TRANSPORTING CONCRETE MASONRY SAFELY

BACKGROUND

Think Brick Australia (TBA) represents the clay brick and paver manufacturers of Australia. Safety is a major issue and concern for our members.

Safe loading is vitally important. Loaded vehicles must be properly restrained to ensure the safety of the driver and other road users. Additionally, care and attention must be employed during the loading and unloading process, to avoid collisions with pedestrians and prevent loads from falling onto them or other workers.

This factsheet aims to provide a general guidance for masonry transportation, restraint and pick-up management consistent with various regulatory requirements including the recently released third edition of the National Transport Commission's **Load Restraint Guide (LRG)** and the Think Brick Australia industry Codes of Conduct [1+3]

KEY CONSIDERATIONS FOR TRANSPORT

Planning the load

- Understand your load.
- Choose a suitable vehicle for your load type and size.
- Use a restraint system that is suitable for your load.
- Position your load to maintain vehicle stability, steering and braking.
- Check that your vehicle and restraint equipment are in good working condition and strong enough to restrain your load.

Loading (and unloading) the vehicle

- Make sure your load is stabilised.
- Make sure you understand and use safe work practices when loading and unloading a vehicle.
- Make sure you use enough restraints to keep you and others safe. Drive accordingly to the load and driving conditions.
- Allow for changes in vehicle stability, steering and braking when driving a loaded vehicle.
- Check the load and its restraints regularly during your journey.

(***Source:*** *National Transport Commission Australia Load Restraint Guide 2018).*

BLOCKS PICK-UPS MANAGEMENT

General Checklist [4]

- Is there an authorised representative to accept the delivery?
- Is there safe access to/ from the site
- Have onsite traffic management measures been executed?
- Are there obstructions in the pick-up/ delivery area?
- Is there loading/unloading equipment available?
- Is reversing required?
- Are there onsite systems to control/ mitigate falls?
- Is there parking for pick-up/delivery vehicles on or close to the site?
- Are there any other hazards?

Pedestrian Safety [4+5]

To avoid collisions with pedestrians and loads falling onto them, ensure that pedestrians are separated from the loading/ unloading area by:

- Designing the layout of the loading/ unloading area to eliminate interactions between pedestrians and vehicles;
- Providing enough space to operate mobile plants, such as forklifts and trolleys;
- Providing high-impact safety barriers and containment fences where possible;
- Implementing and enforcing pedestrian and forklift exclusion zones or pedestrian safety zones;
- Implementing and enforcing speed limits for powered load shifting equipment.

The loading docks should [4+5]

- Be designed to accept vehicles of varying dimensions, and provide easy access and egress;
- Have fall prevention devices;
- Be well lit and free from clutter.

Skills and knowledge [6]

Ensure that the workers in the workplace are skilled and experienced. e.g. Ensure forklift operators are licensed and supervised appropriately. Safety hazard perception should be done and PPE (personal protective equipment) should be worn.

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IMPLICATIONS TO THE INDUSTRY (FROM THE UPDATES IN LOAD RESTRAINT GUIDE 2018)

A major change found in LRG 2018 is an additional section containing specific guidance regarding restraining bricks or blocks. The updated guide helps clarify previous ambiguity, provides additional illustrations and an easier load restraint calculation method with more examples. The changes allow masonry packs to be regarded as a unit, with restraint of unblocked packs and diverse restraint systems allowable for use after certification.

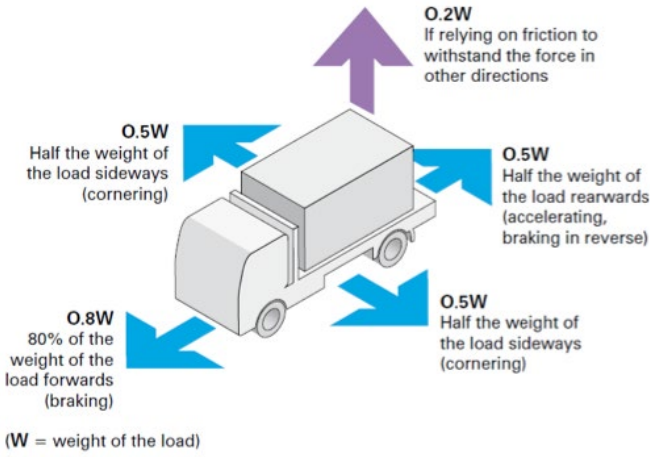


Figure 1: Performance standards (Load Restraint Guide - 2018: Page 8)

1. **New section for masonry** (Page 93 LRG 2018) – an additional guideline for blocks' load restraint in transportation:

   - **Protective corners** are required to restrict block units from being dislodged and to prevent strap damage.

   - **Unitisation** (Page 251 LRG 2018):
     Blocks can be unitised with or without pallets. Unitising methods include strapping, stretch wrapping or a combination of the two.

