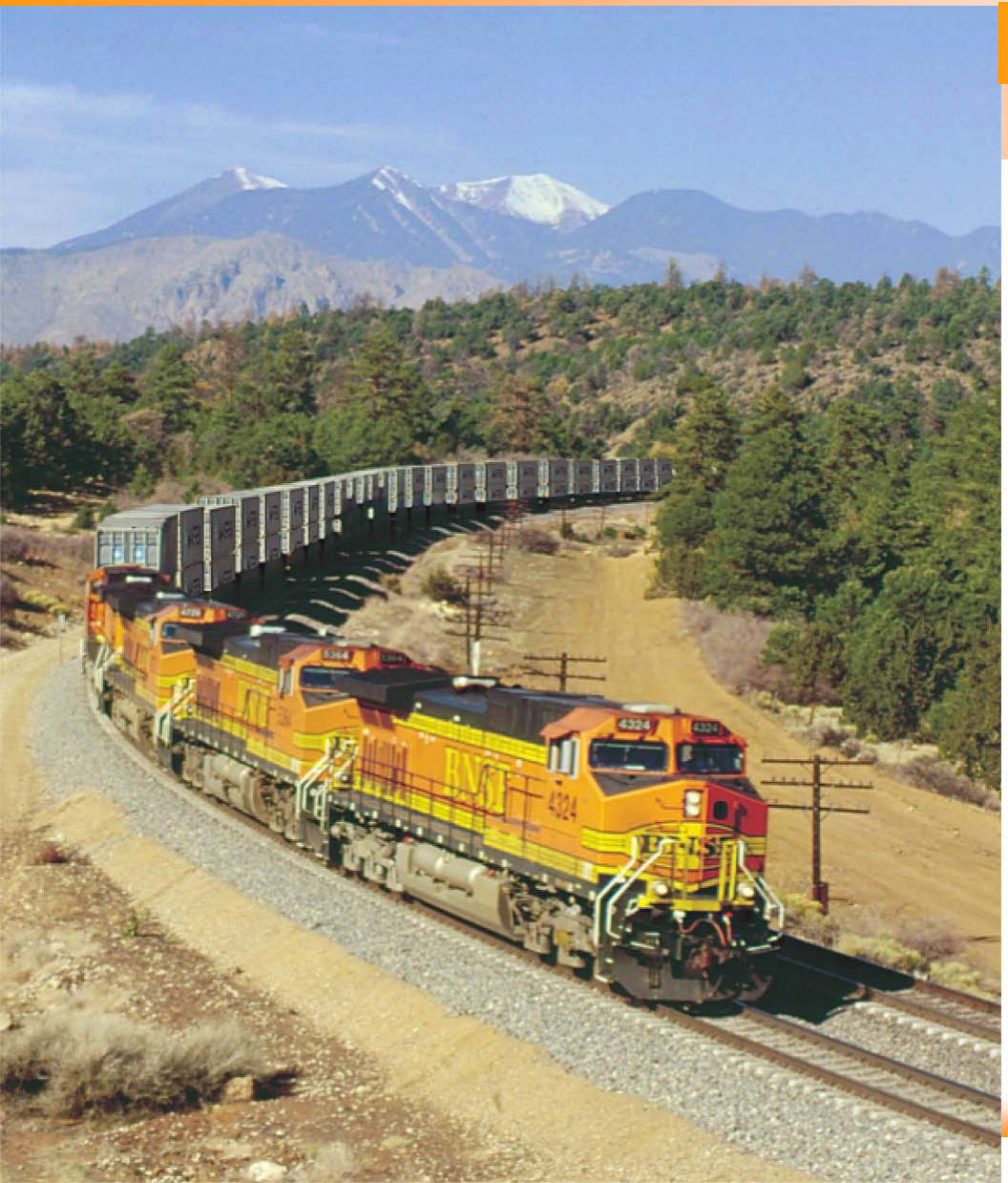
BNSF Intermodal Loading Guide



Load and Ride Solutions Team

(LARS)

BNSF RAILWAY

TABLE OF CONTENTS

SECTION I
GENERAL INFORMATION

GENERAL INFORMATION

As a "intermodal" shipper on the BNSF, you've selected the number one TOFC/COFC carrier in the industry -- both in volume and commitment. At the BNSF we are committed to meet the challenges of the future in both service and equipment needs.

At BNSF our number one priority is the safety of our employees, the communities through which we operate, and the cargo that is entrusted to us by our customers.

"Our vision is to realize the tremendous potential of the Burlington Northern Santa Fe Railway by providing transportation services that consistently meet our customers expectations."

SAFE LOADING

While BNSF goes to great lengths to provide top-notch service for our customers, .Should a load shift occur, due to improper weight distribution or inadequate blocking and bracing, the vehicle may lean excessively on the flatcar, or lading may burst through either end of the vehicle. A leaning vehicle, because of its high center of gravity, can actually fall from the flatcar or cause flatcar wheels to raise from the track, either of which can result in a serious derailment. Lading moving against vehicle doors can break door locking mechanisms, allowing doors to open and lading to fall from the vehicle. Either of these instances can cause personal injury, as well as damage to both equipment and your products.

DISTRESSED VEHICLE SETOUT EN ROUTE

While in transit, if the vehicle is observed leaning or with distressed doors, the train is stopped, the load is setout for adjustment and forwarded to destination. This results in delays to other shipments in train, as well as your shipment.

This publication has been developed to prevent such mishaps. By following basic rules of tight loading, proper weight distribution and adequate blocking and bracing, your load will arrive in damage-free condition for your customers.

If you are a new customer, have a loading problem or an alternative loading method for evaluation, contact your local Load and Ride Solutions Manager.

To obtain further information please reference the BNSF Rule & Policies Guide or your Account Representative.

SECTION II
TRAILER/CONTAINER INSPECTION PROCEDURES

TRAILER/CONTAINER INSPECTION PROCEDURES

Before ordering equipment you will want to consider many factors, loading and unloading facilities and systems, maximizing equipment capacity, as well as complying with all applicable transport regulations. You will also need to determine if any special equipment requirements (e.g., insulated trailers, temperature control, special interior fixtures, etc.) are needed for each load prior to ordering equipment.

If dock access is available at origin and destination, and goods are palletized, closed vans should be the proper type of equipment to order. If lading is of extreme length, and loaded form the side or with an overhead crane, an open-top or flatbed vehicle should be considered.

Quantity and dimension of lading for shipment will dictate size and type of vehicle to order. The load weight limit of the vehicle must not be exceeded, however, regardless of the amount of cubic capacity taken up by the lading. The load weight limit of the vehicle can be determined by consulting the manufacturer's specification plate on the vehicle, the Official Intermodal Equipment Register or the equipment owner.

Highway regulations regarding load limits over routes the shipment will move must be considered in load preparation; the same as vehicle weight limits. In instances were vehicle and highway limits vary, the lower weight limit will govern the amount of lading to be shipped in a single vehicle. Under no circumstances should a load in excess of 65,000 pounds gross weight be tendered for movement.

When appropriate equipment has been ordered, perform a through exterior and interior inspection prior to accepting the equipment for loading.

EXTERIOR INSPECTION

The exterior inspection should include these items:

1) Checking safety appliances to assure compliance with highway regulations.
2) Checking for defects that could affect sealing qualities of vehicle, such as bent or broken doors, damaged or missing weather seals, defective locking hardware, etc.
3) Examination of vehicle walls, roof panels, top rail and undercarriage for soundness and holes, cuts, bends, dents or other defects which could allow entrance of the elements.

INTERIOR INSPECTION

The interior inspection should include the following:

1) Checking for foreign materials or odors which might be contaminating to your products.
2) Checking wall and door linings for broken or missing panels, and for nails, staples or other protrusions which could contact lading and cause damage. If any such defects are found, you may elect to cover the defective area(s) with corrugated fibreboard or other suitable material, remove protruding objects, or reject the vehicle for loading.
3) Examination of floor for soundness, particularly where bracing materials will be nailed to ensure the nail's maximum holding power. Remove any exposed nails or protrusions. Sweep the vehicle floor before loading to minimize dust settling on lading during transit.
4) Checking for leaks. If your product is susceptible to damage from the elements, get inside the vehicle and have the doors closed and latched. If light enters the vehicle, so can moisture, air and dust. After dark, check by using a spotlight around outside of vehicle, and along all seams. If defects are found, reject the vehicle for loading.

SECTION III
TOFC/COFC
PHYSICAL ENVIRONMENT

THE RAIL ENVIRONMENT

Intermodal customers should be aware of the physical forces that affect the load during transit. Since the shipment will travel by truck, rail, and possibly water or air modes, the individual operations and physical characteristics of each should be considered, as well as the combined effects. By understanding the forces affecting each shipment in various modes, the most effective packaging, load planning, blocking and bracing for safe arrival can be realized.

Vibrations and shock are two forces encountered in transport. The forces occur continuously (vibration, a result of an object oscillating) as isolated incidents (shock, a result of an abrupt change in acceleration and direction) or simultaneously, which results in very complex dynamic forces. These forces generally occur in three directions: vertical, longitudinal and lateral.

Failure to control (dampen) these elements can jeopardize the safe transportation of the load, as well as the entire train. Improperly loaded freight or inadequate bracing can produce the following situations:

1) load movement to one side of the vehicle, causing it to lean excessively on the flatcar.

2) load movement through the ends of the vehicle

3) collapsed vehicle floors (from concentrated weight of high-density commodities or poor condition of vehicle).

Any of these situations can cause lading damage from compression; damage to equipment doors, walls or floor; or cause a train derailment.

THE HIGHWAY ENVIRONMENT

Vibration in the vertical direction is considered most severe in the highway environment. This is a result of the truck's suspension system having a natural response in a low-frequency range. When the vehicle tires contact the highway surface, a continuous vertical vibration input (forcing frequency) is produced. Uneven surfaces, such as holes, bridge abutments or grade crossings, produce vertical shocks, which also produce vertical vibrations. When the forcing frequency coincides with the natural frequency of the suspension system, amplification of the forces occur. At times, these amplified forces can reach such magnitude that even high-density lading will move, often necessitating a load adjustment.

Lateral forces generated from traversing uneven roadway surfaces normally are not as severe as vertical vibration. Longitudinal shocks encountered in the highway mode during starting and stopping in traffic, or backing into a dock, are generally greater as those experienced in the rail mode.

The optimal ride quality is found in the center portion of the vehicle, followed by the nose portion and then the rear area.

SECTION IV
LOADING, BLOCKING AND BRACING OF INTERMODAL LOADS

LOADING, BLOCKING AND BRACING INTERMODAL LOADS

When shipping intermodal on the BNSF, the shipper has certain obligations to safely load contents, as stated in The BNSF Intermodal Rules & Policies Guide. These obligations are:

1) In no instance can gross weight of vehicles and contents exceed 65,000 pounds. Responsibility for adequate packaging, loading, blocking and bracing of the shipment lies entirely with the shipper.

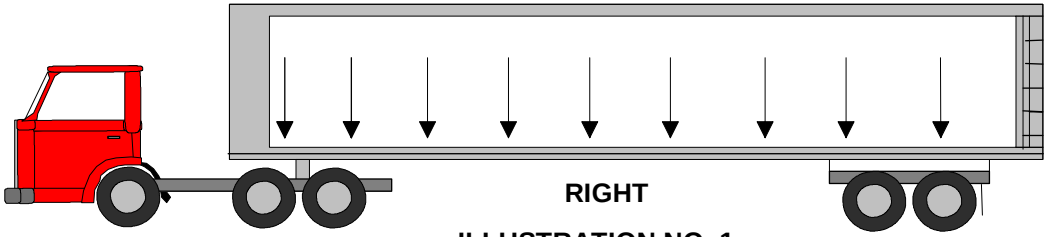
2) Weight Distribution: Vehicles are designed for uniform load distribution. Lading weight in vehicles must be evenly distributed both crosswise and lengthwise. It must be equally distributed between the rear tires and the kingpin. Lading is to be secured in such a manner to prevent it from shifting either crosswise or lengthwise during transport where it would affect safe weight distribution or position in vehicle.

3) When loading heavy or concentrated weight commodities no more than 25,000 pounds may be uniformly distributed over any 10 lineal feet within the vehicle. When load is smaller, more highly concentrated commodities, no more than 2,500 pounds may be loaded per lineal foot within the vehicle. On lading with small supporting bases, no more than 3,500 pounds may be concentrated on a floor area of less than 25 square inches (minimum dimension 3.1” x 8”) with such areas no closer than 25 inches to one another.

4) Vehicle doors are not designed or constructed to restrain longitudinal movement of lading under normal railroad operating conditions. Lading must be loaded and restrained adequately to prevent it from exerting excessive pressures against doors, walls or ends of vehicle that might cause their failure.

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

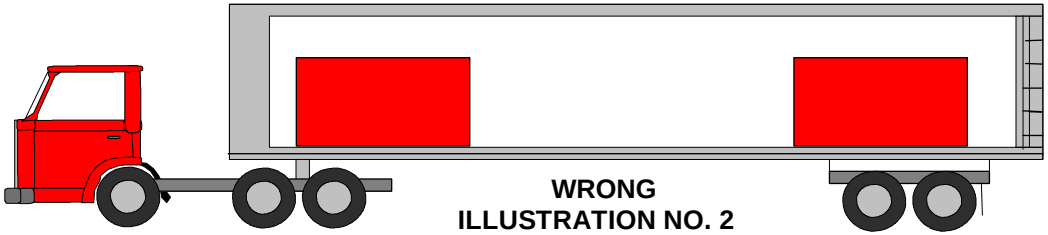
Trailers are designed for uniform load distribution as shown. Distribute the lading equally between the rear tires and the king pin which transfers its load to the truck tractor



RIGHT

ILLUSTRATION NO. 1

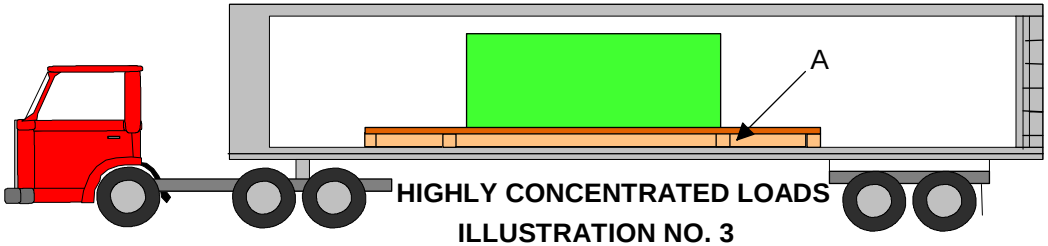
Units loaded in either position indicated are incorrect because weight is not equally distributed to tires & King Pin



WRONG

ILLUSTRATION NO. 2

Not more than 25,000 lbs. can be loaded in any 10 linear feet. Item "A" skid of adequate lenght and construction to properly distrubute weight over trailer/container floor.



HIGHLY CONCENTRATED LOADS

ILLUSTRATION NO. 3

TOFC trailers are often left unsupported by truck tractors and are lifted by cranes. In positioning two concentrated weight units as illustrated, position the forward unit for equal weight distribution on the landing gear. (approx. 10' from nose)

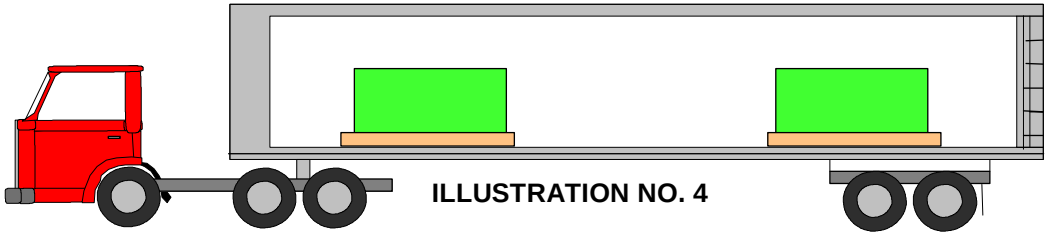


ILLUSTRATION NO. 4

Proper Load Distribution Practices

Reinforcement Of Lengthwise Blocking To Trailer/Container Floors

Reinforcement of lengthwise blocking placed cross trailer/container can be provided by the use of diagonal blocking to the trailer floor. DO NOT APPLY THIS BLOCKING AT AN ANGLE GREATER THAN 45 DEGREES WITH THE TRAILER/CONTAINER FLOOR. If possible, position diagonal at the upper third of the load . (See illustration on opposing page)

Table "G" contains approximate lengths of floor diagonals which will be of such a length that the angle will not exceed 45 degrees.

TABLE "G"

Height Of Application Of Diagonal Brace To Minimum Length Of:

Cross Brace Or Load Above Trailer Floor	Diagonal Brace Required
1 Foot - 0 Inches	1 Foot - 6 Inches
1 Foot - 6 Inches	2 Feet - 3 Inches
2 Feet - 0 Inches	3 Feet - 0 Inches
2 Feet - 6 Inches	3 Feet - 6 Inches
3 Feet - 0 Inches	4 Feet - 3 Inches
3 Feet - 6 Inches	5 Feet - 0 Inches
4 Feet - 0 Inches	5 Feet - 9 Inches
4 Feet - 6 Inches	6 Feet - 6 Inches
5 Feet - 0 Inches	7 Feet - 3 Inches
5 Feet - 6 Inches	7 Feet - 9 Inches
6 Feet - 0 Inches	8 Feet - 6 Inches

Rear gates may be braced against corner posts there trailers/containers are so constructed. Double miter diagonal members extending to the trailer floor and reinforce by a backup cleat of at least 2" x 4" x 18" wood blocking. Drive nails perpendicular to floor for maximum holding power of nails. (See illustration on opposing page)

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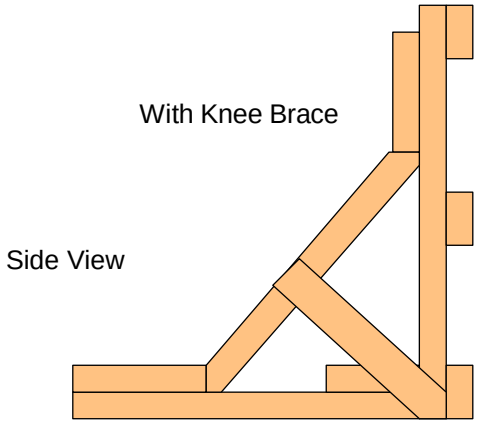
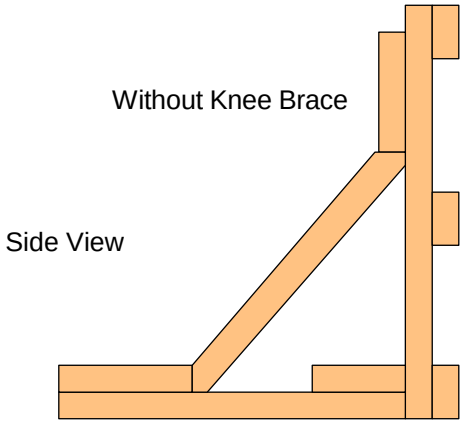
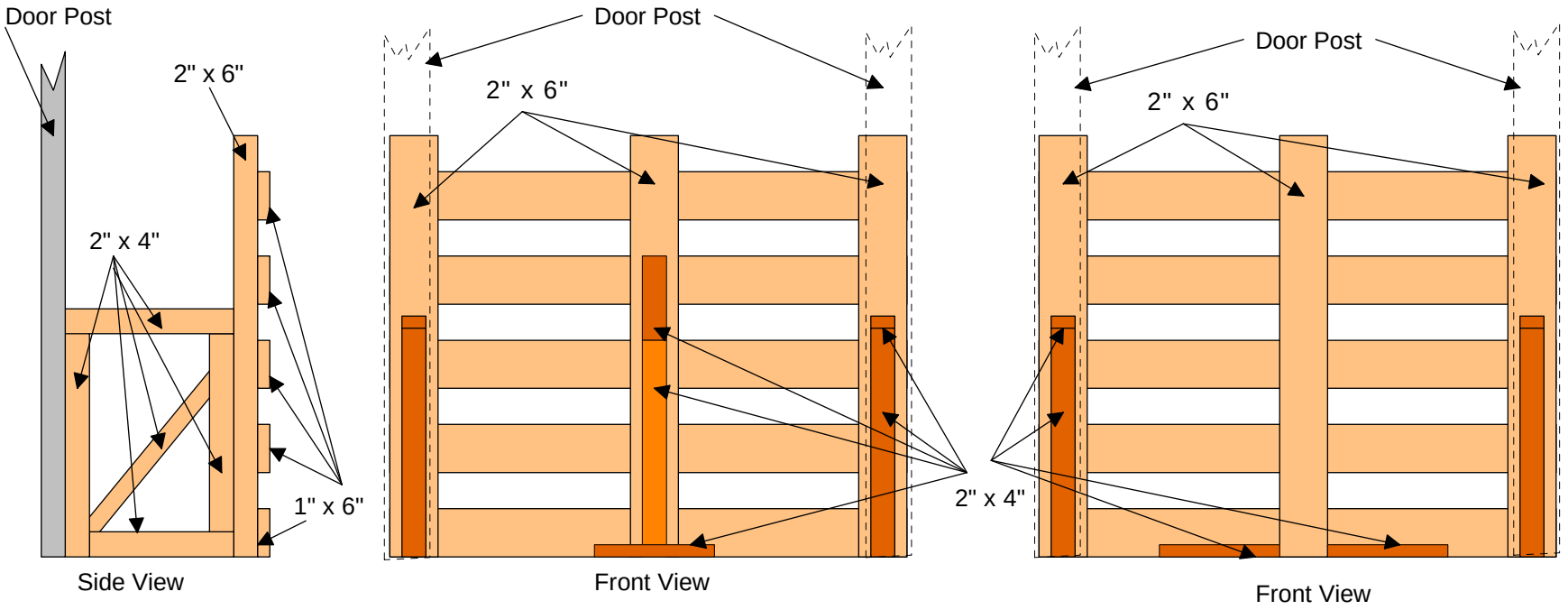
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Floor Blocking Diagonal Braces







Rear Gates For Use In Trailers With Posts (Item D-24)

Item List For Floor Blocking Applications

Item D-9 Nails Consider the relation of the number, size and kind of nails to the size and kind of lumber used in blocking and bracing . Use sufficient nails, as the strength of blocking and bracing increases directly with the number and size of nails. Do not use nails where they will be in direct tension, but preferably in lateral resistance as shown in illustrations 37 and 38.

Item D-16 Wood Blocking Securely nail to trailer floor all floor blocking to prevent lengthwise movement. Reinforce with backup cleats not less than 2" x 4" lumber and atleast 18" in length. Stagger nails in an offset pattern every 6". The size of and number of nails required will be dictated by weight of lading.

Item D-17 Wood Blocking Use floor blocking as shown in Illustration 37 of not less than 2" x 4" lumber and extend or exceed full width of the boxed or crated item against which it bears to prevent concentrated pressure or shearing of the container. For shipments on skids use floor blocking of the same thickness as the skid members as shown in illustrations 38 and 39 with backup cleats placed in line with the skid members.

Item D-18 Wood Blocking Use floor blocking applied against beveled or mitered skids the same thickness as the skid member (see illustration 39), and reinforce with backup cleats secured to trailer floor. Avoid excessive mitering of the ends of the skids in order to prevent the skidded article from riding up over the floor blocking. If beveling or mitering is necessary to facilitate handling, do not exceed one third the thickness of the skid member.

Item D-19 Wood Illustration 39 shows the use of a hold-down cleat which is nailed to the floor cleats and extends over the floor blocking member and the skid runner. Height of this cleat is equal to that of the crosswise skid member.

