Closed Car Loading Guide

Part 5
(formerly Pamphlet No. 6)

Minimum Loading Standards for
Building Brick in Closed Cars

Approved May 30, 2014, by the
Damage Prevention and
Freight Claim Committee
Minimum Loading Standards for
BUILDING BRICK
IN CLOSED CARS

(Supersedes Pamphlet No. 6, Published August 1983;
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# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.0 Introduction</strong></td>
<td>1–1</td>
</tr>
<tr>
<td>1.1 Overview</td>
<td>1–1</td>
</tr>
<tr>
<td>1.2 Reference Documents</td>
<td>1–1</td>
</tr>
<tr>
<td>1.3 Rail Transportation Environment</td>
<td>1–2</td>
</tr>
<tr>
<td><strong>2.0 Selection and Preparation of Car.</strong></td>
<td>2–1</td>
</tr>
<tr>
<td><strong>3.0 Load Planning</strong></td>
<td>3–1</td>
</tr>
<tr>
<td>3.1 General Load Planning</td>
<td>3–1</td>
</tr>
<tr>
<td>3.2 Care and Protection of Rail Equipment</td>
<td>3–2</td>
</tr>
<tr>
<td><strong>4.0 Packaging and Unitizing</strong></td>
<td>4–1</td>
</tr>
<tr>
<td><strong>5.0 Blocking and Bracing Materials</strong></td>
<td>5–1</td>
</tr>
<tr>
<td>5.1 Steel Strapping</td>
<td>5–1</td>
</tr>
<tr>
<td>5.2 Nonmetallic Strapping</td>
<td>5–1</td>
</tr>
<tr>
<td>5.3 Lumber</td>
<td>5–1</td>
</tr>
<tr>
<td>5.4 Pneumatic Dunnage</td>
<td>5–1</td>
</tr>
<tr>
<td><strong>6.0 Through Loads</strong></td>
<td>6–1</td>
</tr>
<tr>
<td>6.1 With Filler Gates</td>
<td>6–1</td>
</tr>
<tr>
<td>6.2 With Pneumatic Dunnage</td>
<td>6–2</td>
</tr>
<tr>
<td><strong>7.0 Incomplete Layer Loads</strong></td>
<td>7–1</td>
</tr>
<tr>
<td>7.1 General Information</td>
<td>7–1</td>
</tr>
<tr>
<td>7.2 Combination Gate and Vertical Straps</td>
<td>7–2</td>
</tr>
<tr>
<td>7.3 Combination Gate and Horizontal Straps</td>
<td>7–3</td>
</tr>
<tr>
<td>7.4 Pyramid Loads (Two over Four)</td>
<td>7–4</td>
</tr>
<tr>
<td>7.5 Pyramid Loads (One over Four)</td>
<td>7–5</td>
</tr>
<tr>
<td>7.6 Pyramid Loads (Two over Four to Two over Three)</td>
<td>7–6</td>
</tr>
<tr>
<td><strong>8.0 Doorway Protection</strong></td>
<td>8–1</td>
</tr>
</tbody>
</table>
LIST OF FIGURES

Figure 2.1  End gate ................................................................. 2–2
Figure 3.1  Offset loading—through load with filler gate ..................... 3–2
Figure 4.1  Typical package ...................................................... 4–1
Figure 4.2  Typical multipack .................................................... 4–1
Figure 4.3  Shrink- or stretch-wrap shroud ................................... 4–2
Figure 4.4  Shrouding for pairs of brick multipacks ......................... 4–2
Figure 5.1  Pneumatic dunnage .................................................. 5–2
Figure 6.1  Through load—filler gate ......................................... 6–1
Figure 6.2  Through load—pneumatic dunnage ............................... 6–2
Figure 7.1  Gate construction ..................................................... 7–1
Figure 7.2  Incomplete layer loads—combination gate and vertical straps 7–2
Figure 7.3  Incomplete layer loads—combination gate and horizontal straps 7–3
Figure 7.4  Pyramid loads (two over four) .................................... 7–4
Figure 7.5  Pyramid loads (one over four) .................................... 7–5
Figure 7.6  Pyramid loads (two over four to two over three) ............... 7–6
LIST OF TABLES

Table 5.1  Performance level application guide ........................................ 5–3
1.0 INTRODUCTION

1.1 Overview

1.1.1 The purpose of this guide is to relate basic good car loading procedures that have been developed through laboratory and field testing, engineering studies, and accumulated experience in rail transportation. Compliance with the “Minimum Loading Standards” contained herein will ensure conformance with Circular No. 42-K rules and provide adequate protection for lading from sources of damage in the normal railroad environment.