     Unitisation can be easily achieved using the method outlined in the TBA Code of Conduct manual [3]: unitised form can be achieved with two polyester straps per leaf plus a 'belly' (90 degree) strap, or alternatively methods that are able to meet the forces indicated by the **Performance Standards** (Page 241 LRG 2018) so that no block or pavement unit fall out is considered compliant.

2. **Restraint certification** (Page 236 LRG 2018)

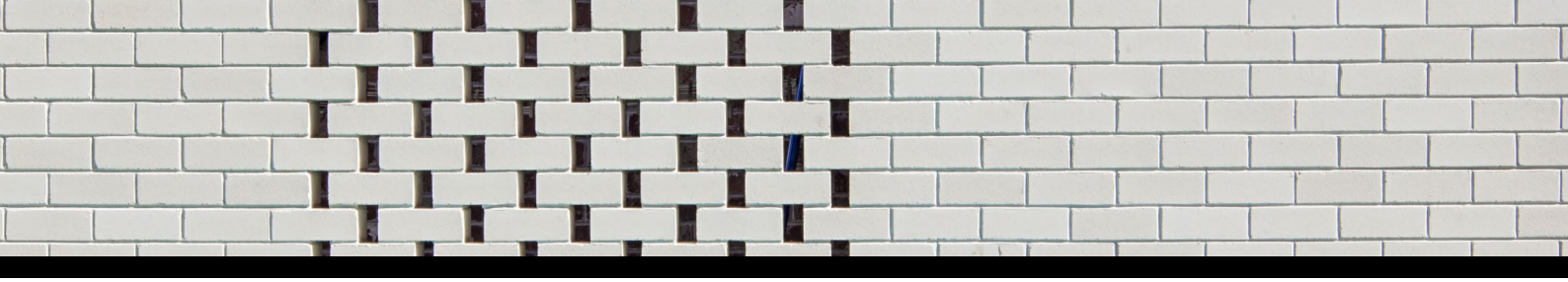
   Alternative load restraint systems are now allowed with certification from a Charted Professional Engineer or experienced expert, providing assurance that the system meets the Performance Standards.

The **Performance Standards** set out the minimum amount of force a restraint system must be able to withstand in each direction. For heavy vehicles, these forces are shown in figure 1.

3. **Simplified lashing calculation**

   The calculation for number of tie-down lashing is simplified and added provisions for unblocked loads (see calculation examples on Page 207 of Load Restraint Guide 2018).

   However, uncertainty remains around strap requirements as the table of typical friction levels has not been updated to include blocks and pavers. To adopt these simplified calculations for any clay or concrete product, the friction level between the product and container's surfaces needs to be suggested by manufacturers.



LOAD RESTRAINT OPTIONS

Loads can be restrained by two basic methods: tie-down or direct restraint.

