any engineering plant to the carrying vehicle's platform and the extent to which any further anchorage points will be necessary will need to have regard to the following: -

- (i) the need to position the machine to achieve the correct load distribution to meet the legal axle load requirements and to ensure that the safe driving of the carrying vehicle is not impaired;
- (ii) the design of the vehicle;
- (iii) whether the machine has wheels, tracks or rollers; and

(iv) the weight of the machine to be carried.

5.8.19 Whilst not every eventuality is covered, Diagrams 5.8.2 to 5.8.10 illustrate details of the type of restraints required when transporting certain common engineering plants. The type of low loader indicated in the Diagrams is not necessarily indicative of the type that should always be used, but where a different type is employed then the location of the anchorage devices illustrated in the Diagrams may need to be adjusted to suit the particular vehicle. Similarly, chains are generally shown for the lashings but other suitable lashing materials as mentioned in paragraph 5.8.14 may also be used.

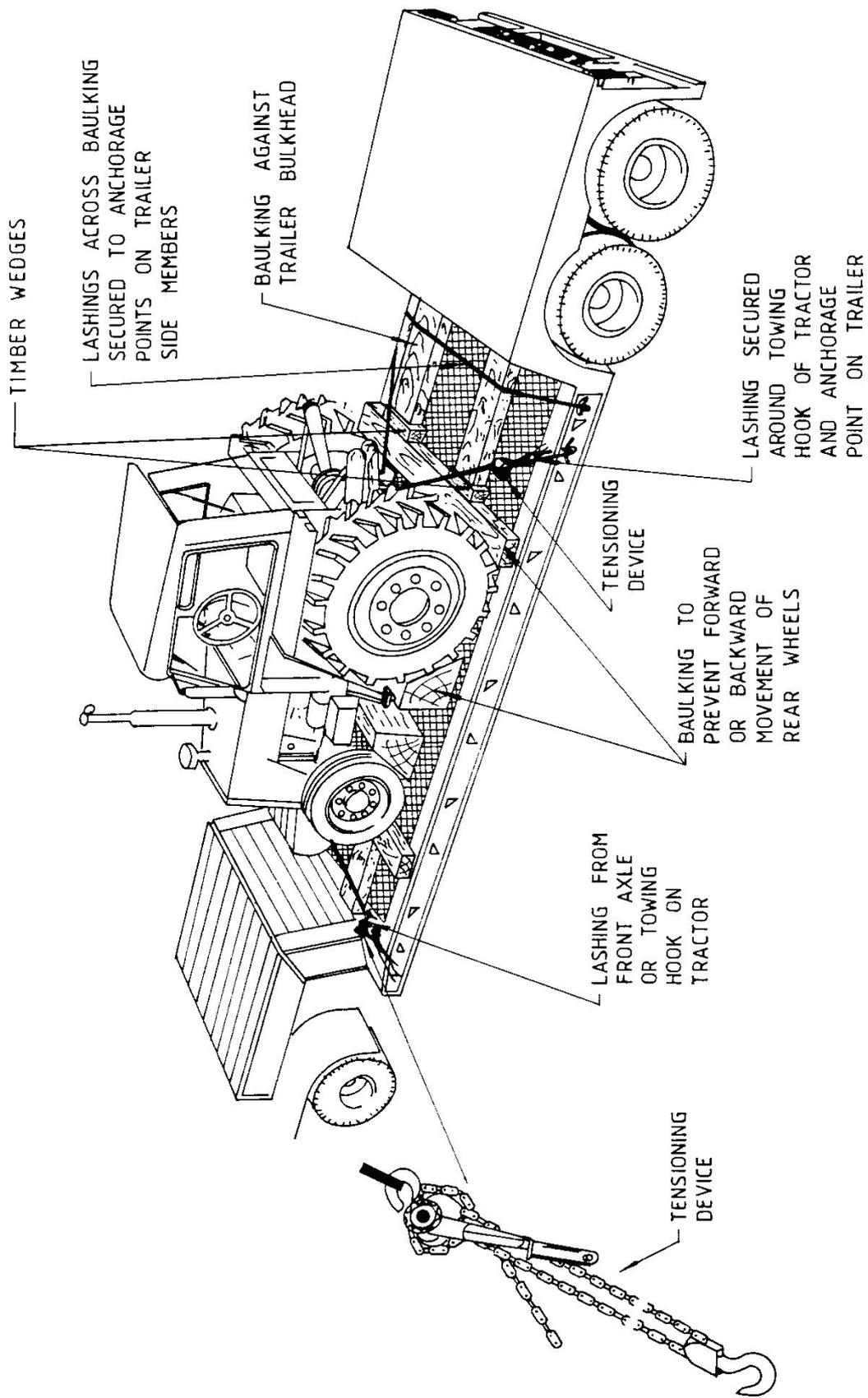
5.8.20 Diagram 5.8.2 illustrates the type of restraint required when transporting an tractor, or similar. Any forward or backward movement is prevented by baulking. Sideways movement is prevented by the lashings.

5.8.21 Diagram 5.8.3 illustrates the type of restraint required when transporting a fork lift truck. Baulking is used to prevent forward and backward movement, with the baulking against the rear wheels of the truck also being butted against the trailer bulkhead. Sideways movement is prevented by the lashings.

5.8.22 Diagram 5.8.4 illustrates the restraint required when transporting a road roller. Forward and backward movement is prevented by baulking butted against the wheels and the trailer bulkhead. Sideways movement is prevented by the lashings.

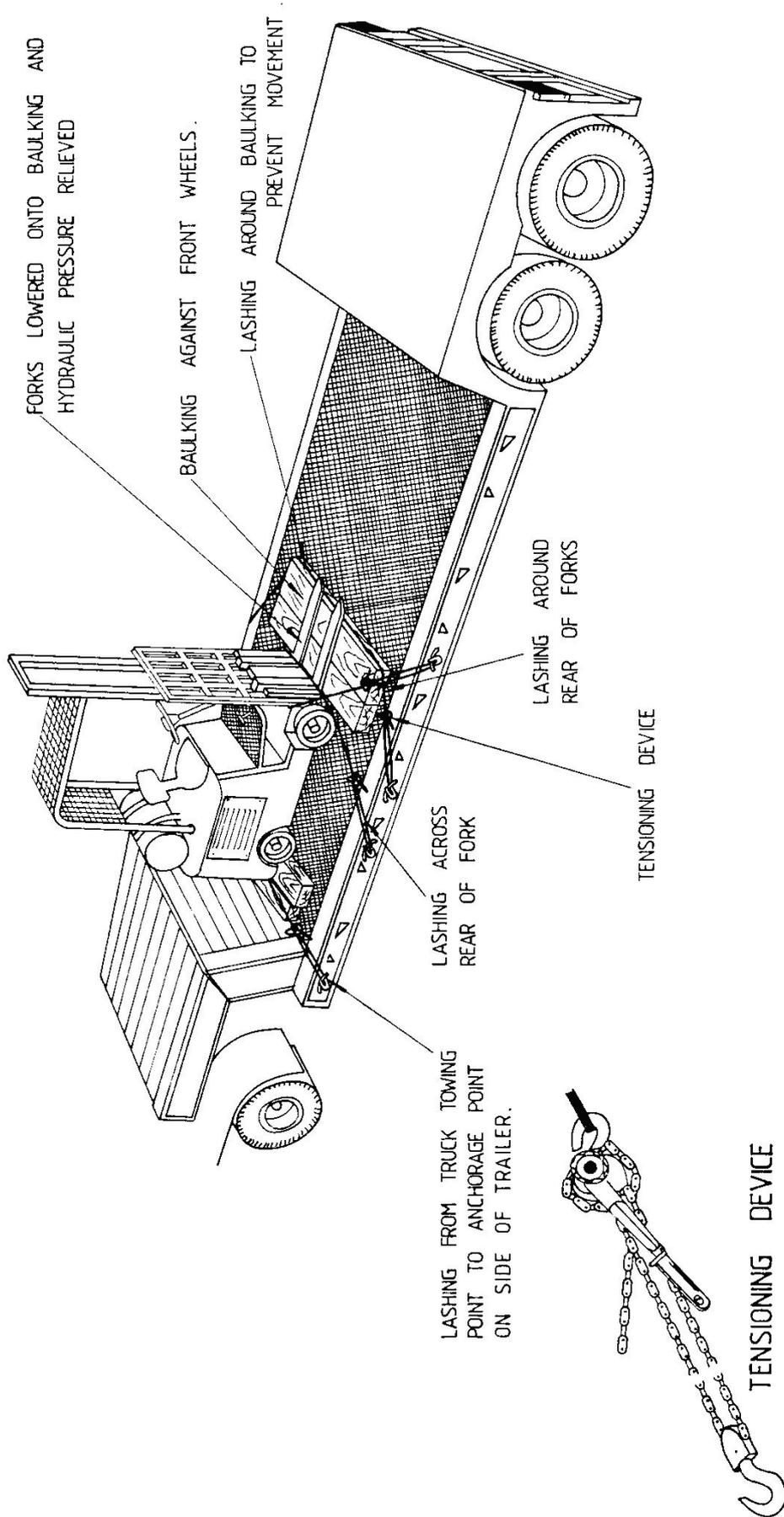
5.8.23 Although "pedestrian rollers" would generally not be carried on a low loader, Diagram 5.8.5 illustrates the type of restraint required when carried on such vehicles, and an equal restraint system would be necessary if the roller was carried on any other type of vehicle.

5.8.24 Diagram 5.8.6 illustrates the type of restraint required in respect of a wheeled tractor shovel. If the front part of the machine articulates relative to the rear part, the pivot locking bar should be bolted in position. With regard to the bucket assembly, the hydraulic pressure should be relieved by operating all controls at least twice through all their positions with the engine switched off. Forward and backward movements should be prevented by baulking butted against the wheel together with lashings to also prevent any sideways movement.