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BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Illustration N0. 37
(Items D-9, D-16, D-17)

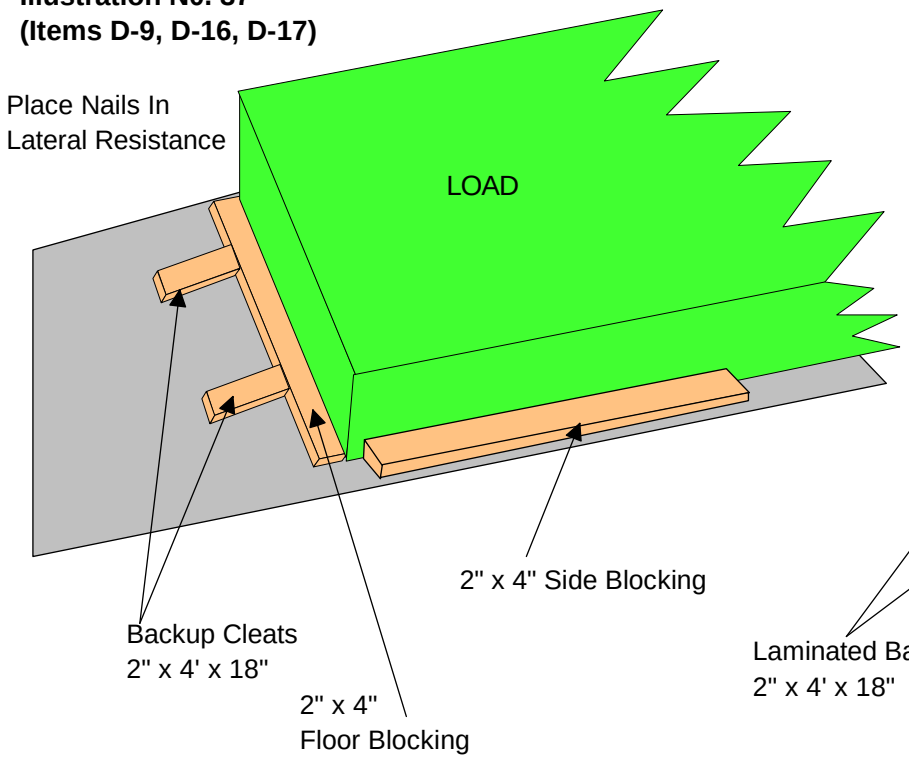


Illustration NO. 38
(Items D-9, D-16, D-17

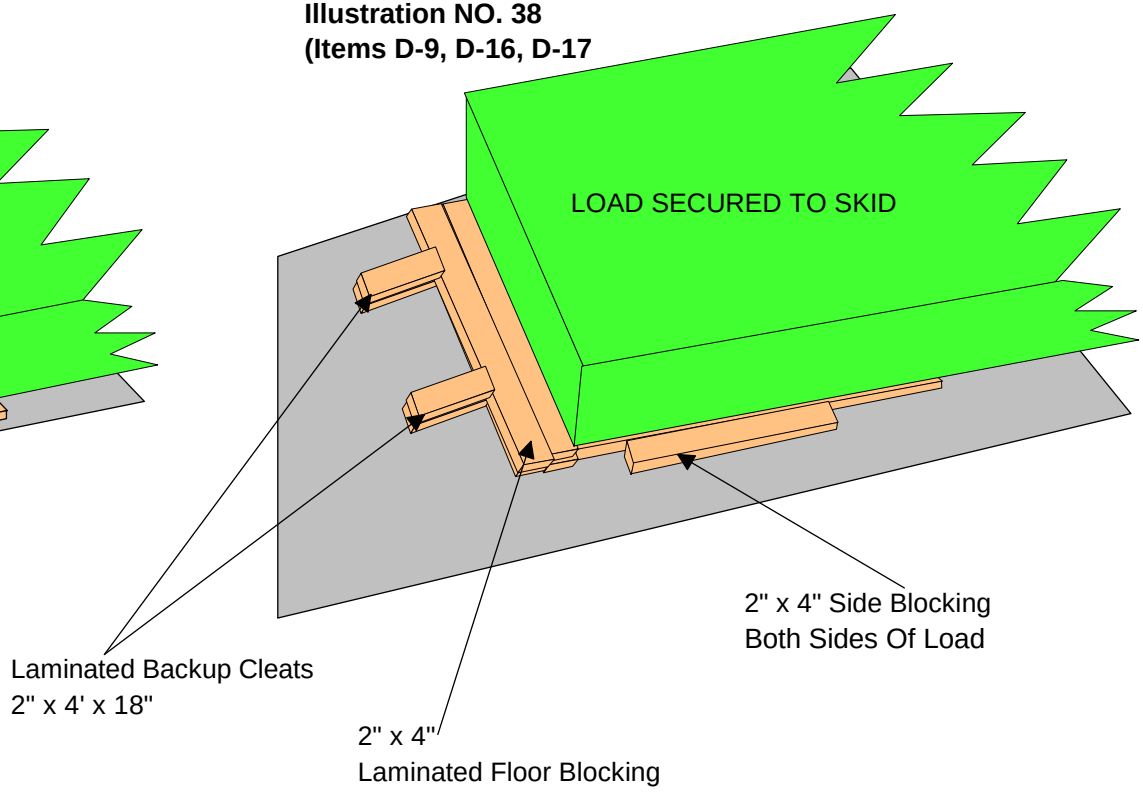
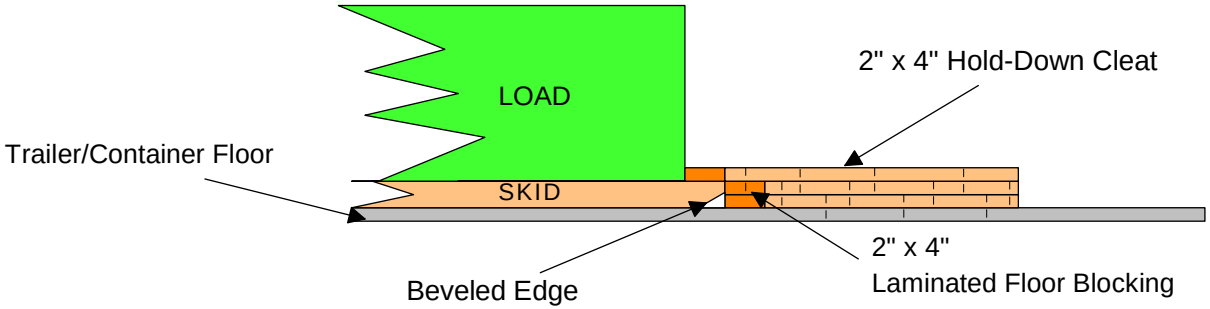


Illustration NO. 39 (Items D-16, D-17, D-18, D-19



Floor Blocking Applications

Use Of Slotted Doorposts and Corrugated Sidewalls

Bull boards may be inserted into slotted doorposts at rear of trailer/container or corrugated sidewalls to restrain a variety of commodities. These bull boards may be made of wood or steel. When applying wood bull boards use minimum 2" x 4" lumber (preferably hardwood) free of knots or other strength impairing defects, of suitable length to fit snugly between the doorposts. Use a sufficient number of bull boards to prevent lading from contacting rear doors. (See chart below). When necessary use a wooden gate and fiberboard or plywood buffer material to fill remaining void space and evenly distribute lading forces.

When applying steel bull boards use minimum 1 ½" x 1/8" thick square stock steel tubing. Bull boards are to rest on the steel door slot pins found in the trailer/container door slot. Use a sufficient number of bull boards to prevent lading from contacting rear doors. When necessary use a wooden gate and fiberboard or plywood buffer material to fill remaining void space and evenly distribute lading forces. In cases where door slot pins are not of sufficient numbers or proper positions bull boards may be secured to buffer sheets with wire twist ties to keep them from sliding down in the door slots. Each steel bull board will restrain 12,000 pounds and must be evenly spaced across the face of the load from top to bottom.

Restraint Device	Capacity
2" x 4" Wooden Bull Board	5,600 lbs
2" x 6" Wooden Bull Board	8,000 lbs
2" x 4" Wooden "T" Brace	7,000 lbs
1 ½" x 1/8" Square Stock Steel Tubing	12,000 lbs

Figures for wooden bull boards developed through testing of bull boards and "T" braces constructed of yellow pine lumber

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Figures for wooden bull boards developed through testing of bull boards and "T" braces constructed of yellow pine lumber

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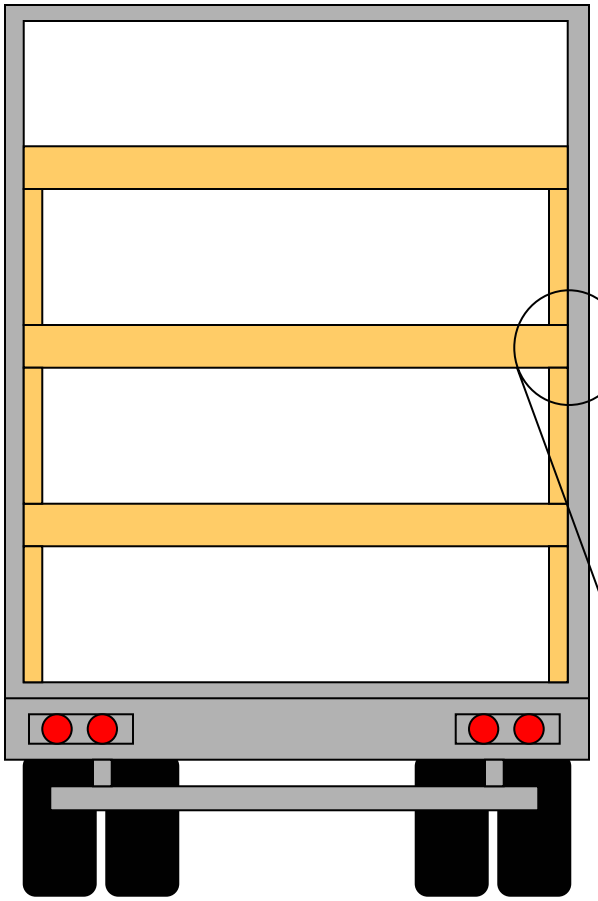
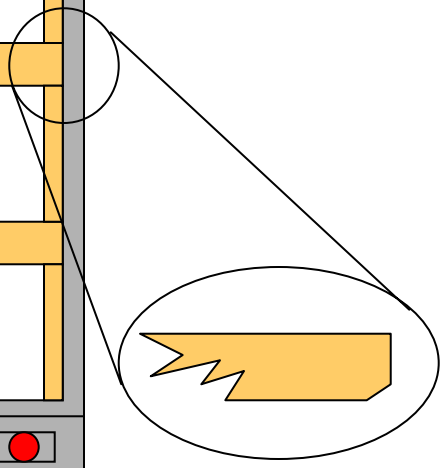
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD & RIDE SOLUTIONS DRAWING

WOODEN BULL BOARDS

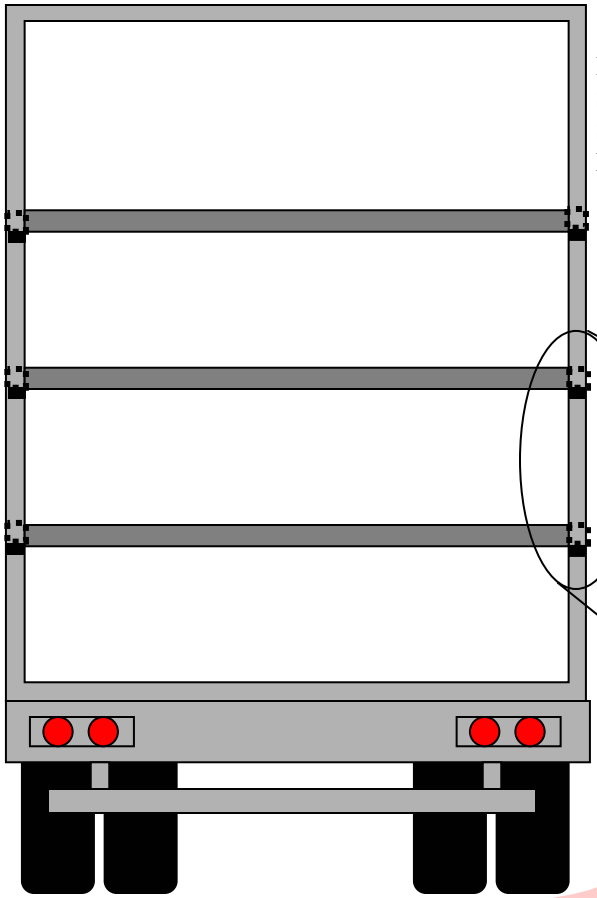


Insert 2”x 6” Verticals In Door Slots To Separate Bull Boards As Needed. Toenail Verticals **To Bull Boards**

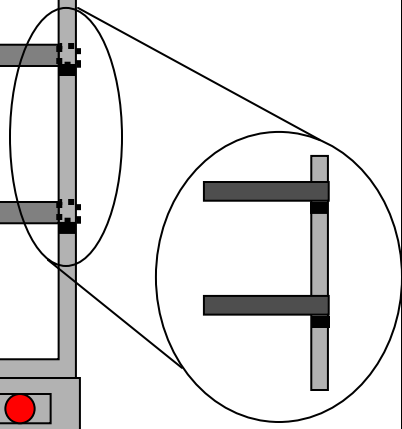


Miter Bottom Corners Of Bull Boards To Ease Installation

STEEL BULL BOARDS



Insert 1 ½” x 1/18” Thick Square Stock Steel In Door Slots At Positions Where Door Slot Pins Are Located



Steel Bull Boards Resting On Door Slot Pins

Application Of Bull Boards In Door Slots

“T” Brace Method Of Reinforcing Bull Board. Shown Backward For Clarity Purposes

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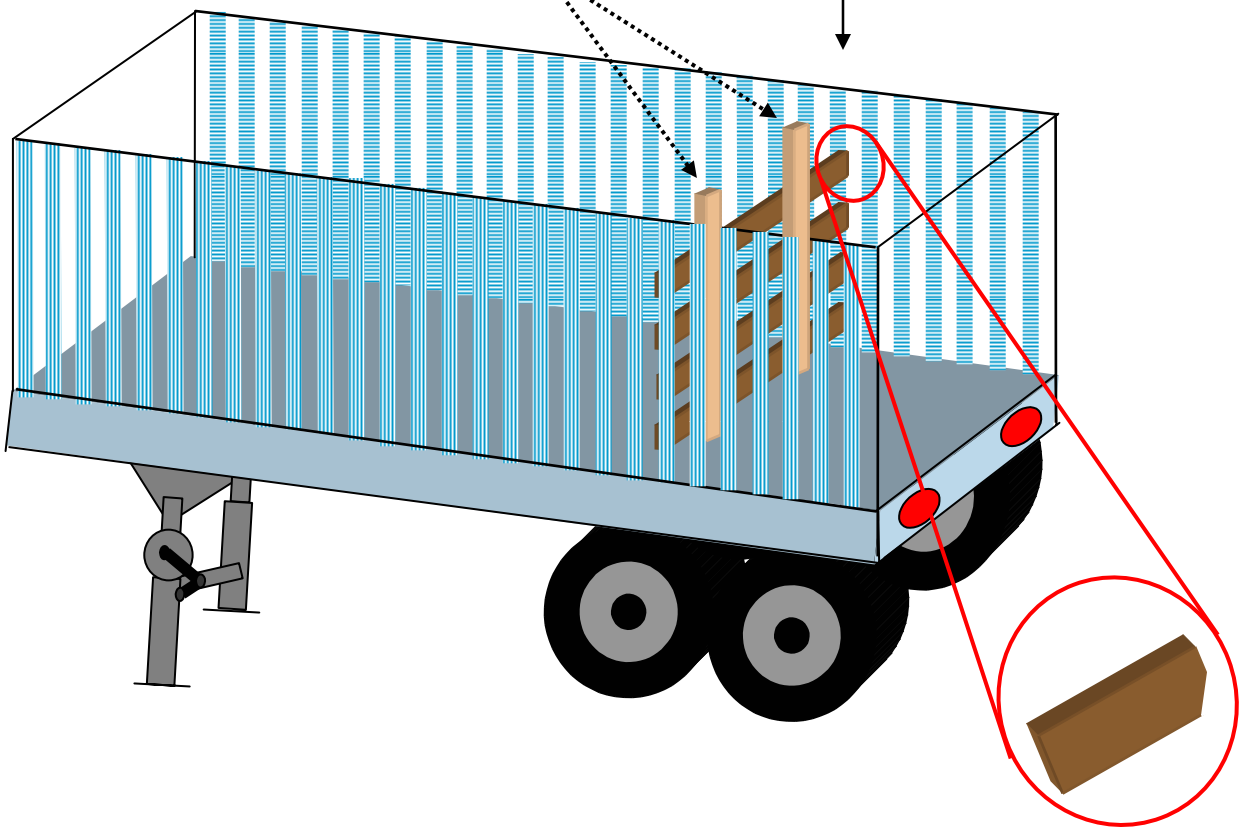
BURLINGTON NORTHERN SANTA FE RAILWAY
LOAD & RIDE SOLUTIONS DRAWING

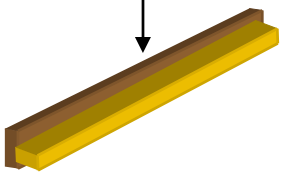
BULL BOARDS - INTERMEDIATE BULKHEAD APPLICATION (INSERTED INTO CORRUGATED SIDEWALL)

THE VERTICAL 2"X 4" LUMBER IS SECURED TO THE HORIZONTAL BULL BOARDS IN ORDER TO PREVENT DISPLACEMENT

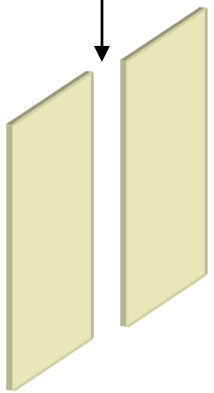
BULL BOARDS CORRUGATED SIDEWALLS



"T" BRACE METHOD OF REINFORCING BULL BOARD. SHOWN BACKWARDS FOR CLARITY.



OPTIONAL: PLYWOOD BUFFER MATERIAL CAN BE PLACED BETWEEN LADING & BULL BOARDS TO HELP EVENLY DISTRIBUTE LADING FORCES (NOT SHOWN IN DIAGRAM)



MITER BOTTOM CORNERS TO SIMPLIFY DROPPING BULL BOARDS IN PLACE

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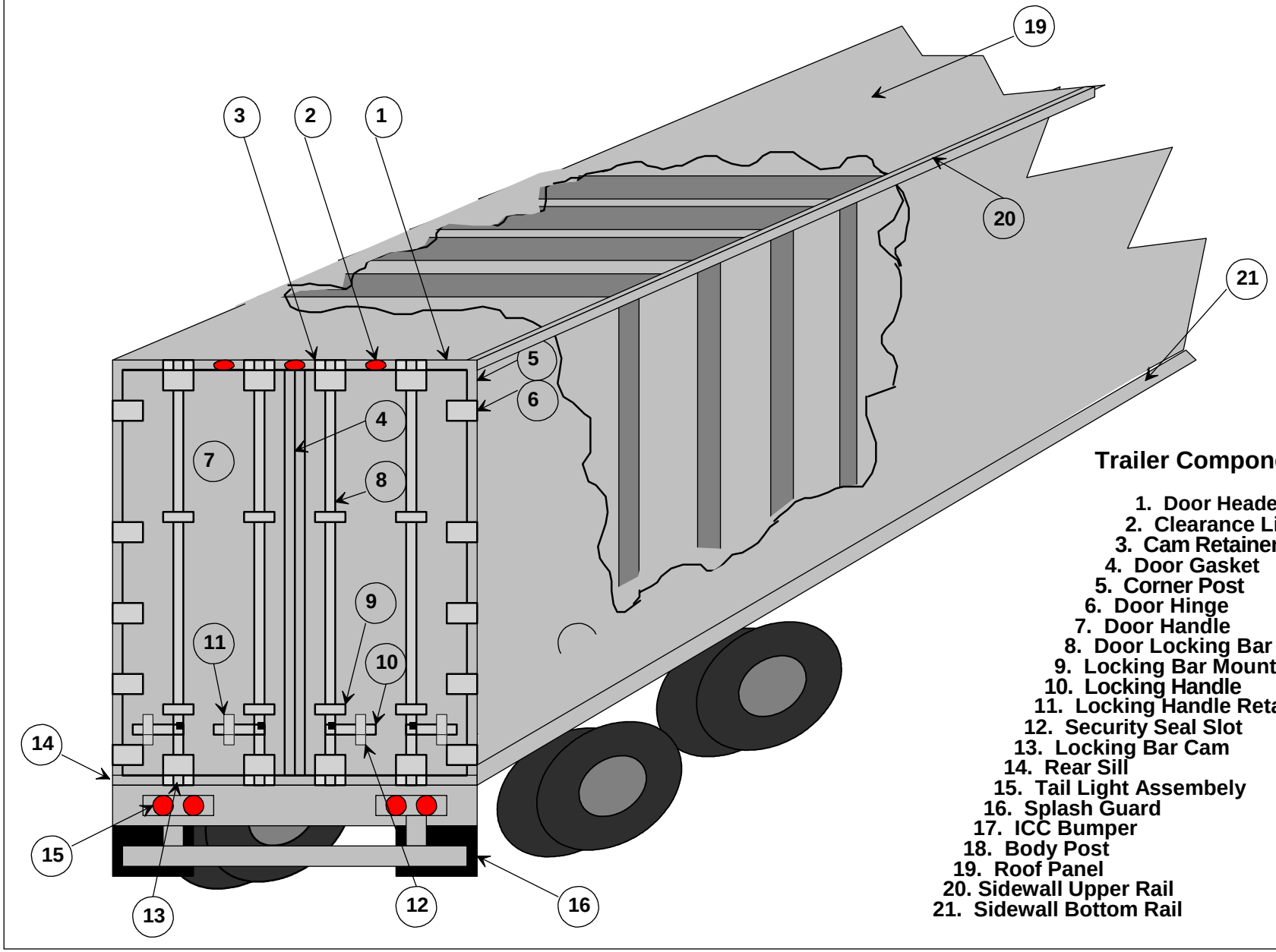
BURLINGTON NORTHERN SANTA FE

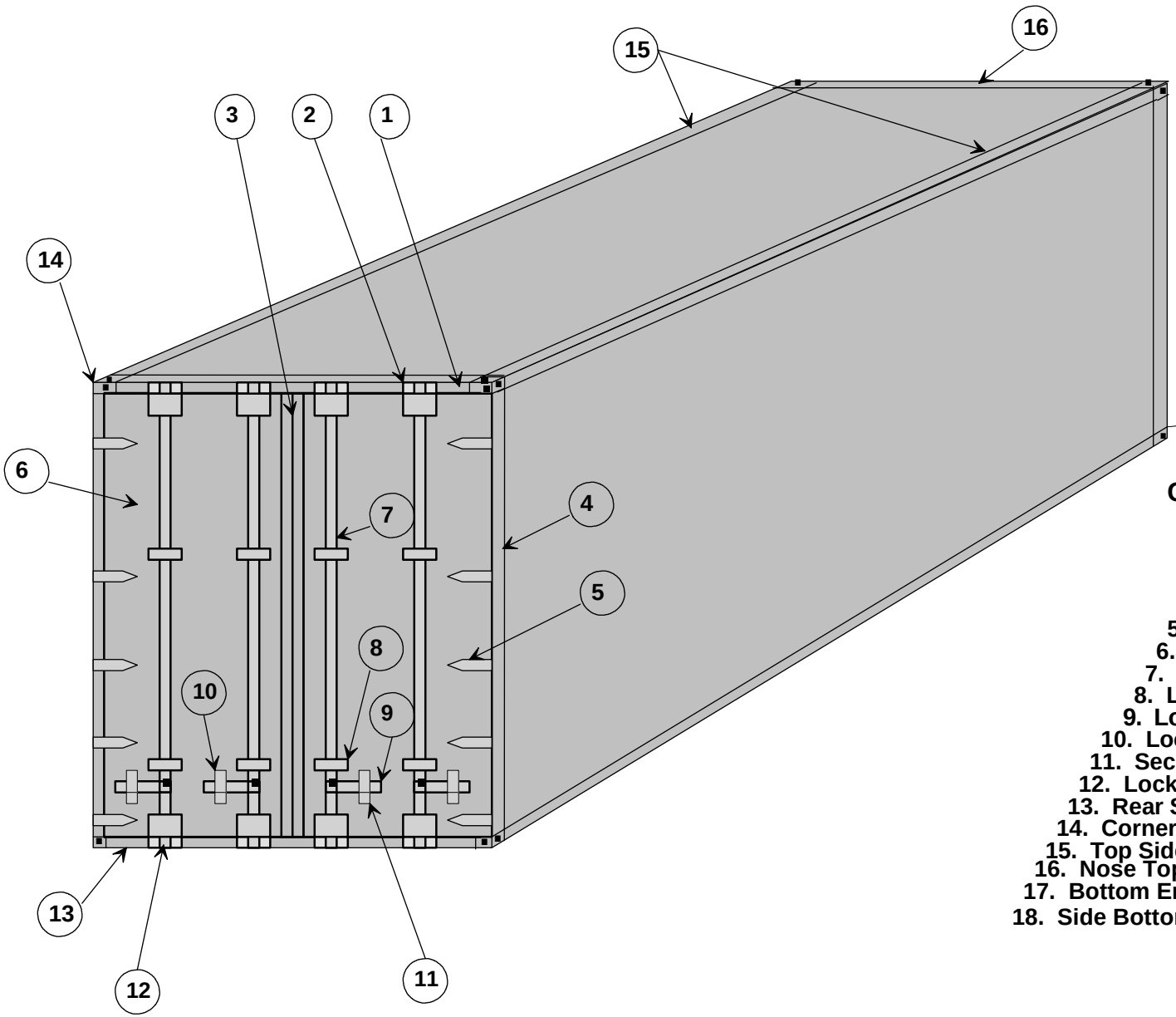
LOAD AND RIDE SOLUTIONS DRAWING



Trailer Components

1. Door Header
2. Clearance Lights
3. Cam Retainer
4. Door Gasket
5. Corner Post
6. Door Hinge
7. Door Handle
8. Door Locking Bar
9. Locking Bar Mounting Brackets
10. Locking Handle
11. Locking Handle Retainer
12. Security Seal Slot
13. Locking Bar Cam
14. Rear Sill
15. Tail Light Assembely
16. Splash Guard
17. ICC Bumper
18. Body Post
19. Roof Panel
20. Sidewall Upper Rail
21. Sidewall Bottom Rail

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



Container Components

1. Door Header
2. Cam Retainer
3. Door Gasket
4. Corner Post
5. Door Hinge
6. Door Panel
7. Door Locking Bar
8. Locking Bar Mounting Brackets
9. Locking Handle
10. Locking Handle Retainer
11. Security Seal Slot
12. Locking Bar Cam
13. Rear Sill
14. Corner Casting
15. Top Side Rail
16. Nose Top (End) Rail
17. Bottom End Rail, Front Sill
18. Side Bottom Rail

SECTION V
LTL PLANNING AND LOADING

LTL Load Planning And Loading

Inspect Lading prior to loading into trailer/container. Do not load damaged freight.