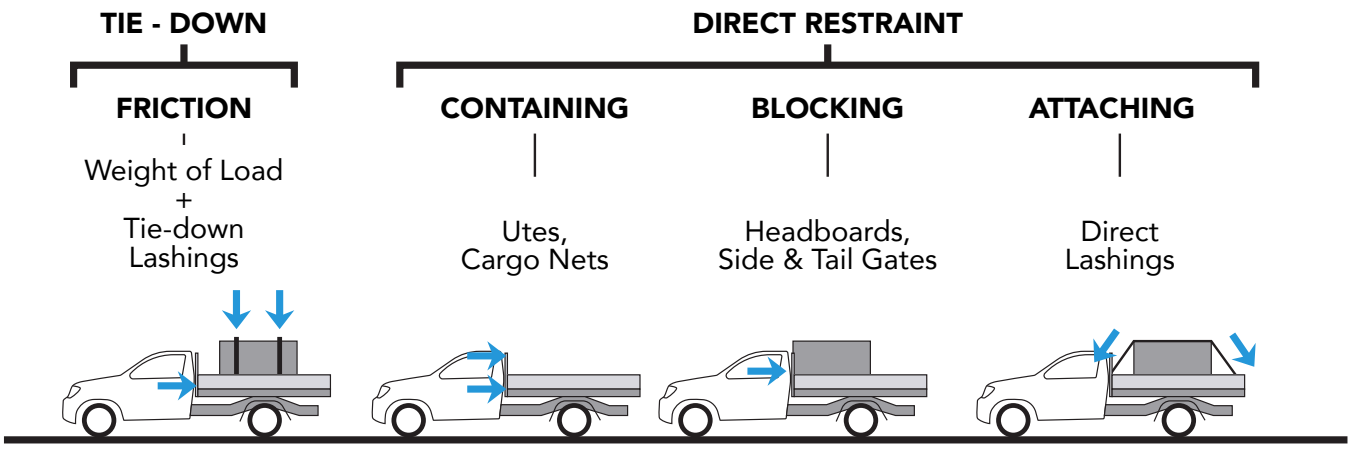
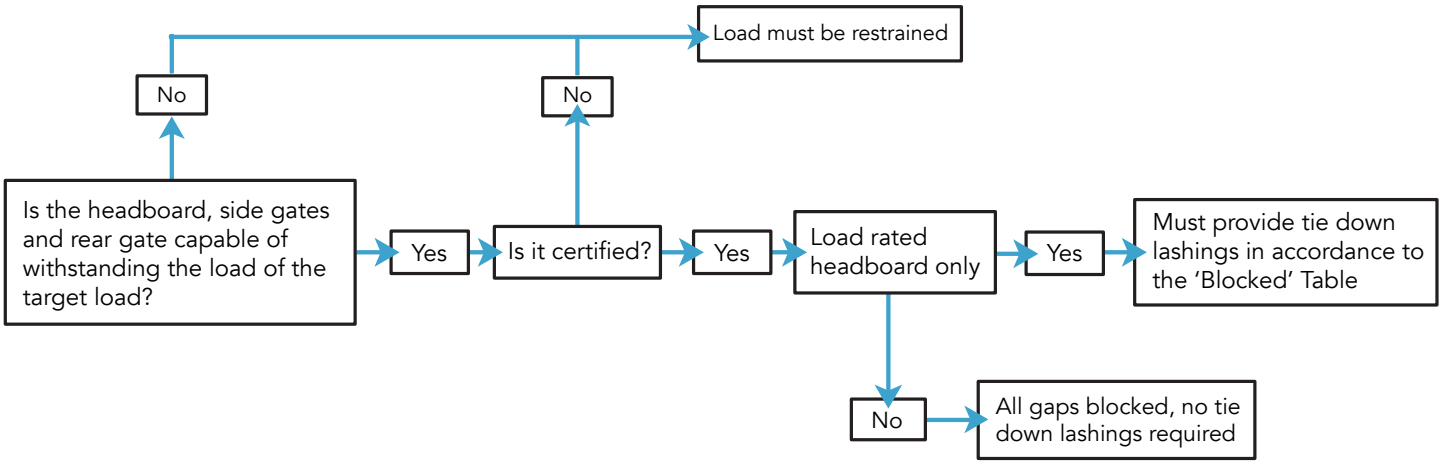


Figure 3: Tie-down and Direct Restraint
(Load Restraint Guide - 2018: Page 13)

The following diagram shows a flowchart for you to choose the restraint method that is most suitable given your vehicle type.



*A load is not regarded as blocked if it is greater than 200 mm away from the headboard or the cumulative amount of gaps along the trailer (front to rear) is greater than 200 mm.

Option 1 – Contained loads:

Masonry packs can be transported without tie-downs, if restrained properly by direct restraint methods.

Direct restraint is a method to prevent load dislodging from a rated vehicle structure, by containing, blocking and attaching methods. Contained loads cannot be unblocked.

- **Blocking the loads:**
  For contained loads, packed loads should be blocked forwards, rearwards and sideways with no gaps, by rated headboard or gates. Damaged blocking devices should not be used.Loads can be blocked with the assistance of empty pallets or stillages.

- **Contained loads:**
  Contained loads are defined as loads transported in containers, tippers, drop-sided vehicles, pantechnicon and curtain-sided vehicles, flattop vehicles with gates, and tankers. Blocks in a container cannot reach higher than half a block unit above the gates.

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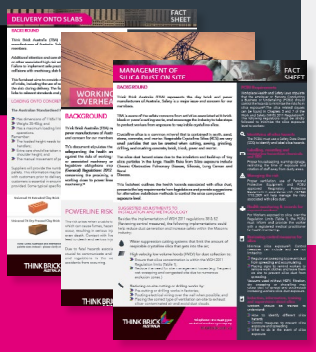

Option 2 – Tie-down:

Can be either blocked or unblocked. Masonry packs can be transported without load-rated side gates if they are restrained by adequate lashing numbers, as suggested by LRG 2018.

- A not fully loaded truck is allowed if masonry packs or pallets are unitised. Steel mesh frames may be used to provide support. Tie-down lashings should apply clamping to all block packs in the load.

- Unblocked loads are allowed if additional number of lashing compliant to LRG is applied. Always make sure blocking surfaces are suitably engineered.

REFERENCES

[1] National Transport Commission & Roads & Traffic Authority NSW, 2018, Load Restraint Guide 2018 Third Edition, Australia.

[2] National Transport Commission & Roads & Traffic Authority NSW, 2004, Load Restraint Guide Second Edition, Australia.

[3] Think Brick Australia, 2016, Load Restraint Industry Code of Conduct, Australia.

[4] Safework NSW, Safety in the road freight transport industry, Australia.

[5] Safework Australia, July 2013, TRAFFIC MANAGEMENT GUIDE: WAREHOUSING, Australia.

[6] Workplace Health and Safety Queensland, Transport industry – checklists for managing hazardous manual tasks at customer sites, Australia.

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