1.1.2 The general rules contained in Circular No. 42-K or supplements thereto issued by the AAR are formulated for the purpose of providing safe methods of loading boxcars and must be observed.

1.1.3 The loading rules and/or practices apply to shipments transported in the USA, Canada, and Mexico.

1.1.4 The loading methods in individual closed car loading publications issued by AAR’s Damage Prevention and Loading Services are minimum standards that have been evaluated and approved by the AAR Damage Prevention and Freight Claim Committee. The minimum standards offer practical guidelines on the subjects covered. Because these are minimum standards, it may be necessary to supplement the methods in some instances.

1.1.5 Securement standards in AAR closed car loading publications are intended for safe transit of the railcar from origin to destination and for the prevention of lading and equipment damage. The standards do not address unloading practices.

1.1.6 Loading and bracing methods not currently approved may receive consideration for approval and publication under the Damage Prevention and Loading Services General Information Bulletin, No. 2, “Procedures Governing Evaluation and Acceptance of New Closed Car Loading and Bracing Methods and Materials.” Submit requests to Director, Damage Prevention and Loading Services, Association of American Railroads, Transportation Technology Center, Inc., 55500 DOT Road, Pueblo, CO 81001.

1.1.7 CAUTION: Car rocking motion caused by lift equipment entering and/or exiting the railcar may cause unsupported packages or articles with a high center of gravity to fall to the floor. Minimize access to the car. Exercise caution when inside a partially loaded car. Lift operators should stay on lift equipment, whenever possible, while inside a partially loaded car.

1.2 Reference Documents

1.2.1 Circular No. 42-K (or supplements thereto)
“General Rules Covering Loading of Carload Shipments of Commodities in Closed Cars”—These requirements must be observed in all closed car loading activities to ensure safe transit of the railcar from origin to destination, thereby eliminating hazard to railroad operation.

1.2.2 Circular No. 43-E (or supplements thereto)
“Rules Governing the Loading, Blocking, and Bracing of Freight in Closed Trailers and Containers for TOFC/COFC Service”—This publication contains the requirements covering loads in trailers or containers.
INTRODUCTION

1.3 Rail Transportation Environment

1.3.1 There are inherent characteristics of the rail environment that must be understood to recognize the need for many of the requirements identified in this publication.

1.3.2 Forces encountered within the rail vehicle are induced by shock and/or vibration. In most instances, the force is a complex result of both shock and vibration. Force input due to shock is mainly a result of impacts during switching and train slack action (run-in and run-out during train movement). Force input due to vibration is a result of the movement of the railcar's wheels on the rails. This vibration force can act either in a vertical or lateral plane. These forces are due to the movement of the car wheels on the rails, the truck geometry, rail joints, rail elasticity, nonuniformities of the rail and wheels, and overall track condition. When all these factors are acting on a rail vehicle, the resultant force is very complex.

1.3.3 The lading in a rail vehicle can also generate forces; for instance, in canned commodities, the metal cans can act as springs. For multilayer loads in the rail vehicle, any vertical force input in the bottom layers can be greatly amplified as it travels to the top layers. This is the transmissibility factor due to the harmonics of a particular stack or column of containers.

1.3.4 Uncontrolled movement and/or displacement of the lading in a rail vehicle can cause safety problems, equipment failure, damage, and unloading problems. The following minimum loading standards in conjunction with proper packaging will provide safe arrivals.
2.0  SELECTION AND PREPARATION OF CAR

2.1  Railroads are responsible for supplying cars that are clean and have sound roofs, sides, and square end walls; smooth floors; and snug-fitting doors. Any exception is cause for rejection. Shippers are responsible for inspecting interiors of cars to see that they are suitable to carry lading safely and damage-free.

2.2  Before attempting to open the doors of any railcar, check to make sure that all hardware is intact so that the doors open safely. Check the door tracks to make sure they are equipped with stops on the ends so that the doors do not fall off when opened.

   • It is critical to check locking bars and related hardware to make sure you can safely open plug doors.
   • Make sure the doors are operating correctly before fully opening them. There is always the possibility that material or lading may be leaning against the inside doors or is applying pressure.
   • Use extreme care when opening any type of railcar door to protect against injury.