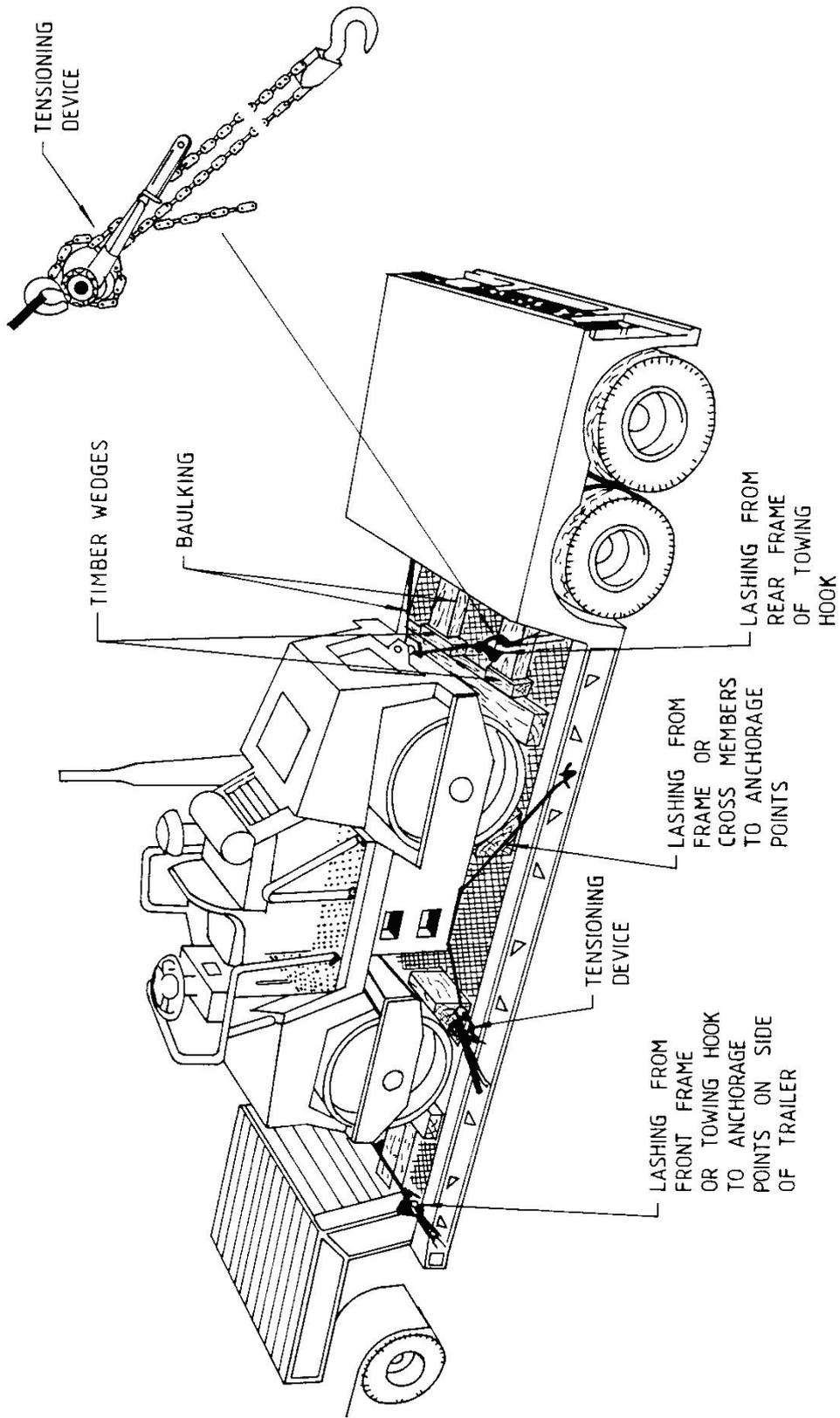
**TRANSPORTING A TRACTOR**

DIAGRAM 5.8.2



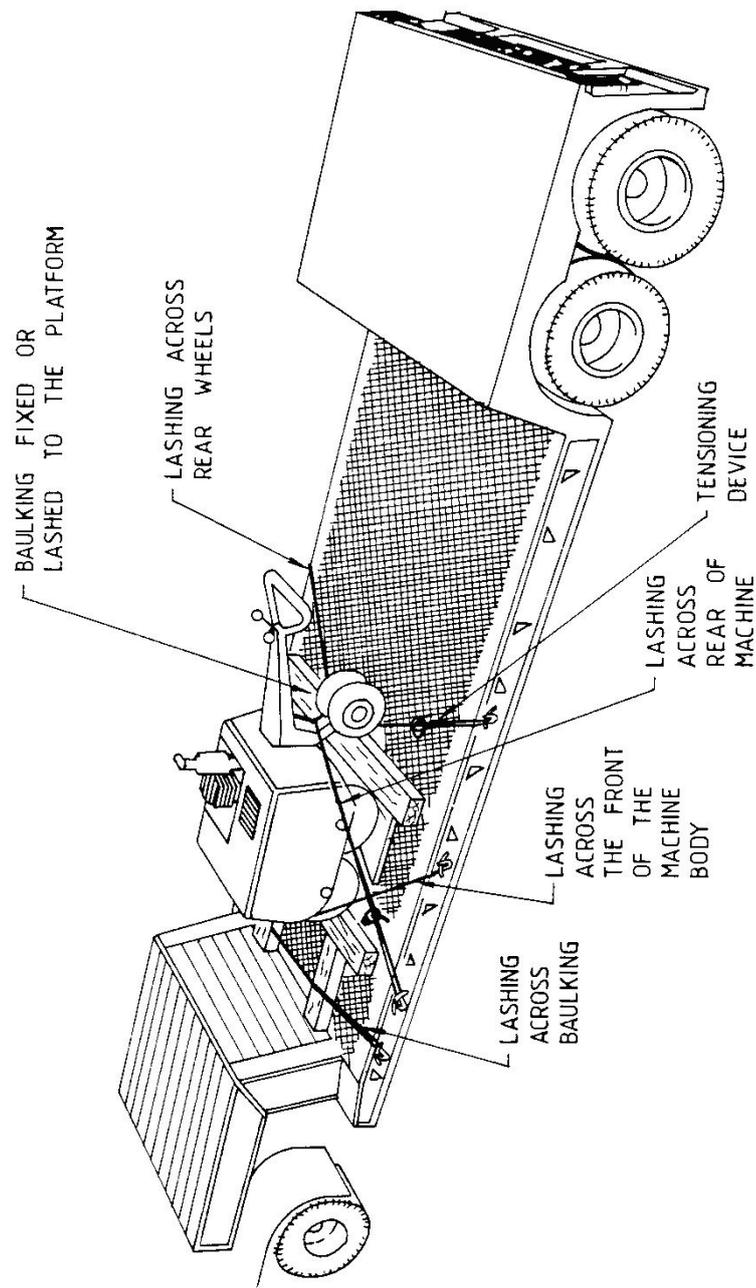
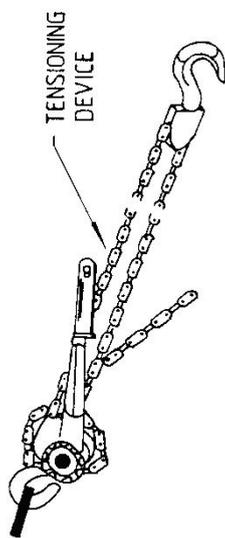
**TRANSPORTING A FORK LIFT TRUCK**

DIAGRAM 5.8.3



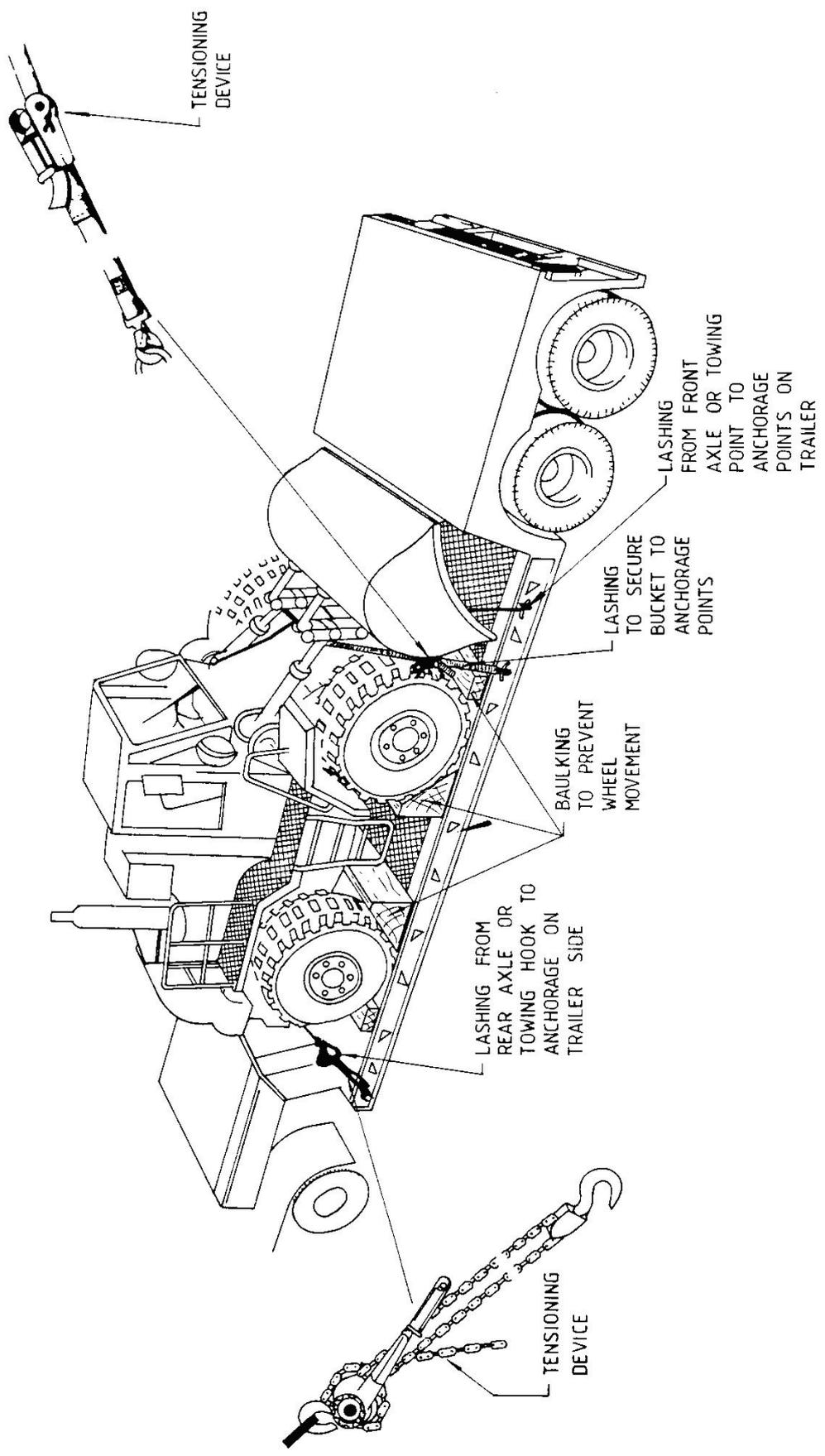
**TRANSPORTING A ROAD ROLLER**

DIAGRAM 5.8.4



**TRANSPORTING A PEDESTRIAN ROLLER**

DIAGRAM 5.8.5



**TRANSPORTING A WHEELED TRACTOR SHOVEL**

DIAGRAM 5.8.6

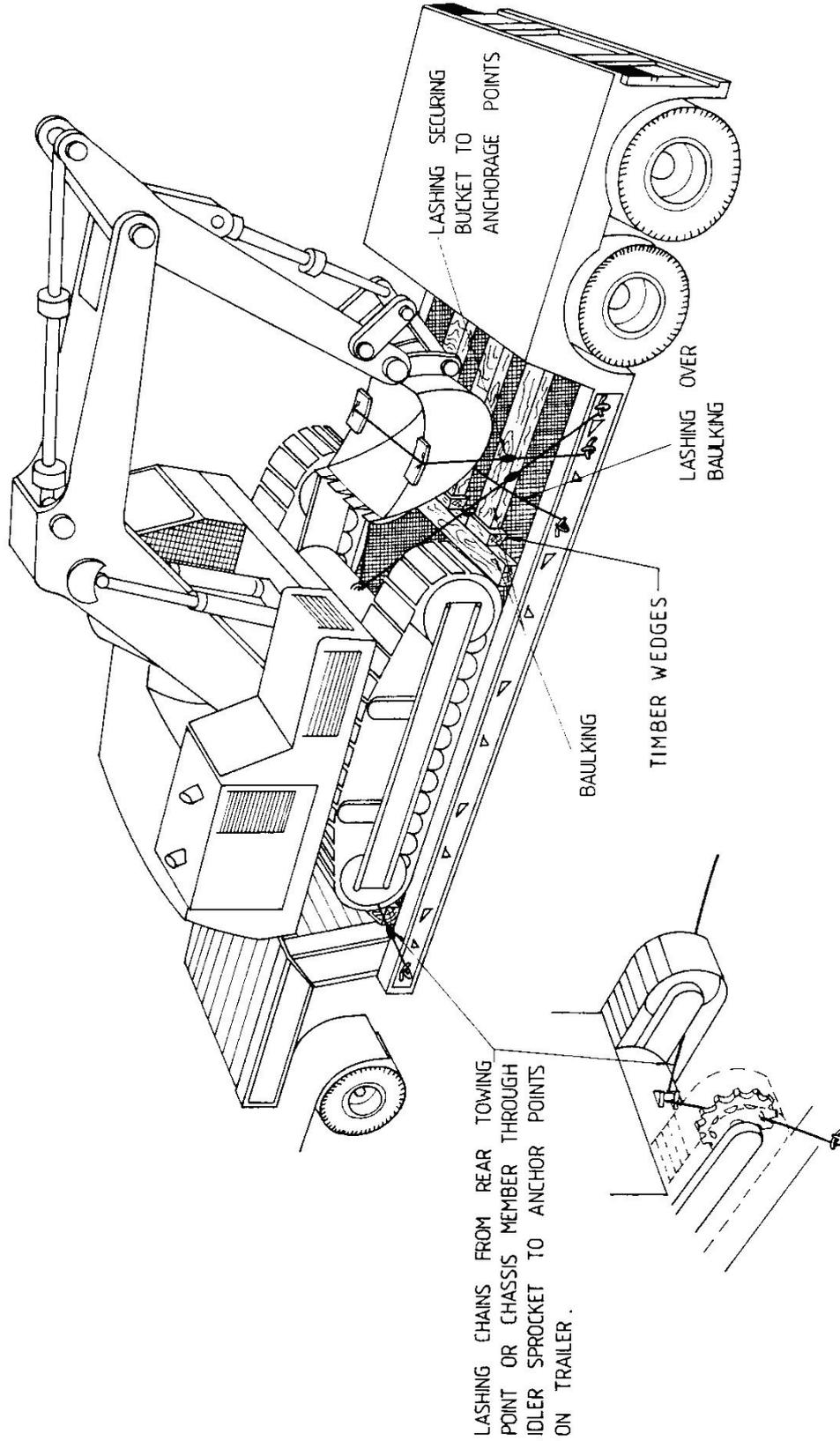
5.8.25 Diagram 5.8.7 illustrates typical restraint measures needed when transporting a large machine such as an excavator. The movement of the cab and superstructure relative to the chassis of the machine must be prevented by relieving hydraulic pressure by operating all controls at least twice through all their positions, with the engine switched off, and applying the slew lock on the slewing ring. The arm should be put down as low as possible and its movement should be prevented by securing the bucket to anchorage points. Tracks should be butted up to baulking so that any forward or backward movement is stopped, with lashings also applied to prevent these movements as well as any sideways movement.

5.8.26 For machines such as motor graders as shown in Diagram 5.8.8, the blade and scarifier should be lowered to the trailer deck, and the front wheels should be butted against the trailer bulkhead, with baulking at the rear of the front wheel to prevent backward movement. Individual lashings applied to the main frame and further baulking butting up to the rear wheels are required to provide full restraint against backward, forward and sideways movement.