Evenly distribute the weight of load from side to side and end to end in trailer/container and to a uniform height as much as lading permits. Place lighter lading on top of heavier lading with separating material used as needed between layers. Load like sized shipping container in stacks and use divider material between stacks of different size or type of shipping containers and shipping containers of different densities. See illustrations 1, 3, and 4.

Place shipping containers in the position to best utilize the shipping containers' inherent strength. (See illustrations 1 and 2)

Fill all lengthwise space with lading or with lading and filler material, or appropriately block and brace, unless loaded to a specific method. (See illustration 3)

Plan load so that crosswise void space is minimized. Use appropriate bracing or filler material to maintain vertical alignment and prevent crosswise movement.

In manually loaded shipments, use bonded block patterns for fiberboard shipping containers. (See illustrations 3 and 4) Load cylindrical shaped items such as drums pails or rolls of paper in a recessed or in line load pattern. See Illustrations 3 and 4)

Handle and load all freight according to the shippers' printed directions such as "This Side Up", "Do Not Drop", "Clamp Here", etc. (See Illustration 2)

Segregate irregular lading from remainder of lading using blocking and bracing or separators and dividers. (See illustration 3)

Load Longest dimension of narrow based items lengthwise of trailer/container. (See Illustration 1)

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BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Stowing Mixed Sizes And Products

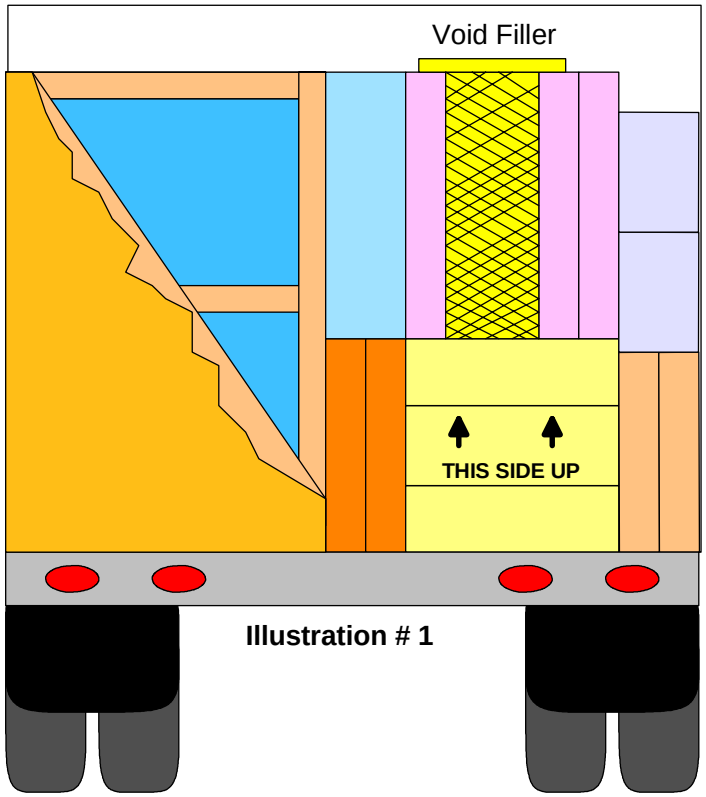


Illustration # 1

Open crate on left contains large piece of freight. A covering of corrugated fiberboard (cut away for better perspective) is used to protect against the possibility of smaller boxes falling or moving into open crate. Load mirrors, marble tops, KD tables, and/or bed ends etc., on edge lengthwise in trailer/container.

Placement Of Odd Shaped Containers

Load furniture in accordance with any directional arrows except in the case of form fitting containers which may be inverted.

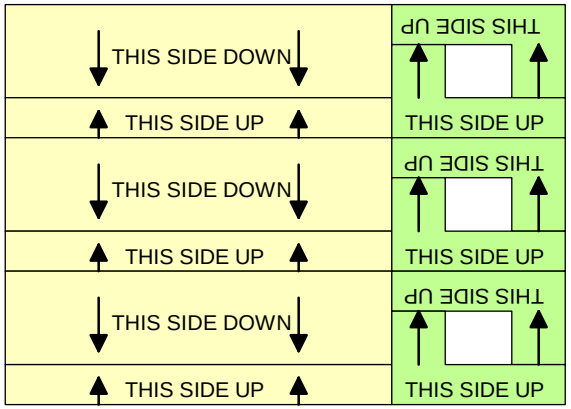


Illustration # 2

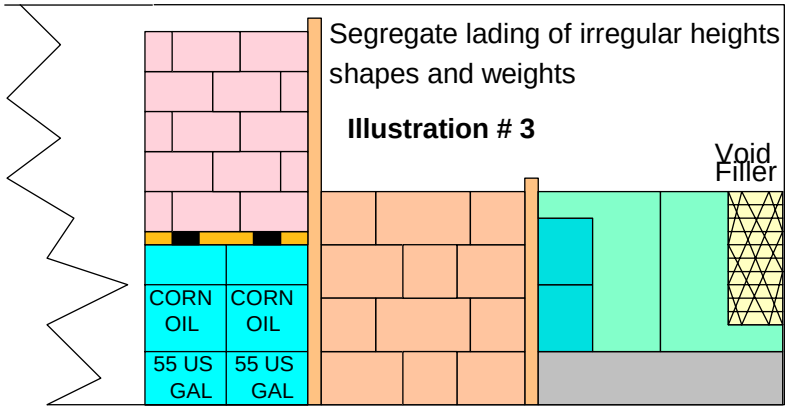


Illustration # 3

Stretch Wrapped Unit

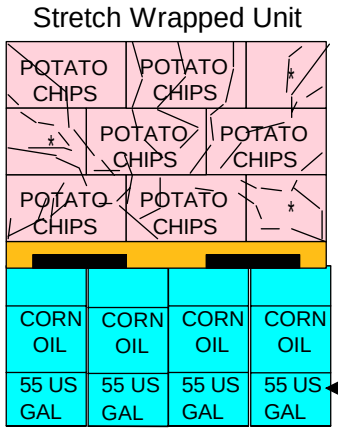


Illustration # 4

Load heavier rigid type lading on bottom with lighter more easily damaged type lading on top. Palletize and unitize lading when ever possible maintain product alignment during the warehousing and shipping cycle.

55 Gallon Closed Head Drums.

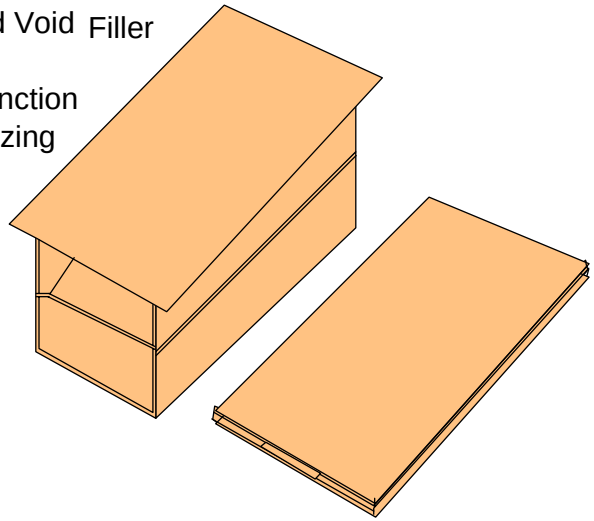
LTL Loading Techniques

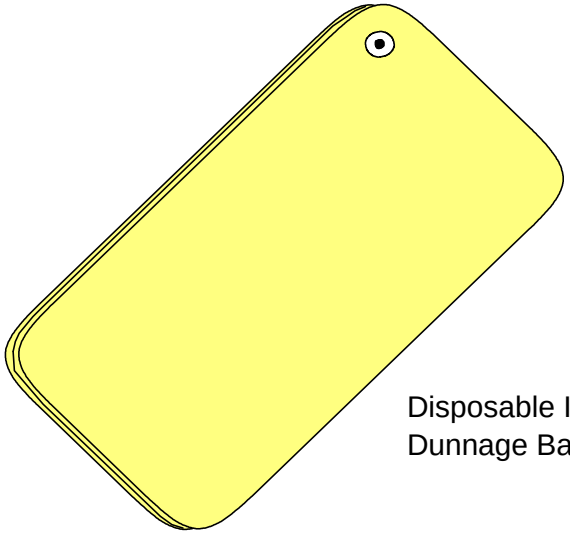
SECTION VI
DUNNAGE & UNITIZING MATERIALS

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Collapsible Fiberboard Void Filler

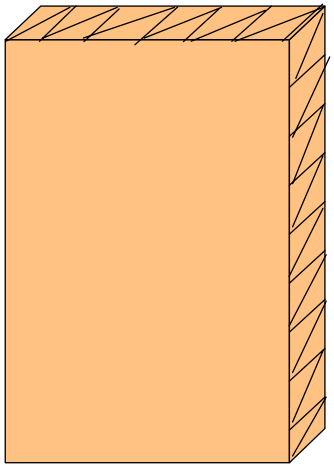
Must be used in conjunction with some type of unitizing material.



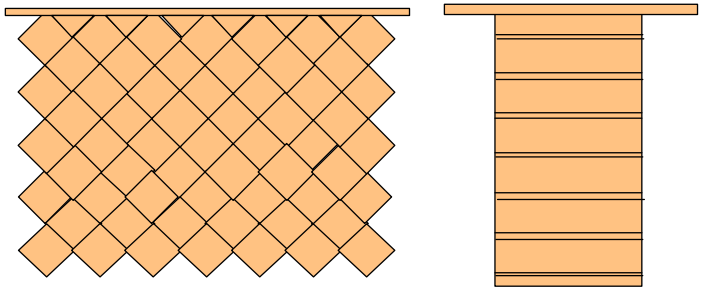


Disposable Inflatable Dunnage Bag (DID Bag)

Honeycomb Filler Sheet



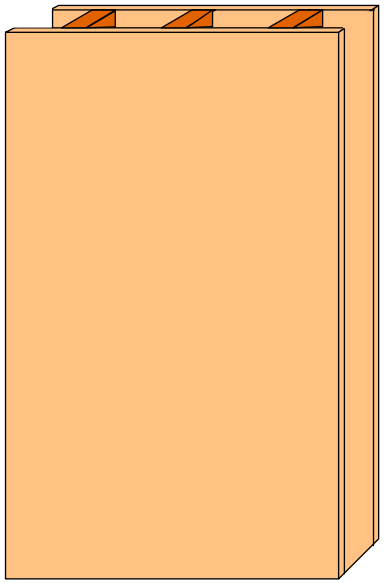
Honeycomb Style Drop Filler



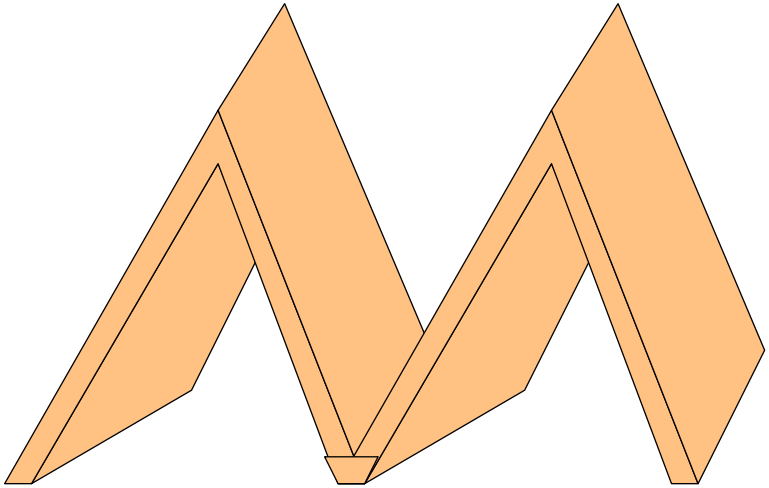
Common Void Fillers And Dunnage Materials

BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

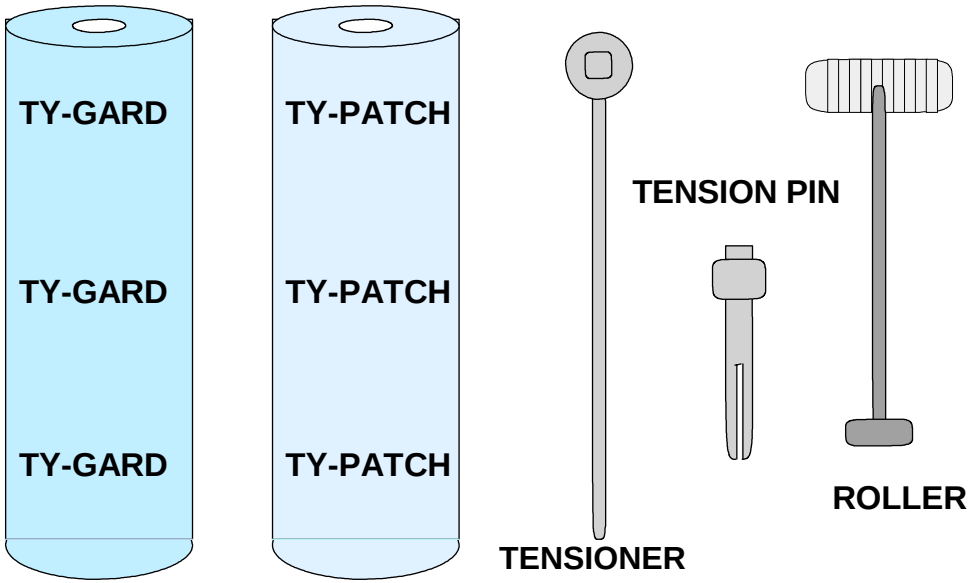


WOOD CORE



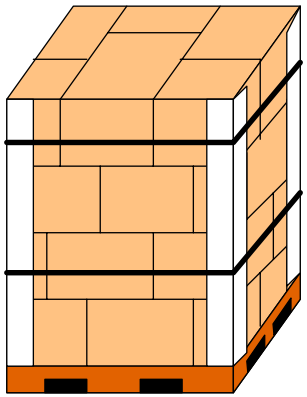
A-FRAME LENGTHWISE VOID FILLER

TY-GARD AND APPLICATION TOOLS

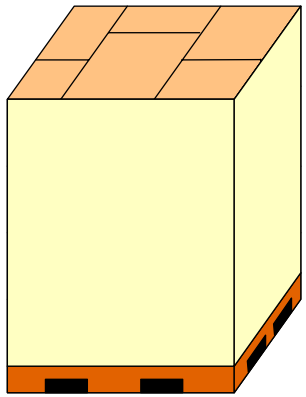


Common Viod Fillers And Dunnage Materials

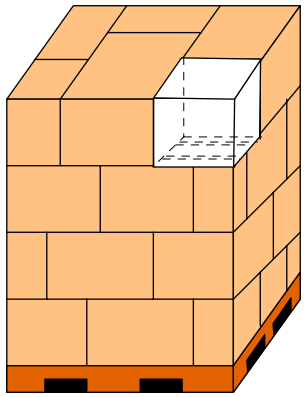
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



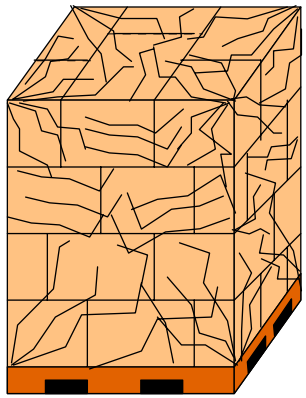
Corner Posts And Strapping. Corner Posts May Be Made From Plywood, Hardboard, Multi-Wall Corrugated Fiberboard Or Other Suitable Material



Corrugated (Fiberboard) Sleeves



Spot Gluing Of Containers. Double Dotted Line Represents Glue Lines Applied.



Pallet Load Utilizing One Of The Stretch-Wrap Or Shrink-Wrap Films.

Examples Of Maintaining Vertical Alignment Of Unitized Containers

SECTION VII
BNSF APPROVED METHODS

BURLINGTON NORTHERN & SANTA FE APPROVED METHODS

At times we are asked by various shippers to evaluate certain loading methods that do not meet all of the requirements of published loading rules. Those methods that have performed successfully when moving over our lines are included in this publication.

Important: Use of BNSF loading and securement methods are restricted to shipments moving on BNSF and final approval must be obtained from a Load and Ride Solutions representative prior to shipping. These methods cover shipments of non hazardous material commodities, unless otherwise approved by a LARS representative. Finally, because BNSF loading methods are not authorized with other rail carriers, it is the shipper's responsibility to get authorization from all carriers in the routing.

Contact LARS: If you don't see a specific diagram for the commodity you are shipping, or checking for approval on one of the diagram examples, please contact your local LARS rep for assistance.

Rear Door Method

REAR DOOR SECUREMENT METHOD

As stated previously in this guide, vehicle doors are not designed to restrain lading movement. BNSF has found that trailer/container doors generally cannot be expected to fully restrain the load. If the lading is rigid in nature and/or very dense, such as boxes of nuts and bolts, machinery, metal beams, brick, cut paper, etc., or if the shape of the lading is such that the area of contact is minimal, such as with cylindrical objects like drums or rolled paper, additional blocking and bracing is necessary. The trailer doors are neither designed nor intended to restrain commodities with these characteristics. Such products must be loaded and secured in conformance with the rules and illustrations in this publication. However, trailer/container doors meeting Association of American Railroads' door design specifications can be relied on to restrain lading under the following conditions:

1) Lading is multi-unit, light-weight and high cube, such as boxes of food-stuffs, tissue or soft paper products, furniture, appliances, etc.

2) Lading must be loaded tightly, both lengthwise and crosswise in the vehicle allowing no room for movement. If any void exists, fill void space with recommended dunnage.

3) The load must come to the doors with an even load face, covering a minimum of 60% of the door area. In a straight floor vehicle, minimum height of load would be 5' 4" and in a drop frame trailer, minimum height of load would be 6'. In both cases, the full width of the trailer/container is assumed to be filled.

4) The doors must fit squarely, the hinges tight, and the locking bars must be in good condition and function properly.

CAUTION: private equipment (especially rear doors) may not be designed according to the AAR specifications, and therefore, unable to withstand the rigors of the rail environment. It is strongly suggested that blocking be utilized. Should you elect to use the rear doors for restraining (whether private or rail-owned equipment) and not follow the conditions specified, you stand to bear the costs for damage to equipment, lading, and load transfer.

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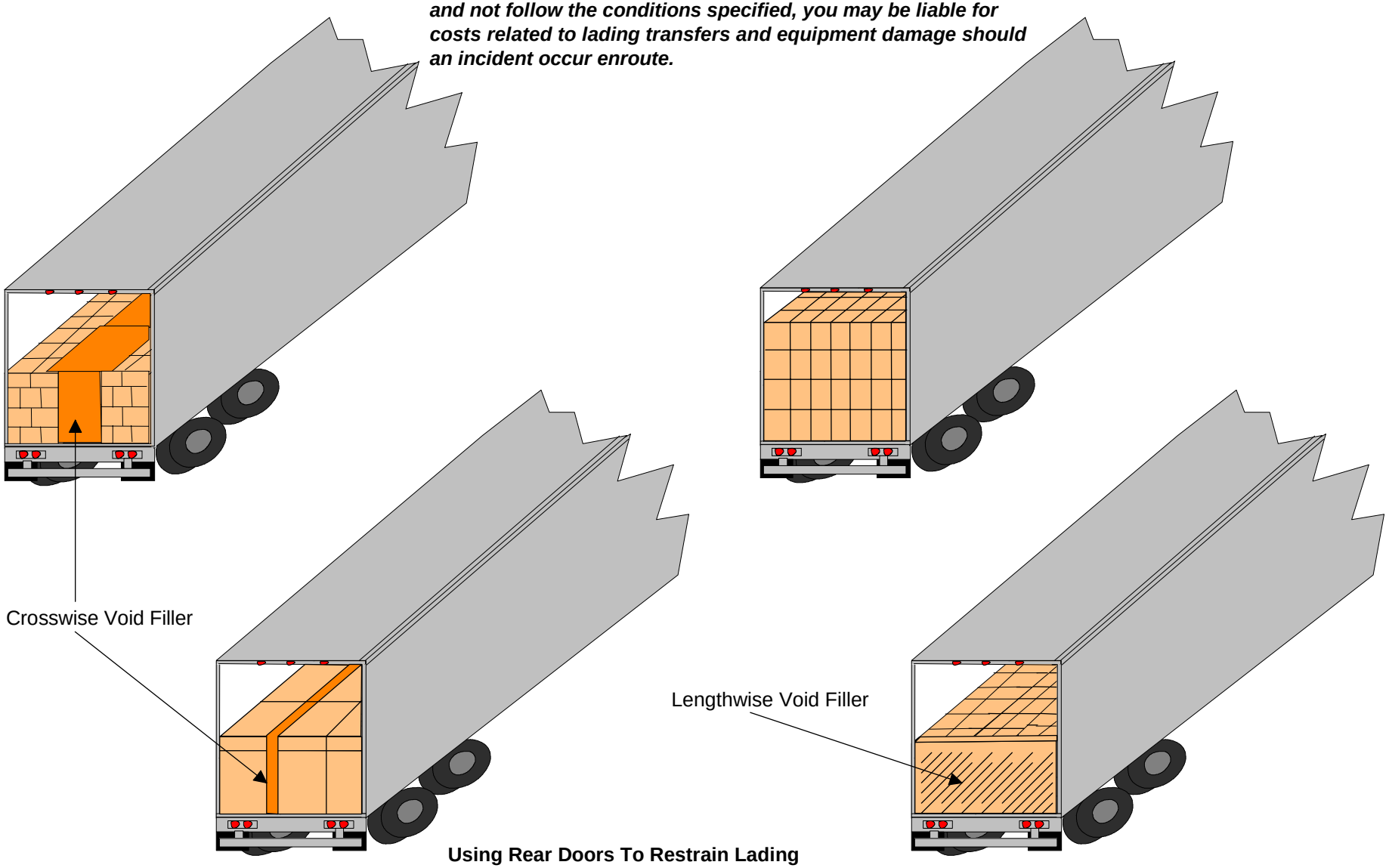
BURLINGTON NORTHERN SANTA FE

LOAD AND RIDE SOLUTIONS DRAWING

CAUTION: Private trailer rear doors may not be designed according to AAR specifications and may not be suitable to the rail environment. Should you elect to use rear doors for restraint and not follow the conditions specified, you may be liable for costs related to lading transfers and equipment damage should an incident occur enroute.