2.3  Always check the car to see if water entry is possible. Make sure that the car is watertight. Look for light leaks or evidence of new or large amounts of rust, which may indicate recent water entry into the car.

   (Note to customers: Notify appropriate carriers immediately if railcars are received with water damage to ensure that the car is shopped and repaired before the car is used again.)

2.4  Check the car floors for any holes or rough surfaces that may result in leakage or damage to the product.

2.5  Inspect the cars for any protrusions or rough, broken, or bent surfaces that could result in damage to the product. It is important that cars are clean and free from nails, brads, staples, fragments of steel, and dunnage remnants. To prevent damage, cover projections of lining or anchor devices with protective materials taped in place or otherwise adequately secured.
2.6 Check the end walls to make sure they are not bowed. If the end wall is severely bowed, reject the car. If the end walls are bowed and you need to use the car, use materials of appropriate size and strength to bring the end walls back to square. This will help to ensure that the load remains tight during its journey. See Fig. 2.1.

2.7 If the car supplied is not suitable for loading and the shipper elects to load the car rather than reject it, it is the shipper’s responsibility to properly prepare the car.

2.8 Cover rough surfaces with fiberboard sheets or other suitable materials. Do not use kraft paper.

2.9 The loading methods illustrated in this guide have a proven track record of success in specific car types. Please note the type of car for which each method is used. Failure to use the proper loading method in the proper type of equipment will result in damage to the product and a dissatisfied customer (i.e., if a loading method is shown for use in a cushion equipped car, use that loading method only in cushion equipped cars).
3.0 LOAD PLANNING

3.1 General Load Planning

3.1.1 Load, block, or brace commodities tightly lengthwise and crosswise to eliminate all void spaces, which are primary reasons for damage. Take up any void spaces remaining in a car. Use blocking, fillers, and other suitable materials, and secure them in accordance with the methods outlined in this guide and other guides listed on the back cover of this book.

3.1.2 Load and secure lading to permit unloading from either side of the railcar, except when dimensions of individual units of freight prohibit unloading from either side of the car.

3.1.3 Inspect lading before loading car. Do not load damaged lading.

3.1.4 Evenly distribute the weight of loads from side-to-side and end-to-end in the car and to a uniform height of lading insofar as lading permits. Always center the units in the doorway area along the lengthwise centerline of the car.

3.1.5 Stow lading in a manner to prevent contact with doorposts.

3.1.6 Fill all lengthwise space with lading and with lading and filler material, or appropriately block and brace.

3.1.7 When there is a possibility of lading falling or rolling out of the doorway or coming in contact with sliding or plug-type side doors, protect openings with wood doorway protection, steel straps, or other material of sufficient strength and number, and adequately secure it.

3.1.8 Apply temporary bracing in partly loaded or unloaded cars that will be switched during the process of loading or unloading.

3.1.9 Plan load so that crosswise space is minimized without exceeding an aggregate of 18 in., unless additional appropriate bracing is used. Maintain vertical alignment to prevent crosswise movement.

3.1.10 Load units in a straight line lengthwise in the car to ensure face-to-face unit alignment. If unit alignment is not maintained, use divider sheets. Crosswise space may be filled with product placed alongside walls or down the center with protective material separating hand-stacked and unitized lading, unless other means of maintaining vertical alignment of the units are used.

3.1.11 Shroud all doorway units, end wall units, and second layer units facing a lateral void to prevent brick from falling out of packages (see Figures 4.3 and 4.4).
3.1.12 Loading methods depicted in Figures 6.1 through 7.6 illustrate loads centered lengthwise in the car with an equal void space at each sidewall. To reduce the number of units that require shrouding, packages may be loaded tightly against one sidewall in one end of the car and tightly against the opposite sidewall in the other end of the car. The doorway stacks on each side of the doorway bracing are offset from each other. Doorway bracing is centered in the car as shown in Figure 3.1.

PACKAGES OFFSET AGAINST OPPOSITE SIDEWALL IN OPPOSITE ENDS OF THE CAR

Figure 3.1 Offset loading—through load with filler gate

3.2 Care and Protection of Rail Equipment

3.2.1 Have lift truck operators use extreme care in turning units within cars or backing a lift truck out of car doors to avoid damage to side walls and bulkhead doors. Do not use lift equipment to open or close railcar side doors or to position bulkhead doors.