5.8.27 As with other large machines, when transporting a tracked roped excavator as shown in Diagram 5.8.9, it is essential to check that the highest point of the load is not greater than 4.6 m above the adjacent road surface. Preferably the load should not extend beyond the rear of the trailer, but if this cannot be avoided no extension should be greater than 1.4 m, and it will be necessary to hang a red flag at the rear or have lights at the extremities of the load (see details at paragraph 5.9.2). The boom of the excavator should be taken down and if it cannot be properly carried on the same trailer as the rest of the machine, it should be dismantled and carried on another vehicle. Lashings as shown in Diagram 5.8.9 or similar should be applied to prevent forward, backward and sideways movement. Additionally, baulking should be butted up to the tracks and the bulkhead of the trailer as a further restraint against forward and backward movement. The slew lock must be applied to the slewing ring to prevent movement of the boom, and this should be further restrained by suitable lashings across the jib. Support should also be provided under the counter weights.

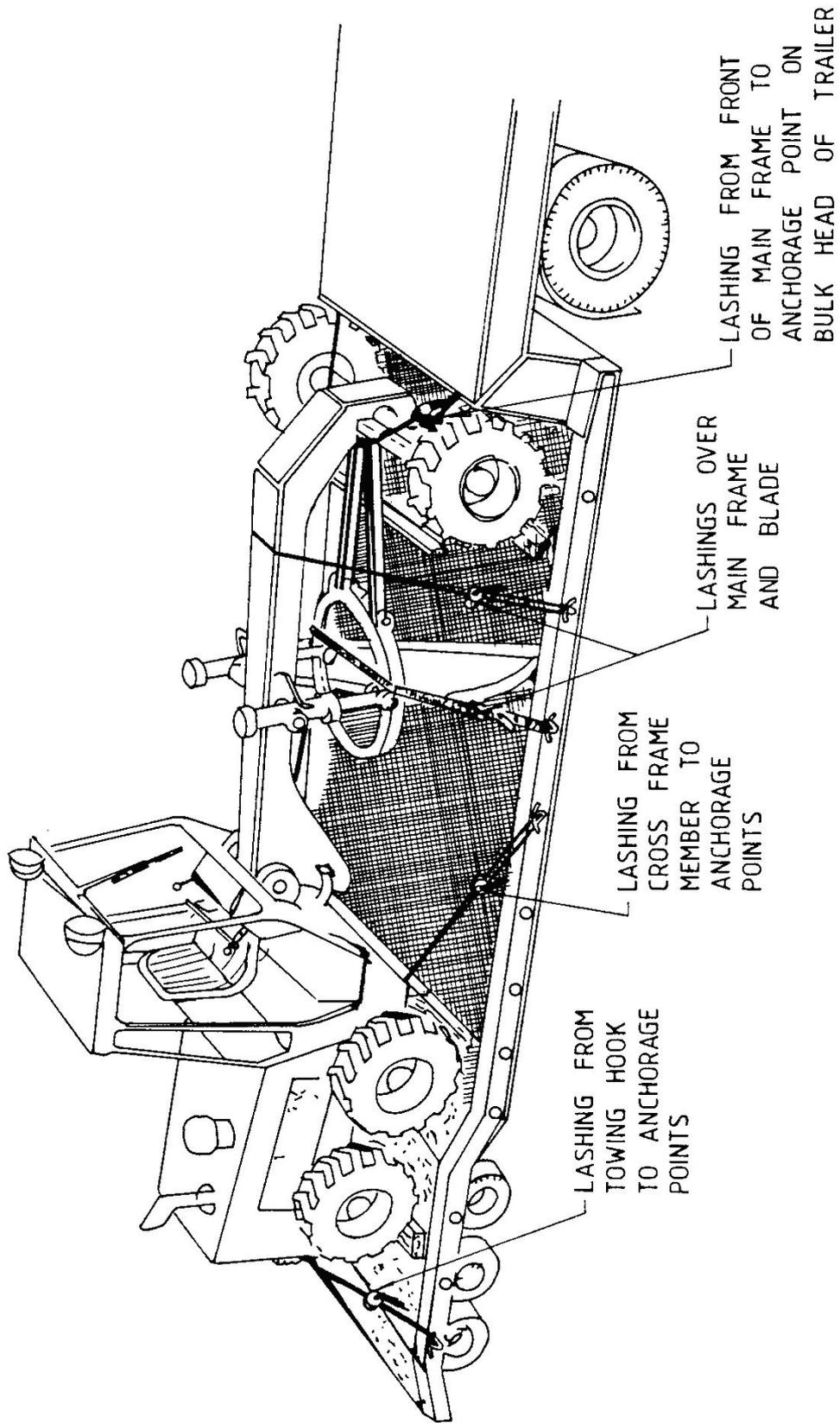
5.8.28 Diagram 5.8.10 illustrates the restraint required when transporting a tracked dozer. The dozer blade should be removed and securely lashed to the trailer. Forward, backward and sideways movement should be prevented by the use of suitable lashings as shown in the Diagram, and further restraint should be provided by the use of baulking.

5.8.29 Once the engineering plant has been loaded and properly restrained, the carrying vehicle should be driven a short distance and stopped, and the load should then be inspected to ensure that no movement has taken place and the restraining devices are fully secure. On longer journeys, periodic inspections should be carried out at suitable locations during the course of the journey.



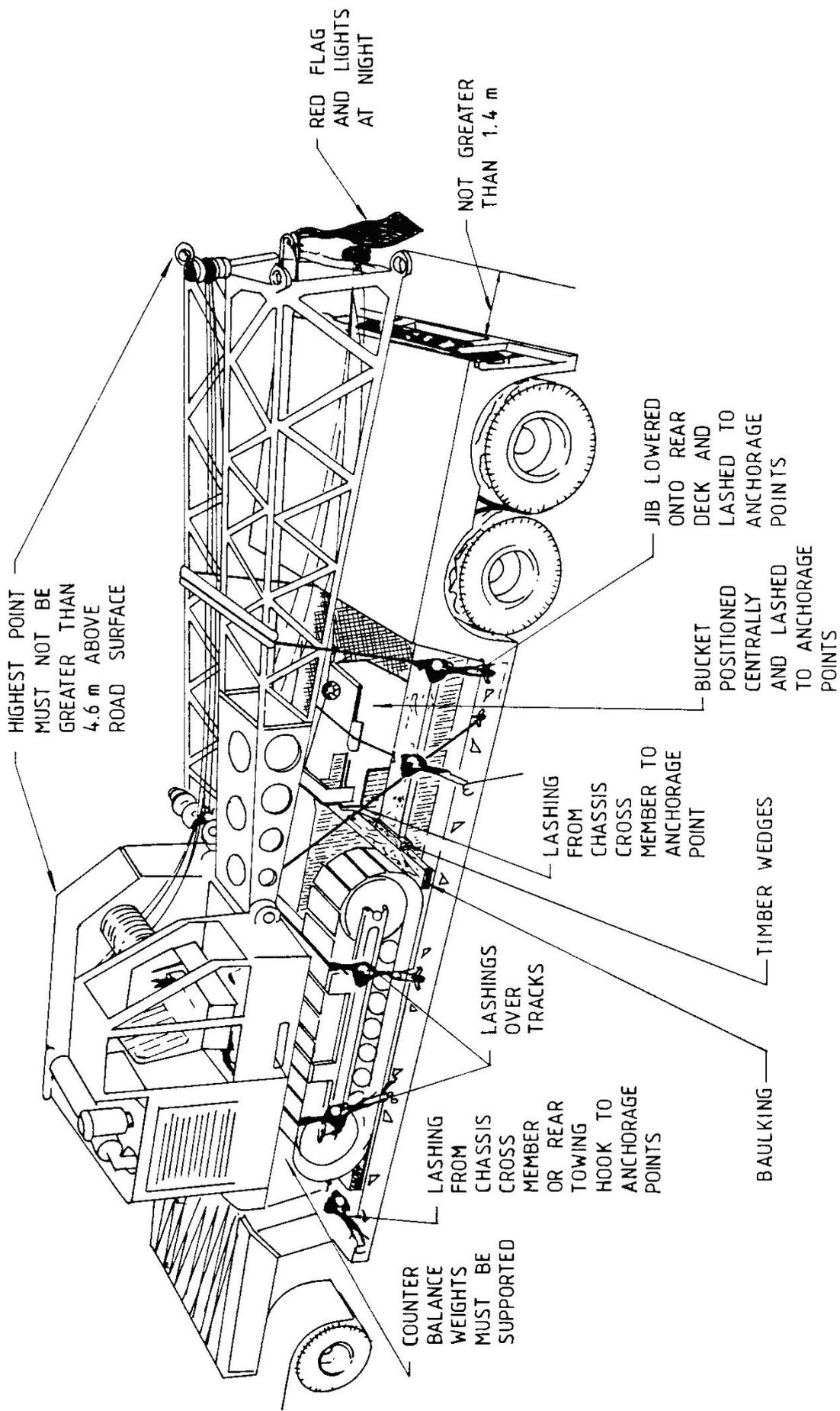
**TRANSPORTING A HYDRAULIC EXCAVATOR**

DIAGRAM 5.8.7



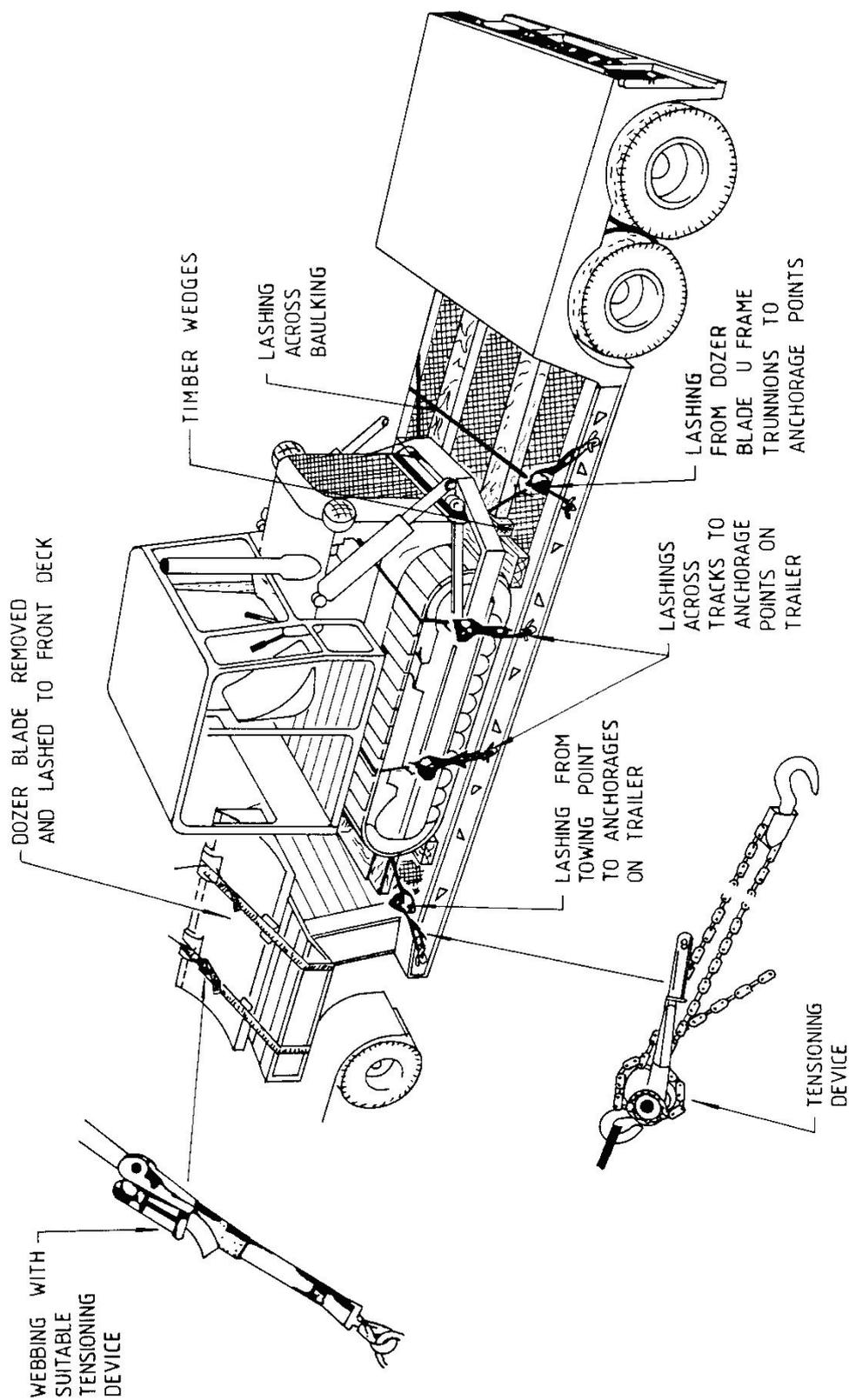
**TRANSPORTING A GRADER**

DIAGRAM 5.8.8



**TRANSPORTING A TRACKED ROPED EXCAVATOR**

DIAGRAM 5.8.9



**TRANSPORTING A TRACKED DOZER**

DIAGRAM 5.8.10

## 5.9 Long and wide loads

5.9.1 Regulation 55 of the Road Traffic (Traffic Control) Regulations generally permits the following: -

- (i) A load may extend up to 1.5 m in front of the vehicle.
- (ii) A load may extend up to 1.4 m over the rear of the vehicle.
- (iii) A load may extend sideways but the total width of the load and any part of the vehicle must not exceed 2.5 m.