Using Rear Doors To Restrain Lading

CASED GOODS
(Food & Beverages)

Palletized Cased Goods Centered in Trailer/Container Braced With DID Bags

This method is for use with stretch-wrapped, palletized units of case goods braced with two DID bags.

Each pallet is to be unitized with either shrink- wrap or stretch-wrap in accordance with manufacturer's specifications.

DID bags must be a minimum of 48"x 96" x two ply.

Pallets are to be loaded in a 2-2 pattern with the 48" dimension running crosswise in the trailer/container. (If 40" dimension is placed crosswise in trailer/container see diagram inset)

Load is to be placed in one section in center of trailer/container so that appropriate axle weights are maintained.

A 48"x 96" DID bag must be placed at each end of the product placed in the trailer/container in the center void space .

DID bags must fill a minimum of 2 lengthwise stacks in the load at each end.

*** Since loading method was developed for a denser type product in which loads weigh out before they are cubed out care must be
*** taken to ensure that not more than 25,000 pounds are loaded in any 10 linear feet.

Notes

DID bags must not be used in a void space in excess of 12" wide.

DID bags must not be placed in such a manner that they contact the floor of trailer/container or pallet after inflation.

DID bags must be adequately buffered to prevent contact with sharp or rough surfaces which could cause deflation.

DID bags must be inflated between ½ and 2 PSI depending on the type of trailer/container walls you may encounter.

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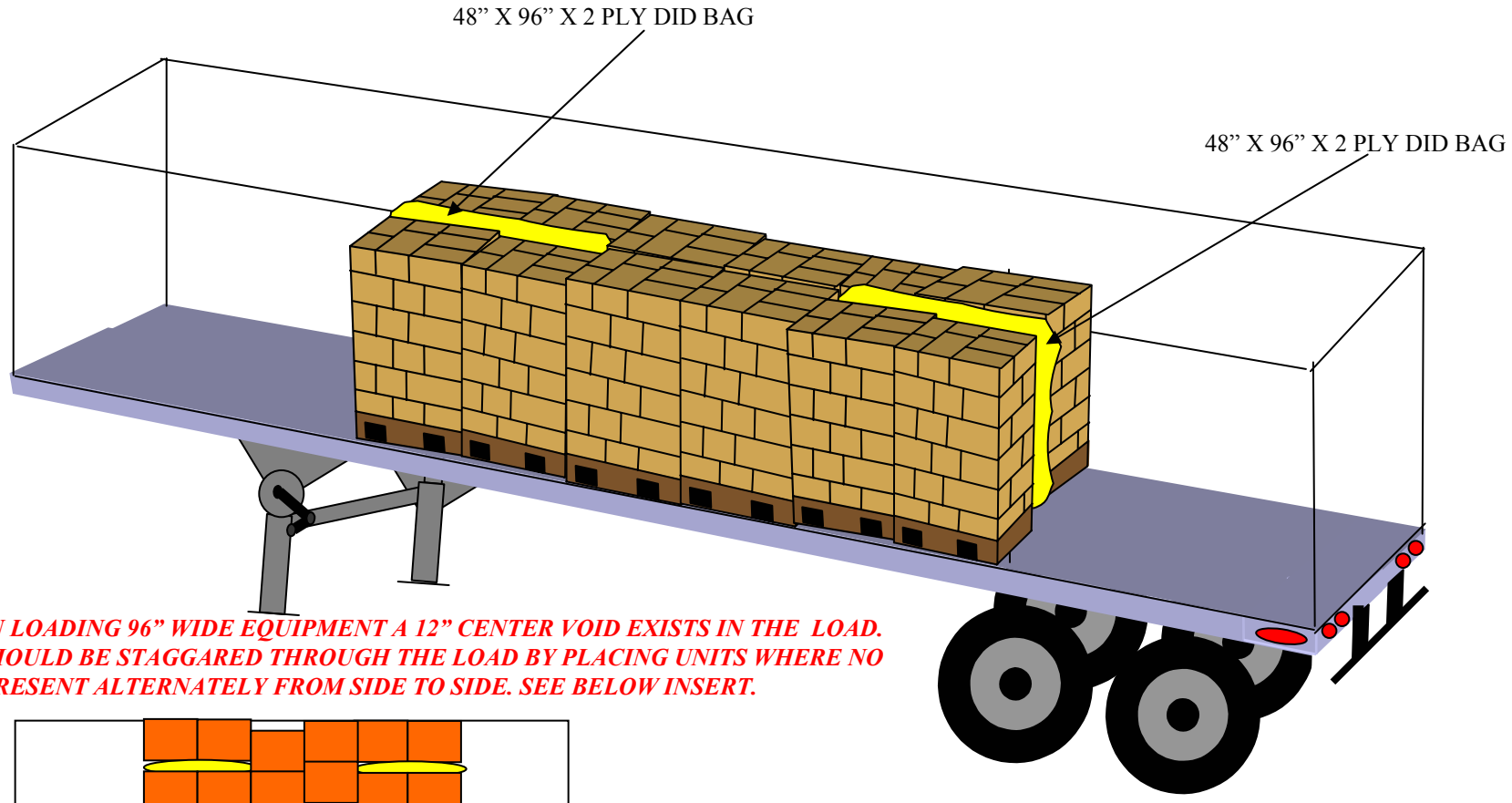
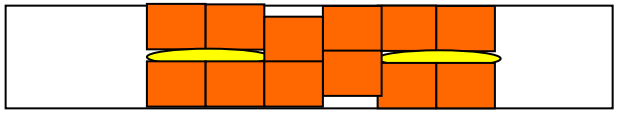
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

APPROVED LOADING METHOD FOR PALLETIZED/STRETCH-WRAPPED UNITS OF CASE GOODS IN TOFC/COFC SERVICE WITH ODD NUMBER AMOUNT. METHOD REQUIRES PALLETS BE PLACED WITH 48" DIMENSION X-WISE IN 102" WIDE TRLRS. AND 40" DIMENSION BE PLACED X-WISE IN 96" TRLRS.



NOTE: WHEN LOADING 96" WIDE EQUIPMENT A 12" CENTER VOID EXISTS IN THE LOAD. THIS VOID SHOULD BE STAGGARED THROUGH THE LOAD BY PLACING UNITS WHERE NO DID BAG IS PRESENT ALTERNATELY FROM SIDE TO SIDE. SEE BELOW INSERT.



NOTE: DID BAGS MUST NOT BE USED IN VOID SPACES IN EXCESS OF 12", MUST NOT CONTACT FLOOR OF TRAILER OR PALLET AFTER INFLATION, MUST BE ADEQUATELY BUFFERED WHEN IN CONTACT WITH ROUGH SURFACES, INFLATE BETWEEN 1/2 & 1 PSI HWY. EQMT., 2.5 PSI RAILEQMT. IF PALLETS TURNED WITH 48" DIMENSION TURNED CROSSWISE IN 102" WIDE EQMT., USE A 48"X84" 2-PLY DID BAG THAT BEST FITS PATTERN. ALSO: ALL UNITS MUST BE PROPERLY STRETCH-WRAPPED TO MAINTAIN ADEQUATE VERTICAL ALIGNMENT DURING THE TRANSPORTATION CYCLE (3 TO 4 WRAPS PER UNIT) SINGLE UNIT MUST BE HEAVILY STRETCH-WRAPPED TO OBTAIN OPTIMUM RESTRAINING CAPACITY.

Palletized Cased Goods Loaded In Two Sections in Trailer/Container Braced With DID Bags

This method is for use with stretch-wrapped, palletized units of case goods braced with three DID bags.

Each pallet is to be unitized with either shrink- wrap or stretch-wrap in accordance with manufacturer's specifications.

DID bags must be a minimum of 48"x 96" x two ply.

Pallets are to be loaded in a 2-2 pattern with the 48" dimension running crosswise in the trailer/container. (If 40" dimension is placed crosswise in trailer/container see diagram inset)

Load is to be placed in two sections in trailer/container, one section in nose and one section in rear so that appropriate axle weights are maintained.

A 48"x 96"x 2 ply DID bag must be placed at the rear end of the lading loaded in the nose section of trailer/container in the center void space.

A 48"x 96"x 2 ply DID bag must be placed at the front of the rear section and rear of rear section of lading loaded in the rear of trailer/container in the center void space.

DID bags must fill a minimum of 2 lengthwise stacks in the load at each application point.

*** Since loading method was developed for a denser type product in which loads weigh out before they are cubed out care must be
*** taken to ensure that not more than 25,000 pounds are loaded in any 10 linear feet.

Notes

DID bags must not be used in a void space in excess of 12" wide.

DID bags must not be placed in such a manner that they contact the floor of trailer/container or pallet after inflation.

DID bags must be adequately buffered to prevent contact with sharp or rough surfaces which could cause deflation.

DID bags must be inflated between ½ and 2 PSI depending on the type of trailer/container walls you may encounter.

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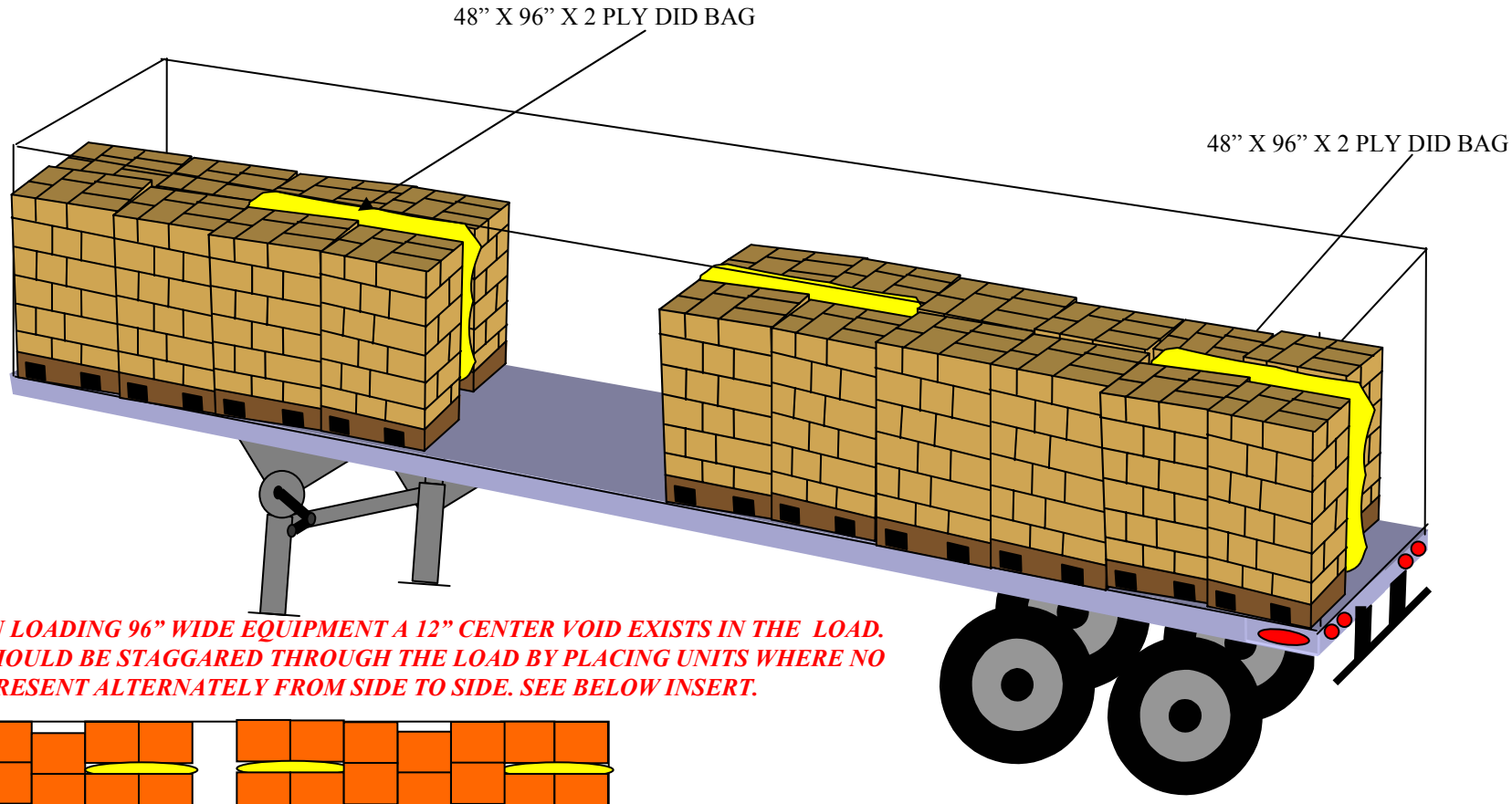
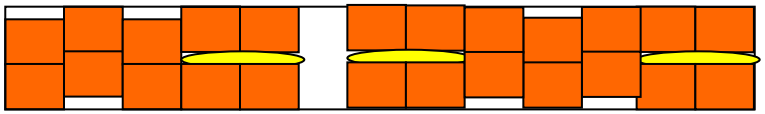
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

APPROVED LOADING METHOD FOR PALLETIZED/STRETCH-WRAPPED UNITS OF CASE GOODS IN TOFC/COFC SERVICE WITH ODD NUMBER AMOUNT. METHOD REQUIRES PALLETS BE PLACED WITH 48" DIMENSION X-WISE IN 102" WIDE TRLRS. AND 40" DIMENSION BE PLACED X-WISE IN 96" TRLRS.



NOTE: WHEN LOADING 96" WIDE EQUIPMENT A 12" CENTER VOID EXISTS IN THE LOAD. THIS VOID SHOULD BE STAGGARED THROUGH THE LOAD BY PLACING UNITS WHERE NO DID BAG IS PRESENT ALTERNATELY FROM SIDE TO SIDE. SEE BELOW INSERT.



NOTE: DID BAGS MUST NOT BE USED IN VOID SPACES IN EXCESS OF 12", MUST NOT CONTACT FLOOR OF TRAILER OR PALLET AFTER INFLATION, MUST BE ADEQUATELY BUFFERED WHEN IN CONTACT WITH ROUGH SURFACES, INFLATE BETWEEN 1/2 & 1 PSI HWY. EQMT., 2.5 PSI RAIL EQMT. IF PALLETS TURNED WITH 48" DIMENSION TURNED CROSSWISE IN 102" WIDE EQMT., USE A 48"X84" 2-PLY DID BAG THAT BEST FITS PATTERN. ALSO: ALL UNITS MUST BE PROPERLY STRETCH-WRAPPED TO MAINTAIN ADEQUATE VERTICAL ALIGNMENT DURING THE TRANSPORTATION CYCLE (3 TO 4 WRAPS PER UNIT) SINGLE UNIT MUST BE HEAVILY STRETCH-WRAPPED TO OBTAIN OPTIMUM RESTRAINING CAPACITY.

Cased Goods Secured With D.I.D. Bags

This method is for case goods unitized on pallets or slipsheets by minimum 90 gauge stretch wrap. A minimum of 3 wraps for the top and bottom layers and 2 wraps for the center layers. The actual load tested weighed 45,000 lbs.

Cover rough surfaces or projections of the sidewall with fiberboard sheets or other suitable buffer material.

Disposable inflatable dunnage (D.I.D.) bags are used at two locations in the load, at the 4th and 5th stacks and at the last two stacks. The diagram shows 10 units in 2 rows in a 102" wide trailer. Other size trailers with varying numbers of units may also be loaded. In any case, the first D.I.D. bag restrains approximately 1/2 of the load. Use 2-ply D.I.D. bags long enough to extend over 2 stacks of lading and wide enough to extend from 4" above the floor to the top of the lading. Minimum D.I.D. bag size is 48" x 96".

Place units in the trailer with a minimum 2" center void between the units where the D.I.D. bags are located. Leave a 24" (approx.) space between the rear of the load and the trailer doors.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bags must not exceed height of the lading they are restraining when inflated.

DID bags must conform to AAR requirements. DID bags to be minimum of 2 ply. Apply DID bags so they are a minimum of 1" above floor of trailer/container when inflated. Inflate DID bags with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

DID bags are not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied. If DID bags are to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

If product is likely to shift in void spaces where DID bags are not restraining lading suitable crosswise void fillers must be applied.

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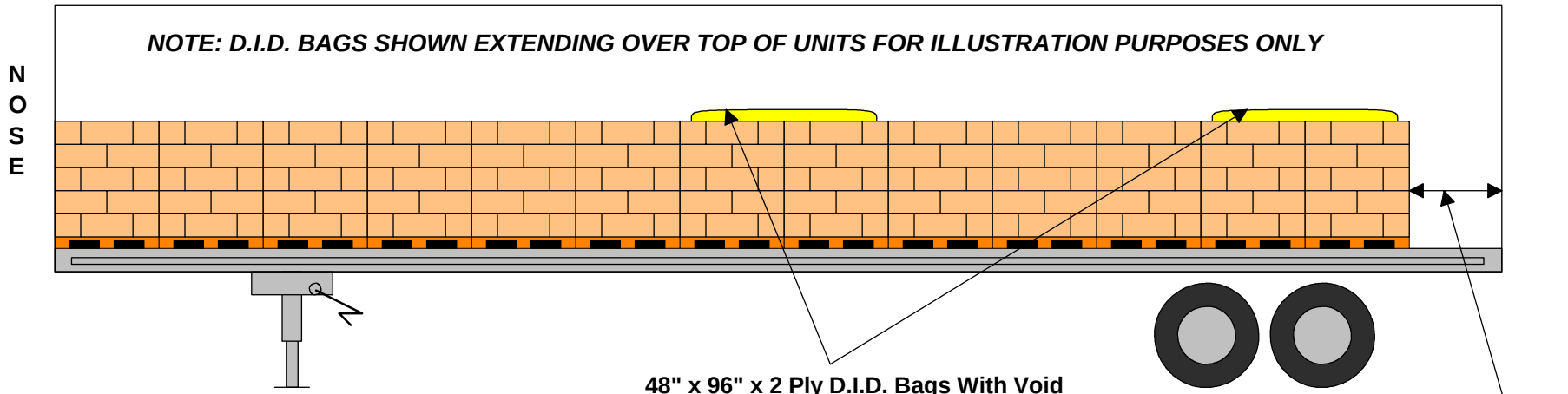
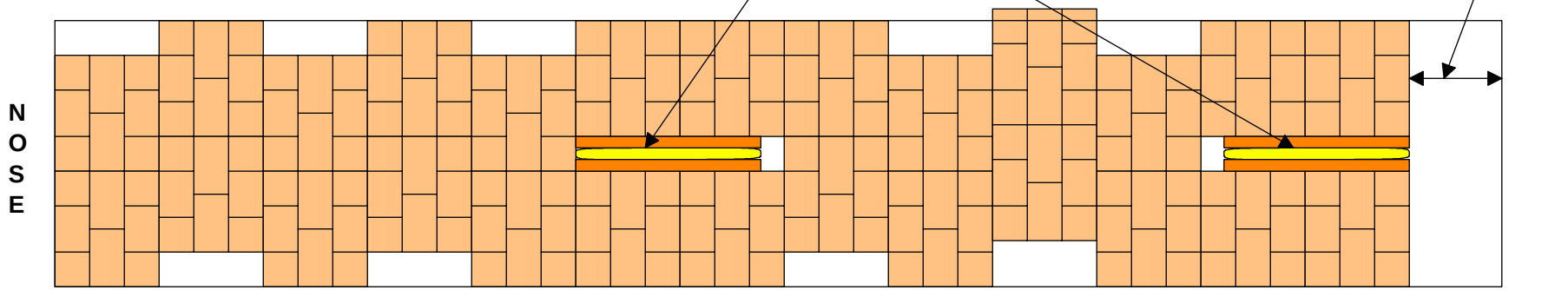
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



Palletized Case Goods Secured With D.I.D. Bags

Use Of DID Bags For Lengthwise Bracing In Double Layered Slip-Sheeted Loads Of Cased Goods

It is recommended that all units be wrapped with several layers of stretch wrap or other unitizing materials.

Units to be placed in trailer/container two across and two high with any void space to be alternated side to side in load.

Placed one 36" x 84" x 2 ply DID bag vertically in center void at rear of load between last stack loaded in trailer/container and one 36" x 84" x 2 ply DID bag vertically in center void between second to the last stack loaded in trailer/container.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bags must not exceed height of the lading they are restraining when inflated.

DID bags must conform to AAR requirements. DID bags to be minimum of 2 ply. Apply DID bags so they are a minimum of 1" above floor of trailer/container when inflated. Inflate DID bags with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

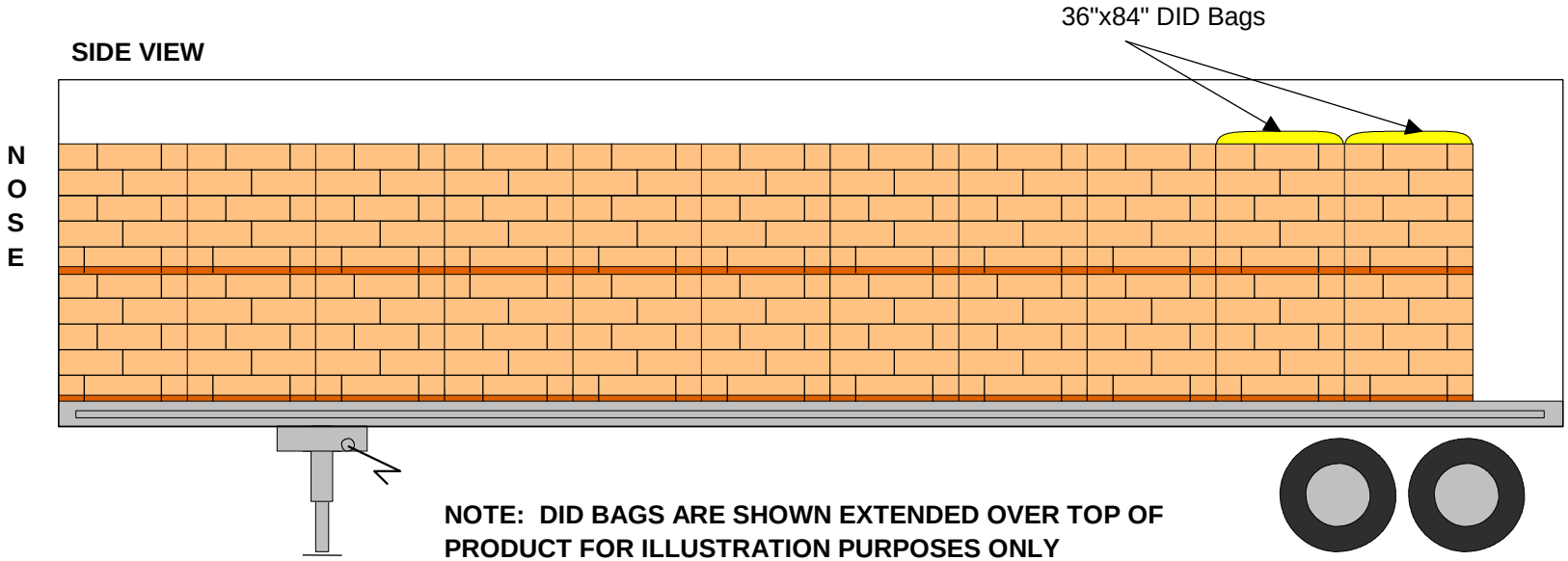
DID bags are not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied. If DID bags are to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

If product is likely to shift in void spaces where DID bags are not restraining lading suitable crosswise void fillers must be applied.