3.2.2 Some lift truck forks are longer than the units being loaded or unloaded. Have lift truck operators use extreme care so that the forks do not protrude through and beyond the units and damage the product or the end wall of the car beyond the unit being handled.
4.0 PACKAGING AND UNITIZING

4.1 To facilitate handling, brick is usually unitized into packages for hand trucking or into multipacks for mechanical fork truck handling.

4.2 Fig. 4.1 is an example of a typical package, and Fig. 4.2 is an example of a typical multipack (or cube).

4.3 Packages may be unitized with automatic tools or hand tools. Use the proper combination of strap, seals, and tensioning tools as specified by the manufacturer. Use a strap with a minimum breaking strength of 1,200 lb. Seal the strap with a friction weld or heat seal joint (sealless) with a minimum joint efficiency of 75%. The strap must be clearly marked with the strap ID spaced at not more than 5 ft intervals.

NOTE: For the latest updates of approved strapping, go to the TTCI Web site at http://www.aar.com/standards/open_top_loading_approvals.php.

4.4 Use veneer 0.10 in. to 0.125 in. thick, 5 in. to 7 in. wide, and approximately 1/2 in. shorter than the width of the brick.

4.5 Corner protectors are optional at the discretion of the shipper. Any exception to the lading because of strapping indentations due to lack of corner protection is not considered the rail carrier’s responsibility.
4.6 One or two units (multipacks) may be shrouded together with corrugated fiberboard, shrink film, or stretch wrap (see Figs. 4.3 and 4.4). This shrouding is required in some loading methods for second layer, end, and doorway units.

Figure 4.3 Shrink- or stretch-wrap shroud

Figure 4.4 Shrouding for pairs of brick multipacks
PACKAGING AND UNITIZING

4.7 Shrink-wrap material must be 4 mil (0.004 in.) thick (minimum) before placing in the heat tunnel. Stretch-wrap material must be a minimum of 1 mil (0.001 in.) thick or equivalent with a minimum of three wraps.

4.8 Protect all facing surfaces by using protective material made of 0.012 in. chipboard, 90 lb kraft paper, or equivalent material. Place horizontally between all facing surfaces (not applicable on antique-type brick). Overlap protective material at least 1/2 in. beyond one end of each article in the strapped package.

4.9 Refer to American Society for Testing and Materials (ASTM) Standard C-652 or acceptance standards for shipper.
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5.0 BLOCKING AND BRACING MATERIALS

5.1 Steel Strapping

5.1.1 Use the proper combination of steel straps, seals, sealing tools, notches, or crimps to provide a minimum breaking strength of 4,725 lb and 75% joint efficiency for all doorway protection straps.

5.1.2 Use metal protectors, such as corner guards or plates, sufficient to provide a suitable radius to protect straps at all points on lading having sharp edges and/or sharp corners.

5.1.3 Use tensioning and sealing equipment properly. Check the tools periodically to ensure their efficiency.

5.1.4 More detailed information regarding steel strapping is available in the Closed Car Loading Guide, Part 1, (formerly Pamphlet No. 14), “Minimum Loading Standards for Freight in General Purpose Boxcars.”

NOTE: For the latest updates of approved strapping, go to the TTCI Web site at http://www.aar.com/standards/open_top_loading_approvals.php.

5.2 Nonmetallic Strapping

5.2.1 Use the proper combination of nonmetallic straps, seals, and sealing tools to provide a minimum breaking strength of 3,285 lb and 75% joint efficiency for all doorway protection straps.

5.2.2 More detailed information regarding nonmetallic strapping is available in the Closed Car Loading Guide, Part 1, (formerly Pamphlet No. 14), “Minimum Loading Standards for Freight in General Purpose Boxcars.”

NOTE: For the latest updates of approved strapping, go to the TTCI Web site at http://www.aar.com/standards/open_top_loading_approvals.php.

5.3 Lumber


5.4 Pneumatic Dunnage

5.4.1 Table 5.1 defines five levels of performance for pneumatic dunnage:

- Level 1 for pneumatic dunnage as lateral void fillers (and load securement in certain intermodal applications)
- Levels 2 to 5 for pneumatic dunnage as lengthwise void fillers in flat platen-type applications with varied performance requirements

Pneumatic dunnage meeting Level 2 to 5 requirements fulfills all Level 1 requirements.