5.9.2 Where a vehicle does overhang within the tolerances mentioned in paragraph 5.9.1, then in accordance with regulation 56 of the Road Traffic (Traffic Control) Regulations, in daylight, a red flag of an area not less than 1 square metre must be attached to the rear extremity of the load, and during the hours of darkness or in poor visibility conditions, a white light showing ahead must be displayed at each side of the front extremity of the load and a red light showing to the rear must be displayed at the rear extremity of the load (see Diagram 5.9.1).

5.9.3 If a load is required to be carried and it is likely to extend beyond the vehicle by more than any of the dimensions given in paragraph 5.9.1, then as a first step, it should be ascertained whether it could be more conveniently carried on a larger vehicle.

5.9.4 Where it is not possible to provide a larger vehicle, then a wide or long load permit in accordance with regulation 54 of the Road Traffic (Registration and Licensing of Vehicles) Regulations must be obtained before the load can be transported along any roads. In making the application, the applicant has to provide sufficient information to substantiate the proposal (vehicle to be used, routing, timing, escorts, police assistance required, etc.) including but not limiting to the following:-

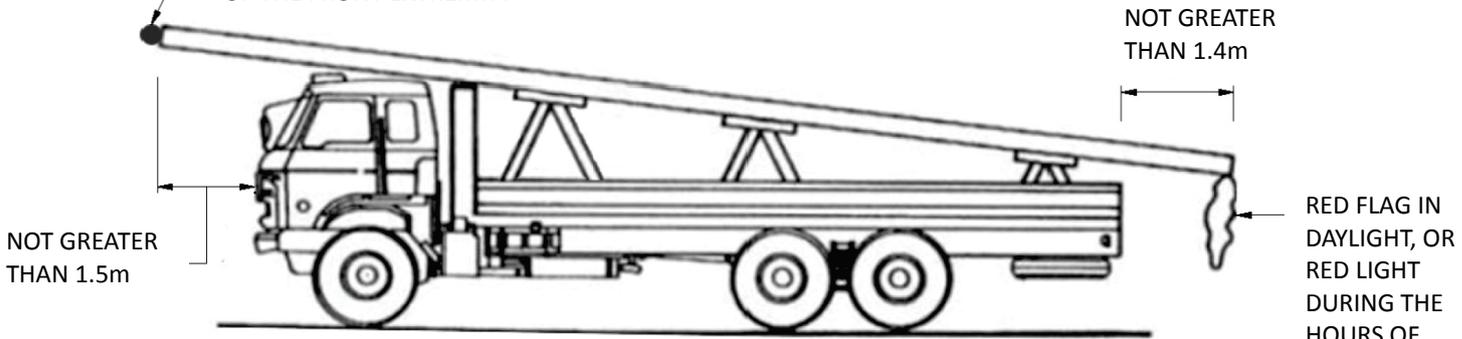
- (i) details of the load;
- (ii) justifications and details of the proposal;
- (iii) information showing that the proposal is feasible and would not cause adverse traffic impact or jeopardise safety of other road users; and

(iv) contingency plan, if necessary.

5.9.5 With regard to the issuing of a wide or long load permit, it should be noted that it will not be issued to any vehicle less than 9.1 m in length. Even with a wide or long load permit, the total height of the load with a medium/heavy goods vehicle must not exceed 4.6 m above the road surface.

5.9.6 One of the conditions of issuing a wide or long load permit is that the vehicle carrying the load must be escorted by a vehicle at the front and a vehicle at the rear each displaying a sign "LONG LOAD" or "WIDE LOAD" as the case may be. The escort vehicles must also be equipped with amber flashing lights which are switched on, as shown in Diagrams 5.9.2 and 5.9.3. Approval for the installation of amber flashing lights on a vehicle must however be obtained from the Transport Department.

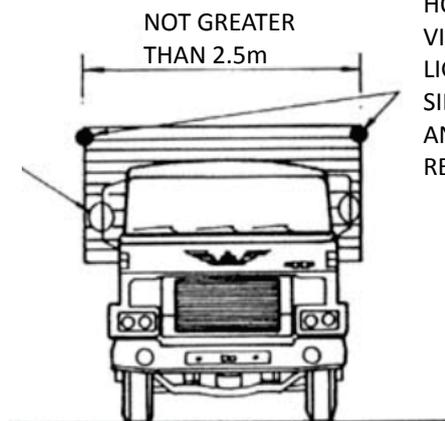
DURING THE HOURS OF DARKNESS OR IN POOR VISIBILITY CONDITIONS: A WHITE LIGHT SHOWING AHEAD AT EACH SIDE OF THE FRONT EXTREMITY



PERMITTED EXTENSION DIMENSIONS

IN DAYLIGHT: A RED FLAG AT THE REAR EXTREMITY; DURING THE HOURS OF DARKNESS OR IN POOR VISIBILITY CONDITIONS: A WHITE LIGHT SHOWING AHEAD AT EACH SIDE OF THE FRONT EXTREMITY, AND A RED LIGHT SHOWING TO THE REAR AT THE REAR EXTREMITY

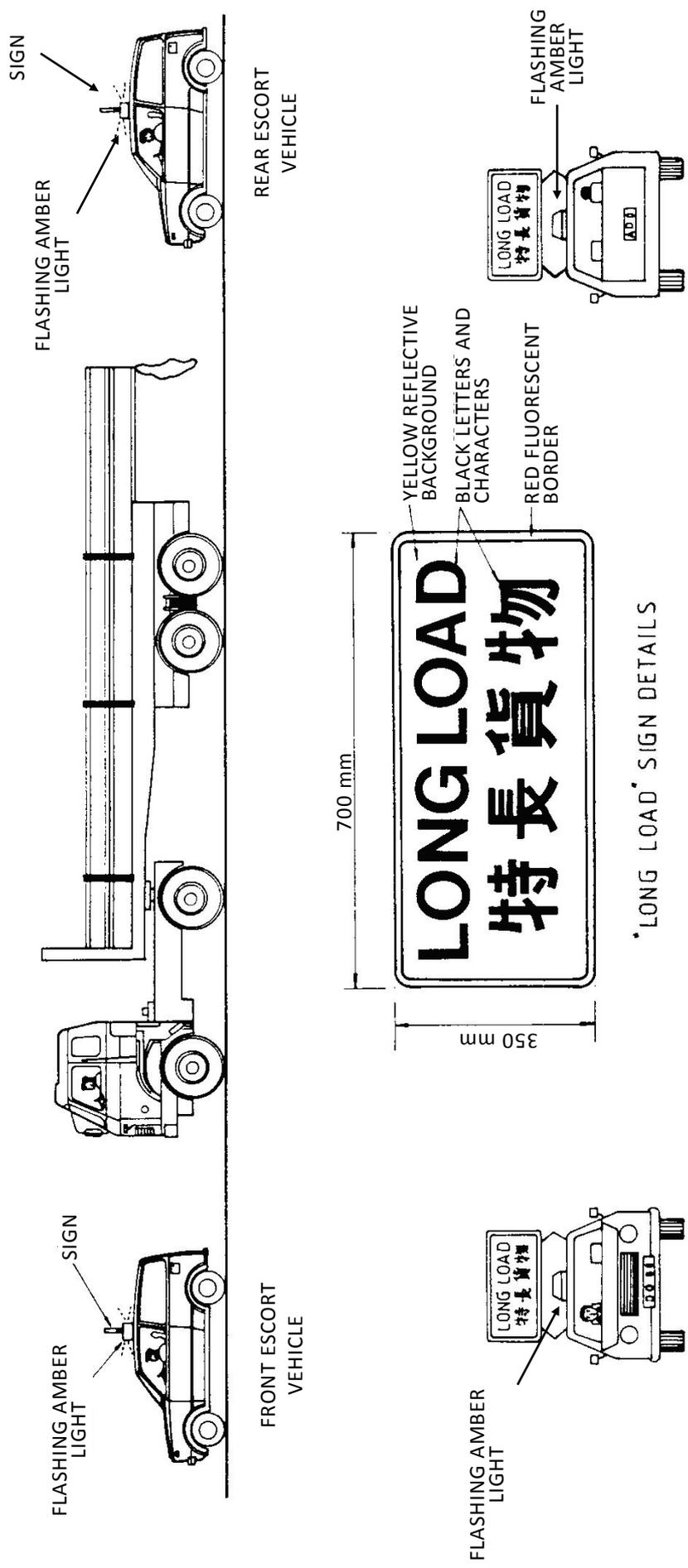
SIDE MIRRORS SHOULD BE EXTENDED SO THAT DRIVER CAN SEE THE TRAFFIC CONDITION BEHIND PROVIDING ANY EXTENSION IS IN ACCORDANCE WITH THE RELEVANT REGULATIONS



PERMITTED WIDTH DIMENSIONS

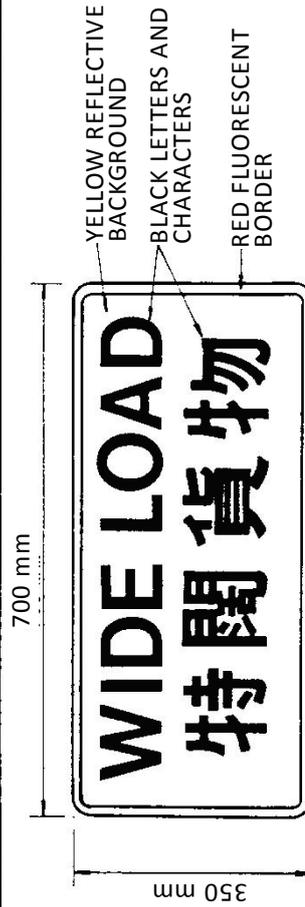
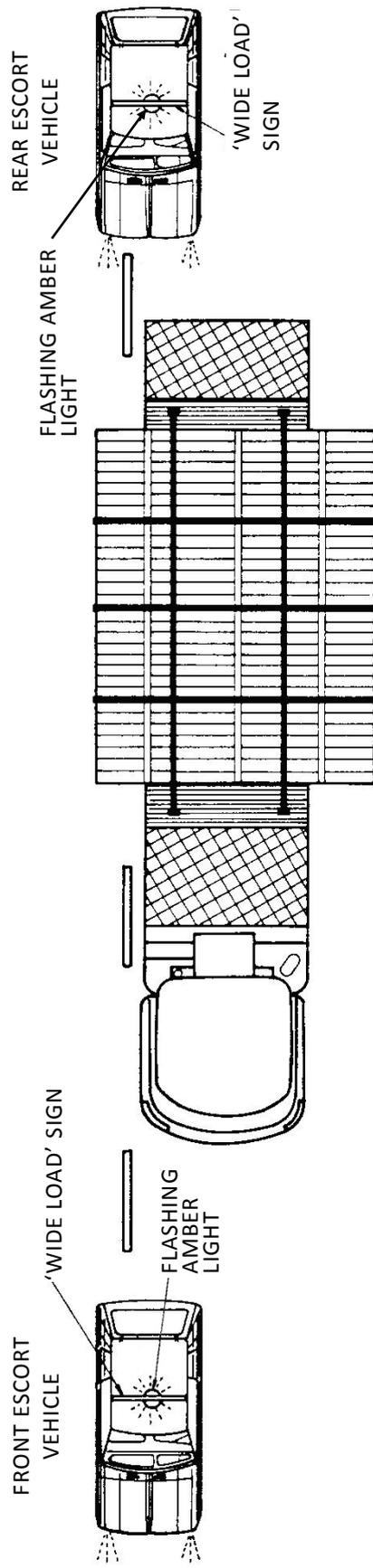
**PERMITTED WIDE AND LONG LOADS**

DIAGRAM 5.9.1



**TRANSPORTING LONG LOADS**

DIAGRAM 5.9.2



\* WIDE LOAD SIGN DETAILS

**TRANSPORTING WIDE LOADS**

DIAGRAM 5.9.3

5.9.7 The police must always be consulted as to the exact duties of the escort vehicles, and the police at times may require that they provide or assist in the escorting of wide or long loads. This is particularly relevant in respect of abnormally wide loads, as it may be necessary to direct other traffic and only the police have the authority to do this.