BNSF

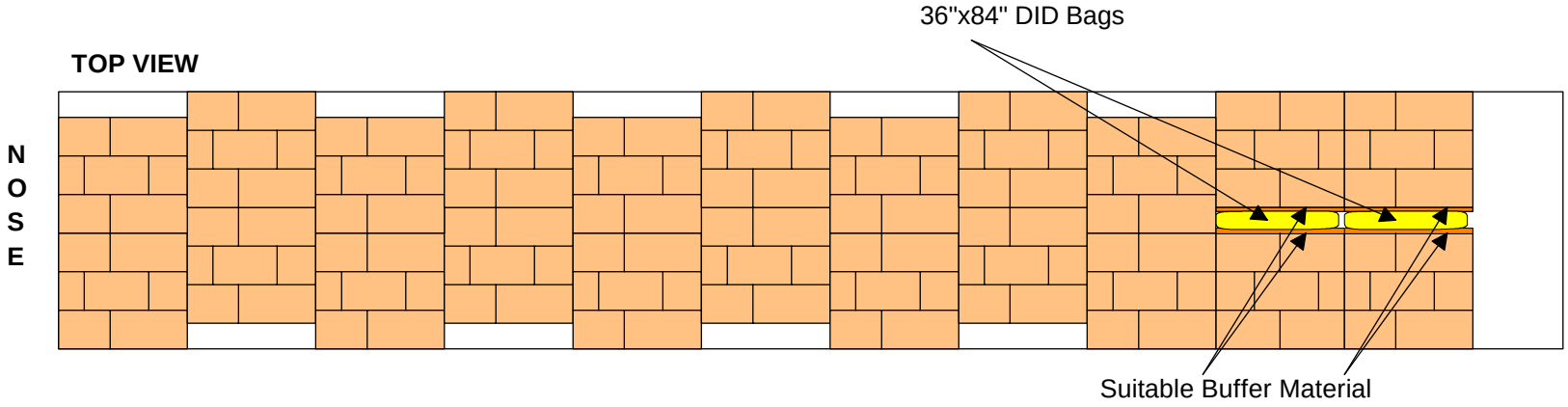
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



NOTE: DID BAGS ARE SHOWN EXTENDED OVER TOP OF PRODUCT FOR ILLUSTRATION PURPOSES ONLY

TOP VIEW



Double Layered Load Of Food Products On Slip-Sheets

Incomplete Double-Layered Load On Slip Sheets

It is recommended that all units be wrapped with several layers of stretch wrap or other unitizing materials.

Units to be placed in trailer/container two across with any void space to be left in center of the load.

Place one 48" x 96" x 2 ply DID bag vertically in the center void at each end of the double layered portion of the load.

Place a single 48" x 96" x 2 ply DID bag longitudinally in the center void between the last two stacks loaded in the trailer/container.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bag must not exceed the height of the lading it is restraining when inflated.

DID bag must conform to AAR requirements. DID bag to be a minimum of 2 ply. Apply did bag so it a minimum of 1" above floor of trailer /container when inflated. Inflated DID bag with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

DID bag not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied . If DID bag is to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

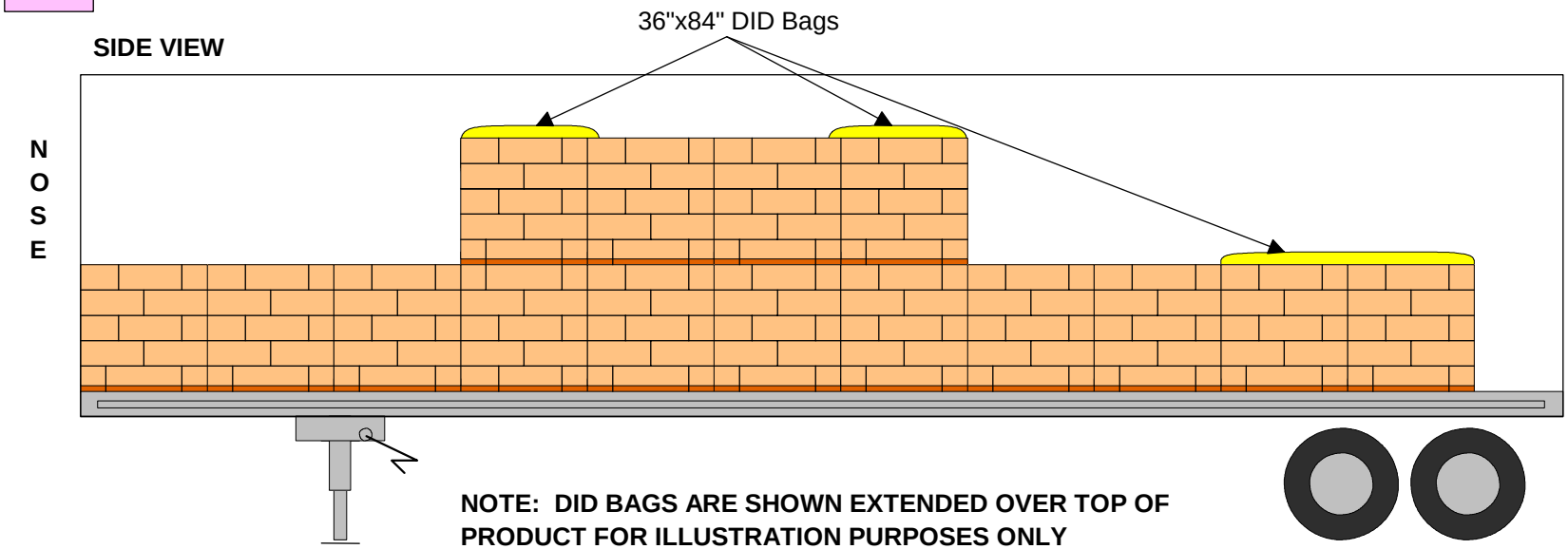
If product is likely to shift into void spaces where DID bag is not restraining lading suitable crosswise void fillers must be applied.

BNSF

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Indicates Incomplete Double Layer

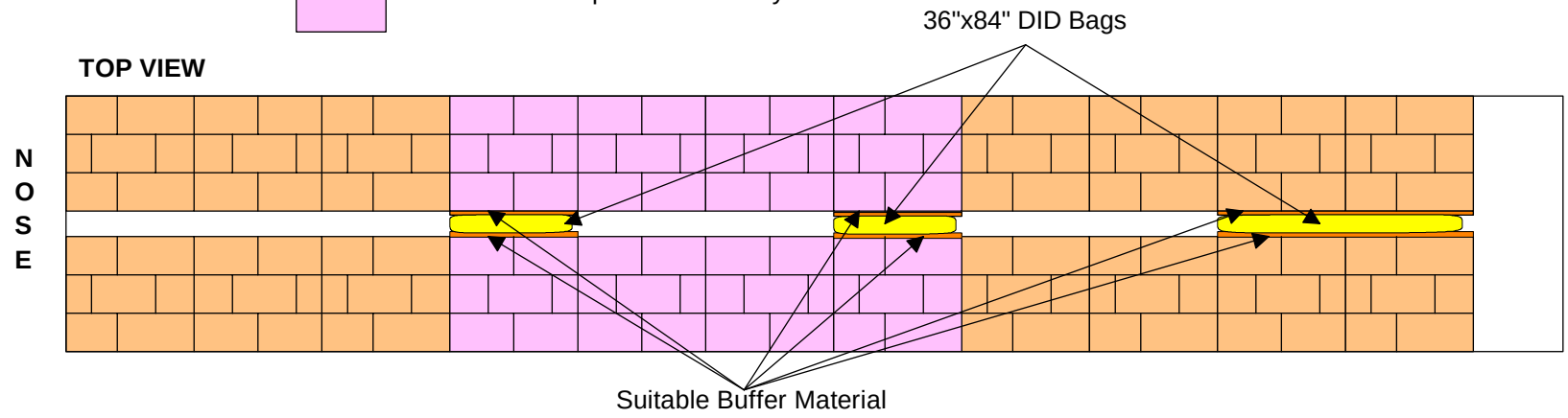
SIDE VIEW



NOTE: DID BAGS ARE SHOWN EXTENDED OVER TOP OF PRODUCT FOR ILLUSTRATION PURPOSES ONLY

Indicates Incomplete Double Layer

TOP VIEW



Incomplete Double Layered Load Of Food Products On Slip-Sheets

Use Of DID Bags For Lengthwise Bracing In Palletized Loads Of Cased Goods

It is recommended that all units be wrapped with several layers of stretch wrap or other unitizing materials.

Units to be placed in trailer/container two across and one high with any void space to be alternated from side to side in load.

Placed one 48" x 96" x 2 ply DID bag in center void at rear of load between last two stacks loaded in trailer/container and one 48" x 96" x 2 ply DID bag in center void between two stacks no closer to the nose than half of the load length.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bags must not exceede height of the lading they are restraining when inflated.+

DID bags must conform to AAR requirements. DID bags to be minimum of 2 ply. Apply DID bags so they are a minimum of 1" above floor of trailer/container when inflated. Inflate DID bags with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

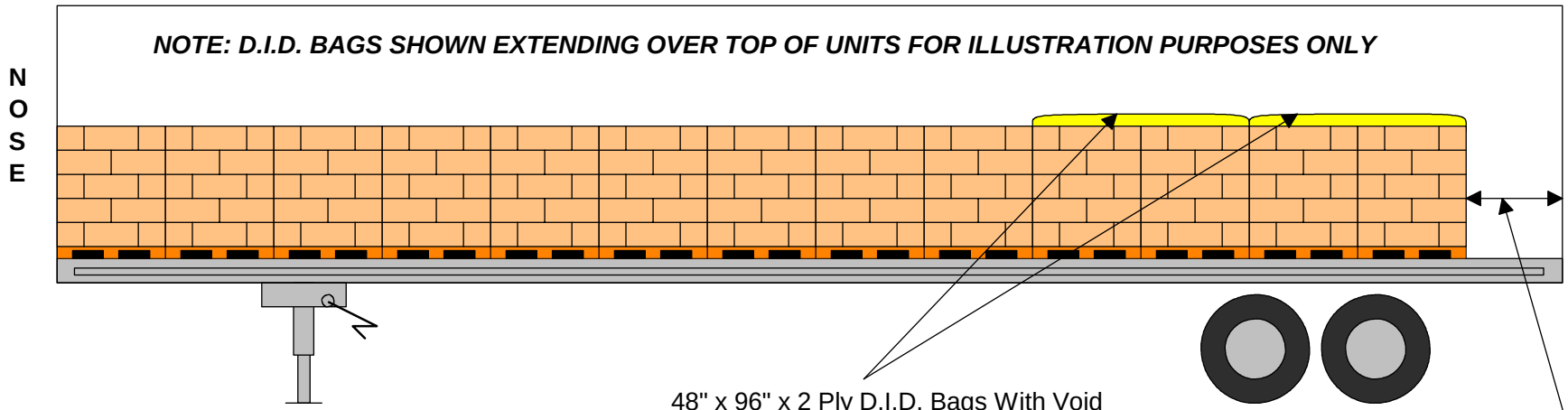
DID bags not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied. If DID bags are to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

If product is likely to shift in void spaces where DID bags are not restraining lading suitable crosswise void fillers must be applied.

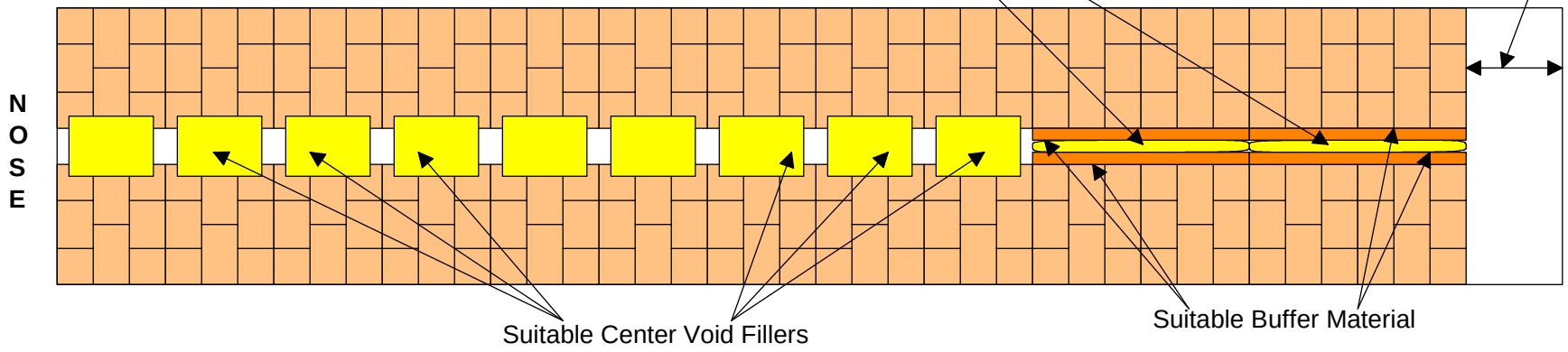
BNSF

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



Palletized Case Goods Secured With D.I.D. Bags

Use Of DID Bags For Lengthwise Bracing In Slip-Sheeted Loads Of Cased Goods

It is recommended that all units be wrapped with several layers of stretch wrap or other unitizing materials.

Units to be placed in trailer/container two across and one high with any void space to be alternated from side to side in load.

Placed one 48" x 96" x 2 ply DID bag in center void at rear of load between last two stacks loaded in trailer/container.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bag must not exceed height of lading it is restraining when inflated.

DID bag must conform to AAR requirements. DID bag to be minimum of 2 ply. Apply DID bag so it is a minimum of 1" above floor of trailer/container when inflated. Inflate DID bag with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

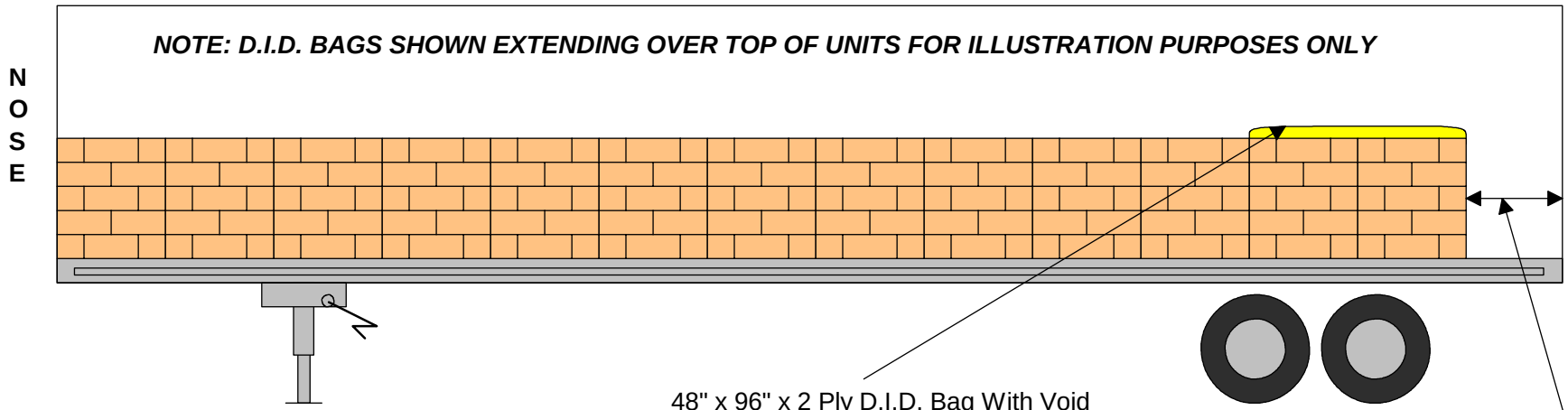
DID bag not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied. If DID bag is to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

If product is likely to shift in void spaces where DID bag is not restraining lading suitable crosswise void fillers must be applied.

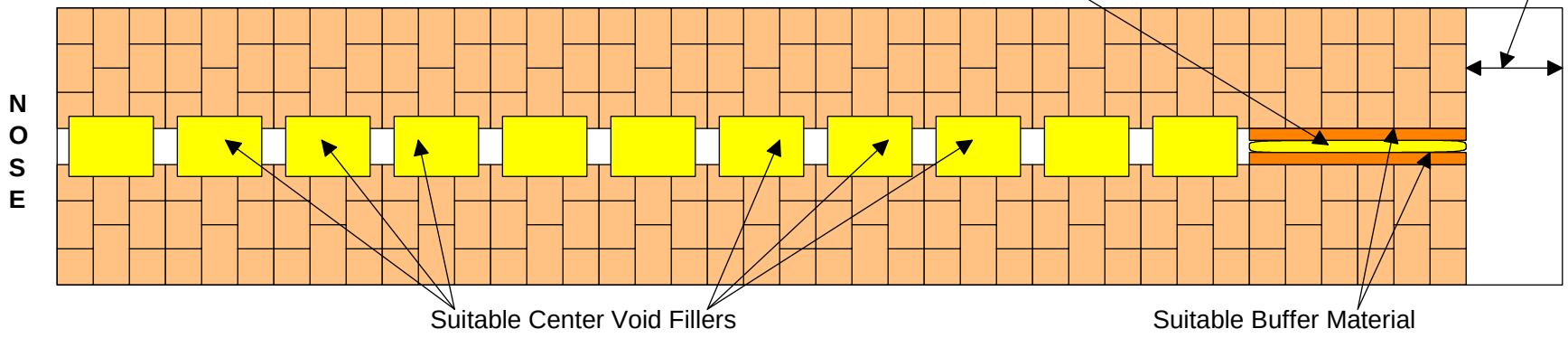
BNSF

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



Slip-Sheeted Case Goods Secured With D.I.D. Bags

Canned Beverages In Tray Pack Containers, Palletized, Secured With Ty-Gard And Floor Blocking

Load pallets 2 across and 2 high with the first stack placed tightly against the nose of trailer/container. Units are to be loaded tight against the sidewalls leaving any void space in center of load.

Where ever possible suitable crosswise void fillers must be used in center void space to maintain proper unit alignment.

Apply suitable buffer material to rear of load prior to applying Ty-Gard strips to prevent damage to lading.

Apply two 15" Ty-Gard strips to rear of load in accordance with manufacturers instructions.

Apply 2" x 4" x 8' boards laminated 2 boards high for lengthwise blocking at rear of load abutting pallets. Lengthwise blocking is to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

Apply four 2" x 4" x 18" boards laminated 2 boards high for lengthwise blocking back-up cleats spaced evenly across rear of load and abutting the lengthwise blocking. Lengthwise blocking back-up cleats are to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

NOTES

Stretch wrap is recommended to maintain good vertical alignment.

Ensure side wall condition is sound, clean and free of objects where Ty-Gard adhesive strips are to be applied.

Follow manufacturers instructions to ensure proper application of Ty-Gard and Ty-Patch sealing bands.

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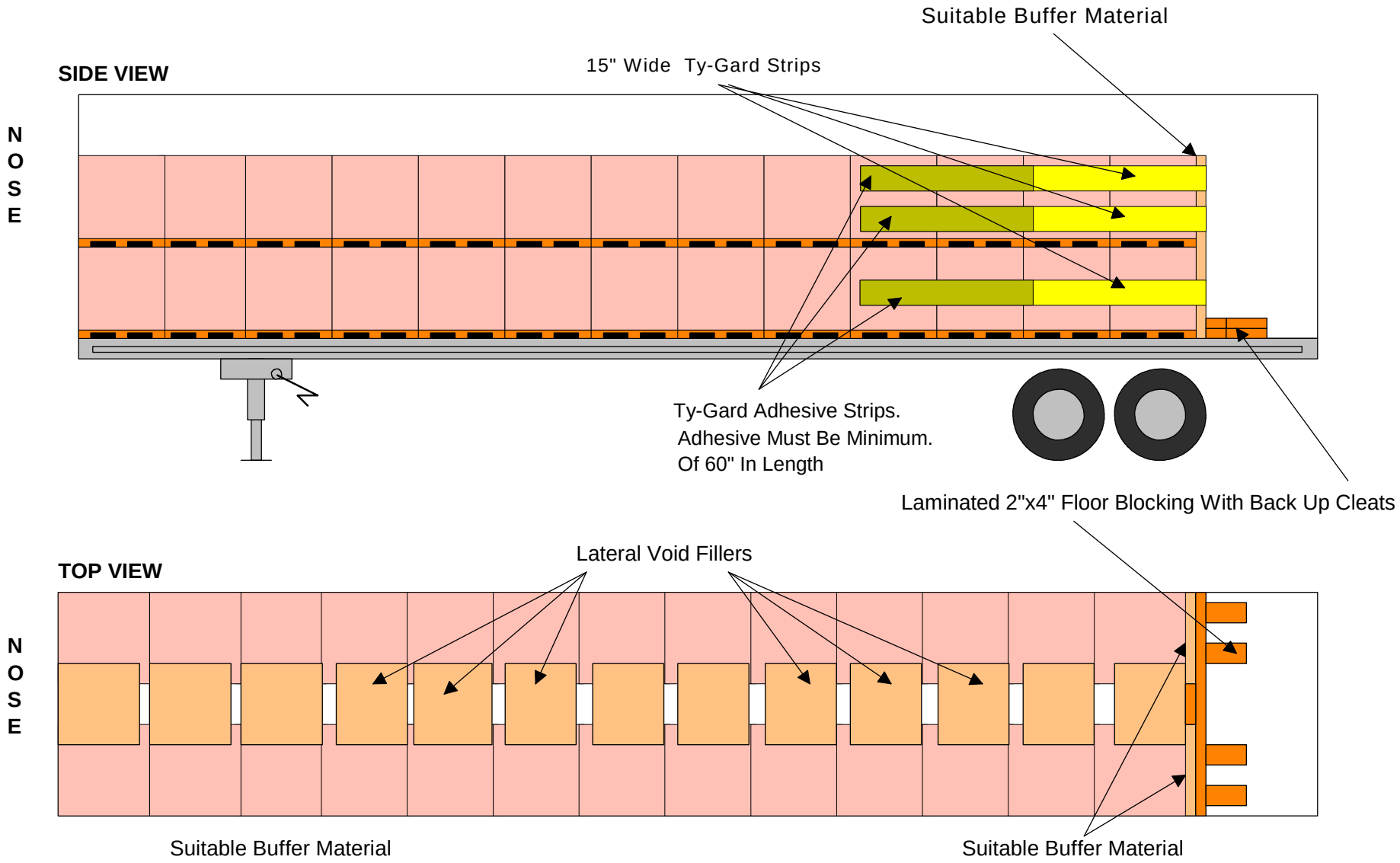
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



Palletized Canned Beverages In Tray Pack Containers Secured With Ty-Gard™ And Floor Blocking

Multi-wall Corrugated Longitudinal Void Fillers and Trailer Doors Used to Secure Products in Cans or Bottles Unitized on Pallets or Slip Sheets

This loading and bracing method is for products in bottles and cans, on pallets or slip sheets. All units are stretch wrapped with 90 gauge film minimum, having three wraps at top and bottom and two wraps around the middle of the units.
Units are loaded with longitudinal void fillers at the nose and rear of the load and at other locations in the load as needed for weight distribution and to fill lengthwise voids to trailer doors. Trailer doors are used to restrain lengthwise movement.