<table>
<thead>
<tr>
<th>Level</th>
<th>Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>For filling lateral voids, primarily in intermodal loads</td>
</tr>
<tr>
<td>Level 2</td>
<td>For filling lengthwise voids in loads weighing up to 75,000 lb</td>
</tr>
<tr>
<td>Level 3</td>
<td>For filling lengthwise voids in loads weighing up to 160,000 lb</td>
</tr>
<tr>
<td>Level 4</td>
<td>For filling lengthwise voids in loads weighing up to 216,000 lb and horizontal applications in approved roll paper loading methods weighing up to 190,000 lb</td>
</tr>
<tr>
<td>Level 5</td>
<td>For filling lengthwise voids in loads weighing up to 216,000 lb and horizontal applications in approved roll paper loading methods</td>
</tr>
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</table>
5.4.2 Usage guidelines: follow the manufacturer’s instructions on care and storage of bags prior to use. Inflate bags with an approved inflator, in accordance with the manufacturer’s instructions.

5.4.3 After inflation, check to see that dunnage bags are approximately the same size as the face of the load. Do not extend the dunnage bag beyond the face of the load. See Figure 5.1.

5.4.4 Use buffer material of sufficient strength to prevent it from conforming to dunnage bag contour, to prevent chafing, to prevent dunnage bag from crushing load at proper inflation pressure, and to prevent lading from damaging dunnage bags.

5.4.5 Use buffer material equal or slightly larger in size than face of lading. Have lading adjacent to bag(s) nearly equal in height on each side of bag.

5.4.6 Use inflatable dunnage to fill lengthwise voids of a maximum of 12 in. after inflation. Inflate to 3 psi to 6 psi depending on the nature of the lading, and use an air gauge to ensure proper inflation pressure.

5.4.7 Install bag(s) so that the bottom(s) will be a minimum of 1 in. above the floor after inflation. Apply protective material (e.g., fiberboard) between the bag and floor.

5.4.8 Use hold-down methods when necessary to prevent bag displacement from the void area.

5.4.9 Use an air gauge to ensure prescribed air pressure at inflation. Recheck air pressure one-half hour after inflation for leakage.

5.4.10 Use clean and dry air to fill dunnage bags.

5.4.11 Do not use bags in tandem (back-to-back). Do not use dunnage bags to fill more than one lengthwise void in a car.

5.4.12 Reusable dunnage bags intended for use only in filling crosswise (lateral) voids must be prominently marked by the manufacturer to indicate proper application. Never use bags marked for this application to fill lengthwise voids.
5.4.13 Leave the door of the car open after loading is completed, and check bag 30 minutes after installation for leakage.

5.4.14 For further information, refer to AAR General Information Bulletin No. 9, “Product Performance Profile for Pneumatic Dunnage.”

5.4.15 See http://www.aar.com/standards/dpls/pfds/PPPD_Verification_List.pdf for the most current “Product Performance Profile for Pneumatic Dunnage Product Verification List.”
6.0 THROUGH LOADS

6.1 With Filler Gates

6.1.1 Fig. 6.1 displays the use of a filler gate in a through load.

![Figure 6.1 Through load—filler gate](image)

6.1.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the car floor to reduce friction between brick packages and the car floor.

6.1.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

6.1.4 Construct the filler gate with 2 in. × 6 in. boards that are the same height and width of the load face. Build up to the thickness required to fill the remaining lengthwise space.

6.1.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the filler gate, covering the entire load face.

6.1.6 Shroud all end wall and doorway units to prevent brick from falling out of the package. See Figs. 4.3 and 4.4.
6.2 With Pneumatic Dunnage

6.2.1 Fig. 6.2 displays the use of pneumatic dunnage in a through load.

6.2.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the car floor to reduce friction between brick packages and the car floor.

6.2.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

6.2.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor more than 12 in. Place the dunnage bag in the void so that after inflation it is 1 in. above the car floor. Inflate to 8 psi.

6.2.5 For buffer material on both sides of the dunnage bag, use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

6.2.6 Shroud all end wall and doorway units to prevent brick from falling out of the package. See Figs. 4.3 and 4.4.
7.0 INCOMPLETE LAYER LOADS

7.1 General Information

7.1.1 Where necessary to load a partial or an incomplete layer of brick, secure against shifting. Figures 7.1 through 7.6 show various methods of securing partial or incomplete layers.

7.1.2 Where the incomplete layer is secured in the ends of the car, place approximately the same amount in each end to balance the car. Check the load limit of the cars; do not overload one or both sets of trucks. Place the end loads between full-height gates of 1 in. × 6 in. rough-cut lumber (see Figure 7.1) and secure with a sufficient number of horizontal or vertical straps (see Figures 7.2 and 7.3).