5.9.8 Although the advice of the police must be sought on each occasion as mentioned in paragraph 5.9.7, the following are general guidelines as to the duties of escort vehicles: -

(i) Long Loads

(a) Front Escort Vehicle

This vehicle should be driven in front of the vehicle being escorted. There should be sufficient space between the escort vehicle and the vehicle carrying the load so that another vehicle having overtaken the long load, if necessary, can move into the gap. The driver of the escort vehicle should give every opportunity for this other vehicle to overtake his/her vehicle, and should also try to avoid more than one vehicle being positioned between his/her vehicle and the long load at any time. When turning, the escort vehicle should follow an outer path similar to that which the long load would be expected to follow, in order to warn other road users of this.

(b) Rear Escort Vehicle

This vehicle should take up a position behind the long load, generally such that there is space for another vehicle to overtake and move in between the escort vehicle and the long load. The driver of the escort vehicle should generally give every opportunity for other vehicles to overtake but as with the front escort vehicle, should try and prevent the situation where there is more than one vehicle between his/her vehicle and the long load. On bends or when turning, the rear escort vehicle should follow an inner path similar to that which the long load would be expected to follow so that other vehicles or other road users are discouraged from moving into the likely swept path of the long load.

## (ii) Wide Loads

### (a) Front Escort Vehicle

On two-lane two-way carriageways, wide loads will generally occupy the full lane width and may at times extend into the adjacent lane. It is therefore very necessary that the front escort vehicle gives a clear indication to any oncoming traffic of the extent of the load. The front escort vehicle should therefore take up a position so that the offside is in line with the offside extremity of the wide load. If this does require driving partly on the opposing lane, then in daylight conditions, both the amber flashing light and the vehicle's headlights in a dipped position should be switched on. Ideally, a police motor cycle escort should be provided ahead of the main convoy directing opposing traffic over to their nearside. Wide loads which are likely to extend into the opposing traffic lane should never be transported at night unless police supervision can be provided.

On dual carriageway roads, the front escort vehicle is not essential and needs only to take up a normal driving position in front of the wide load.

### (b) Rear Escort Vehicle

On two-lane two-way carriageways, the purpose of the rear escort vehicle is to positively discourage other vehicles from overtaking and to act as a further reminder of the extent of the wide load. The rear escort vehicle should therefore take up a position so that its offside is in line with the offside extremity of the wide load, such that the vehicle can be seen by approaching drivers from behind, and generally prevent them from overtaking.

The driver of the rear escort vehicle or preferably a passenger should also observe the degree of the following traffic being held up. If this becomes excessive, then the passenger or the driver should communicate (by hands-free communication device or may be a pre-arranged signal) with the drivers of the wide load vehicle and the front escort vehicle of the need to find a convenient layby or other suitable place to stop to allow the following vehicles to pass.

On dual carriageway roads, the load should only be driven along the nearside lane, unless of course it needs to use an offside exit. The rear escort vehicle should be used to indicate the extent of the width of the load and should therefore take up a position so that its offside is in line with the offside extremity of the wide load. If a right-turn movement is required to be made, extreme caution is necessary and the manoeuvre should be started by signalling that the convoy is moving to the right well in advance of where this is to occur. Once the convoy has signalled its intention to move to the right, the rear escort vehicle should move across first providing a protected area for the wide load. If the lane into which the convoy has moved is the outside lane then the escort vehicle should position itself in line with the nearside of the load, if it is a middle lane that the escort vehicle should take up a position so that its offside is in line with the offside extremity of the wide load.

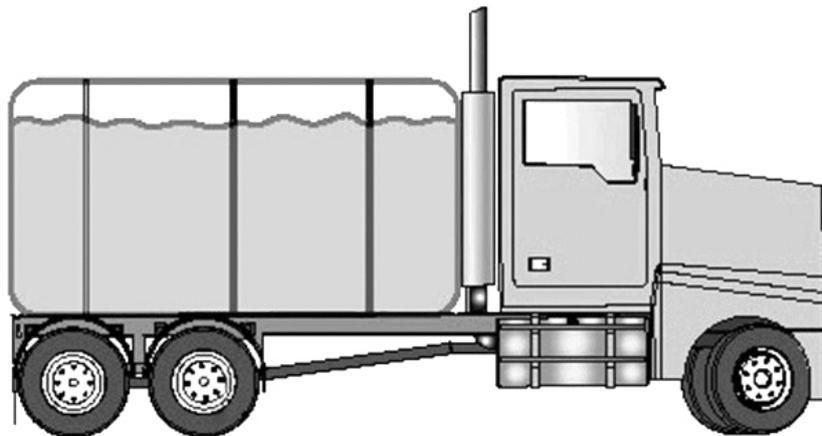
## 5.10 Liquid loads

5.10.1 Special attention is required when transporting liquid loads in large tanks or other such containers. Live fish tank lorries are a specific example of this type of transportation.

5.10.2 Spillage of liquids onto the road surface during transportation causes it to become slippery and result in a danger to other vehicles and pedestrians. Most liquids will cause the vehicle body to deteriorate and may also accelerate the deterioration of the road itself. To prevent such spillage, tanks should be completely sealed. If oxygenation of the water is required, this should be done through appropriate tubing sealed into and through the top of the tank.

5.10.3 If a large tank is only partly filled with liquid, the movement of the liquid during transportation may cause severe instability of the vehicle. To prevent this problem, the size of the tank should be matched closely to the volume of liquid to be transported, so that the tank can be filled with minimal remaining space and, as previously stated, sealed. Tankers should have baffles or compartments installed to minimise liquid slosh, which can otherwise affect the vehicle's stability as illustrated in Diagram 5.10.1.

5.10.4 Liquid loads such as sludge, liquid mud etc. must not be transported in open topped vehicles or skips as any braking or sudden movement of the vehicle would force the liquid load to be spilled out, causing hazard to other road users. These liquid loads must be stored in a sealed container of appropriate size or suitably solidified to reduce their mobility such as by adding cement before transport.



**LIQUID TANKER INSTALLED WITH BAFFLES OR COMPARTMENTS**

DIAGRAM 5.10.1

## 5.11 Towing vehicles

5.11.1 Vehicle towing is a specialist field and different vehicles vary in how they should best be towed. Anyone not fully experienced in vehicle towing is therefore advised to seek specialist advice before carrying out the operation. Some general advice is provided in the following paragraphs and in Diagram 5.11.1.

5.11.2 Before carrying out towing operation, operators must ensure that adequate safety precautions including the provision of hazard warning lights, flashing amber lights, traffic cones, etc. have been taken to warn other drivers particularly on high speed roads. If necessary or in doubt, assistance from the police should be sought to direct the traffic.

5.11.3 The vehicle being towed must be fitted with a proper 'ON TOW' sign (the letters and characters must be at least 150 mm high in white on a dark surface) to its rear. If a tow rope or chain is used, it must be clearly visible to other road users and its length is adjusted so that the distance between the two vehicles does not exceed 4.5 m. Other rules apply when using tow bars or towing vehicles capable of lifting vehicles. See regulations 48 and 49 of the Road Traffic (Traffic Control) Regulations for details of the relevant legislative requirements.

5.11.4 The recommended method of towing is to use a flat bed truck, large enough to accommodate the 'towed' vehicle in terms of both its size and weight. The parking brake of the 'towed' vehicle should be applied and it should be firmly secured to the 'towing' vehicle, to prevent any movement either laterally or longitudinally.

5.11.5 A lift type truck is not as good as a flat bed truck, but is also acceptable for towing providing the correct measures are taken. In all situations, the 'towed' vehicle must be secured to the lift with custom designed restraint equipment, to ensure that the 'towed' vehicle cannot break free of the 'towing' vehicle under any circumstances. Any of the 'towed' vehicle's wheels which are in contact with the carriageway must be in good condition. The size and weight of the lift type truck shall be so selected that no overloading would be caused to the rear axle(s) of the 'towing' vehicle when towing.

5.11.6 When using a lift type truck, it is also advisable to follow certain rules in order to prevent damage to the 'towed' vehicle:

(i) Front Wheel Drive Vehicles

- (a) Manual transmission: If towing from the front, the parking brake should be released to permit the rear wheels to rotate. If towing from the rear, a dolly is recommended under the front wheels. If a dolly is not available, the ignition key should be turned to the position which unlocks the steering and the transmission be put into neutral, to avoid damage to the steering lock.
- (b) Automatic transmission: If towing from the front, as per manual transmission. If towing from the rear, a dolly must be used under the front wheels or the automatic transmission will be damaged.

(ii) Rear Wheel Drive Vehicles

- (a) Manual transmission: If towing from the front, it is preferable to use a towing dolly under the rear wheels. If a towing dolly is not available, release the parking brake and put the transmission into neutral. If towing from the rear, place the ignition key in the position which releases the steering lock.
- (b) Automatic transmission: If towing from the front, a towing dolly must be used under the rear wheels. If towing from the rear, place the ignition key in the position which releases the steering lock.

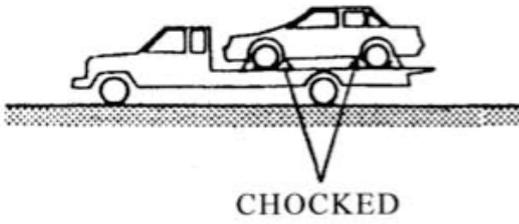
5.11.7 Sling type trucks, used for front or rear towing, may damage the 'towed' vehicle.

5.11.8 Drivers must be aware of the overall length of 'towing' and 'towed' vehicles and observe any length restrictions imposed on the towing route.

5.11.9 Towing operation should not be carried out at locations obstructing main traffic as far as practicable. If hard shoulder is provided along the road, the towing operation should be carried out within hard shoulder.

USING FLAT BED TRUCK  
IS THE BEST METHOD

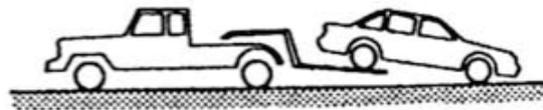
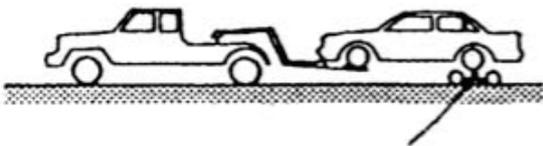
TOWING WITH SLING TYPE  
TRUCK MAY CAUSE BODY DAMAGE



FOR ALL VEHICLES

TOWING WITH LIFT TYPE TRUCK  
FROM FRONT

TOWING WITH LIFT TYPE TRUCK  
FROM REAR

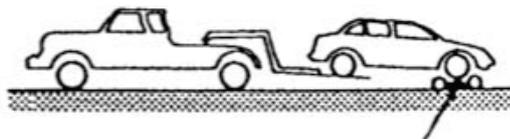
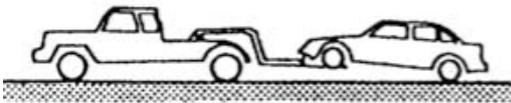


USE TOWING DOLLY

FOR REAR WHEEL DRIVE VEHICLE

TOWING WITH LIFT TYPE TRUCK  
FROM FRONT

TOWING WITH LIFT TYPE TRUCK  
FROM REAR



USE TOWING DOLLY

FOR FRONT WHEEL DRIVE VEHICLE

**ADVICE ON TOWING VEHICLES**

DIAGRAM 5.11.1

## 5.12 Safety of passengers

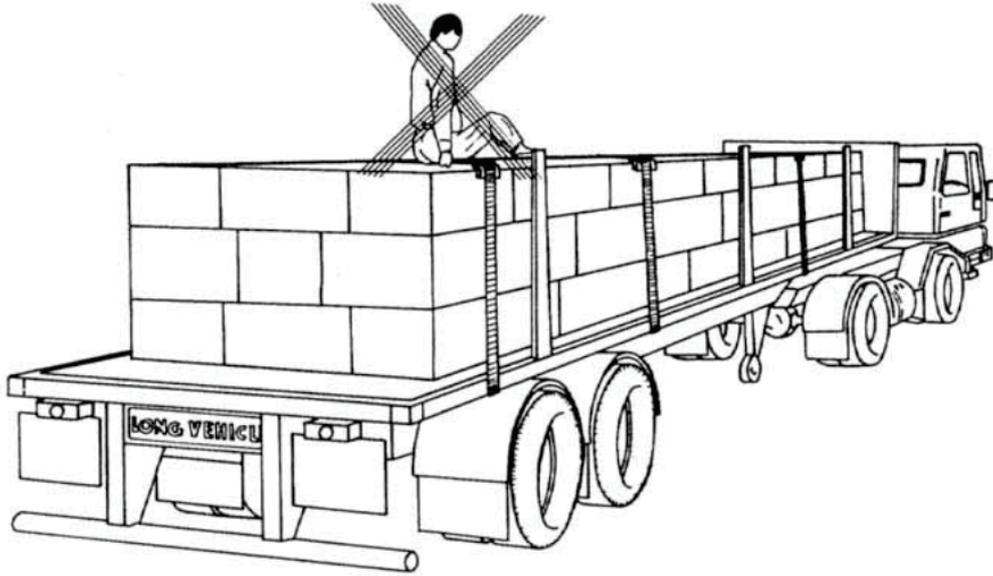
5.12.1 Regulation 53(2) of the Road Traffic (Traffic Control) Regulations states that no driver shall permit a passenger to travel in any vehicle unless the passenger sits in a properly constructed seat which is secured to the bodywork of the vehicle, unless the vehicle is used as a float in a parade and exempted under regulation 53A of the same Regulations.