Load weight may be up to 47,500 lbs if void filler at doorway is 84" tall x 20" deep. If rear void filler height is equal to the height of the load and the load height is less than 84", the maximum load weight is 45,500 lbs. Minimum load height is 48"
Use longitudinal void fillers with height at least equal to the height of the load. Void fillers are constructed of multi-wall corrugated board with an edgewise crush strength of 2,975 lbs per lineal foot of bearing surface.

Prior to loading, calculate overall length of load. Install one longitudinal void filler and /or 3" thick honeycomb core separator (1" cell size) at the nose in front of each row of product. Plan the load to provide for proper weight distribution in the trailer and prevent overloading any portion of the trailer floor.
Install 3" thick honeycomb core separators (1" cell size) or equivalent between the longitudinal void filler and the product. Separators and longitudinal void fillers are installed in the nose and at other locations in the load to provide proper weight distribution in the trailer by filling all lengthwise voids.

Load the product in one or two rows. Two units are required in stacks adjacent to longitudinal void fillers. When loading, install honeycomb core separators between units of different heights and between stacks when the number of rows in adjacent stacks is different.
Use lateral (crosswise) void fillers in the center void, or side voids in stacks with a single unit to maintain vertical and longitudinal row alignment. Width of the lateral void fillers is as close as possible to the width of the lateral void.

After product is loaded, install honeycomb core separators and longitudinal void fillers at the rear of each row. Use as many separator sheets as necessary to bring the rear of the longitudinal void fillers to the trailer doors. Do not reuse longitudinal void fillers or separators which show any evidence of compression, deformation, tearing or other damage which may reduce restraining capacity or strength.

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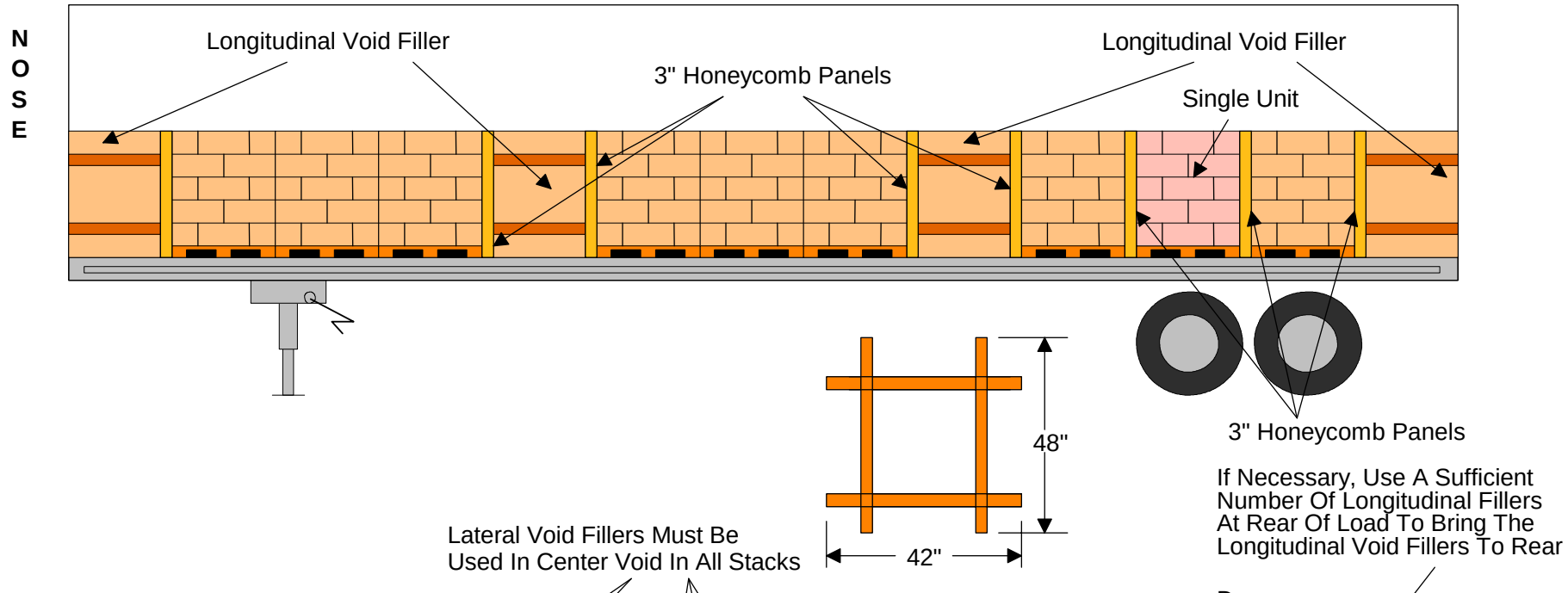
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Note: Load Configuration Illustrated As Tested. Number Of Units And Size Of Void Fillers May Vary Depending On Lading

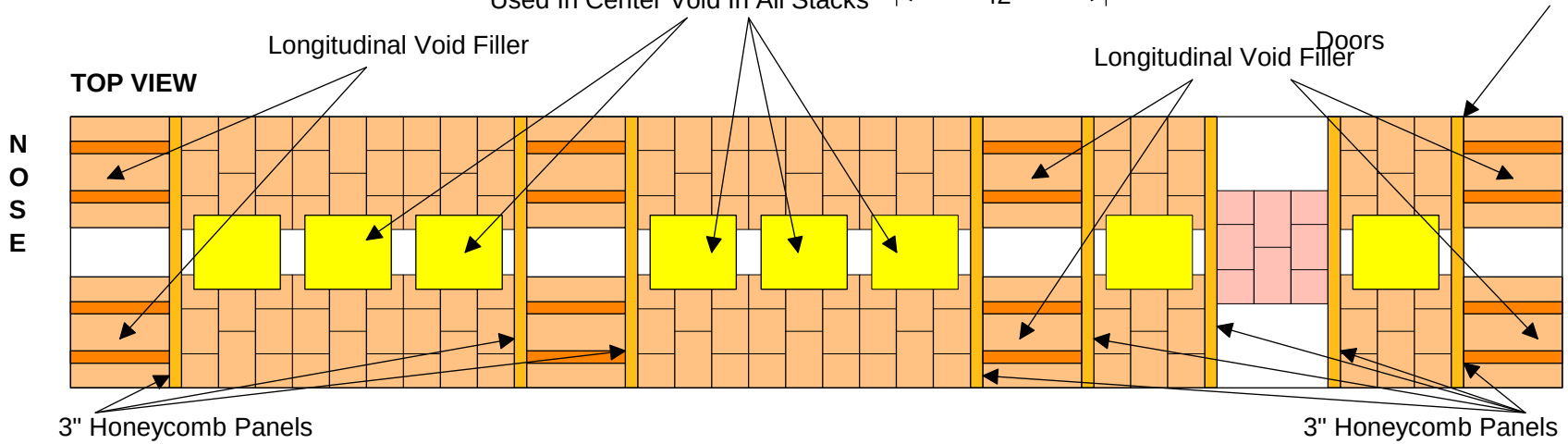
SIDE VIEW



If Necessary, Use A Sufficient Number Of Longitudinal Fillers At Rear Of Load To Bring The Longitudinal Void Fillers To Rear Doors

Lateral Void Fillers Must Be Used In Center Void In All Stacks

TOP VIEW



Case Goods on Pallets Secured Using Longitudinal Void Fillers And The Trailer doors

Beverage Products Unitized on Pallets or Slipsheets and Secured Using Longitudinal Void Fillers and Trailer Doors

This loading and bracing method is for beverage products (both bottles and cans) on pallets or slipsheets. All units are stretch wrapped with 90 gauge film minimum, having three wraps at top and bottom and two wraps around the middle of the units.
Units are loaded in two rows with longitudinal void fillers at the nose and rear of the load, as needed for weight distribution, to fill lengthwise voids to trailer doors. Trailer doors are used to restrain lengthwise movement.

Plan the load to provide for proper weight distribution in the trailer and prevent overloading any portion of the trailer floor.
Maximum load weight is 45,000 lbs. Minimum load height is 60"
Prior to loading. calculate overall length of load. Install one longitudinal void filler at the nose in front of each row of product. For each row, void fillers may consist of any material with a minimum compression rating of 25,000 lbs. Use void fillers with height equal to the adjacent load height and providing support across the full width of each row.

Install multi-wall corrugated or honeycomb core separator sheets between the longitudinal void filler and the product. Separator sheets are to be minimum triple wall corrugated fiberboard. Separator sheets and longitudinal void fillers are installed in the nose to center the load in the trailer by filling all lengthwise voids. Use a minimum of two separator sheets between the lading and the void fillers when the lading adjacent to the longitudinal void fillers consists of bottles.

Load the product in two rows, one row against each side wall. When loading, install one triple wall corrugated separator sheets between units of different heights.
Use crosswise void fillers in the center void to maintain vertical and longitudinal row alignment. Width of the crosswise void fillers is as close as possible to the width of the crosswise void.

After product is loaded, install multi-wall corrugated or honeycomb core separator sheets (minimum triple wall corrugated fiberboard) and longitudinal void fillers at the rear of each row. Use as many separator sheets as necessary to bring the rear of the longitudinal void fillers to the trailer doors. Use one separator sheet between the longitudinal void filler and the doors. To facilitate closing the trailer doors, these separators may be held in place by use of tape.

Use a minimum of two separator sheets between the lading and the void fillers when the lading adjacent to the longitudinal void fillers consists of bottles. Longitudinal void fillers and separator sheets are not to be reused if damaged.

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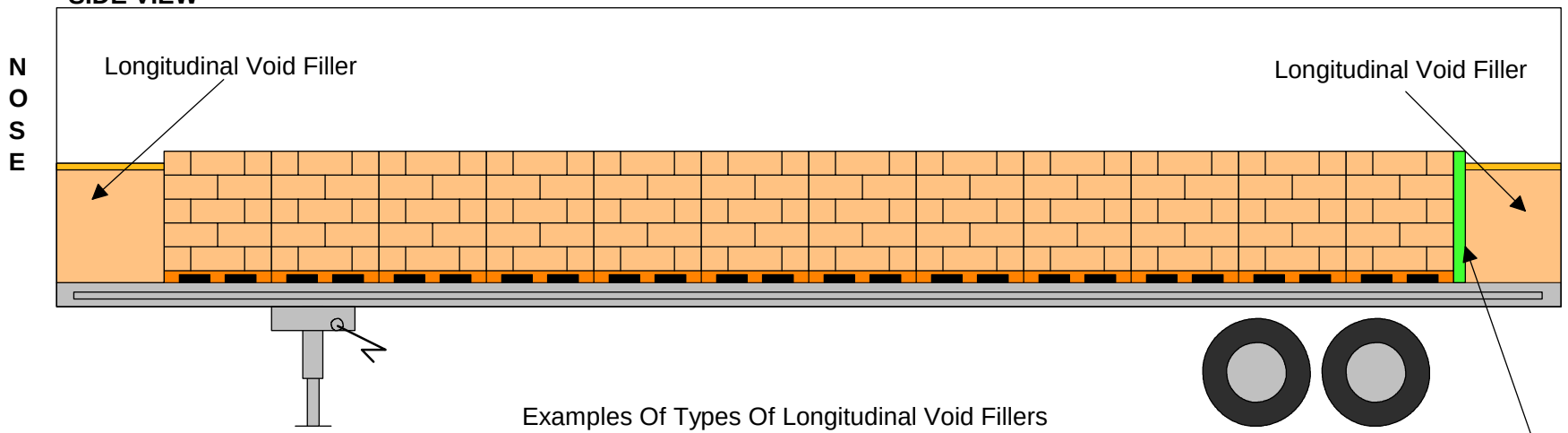
LOAD AND RIDE SOLUTIONS DRAWING

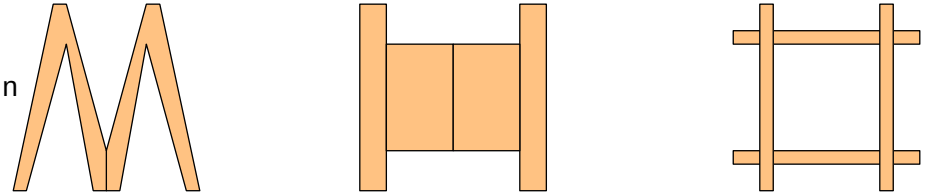
Longitudinal Void Filler Illustrated As Tested. Other Types Acceptable If In Compliance With Item # 1 On Preceding Page

SIDE VIEW



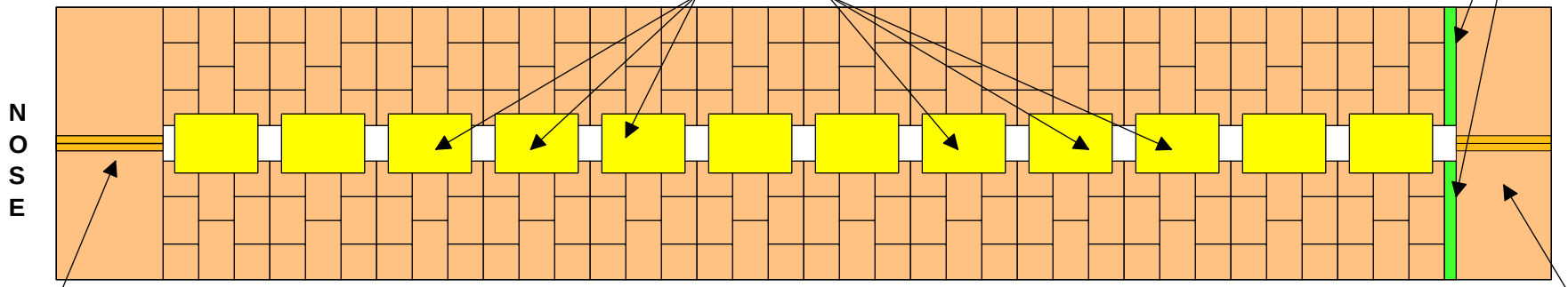
Examples Of Types Of Longitudinal Void Fillers

Type Used In Diagram



Separator Sheets As Needed

TOP VIEW



Case Goods On Pallets Secured Using Longitudinal Void Fillers and Trailer Doors

PAPER
(Rolls, Flat Stock & Bales)

40" Diameter Roll Printing Paper Secured with Ty-Gard Barriers

This method is restricted to a 2-1-2 pattern of 40" rolls of printing paper. The only exception is the first and second stack in the second section which are placed in a 2-2 pattern. If the length of the trailer allows, a 2-1-2 pattern can be used throughout. The last stack of each section has a single roll for placement of the Ty-Gard barriers. Each section contains approximately 1/2 the weight of the load.

Each section is secured with two 15" wide strips of the Ty-Gard. These are attached to the side walls (per manufacturer's instructions) with an adhesive strip 60" long and at least 36" back from the face of the load.

Close and seal the Ty-Gard barriers for each section in accordance with the manufacturer's instructions.

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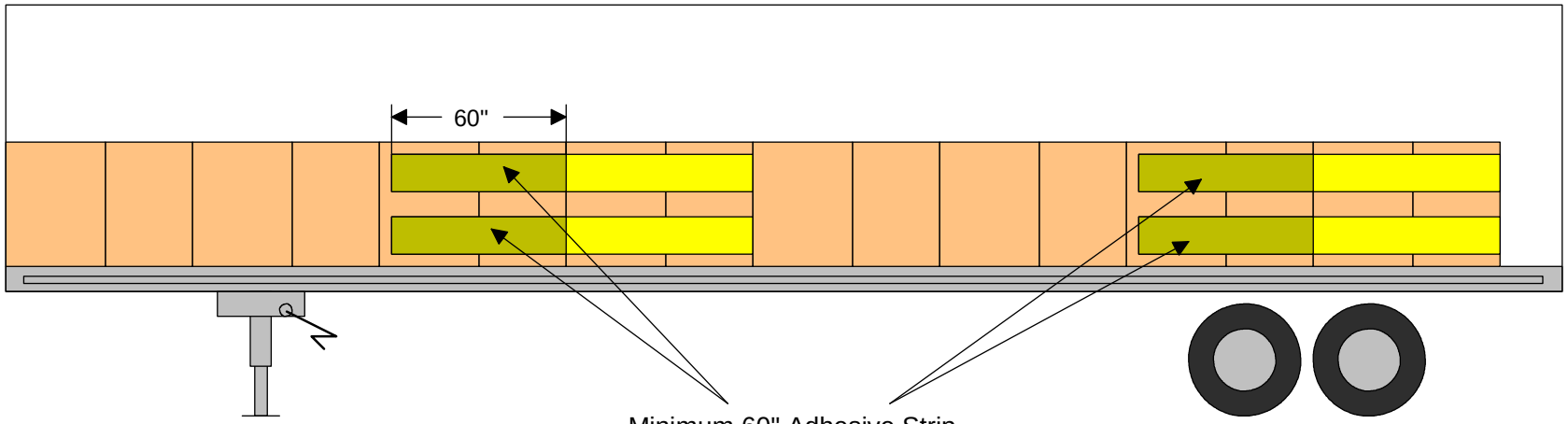
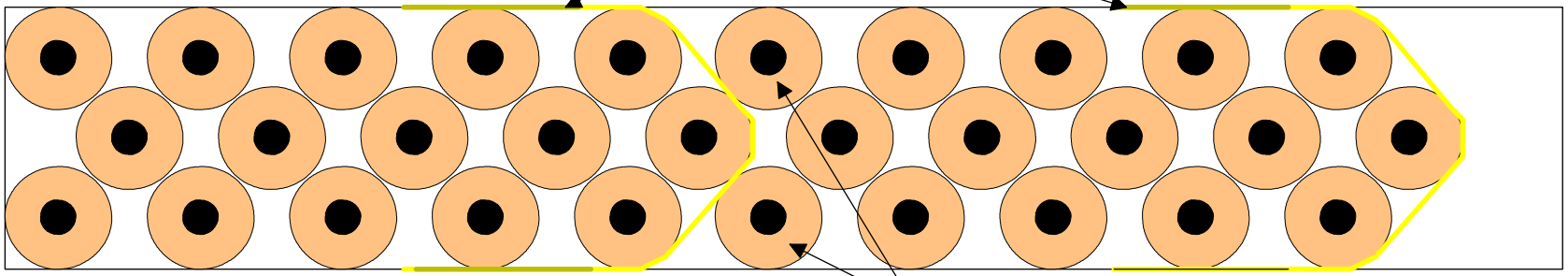
LOAD AND RIDE SOLUTIONS DRAWING



Minimum 60" Adhesive Strip
15" Wide Strips



If Length Of Trailer Allows,
2-1-2 Pattern Can Be Used
Throughout Resulting 12
Rolls In Each Bay

(2-1-2 Pattern Only)
In Second Section, 1st
Two Stacks Only Are
In A 2-1-2 Pattern

40" Diameter Roll Printing Paper Secured With Ty-Gard™ Barriers

40" Diameter Rolls of Printing Paper Secured with Wood Blocking and Two Unitizing Straps

This loading method is restricted to single layer, 2-1-2 pattern loads of 40" diameter roll printing paper in trailers for TOFC Service. This method was tested in a 102" wide trailer.

The last five rolls at the doorway are unitized with two 1 1/4" steel straps. These are sealed with two seals per strap, with two crimps per seal. A strap holder is used to keep these straps in position. The use of 1 3/4" polyester web strap is also approved.

A double 2" x 6" x 8' floor block is nailed against the last rolls perpendicular to the trailer side wall. Use fourteen 8d nails per layer. If 12d nails are used, only seven are needed per layer.

Four double 2" x 6" x 18" backup cleats are nailed perpendicular to the 2" x 6" lumber. Use three nails minimum per layer for these cleats. Two cleats are placed 8" off the center line of each roll of paper .

Any remaining space is to be filled by 2" lumber 18" long, with a width equal to the void size, placed parallel to the 2" x 6" block and nailed in position.

A minimum 16d nails are required .

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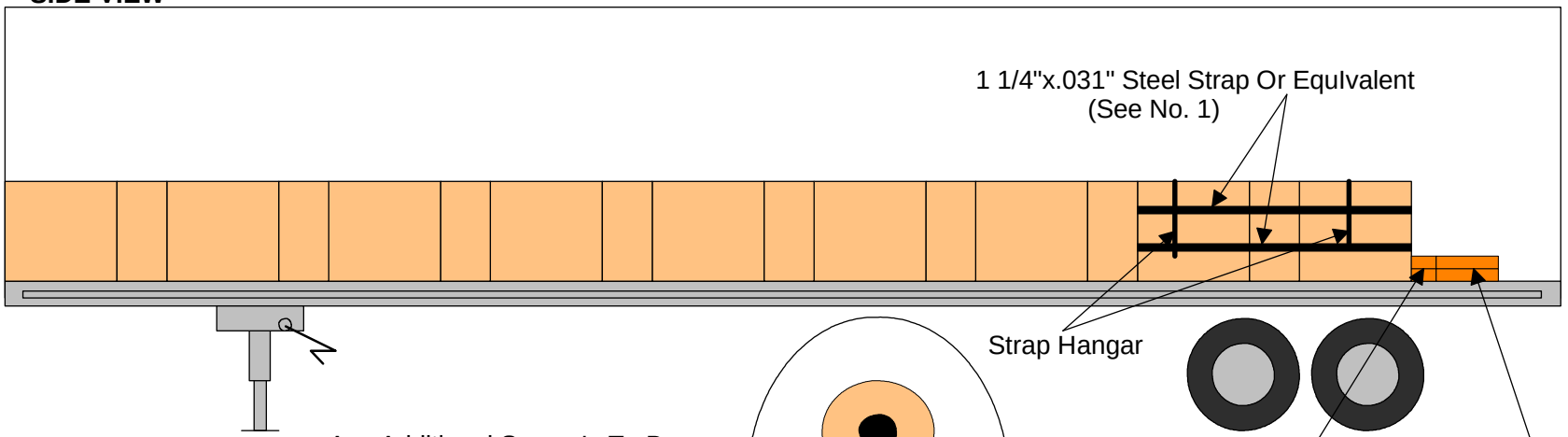
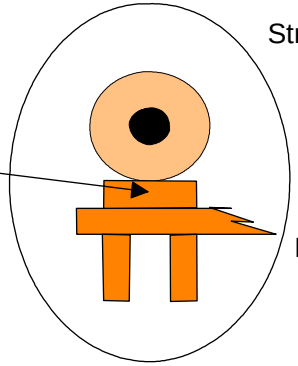
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW





Any Additional Space Is To Be Filled By 2" Lumber 18: Long With Width Equal To Void Size, Placed Parallel To 2"x6" Floor Blocking Nailed In Position

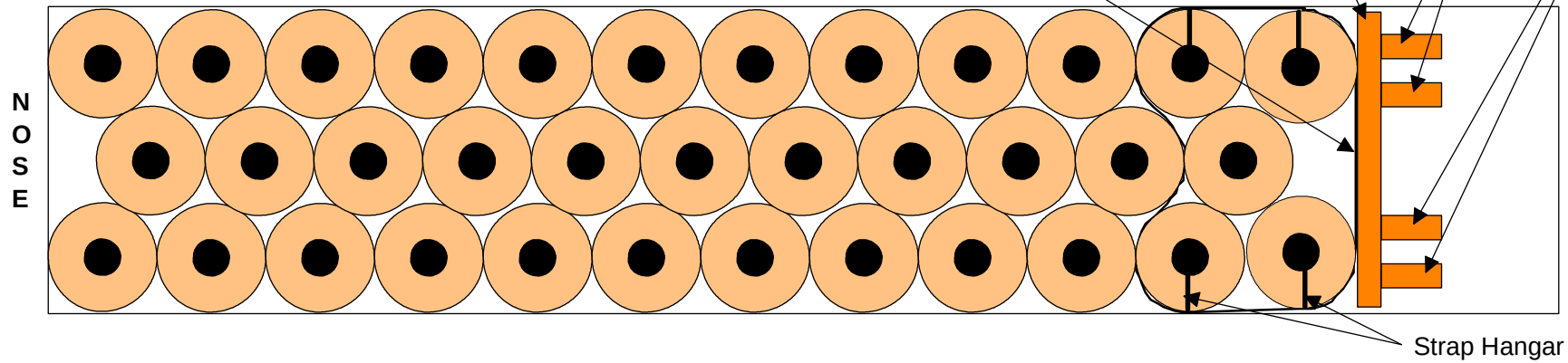
NOTE: 2-1-2 PATTERN ONLY

Laminated 2"x6"x96" Lumber

2"x4"x18" Backup Cleat 8" Off Center Line of Rear Rolls

1 1/4"x.031" Steel Strap Or Equlvalent
(See No. 1)

TOP VIEW



40" Diameter Rolls Of Printing Paper Secured With Wood Blocking And Two Unitizing Straps

40" - 45" Diameter, Large Width Roll Paper on End in Two Sections Using Two 2' Wide Rubber Mats Under Each Section and Steel Strapping

This method is for 40" - 45" diameter, large-width roll paper loaded on end in a 2-1 pattern in a trailer or container for intermodal service. The rubber floor mats are 2' wide and extend 8" beyond each end of each section of rolls.