7.1.3 Where the amount of lading and capacity of the car permit, the partial layer may be one or two multipacks (cubes) wide and the full length of the car. Center the second layer on the first layer, secure with vertical encircling straps, and brace at the doorway to fill any lengthwise void. Brace both layers in the same manner (see Figures 7.4 to 7.6).

---

**Figure 7.1 Gate construction**

\[ W = \text{WIDTH OF LOAD} + 1 \text{ IN.} \]

\[ 1 \text{ IN.} \times 4 \text{ IN. UPRIGHTS} \]

\[ 1 \text{ IN.} \times 4 \text{ IN. CROSSPIECES} \]
7.2 Combination Gate and Vertical Straps

7.2.1 Figure 7.2 displays the use of a combination gate and vertical straps.

7.2.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the floor of the car and between layers to reduce friction with the brick packages.

7.2.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

7.2.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor greater than 12 in. Place dunnage bag in the void so that after inflation, it is 1 in. above the car floor. Inflate to 8 psi.

7.2.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

7.2.6 Shroud all end-wall and doorway units to prevent brick from falling out of the package. See Figures 4.3 and 4.4.

7.2.7 Use two gates in each end of the load. Staple vertical encircling straps, 1 1/4 in. × 0.029 in. steel strap or equivalent, to the gates at the top of each gate's vertical member, one strap for each vertical member.
7.3 Combination Gate and Horizontal Straps

7.3.1 Figure 7.3 displays the use of a combination gate and horizontal straps.

7.3.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the floor of the car and between layers to reduce friction with the brick packages.

7.3.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

7.3.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor greater than 12 in. Place dunnage bag in the void so that after inflation, it is 1 in. above the car floor. Inflate to 8 psi.

7.3.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

7.3.6 Shroud all end-wall and doorway units to prevent brick from falling out of the package. See Figures 4.3 and 4.4.

7.3.7 Use two gates in each end of the load. Staple three horizontal encircling straps, 1 1/4 in. × 0.029 in. steel or equivalent, to the gates at the ends of each gate’s horizontal members.
INCOMPLETE LAYER LOADS

7.4 Pyramid Loads (Two over Four)

7.4.1 Figure 7.4 displays the use of pyramid loads (two over four).

7.4.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the floor of the car and between layers to reduce friction with the brick packages.

7.4.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

7.4.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor greater than 12 in. Place dunnage bag in the void so that after inflation, it is 1 in. above the car floor. Inflate to 8 psi.

7.4.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

7.4.6 Shroud all end-wall, doorway, and second layer units to prevent brick from falling out of the package. See Figures 4.3 and 4.4.

7.4.7 Use encircling straps, 3/4 in. × 0.025 in. steel (MBS 1,875 lb) or equivalent. One is required for each stack, except for end-wall stacks, which require two straps. Any stacks consisting of three packages or less are used as fillers and do not require encircling straps.
7.5 Pyramid Loads (One over Four)

7.5.1 Figure 7.5 displays the use of pyramid loads (one over four).

7.5.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the floor of the car and between layers to reduce friction with the brick packages.

7.5.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

7.5.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor greater than 12 in. Place dunnage bag in the void so that after inflation, it is 1 in. above the car floor. Inflate to 8 psi.

7.5.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

7.5.6 Shroud all end-wall and doorway units to prevent brick from falling out of the package. See Figures 4.3 and 4.4.

7.5.7 Use encircling straps, 3/4 in. × 0.025 in. steel (MBS 1,875 lb) or equivalent. One is required for each stack, except for end-wall stacks, which require two straps. Any stacks consisting of three packages or less are used as fillers and do not require encircling straps.
7.6 Pyramid Loads (Two over Four to Two over Three)

7.6.1 Figure 7.6 displays the use of pyramid loads (two over four to two over three).

7.6.2 Use corrugated fiberboard, straw, or equivalent material to sufficiently line the floor of the car and between layers to reduce friction with the brick packages.

7.6.3 Use corrugated fiberboard or equivalent material stack separators placed across the car between each stack of multipacks (cubes).

7.6.4 Use the appropriate level of pneumatic dunnage for the weight of the load. Do not extend the dunnage bag beyond the face of the load. Void space taken up by the dunnage bag after inflation must be not less than 4 in. nor greater than 12 in. Place dunnage bag in the void so that after inflation, it is 1 in. above the car floor. Inflate to 8 psi.