5.12.2 Whilst the police have powers to prosecute drivers of vehicles whose passengers are at risk, owners and operators of goods vehicles should themselves actively discourage their employees performing any dangerous practices endangering passengers, and instruct passenger to sit at properly constructed seat (and wear seat belt if fitted). The passengers must not:

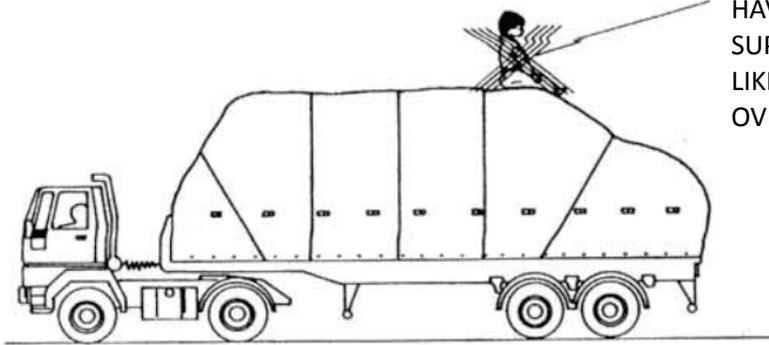
- (i) ride in the rear enclosed compartment as any movement of the goods could result in the passenger being crushed;
- (ii) ride on the loading platform of an open sided or partially sided vehicle as there is no means by which they can prevent themselves from being thrown off should any sudden movement of the vehicle occur;
- (iii) ride on top of the cab of any vehicle, as there is no support and they are in any event vulnerable to being hit by any overhead structures;
- (iv) ride on any part of any load being carried, as there is little or no support and should the load shift they may be crushed, additionally on a high load they will be extremely vulnerable to being hit by any structures over the road;
- (v) ride in the compartment of any plant or machinery being transported as in the event that the machinery should break loose, they could not easily escape, and may therefore suffer serious or fatal injury; and
- (vi) ride on any tailgate or sideboards, as these are not designed to carry loads, and they could easily be thrown off by any sudden movement of the vehicle.

These dangerous and illegal practices are illustrated in Diagrams 5.12.1 to 5.12.3.

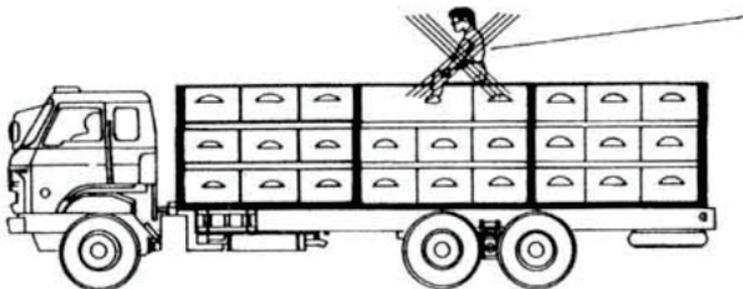
NO ADEQUATE MEANS OF RESTRAINT  
AND THE PASSENGER COULD BE KILLED BY  
OVERHEAD STRUCTURE



PASSENGER APART FROM  
HAVING NO MEANS OF  
SUPPORT IS EXTREMELY  
LIKELY TO BE STRUCK BY  
OVERHEAD STRUCTURE

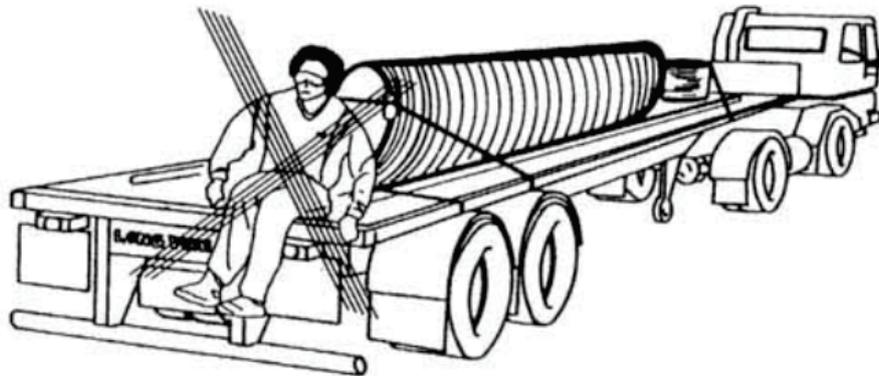
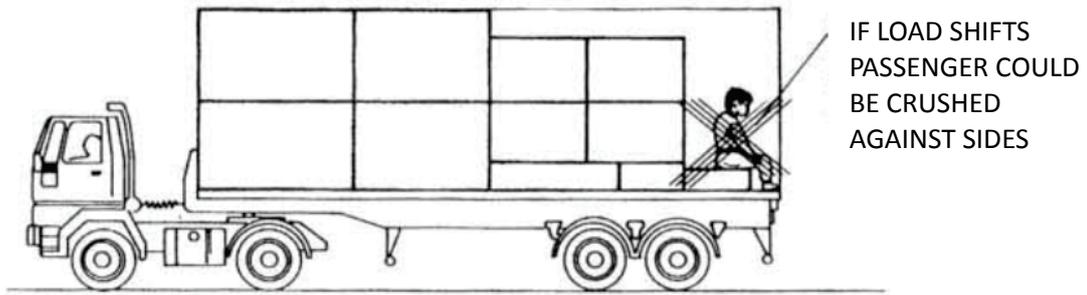


FOR ANY SUDDEN STOP,  
PASSENGER AND  
POSSIBLY WITH CRATES  
CAN BE THROWN OFF  
THE VEHICLE



## SAFETY OF PASSENGERS

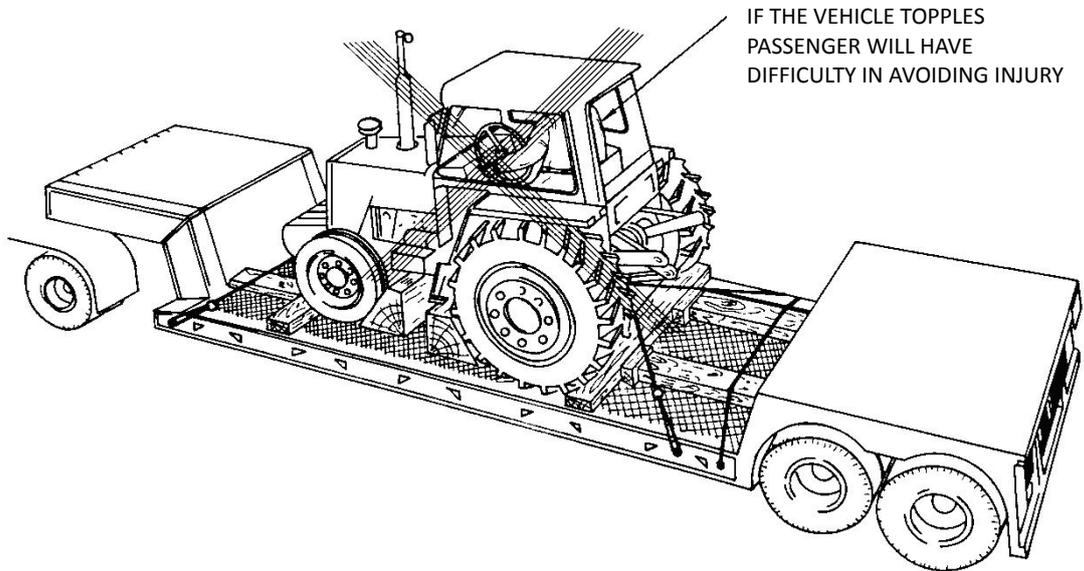
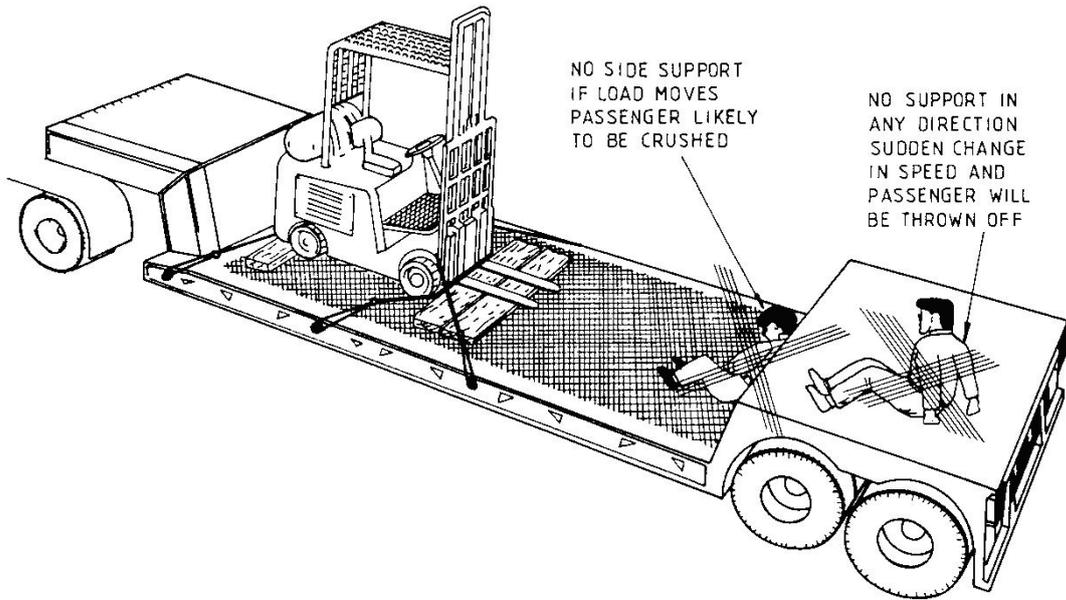
DIAGRAM 5.12.1



ANY SUDDEN MOVEMENT OF THE VEHICLE WILL THROW THE PASSENGER OFF THE VEHICLE.  
IF THE LOAD MOVES, IT COULD IMPALE THE PASSENGER.

## SAFETY OF PASSENGERS

DIAGRAM 5.12.2



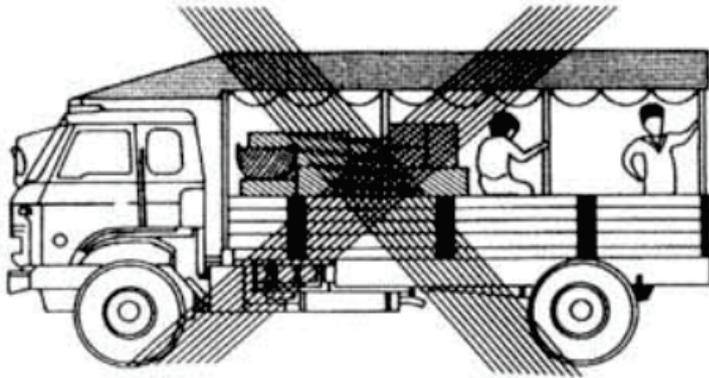
## SAFETY OF PASSENGERS

DIAGRAM 5.12.3

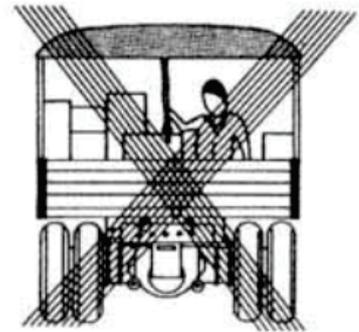
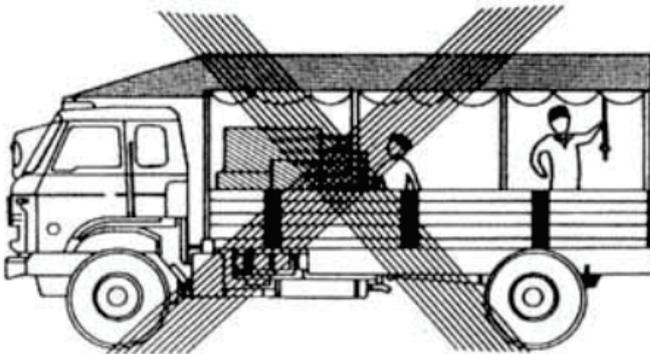
5.12.3 It is also a misconception that the side supports for roofs on partially enclosed vehicles will prevent a person from being thrown off the vehicle. Similarly, having a rope hanging from the roof for a person to hold onto, particularly when standing on the tailgate, will not prevent this either. Riding in the rear of a partially enclosed vehicle is just as unsafe as riding in the rear of any other goods vehicle. The provision of grab ropes still places a person at considerable risk as a sudden movement of the vehicle will cause the person, to lose balance and be thrown off from the vehicle easily (see Diagram 5.12.4).