The load is divided into two sections, each containing three rolls. The width of the rolls is at least 6" less than the inside height of the trailer/container.

Two 2' wide rubber strips are positioned so they will be centered under the two roll wide stack for each section, approximately 16" - 18" from the side walls. Use mats of sufficient length to extend 8" beyond each end of each section of the load.

The first section is loaded in a 2-1 pattern starting about 3 1/2' from the nose of the trailer. The first two rolls are loaded next to each other along the longitudinal centerline of the trailer.
Unitize the first section with three 1 1/4" steel straps, two at the top and one at the bottom as indicated. Tension and seal the straps using proper tensioning and sealing tools. Use strap hangers or tape to maintain proper strap alignment and prevent straps from slipping out of position.
Position 2' wide x 5' long corrugated fiberboard void fillers on edge between the side wall and each of the rolls in the first (two wide) stack. Use void fillers of sufficient thickness to fill the void.

The second section also consists of three rolls loaded in a 2-1 pattern. It is loaded and unitized in the same manner as the first section. Position this section as far from the doors as possible while maintaining proper weight distribution (a minimum of 4 feet from the doors when loading is completed). It may necessary to adjust the position of both sections to provide proper lengthwise weight distribution in the trailer.

Caution: Care must be taken to insure that the floor of the trailer is not overloaded when loading wide rolls. Load may not exceed 2,500 lb/linear foot lengthwise of the trailer for any one foot section.

Due to the nature of this concept some edge damage and /or header damage could occur due to roll rocking. If this is objectionable, do not use the loading and bracing method. Use 3mm (0.125" thick rubber mats.

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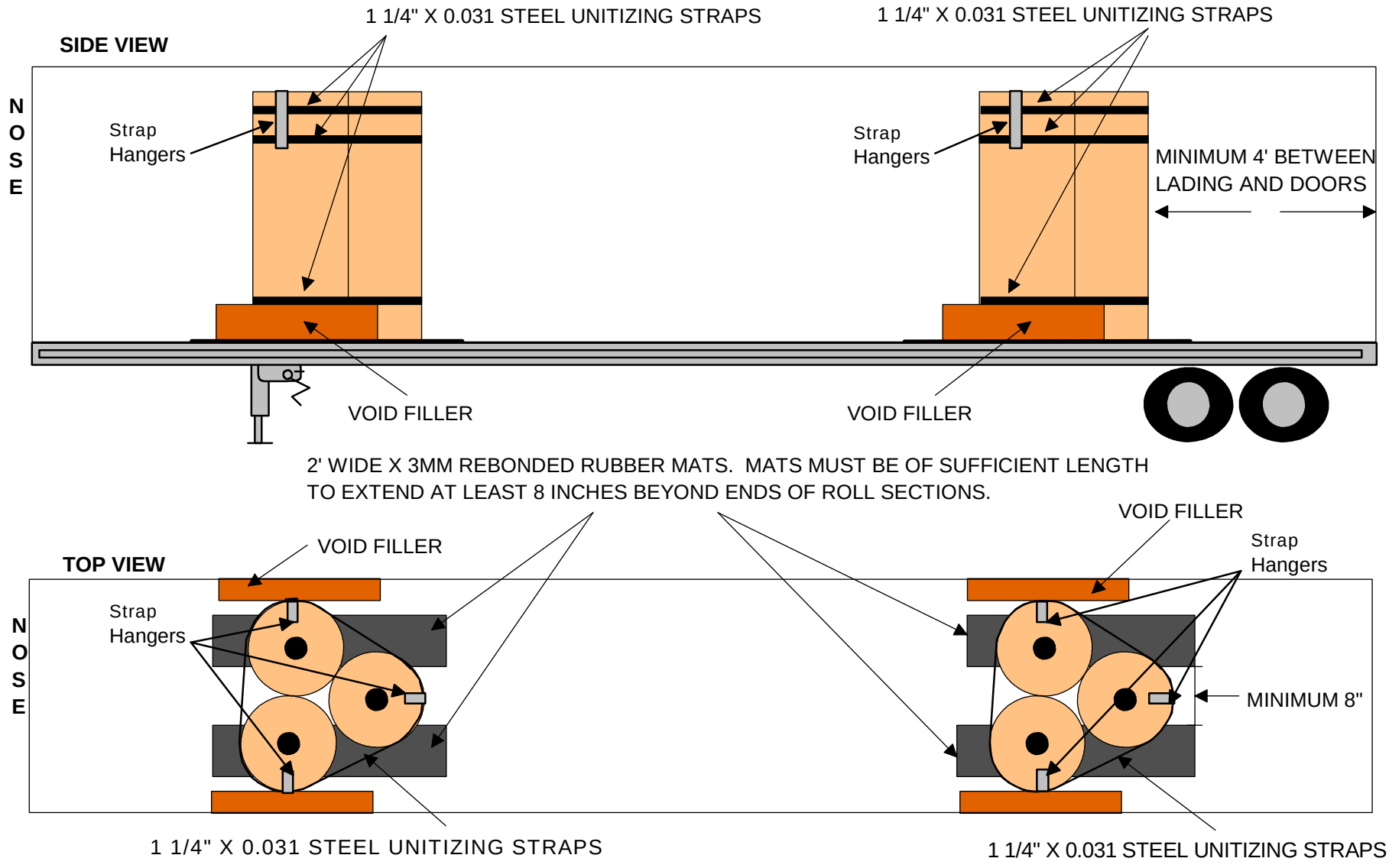
LOAD AND RIDE SOLUTIONS DRAWING



40" - 45" Rolled Paper Loaded In Two 3 Roll Sections On 2' Wide Rubber Mats

40"- 45" Diameter, Large Width Roll Paper On End In 1, Two Roll Section and 1, Three Roll Section Using Two, 2' Wide Rubber Mats Under Each Section And Steel Strapping In Conjunction With Wooden Side Rails In Nose Section.

This method is for 40" to 45" diameter large width roll paper loaded on end in a 1-1 in line pattern in nose and a 2-1 pattern in rear of trailer/container. The rubber floor mats are 2' wide and must extend a minimum of 8" beyond each end of each section of rolls.

The load is divided into 2 sections. The nose section contains 2 rolls and the rear section contains 3 rolls. The width of rolls must be at least 6" less than the inside height of the trailer/container.

The two 2' wide rubber mats in the nose section are positioned in the center of trailer/container and abut each other centered under the two rolls loaded in nose section. The two 2' wide rubber mats loaded in rear section are positioned so they will be centered under the two roll wide stack approximately 18" from each side wall. Mats must be of sufficient length to extend a minimum of 8" beyond each end of each section of the load.

The nose section consists of 2 rolls and is loaded in a 1-1 in line pattern against nose down center of trailer. Apply 2" x 4", laminated 2 boards high, side runners that extend a minimum of 3' past the last roll placed in the section on each side of the nose section. Apply 3 sets of 2" x 4" x 18", laminated 2 boards high, side cleats to each side of the unit abutting against the side rails. Side rails and side cleats are to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern. Unitize the nose section with three
1 1/4" steel straps, 2 at the top and 1 at the bottom as indicated in diagram. Tension and seal the straps using proper tensioning and sealing tools. Use strap hangars or reinforced tape to maintain proper strap alignment and to prevent straps from slipping out of position.

The rear section consists of 3 rolls loaded in a 2-1 pattern. The first two tolls are loaded next to each other along the longitudinal center line of the trailer/container then the last roll is placed as a point roll nested tightly between the 1st two rolls loaded in the section.
Unitize the nose section with three 1 1/4" steel straps, 2 at the top and 1 at the bottom as indicated in diagram. Tension and seal the straps using proper tensioning and sealing tools. Use strap hangars or reinforced tape to maintain proper strap alignment and to prevent straps from slipping out of position. Placed 2' wide x 5' long corrugated fiberboard void fillers on edge between each sidewall and each of the first two rolls loaded into the section. Use void fillers of sufficient thickness to tightly fill the void. A minimum of 4' must be left between the rear doors and the last roll loaded in the rear section.

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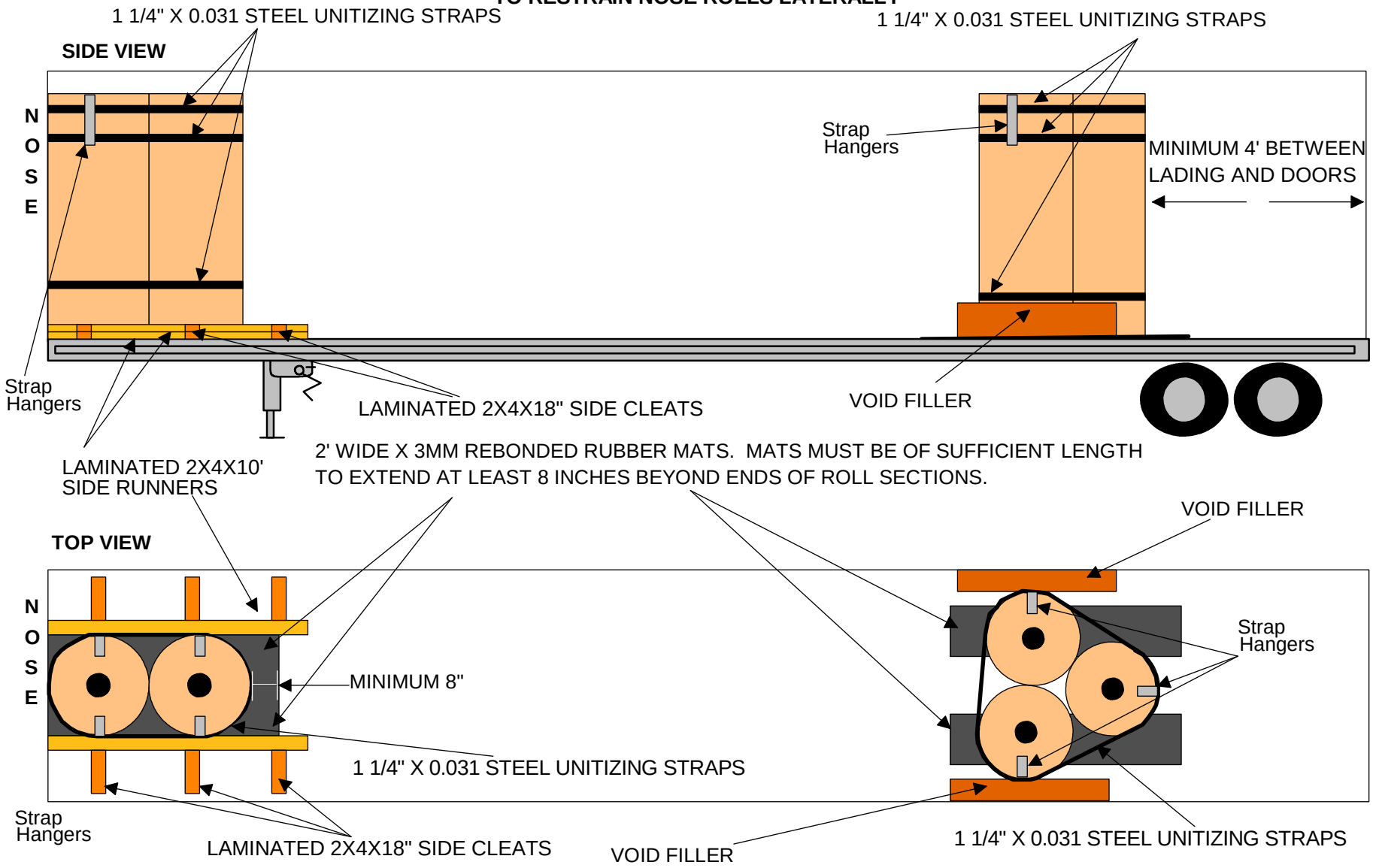
LOAD AND RIDE SOLUTIONS DRAWING

***NOTE: METHOD USES LAMINATED 2X4 BRACING TO RESTRAIN NOSE ROLLS LATERALLY**



40" To 45" Diameter Paper Rolls With Rubber Mats & Wood Blocking With A Roll Nose Section And Roll Rear Section

40" to 50" diameter, large width roll paper on end in two, 4 roll sections using 2' wide rubber mats under each section and steel strapping. Method is designed to restrain a maximum of 47,000 pounds divided evenly between the two sections.

The load is divided into two sections, each containing four rolls. The width of the roll is at least 6" less than the inside height of the trailer/ container.

Two, 2' wide rubber strips are positioned so they will be centered under the two roll wide stack for each section, approximately 16" to 18" from sidewalls. Use mats of sufficient length to extend a minimum of 8" beyond each end of each section of the load.

The first section is loaded in a 1-2-1 pattern starting about 3 1/2" from the nose of the trailer. The first roll of a section is loaded on the center line of the trailer floor, then 2 rolls are nested against the single roll that was placed first, then the last single roll is placed in the section in the recess between the double rolls.

Unitize the first section with three 1 1/4" steel straps, two at the top and one at the bottom as indicated in the diagram. Tension and seal the straps using proper tensioning and sealing tools. Use strap hangars or tape to maintain proper strap alignment and to prevent straps from slipping our of position.

Position 2' wide x 5' long corrugated fiberboard fillers on edge between the sidewall and each of the rolls in the 2 wide stack. Use void fillers of sufficient thickness to fill the void. **Void filler must have a crush strength of at least 1,500 lb/ft2.**

The second section also consists of 4 rolls loaded in a 1-2-1 pattern. It is loaded and unitized in the same manner as the 1st section. Position this section as far from the doors as possible while maintaining proper weight distribution, a minimum of 4' from the doors when loading is completed. It may be necessary to adjust the position of both sections to provide proper lengthwise weight distribution in the trailer.

Care must be taken to insure that the floor of the trailer is not overloaded when loading wide rolls. Load may not exceed 2,500 lb/liner foot lengthwise of the trailer for any one foot section.

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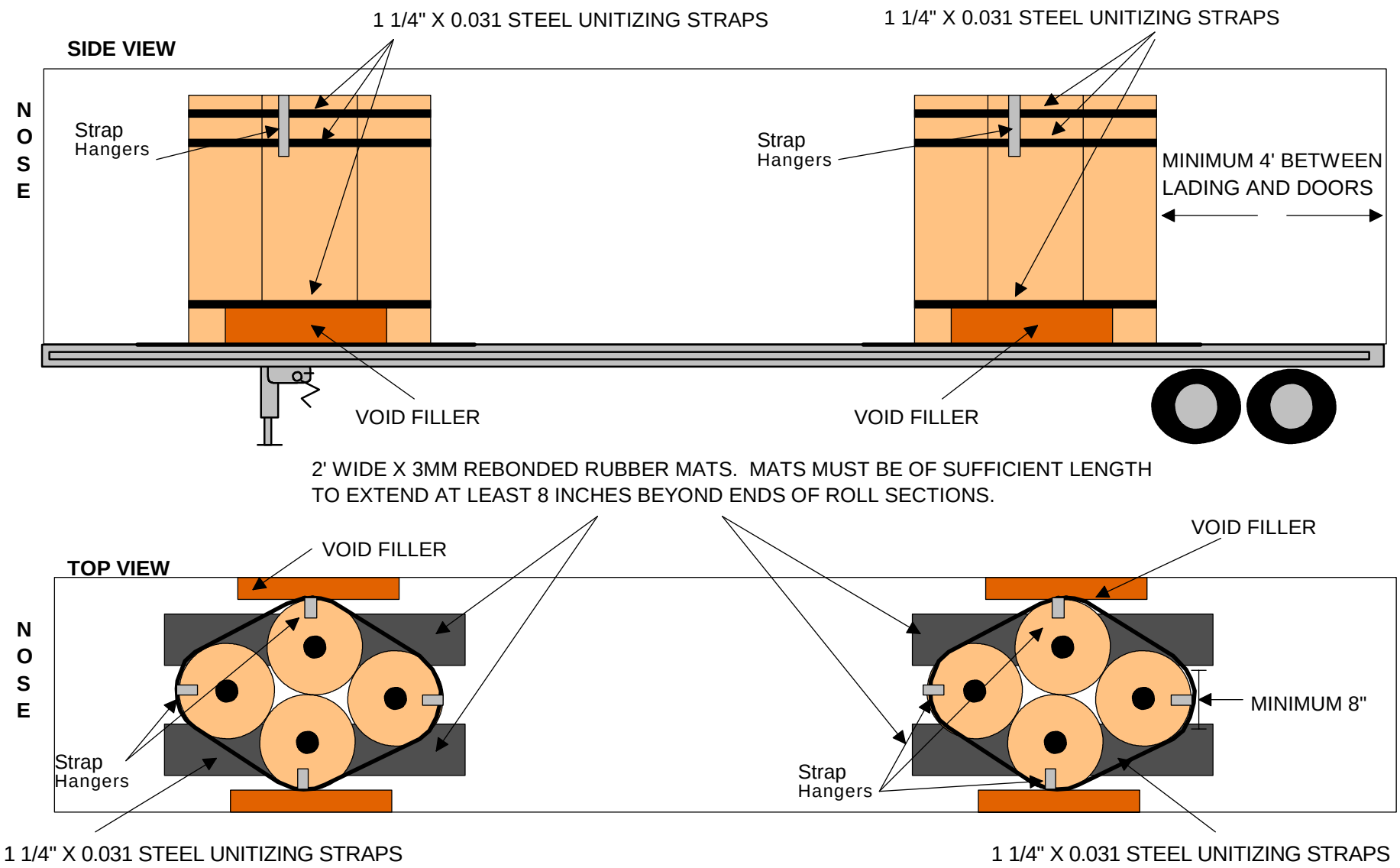
LOAD AND RIDE SOLUTIONS DRAWING



40" - 45" Rolled Paper Loaded In Two 4 Roll Sections On 2' Wide Rubber Mats

50" Diameter Rolls of Wrapping Paper on End Using Rubber Mats

This loading method is for 50" diameter roll wrapping paper loaded on end in a 1-1 offset pattern in a trailer or container for intermodal service.

Use 1/4" thick rubber mats

The load is divided into two sections, each containing approximately half of the load.

The first section is loaded in a 1-1 offset pattern starting at the nose of the trailer

The second section is also loaded in a 1-1 offset pattern approximately 180" behind the first section. This section is to be at least 3 feet from the doors when loading is completed.

Each section is loaded on two 4' x 17' x 1/4" thick rubber mats placed side by side. An equal amount of rubber mat extends from under the from and rear of the second section. The mats are not secured to the trailer floor.

If roll width exceeds 1.5 times roll diameter (75" for a 50" diameter roll) unitize each section with one 1 1/4 steel strap or one Caristrap strap. Tension and seal straps using proper tensioning and sealing tools. Use strap hangers or tape to maintain proper strap alignment.

Rolls can be loaded in one section starting at the nose and continuing to the rear of the trailer if necessitated by the number of rolls being loaded. Use the same number and size of rubber mats as specified above.

Place two mats in the nose of the trailer and two at the rear of the lading. Unitizing straps are not required for rolls loaded in one section from the nose of the trailer.

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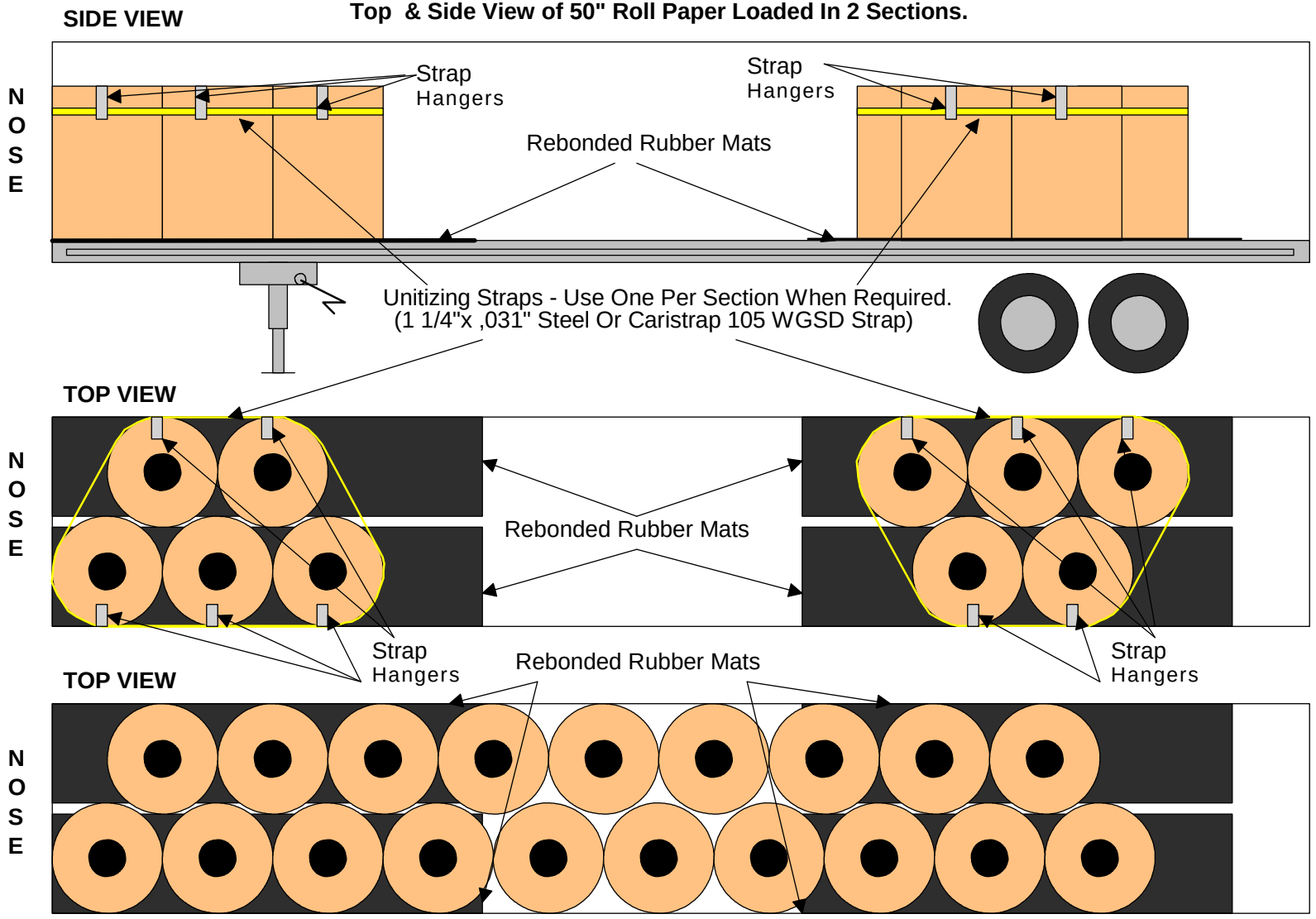
LOAD AND RIDE SOLUTIONS DRAWING

Sketch 1

Top & Side View of 50" Roll Paper Loaded In 2 Sections.