7.6.5 Use two sheets of 275 lb, double-wall, corrugated fiberboard on each side of the dunnage bag, covering the entire load face.

7.6.6 Shroud all end-wall, doorway, and second layer units and where first layer width is reduced from four to three units to prevent brick from falling out of the package. See Figures 4.3 and 4.4.

7.6.7 Use encircling straps, 3/4 in. × 0.025 in. steel (MBS 1,875 lb) or equivalent. One is required for each stack, except for end-wall stacks, which require two straps. Any stacks consisting of three packages or less are used as fillers and do not require encircling straps.
8.0  DOORWAY PROTECTION

8.1 Doorway protection is required to prevent lading from falling or shifting out of the doorway or coming in contact with sliding doors. Protect opening with wooden guide rails, steel straps, or other materials of sufficient strength, and adequately secure.

8.2 Use flush doorway protection in boxcars with sliding doors to prevent the lading from coming into contact with the side doors or to prevent the weight of the lading bearing against the side doors.

8.3 Unit Loads
To keep lading in position, secure openings with 1 1/4 in. × 0.029 in. steel straps or equivalent, covered with corrugated fiberboard.
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## CLOSED CAR LOADING STANDARDS

<table>
<thead>
<tr>
<th>Part</th>
<th>Subject/Title</th>
<th>Publication Date</th>
<th>Formerly</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Minimum Loading Standards for <strong>Freight</strong> in General Purpose Boxcars</td>
<td>01/2014</td>
<td>Pamphlet No. 14, Minimum Loading Standards for Freight in General Purpose and Specially Equipped Boxcars (12/84)</td>
</tr>
<tr>
<td>3</td>
<td>Minimum Loading Standards for <strong>Plywood and Similar Building Products</strong> in Closed Cars</td>
<td>03/2014</td>
<td>Pamphlet No. 8, Minimum Loading Standards for Sanded and Sheathing Plywood in Closed Cars (11/85)</td>
</tr>
<tr>
<td>4</td>
<td>Minimum Loading Standards for <strong>Lumber</strong> in Closed Cars</td>
<td>06/2014</td>
<td>Pamphlet No. 20, Minimum Loading Standards for Lumber in Closed Cars (10/87)</td>
</tr>
<tr>
<td>5</td>
<td>Minimum Loading Standards for <strong>Building Brick</strong> in Closed Cars</td>
<td>06/2014</td>
<td>Pamphlet No. 6, Minimum Requirements for Loading, Bracing and Blocking Carload Shipments of Building Brick in Closed Cars (8/83)</td>
</tr>
<tr>
<td>6</td>
<td>Minimum Loading Standards for <strong>Prepared Food and Similarly Packaged Products</strong> in Closed Cars</td>
<td>02/2014</td>
<td>Pamphlet No. 17, Minimum Loading Standards for Packaged Food Products in Closed Cars and TOFC/COFC (10/88)</td>
</tr>
<tr>
<td>7</td>
<td>Minimum Loading Standards for <strong>Intermediate Bulk Containers</strong> in Closed Cars</td>
<td></td>
<td>New</td>
</tr>
<tr>
<td>8</td>
<td>Minimum Loading Standards for <strong>Bagged and Baled Commodities</strong> in Closed Cars</td>
<td></td>
<td>Pamphlet No. 3, Minimum Loading Standards for Bagged and Baled Commodities in Closed Cars (10/93)</td>
</tr>
<tr>
<td>9</td>
<td>Minimum Loading Standards for <strong>Coiled Metal Products</strong> in Closed Cars</td>
<td></td>
<td>Pamphlet No. 23, Minimum Standards for Loading Steel Products in Closed Cars, Trailers or Containers (4/95)</td>
</tr>
<tr>
<td>10</td>
<td>Minimum Loading Standards for <strong>Primary Metal Products</strong> in Closed Cars</td>
<td></td>
<td>Pamphlet No. 37, Minimum Standards for the Safe Loading of Ingots, Pigs, Anodes, Rods and Similar High Density Metallic Commodities in Closed Cars (11/84)</td>
</tr>
</tbody>
</table>

See also:
Intermodal Loading Guide for Products in Closed Trailers and Containers (7/2011)
Open Top Loading Rules Manual, Sections 1–7