5.12.4 In addition to ensuring that all passengers are properly seated, the driver must ensure that no passengers in excess of the number specified in the registration document of the vehicle or permitted by an excess passengers permit issued by the Transport Department are carried.

5.12.5 It is very relevant with regard to the safety of passengers to bear in mind that apart from any prosecution that may arise as a consequence of a passenger being injured by being thrown off a vehicle, the driver as well as the owner and operator of that vehicle could be liable for substantial claims for damages by the injured passenger.



SIDE SUPPORTS FOR ROOFS IN OPEN SIDED VEHICLES WILL NOT PREVENT A PERSON FROM BEING THROWN OFF THE VEHICLE, AND IT IS EQUALLY UNSAFE TO TRAVEL IN THE REAR OF THESE VEHICLES AS ANY OTHER.



SOME OPERATORS OF GOODS VEHICLE TIE ROPES FROM THE ROOF FOR PASSENGERS TO HOLD ONTO, BUT IN SPITE OF WHAT MAY BE THOUGHT THIS DOES NOT MAKE IT ANY SAFER TO TRAVEL IN THE REAR OF A VEHICLE AS ANY SUDDEN ACCELERATION OR DECELERATION CAN STILL CAUSE THE PERSON TO BE THROWN OFF THE VEHICLE.

### **SAFETY OF PASSENGERS**

DIAGRAM 5.12.4

## 5.13 Maintenance

5.13.1 Regular and proper maintenance of all goods vehicles must be undertaken to ensure that these vehicles operate efficiently and safely.

5.13.2 Any defect that occurs to any part of the vehicle including the engine, brakes, tyres, anchorage points, and locking devices, should immediately be made good. It is also relevant, as indicated in Diagram 5.13.1, that any ancillary equipment fitted to the vehicle should be regularly inspected and tested. Of particular concern in respect of this ancillary equipment is the lifting apparatus frequently found attached to goods vehicles for the loading and unloading of goods. Any defects in this equipment could cause serious injury to operators and of course also to any passers-by. This equipment should be regularly inspected for signs of any wear or damage and thoroughly tested in accordance with the manufacturer's advice.

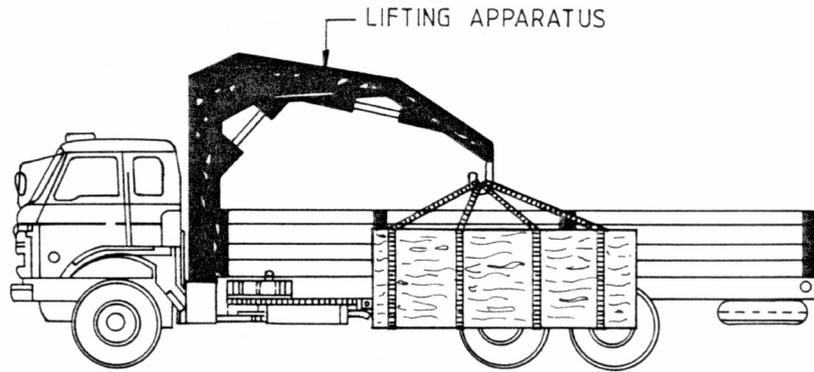
5.13.3 All restraint system should be regularly inspected, if wear or damage are found, the system should be immediately replaced. Particular attention should be given to any webbing and ropes to ensure there is no visible deterioration, such as fraying, cuts or stretching, due to frequent use. Wire ropes should be free from rust and not have any broken wires or strands.

5.13.4 Because any hand signals may be obscured by the load being carried, drivers should regularly check that the direction indicators on their vehicles function properly.

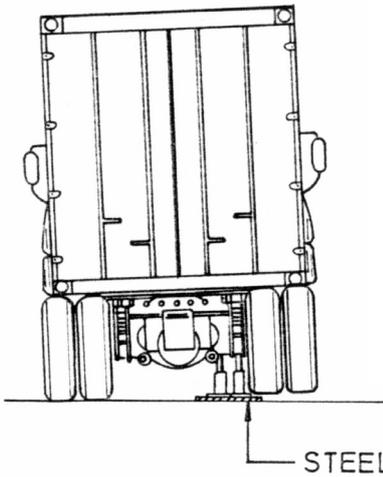
5.13.5 In respect of ensuring that vehicles are properly maintained and in good working condition, it is relevant to note that under regulation 5 of the Road Traffic (Construction and Maintenance of Vehicles) Regulations, an offence may be committed if they are not.

5.13.6 On the matter of maintenance, two items, both illustrated in Diagram 5.13.1, are particularly relevant and although not entirely related to the loading of goods on vehicles, do have an effect on the efficient movement of such goods. The first item concerns oil spillage and the detrimental effect this has on bituminous road surfaces. Whilst much of the problem is caused by leakage of engine oil which better maintenance would avoid, some is also caused by fuel spillage because either filler cap is not properly fitted or proper filler cap is not used. Greater attention to ensuring that filler cap is firmly fitted will not only result in less road maintenance being necessary but also decrease the operating costs of the vehicle. The second item concerns the jacking up of vehicle for tyre repair, and the damage that occurs to the road

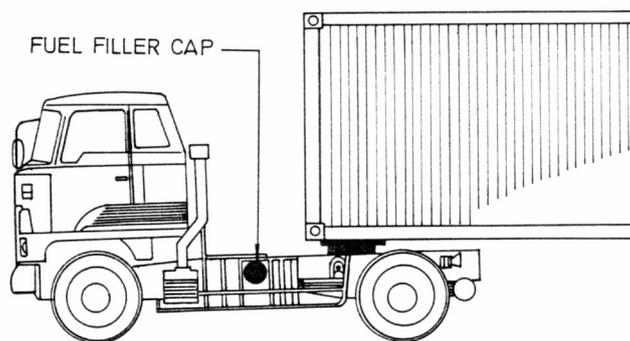
surface when the jack is applied directly to this. Apart from the fact of the damage, the sudden sinking of the jack into the road surface particularly bituminous ones which could occur under certain circumstances, could cause the load to shift, which in turn could result in the vehicle being turned over. These problems can be avoided if a suitable metal plate is placed between the jack and the road surface to spread the load and the vehicle is then jacked up on this.



ALL LIFTING APPARATUS MUST BE REGULARLY INSPECTED AND TESTED OTHERWISE INJURY COULD OCCUR TO PERSONS USING OR IN THE VICINITY OF THE APPARATUS WHEN IN USE.



WHEN JACKING UP A VEHICLE, SUPPORT THE JACK ON A STEEL PLATE TO AVOID DAMAGE TO THE CARRIAGEWAY.



ENSURE THAT THE FUEL FILLER CAP IS ALWAYS FIRMLY ATTACHED AND TIGHTENED SO THAT FUEL CANNOT SPILL.

### **ADVICE ON MAINTENANCE**

DIAGRAM 5.13.1

## 5.14 Location of loading and unloading activities

5.14.1 Because of the disruption and danger that can be caused to other road users if this is not followed, as far as reasonably possible all loading and unloading activities should be carried out off-street and preferably in loading bays specially provided for this purpose.

5.14.2 It is however accepted that many premises either do not have loading or unloading facilities, or those that are provided are inadequate, and therefore in these situations loading or unloading has to take place at the kerb side.

5.14.3 Parking on a gradient to load or unload goods should be avoided wherever possible, and instead vehicles should be parked on adjacent roads where the gradient is relatively flat. Engine should be switched off and the parking brake should be fully engaged, the goods can then be trolleyed or carried to or from this location. If the vehicle is fitted with equipment for lifting heavy loads, it must be ensured that prior to lifting, the vehicle is parked on a firm and level road and all the outriggers or stabilisers are fully extended and locked, and are in full contact with the ground surface. Where necessary, suitable outrigger pads or steel plates of adequate strength should be used to spread the load over the ground surface.

5.14.4 When parking on a gradient to load or unload goods is unavoidable, the driver, vehicle operators and those in control of loading or unloading operations should assess the risks involved in all their activities to ensure that the goods could be practically and safely loaded or unloaded taking into account the stability of the goods and working of operators on gradient. Also, the precautions regard to the following points which are illustrated in Diagram 5.14.1 should be followed:-

- (i) The driver should ensure when stopped that the engine is turned off and the parking brake is fully engaged. Also, the first gear (for uphill) or reverse gear (for downhill) should also be engaged;
- (ii) The front wheels of the vehicle should be turned towards the kerb (when facing downhill) or away from the kerb (when facing uphill);
- (iii) Suitable wooden or steel wheel chocks should be placed beneath the rear wheels before any loading or unloading takes place as a further method of ensuring the vehicle does not move. It is essential where this is done that the driver remembers to recover the chocks before

moving off. Bricks, pieces of concrete, or other available debris cannot be used as chocks;

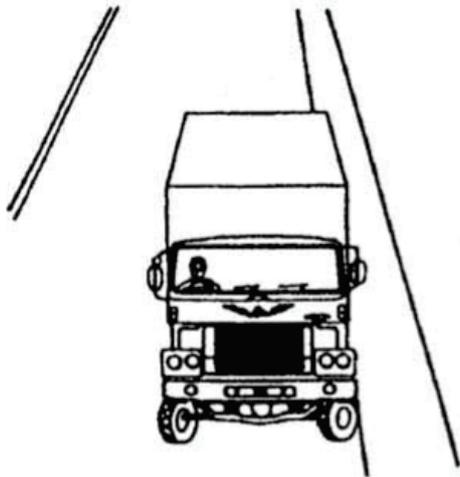
- (iv) The driver should remain in the cab at the wheel of the vehicle. If it is necessary to leave the cab, he/she must ensure that (i) and (ii) above are done and should always be in close attendance to the vehicle;
- (v) Before opening any rear door on an uphill gradient, beware any unsecured goods or items which may shift on the gradient falling onto the goods operators;
- (vi) The use of any jibs or cranes attached to the vehicle for loading or unloading should be avoided whilst the vehicle is parked on a hill as this may adversely affect the stability of the vehicle; and
- (vii) Vehicle equipped with roller loading device or tail lift should never be loaded or unloaded on gradients.

5.14.5 A particular problem can occur when loading or unloading engineering plant from a tractor/trailer combination parked on a gradient as illustrated in Diagram 5.14.2. In this situation, if only the tractor handbrake is applied then when the plant moves across the rear wheels of the trailer, the rear most axle becomes a pivot lifting the front of the trailer and the rear of the tractor unit. The result of this is that braking is then totally reliant on that applied to the front wheels, which in many cases means no brake at all and therefore the vehicle runs away. Even when there is a brake, it is not generally sufficient to prevent the vehicle being bounced down the gradient. To avoid this occurring, the plant should wherever possible not be loaded or unloaded on a gradient. However where it is necessary to load or unload a plant on a gradient, the following precautions should be taken: -

- (i) The driver should ensure when stopped that the engine is turned off and the parking brake of the tractor is fully engaged. Also, the first gear (for uphill) or reverse gear (for downhill) should be engaged.
- (ii) The front wheels of the tractor should be turned towards the kerb (when facing downhill) or away from the kerb (when facing uphill).
- (iii) Activate the trailer parking brakes.
- (iv) Disconnect temporarily airlines between tractor and trailer.

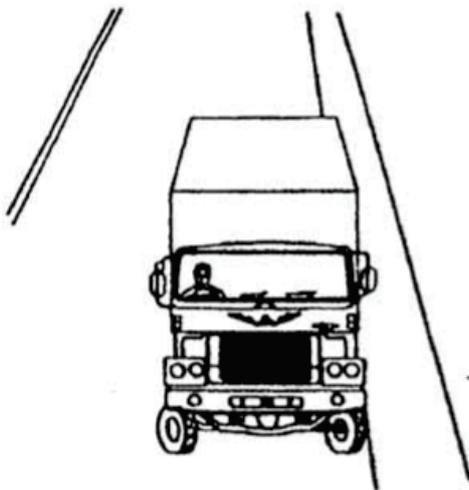
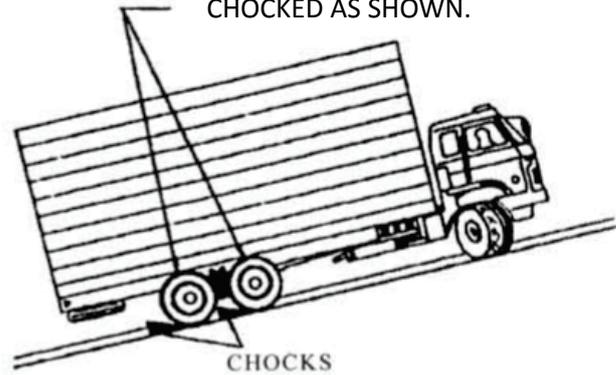
- (v) Chock wheels at the front axle of and the rearmost axle of the trailer.
- (vi) Support rearmost of trailer by timber or jacks (e.g. stabilizers), or as an alternative, support foremost of ramp firmly by timber.

NOTE: LOADING OR UNLOADING ON GRADIENTS SHOULD BE AVOIDED. WHERE THIS IS NOT POSSIBLE: ON PARKING, THE FRONT WHEELS SHOULD BE TURNED TOWARDS THE KERB (FACING DOWNHILL) OR AWAY FROM THE KERB (FACING UPHILL). PARKING BRAKE AND FIRST GEAR (FACING UPFILL)/REVERSE GEAR (FACING DOWNHILL)/PARK MODE GEAR (AUTOMATIC) SHOULD ALSO BE FULLY ENGAGED.



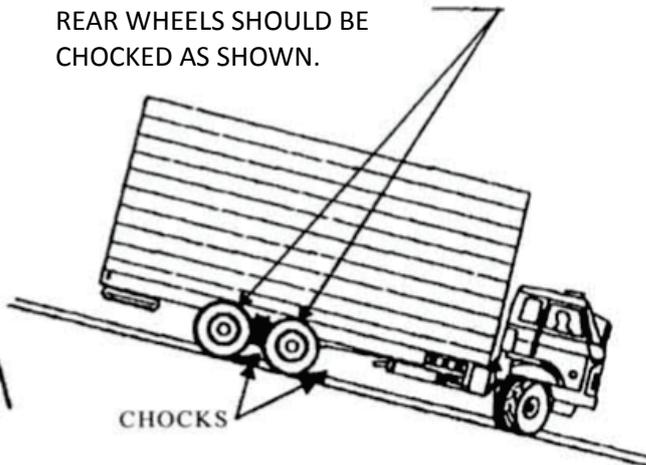
FACING UPHILL

WHEN FACING UPHILL, REAR WHEELS SHOULD BE CHOCKED AS SHOWN.



FACING DOWNHILL

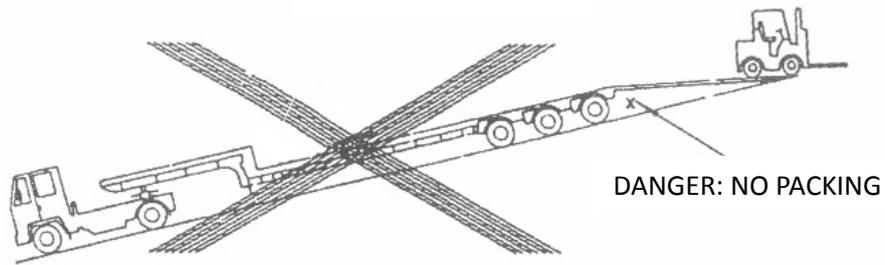
WHEN FACING DOWNHILL, REAR WHEELS SHOULD BE CHOCKED AS SHOWN.



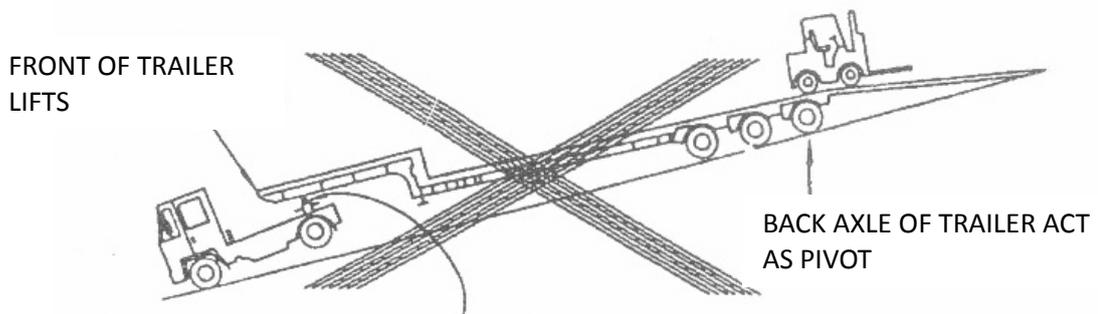
WHEREVER POSSIBLE THE DRIVER SHOULD REMAIN AT THE CONTROLS.

**LOADING / UNLOADING ON GRADIENTS**

NOT ACCEPTABLE

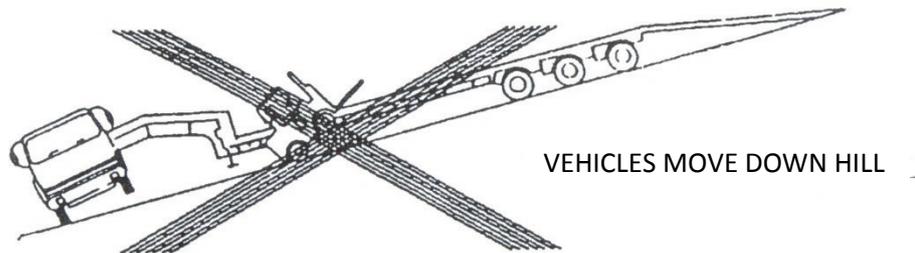


NOT ACCEPTABLE



THE KING PIN LIFTS THE BACK OF THE TRACTOR AND WITHOUT GROUND CONTACT THERE IS NO BRAKE EFFECT BY THEIR REAR WHEELS

NOT ACCEPTABLE

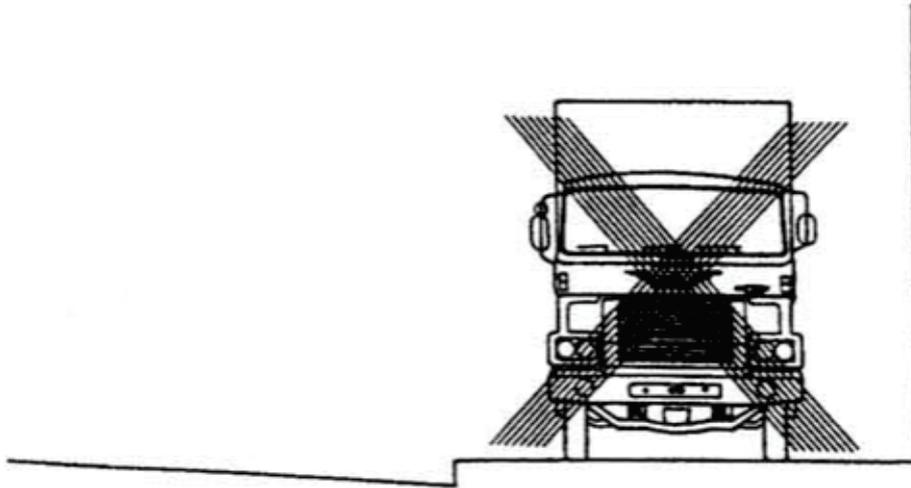


TO AVOID THE ABOVE SEE RECOMMENDATIONS IN PARAGRAPH 5.14.5

## LOADING / UNLOADING PLANT ON GRADIENTS

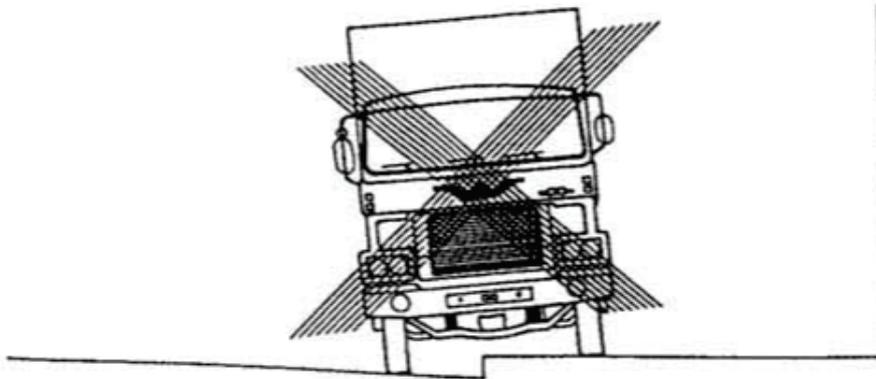
DIAGRAM 5.14.2

**NOT ACCEPTABLE**



GOODS VEHICLES MUST NOT BE PARKED ON FOOTWAYS. IT OBSTRUCTS PEDESTRIANS AND CAUSES DAMAGE TO THE FOOTWAY AND UTILITY PIPES LOCATED BENEATH THE FOOTWAY.

**NOT ACCEPTABLE**



PARKING ON BOTH THE FOOTWAY AND CARRIAGEWAY IS EQUALLY AS BAD AS DAMAGE TO THE FOOTWAY STILL OCCURS AND PEDESTRIANS MAY STILL BE OBSTRUCTED.

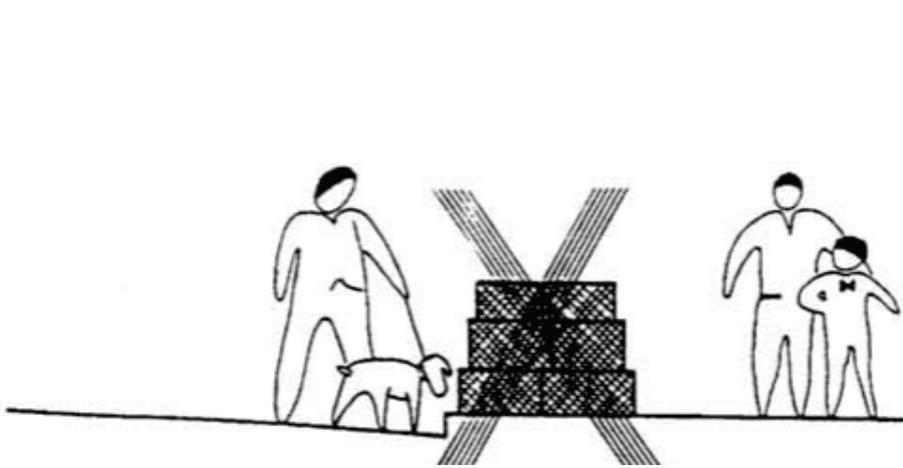
**ILLEGAL PARKING ON FOOTWAYS**

DIAGRAM 5.14.3

5.14.6 As illustrated in Diagram 5.14.3, wherever it is necessary for a vehicle to be loaded or unloaded on the street, the vehicle should not be driven onto the footway in order to carry this out. Not only does this create an obstruction to pedestrians, causing them perhaps to have to walk on the carriageway to their obvious danger, but also it results in damage to the footway and may damage utilities located below the footway. Additionally the oil and debris that are often dropped from vehicles leaves the footway in a very unsuitable condition for pedestrians to use.

5.14.7 As indicated in Diagram 5.14.4, where there is no convenient off-street area and therefore loading or unloading has to take place adjacent to a footway, the footway should not be regarded as a convenient storage space where goods can be left either awaiting to be loaded onto the vehicle or to be delivered to adjacent premises. Leaving goods on the footway unnecessarily obstruct the movements of pedestrians and may even cause a danger to them if the goods are not properly stacked. Loads should be loaded directly onto the vehicle, or unloaded from the vehicle and delivered directly to the premises they are intended for.

**NOT ACCEPTABLE**



FOOTWAY SHOULD NOT BE USED AS A STORAGE SPACE FOR GOODS. IT OBSTRUCTS PEDESTRIANS AND MAY CAUSE THEM TO WALK ON THE CARRIAGEWAY TO THEIR OBVIOUS DANGER.

**ROADSIDE LOADING / UNLOADING**

DIAGRAM 5.14.4

**Further reference materials**

The information provided in this Section is for reference and information only, and does not form part of the Code of Practice for the Loading of Vehicles.

**Transport Department**

No.	<u>Subjects</u>	<u>Webpage</u>	<u>QR Code</u>
1	Code of Practice for the Loading of Vehicles	Transport Department Homepage -> Publications and Press Releases -> Publication -> Free Publications -> Code of Practice	
2	Tips for Improving the Use of Vehicle Mounted Tail Lift	Transport Department Homepage -> Public Services -> Vehicle Type Approval and Examination -> Guidelines and Useful Information (4.11 & 4.12)	
3	A Guide to Install the Additional Lighting and Retro-reflective Aids on Vehicles Equipped with Tail Lift		
4	A Guide for the Installation of Devices to Assist Reversing of Goods Vehicles	Transport Department Homepage -> Publications and Press Releases -> Publication -> Leaflet/Pamphlet	
5	Guidelines for Mounting and Placing of Skips	Transport Department Homepage -> Publications and Press Releases -> Publication -> Leaflet/Pamphlet	
6	Tips on Good Maintenance of Vehicle	Transport Department Homepage -> Public Services -> Vehicle Type Approval and Examination -> Guidelines and Useful Information (4.10)	

7	Road Users' Code	Transport Department Homepage -> Transport in Hong Kong -> Road Safety	
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## Labour Department

No.	<u>Subjects</u>	<u>Webpage</u>	<u>QR Code</u>
1	Guidance Notes on Prevention of Trapping Hazard of Tail Lifts	Labour Department Homepage -> Publications -> Occupational Safety -> Part C: Guidance Notes	
2	Code of Practice for Safe Use of Mobile Cranes	Labour Department Homepage -> Publications -> Occupational Safety -> Part B: Code of Practice	