Sketch 2

Top View Only 50" Roll Paper Loaded In 1 Section

45" Diameter Roll Paper On End Secured Using 2' Wide Rubber Mats

This loading method is for 45" diameter roll paper loaded on end in a 2-1-2 type of pattern in a trailer or container for intermodal service. The load pattern may vary slightly form the basic 2-1-2 pattern depending on the number of rolls in the shipment and weight distribution requirements.

Use trailers/containers with wood floors only.

Use 3mm (o.125") thick rubber mats

A 2' x 12' rubber mat is placed in the nose of the trailer extending lengthwise down the center of the trailer. The mat is not secured to the trailer floor. The rolls are loaded in one section in a 2-1-2 type pattern starting at the nose of the trailer and going back to within 14' of the end of the load, about four stacks.

Two 2' x 14' mats are placed at the rear of the load running lengthwise of the trailer with one mat 12" from each sidewall. Position mats so they will extend 2" - 3" beyond the end of the lading. The mats are not secured to the trailer floor.

Load the remaining rolls into the trailer with the last three stacks in a 2-1-2 pattern.

Unitize the last three stacks (five rolls) using one 1 1/4" steel strap or one caristrap strap. Tension and seal the straps using proper tensioning and sealing tools. Use strap hangers or tape to maintain proper strap alignment and prevent straps from slipping out of position.

Leave a minimum of 3 feet of void space between the lading and the trailer doors.

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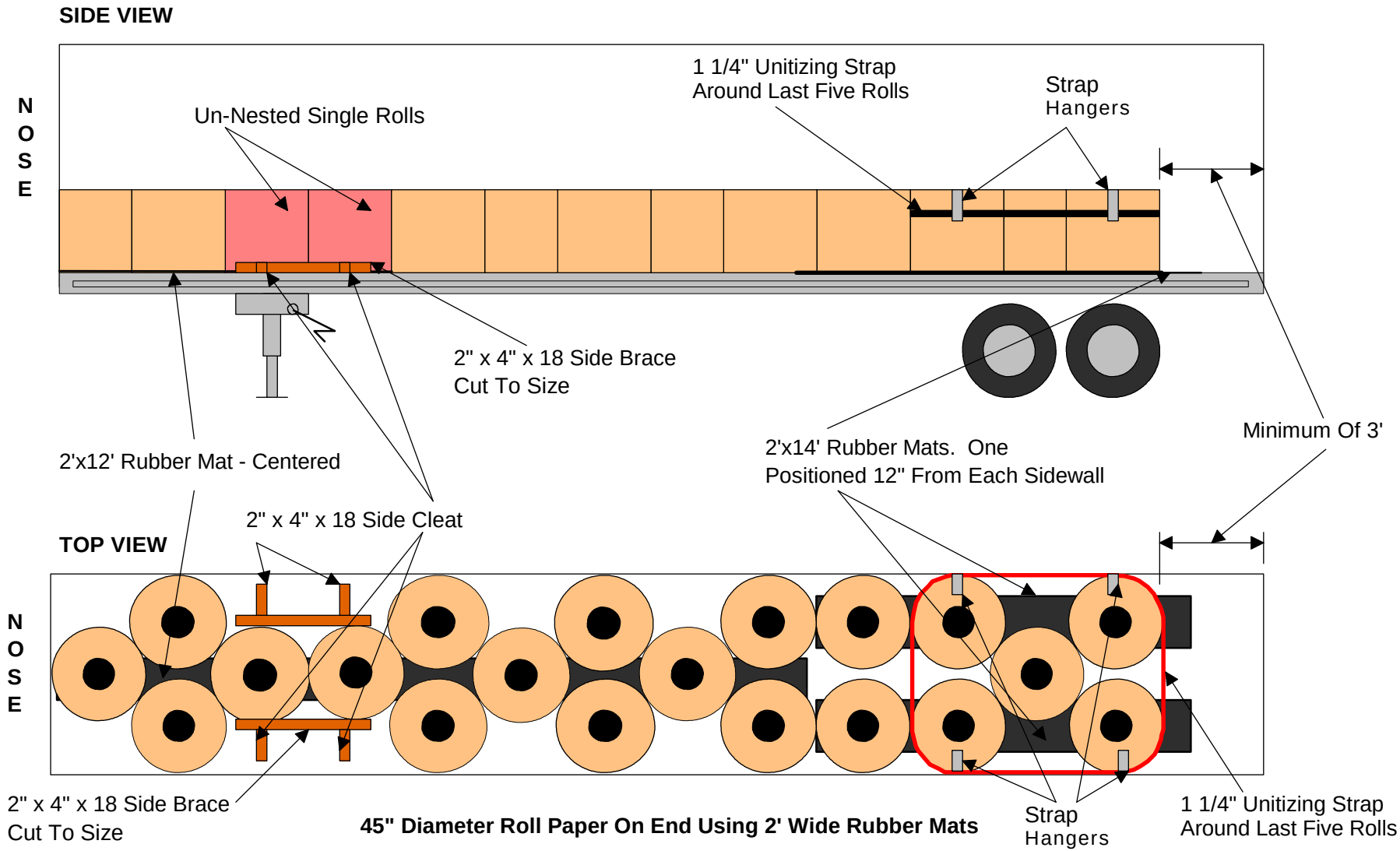
LOAD AND RIDE SOLUTIONS DRAWING

NOTE: Rubber Mats Extend A Minimum Of 3" Beyond Rolls At Rear Of Load.



45" Diameter Roll Paper On End Using 2' Wide Rubber Mats

Split Loads of 58" Diameter Roll Pulpboard on End Using 3' Wide Rubber Mats

This method is for split loads of 58" diameter roll pulpboard loaded on end in a 1-1 offset pattern in a trailer or container for intermodal service. A maximum of 8 rolls may be loaded in a trailer or container using this method. The loads generally consist of 7 or 8 rolls loaded in two sections in the trailer or container. Plan the load to equalize the weight on each side of the trailer or container. Since roll weights vary, this may require some pre-planning, however, a balanced load is important to the stability and success of this loading method.

The nose section will consist of 3 or 4 rolls. Place the mat on the floor at the nose, aligned along the longitudinal centerline of the trailer. Use the appropriate mat size for the number of rolls being loaded. If 4 rolls are loaded in the nose section, use a 3' x 17' mat at the nose. If 3 rolls are loaded in the nose section, use a 3' x 14' mat at the nose.

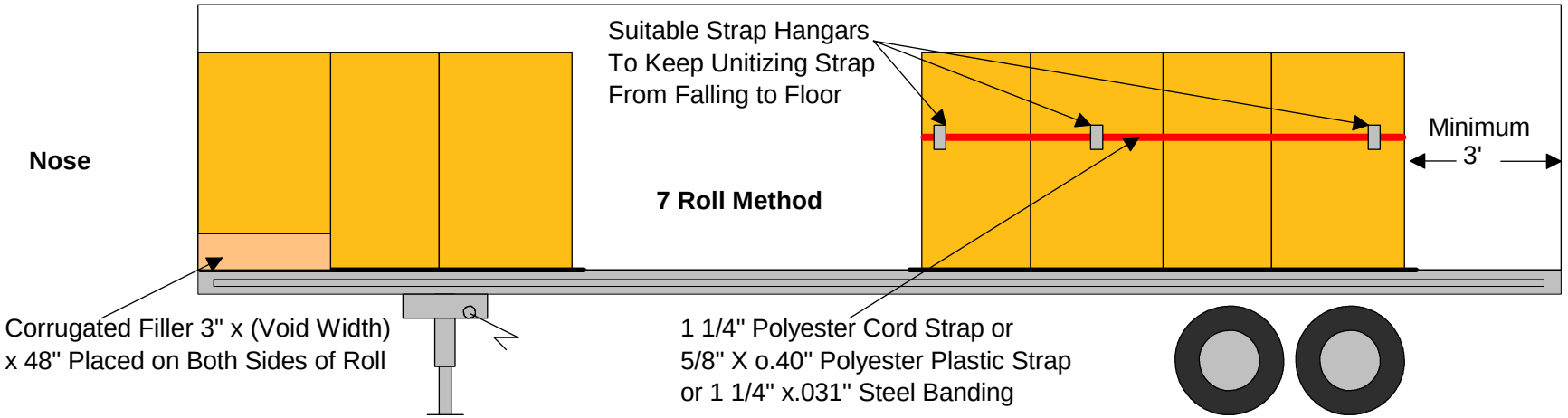
If 4 rolls are loaded in the nose section, load the four rolls tightly starting against the nose and using a 1-1 offset pattern.

If 3 rolls are loaded in the nose section, place void fillers, 3" x 48" on either side of the trailer at the nose. Load the first roll so it is centered in the trailer between the void fillers and tight against the nose. Wood side blocking can be used as an alternative to the void fillers provided it is 3" in height, extends a minimum of 48" form the nose and is secured adequately using 16d nails.
Load the next two rolls tightly lengthwise against opposite side walls of the trailer .
A minimum of 3 feet of void is required between the lading and the trailer doors. Position the rear section to obtain the proper load weight distribution and maintain the 3' void at the rear of the trailer.

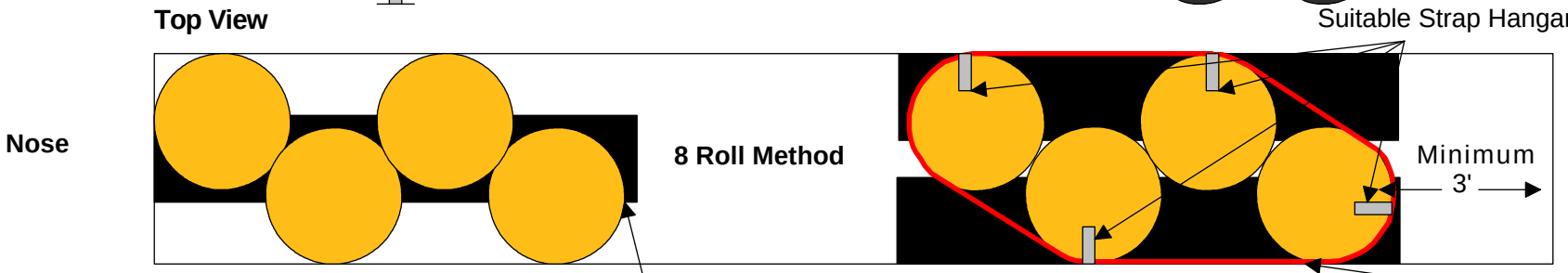
The rear section consisting of 4 rolls is loaded using two 3' x 14' mats. The mats are positioned at the opposite side walls of the trailer. Position the mats to extend a minimum 6" beyond the rolls at each end of each mat. Place the rolls on the mats in a 1-1 offset pattern.

Unitize the rear section (at trailer doors) with one 1 1/4" wide approved polyester cord strap or one 5/8" approved polyester plastic strap. Position the unitizing strap at a maximum height of 4' above the trailer floor. Be sure the strap is level. Tension and seal the straps using proper tensioning and sealing tools
Position two strap hangers on each trailer sidewall at the rear section to maintain proper strap alignment and prevent straps from slipping out of position. Strap hangers may be solid fiberboard secured by use of adhesive, tape or staples or looped cord strap secured by staples. Use adhesive or tape which is heat and cold resistant for this purpose.

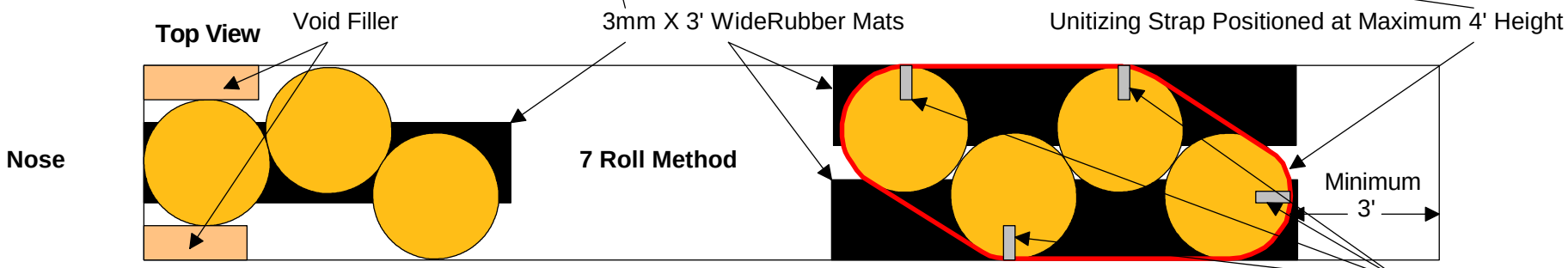
Side View



Top View



Top View



NOTE: RUBBER MATS MUST EXTEND A MINIMUM OF 6'" PAST ENDS OF ROLLS

Split Loads Of 58" Diameter Roll Pulp Board on End Using 3' Wide Rubber Mats

58" Diameter Rolls of Pulpboard on End Using Floor Blocking

This loading method is for 58" diameter roll pulpboard loaded on end in a 1-1 offset pattern in a trailer or container for intermodal service. This method was tested in a 102" wide trailer.

The load is divided into two sections, each containing approximately half of the load.

The first section consists of four rolls starting at the nose of the trailer. The last roll of this section is braced with two floor blocks each consisting of a double 2" x 6" x 36" long floor block with two double 2" x 6" backup cleats 24" long. One of the two floor blocks is adjacent to the roll and perpendicular to the side wall. The other block is installed adjacent to the roll at approximately 45 degrees to the first block. Floor blocking and backup cleats are nailed to the trailer floor with 16d power driven nails staggered 4" on center.

The second section is also loaded in a 1-1 pattern between 75" and 85" behind the first section. The first and last rolls are braced with the same configuration of blocking used in the first section.

One of two types of strapping is used to unitize each section. The first type is a 1 3/4" polyester web strap and buckle assemble having a 15,000 lb. capacity rating. One strap is used around each section and is placed approximately 12" down from the top edge of the roll. Each strap is pretensioned.

The second type of unitizing strap that may be used is a 1 1/4" steel strap. One strap is used around each section. Straps are installed approximately 12" down form the top edge of each roll. Straps on both sections are sealed with two grit type seals per strap with two crimps per seal.

Polyester filament tape or equivalent is used to suspend the unitizing strap from the top of the rolls in both sections.

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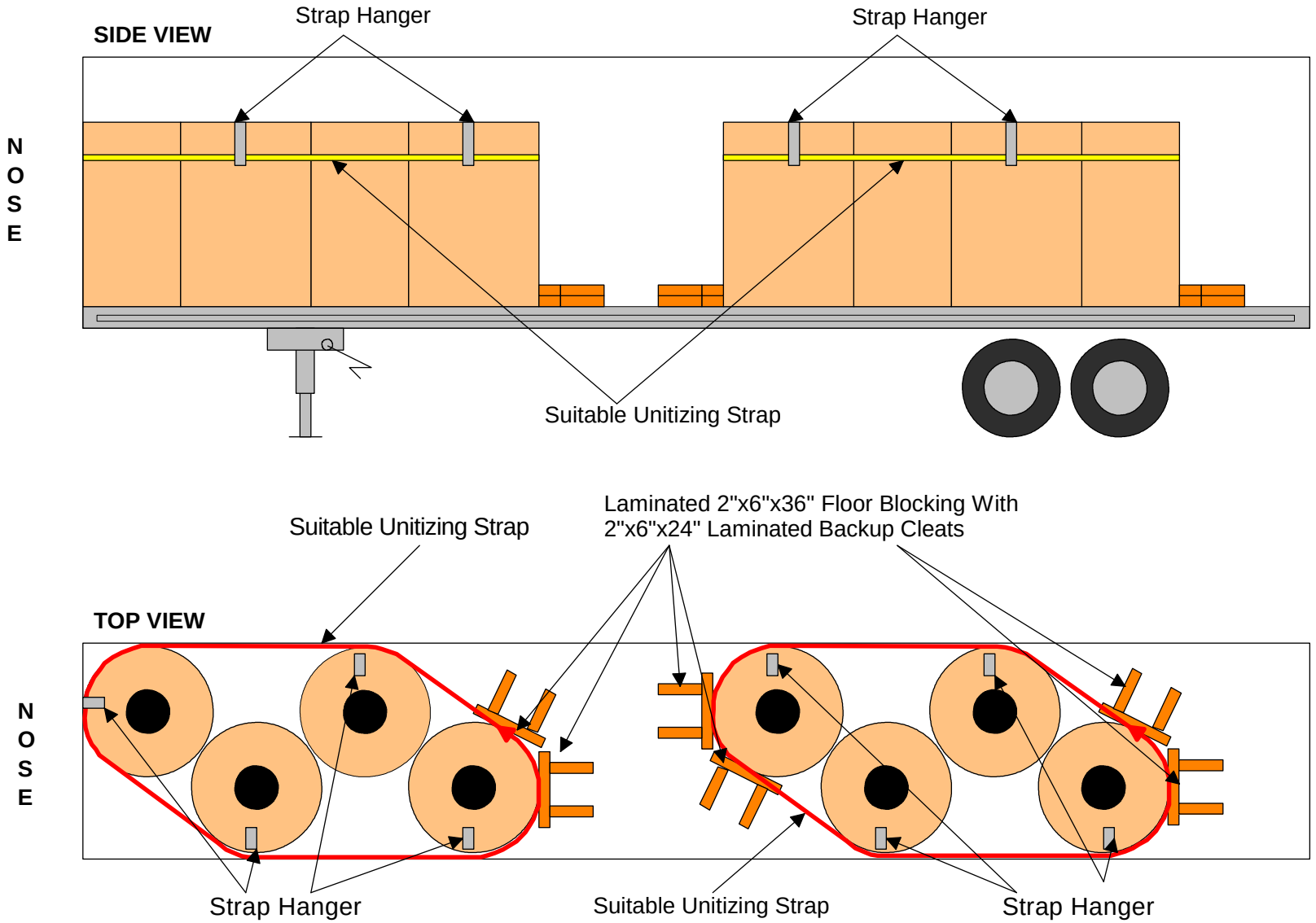
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



58" Diameter Rolls Of Pulp Board On End Using Floor Blocking

Palletized Flat Stock Paper Secured With DID Bag And Ty-Gard

It is recommended that all units be wrapped with several layers of stretch wrap or other unitizing materials.

Units to be placed in trailer/container two across and one high with any void space to be left in center of the load.

Portion of load where DID bag and Ty-Gard are not applied may be pin wheeled if necessary.

Placed one 48" x 96" x 2 ply DID bag in center void at rear of load between last 2 stacks loaded in trailer/container.

Secure rear of load with 2 Ty-Gard Strips per manufacturers specifications.

Apply adequate corner protectors to outside corners of rear units to keep cases from creasing at Ty-Gard Points of contact.

NOTES

Units must be loaded tight to the nose wall of the trailer/container.

DID bag must not exceed height of the lading it is restraining when inflated.

DID bag must conform to AAR requirements. DID bag to be minimum of 2 ply. Apply DID bag so it is a minimum of 1" above floor of trailer/container when inflated. Inflate DID bag with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

DID bag is not to be applied in a void space in excess of 12 inches wide. If void exceeds 12 inches suitable void fillers must be applied. If DID bag is to be placed against rough surfaces adequate buffer materials must be used to prevent chafing or puncture.

If product is likely to shift in void spaces where DID bag is not restraining lading suitable crosswise void fillers must be applied.

Ty-Gard strips must extend along sidewalls toward rear of load with a minimum of 60 inches of adhesive surface applied to walls of trailer/container.

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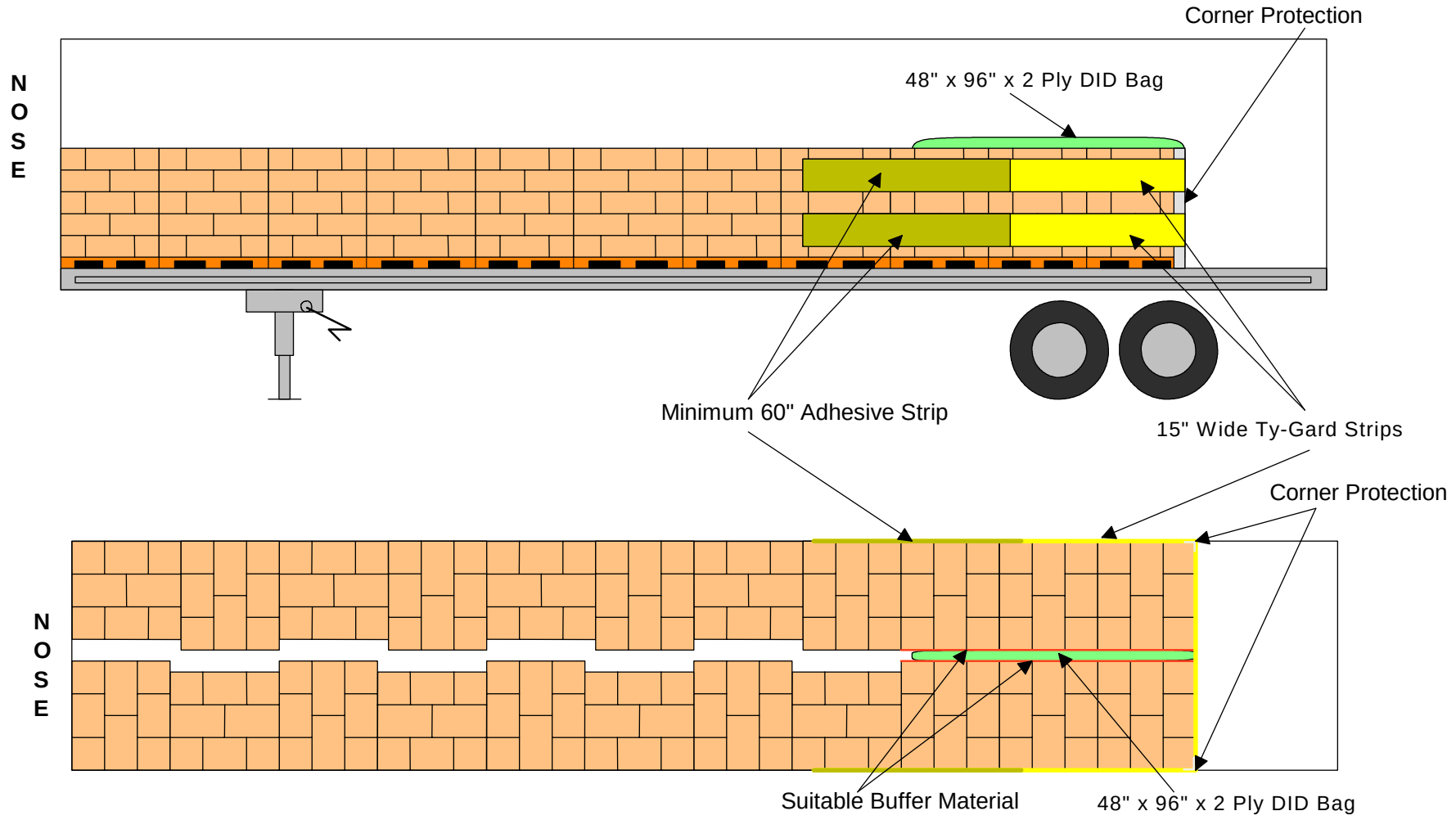
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



Palletized Flat Stock Paper With DID Bags And Ty-Gard™

Baled Scrap Paper All Sizes Secured With Wooden Floor Blocking

This method is for bales of scrap paper in all sizes unitized into bundles with unitizing materials adequate to maintain bundle integrity in the intermodal environment.

All crosswise voids in excess of 10" must be filled with suitable filler material

Place all double stacked units in trailer/container with the exception of the stack before that last unit loaded against each side wall leaving the void space in the center. Then place the last double stacked stack with the void distributed evenly on either sidewall of the stack. Then place the remaining stack that is one high on 4"x4" riser material that is of sufficient strength to support the weight of the stack in the intermodal environment. Block the rear stack in place with a 2"x 6" cross board placed on edge and cut to size of rear stack width. Block the 2" x 6" cross board in place with 3 sets of laminated 2' x 4" x 18" back up cleats.

Nails used to secure wooden blocking must be a minimum of 16d and should be placed in a staggered pattern every 6 " of board length.

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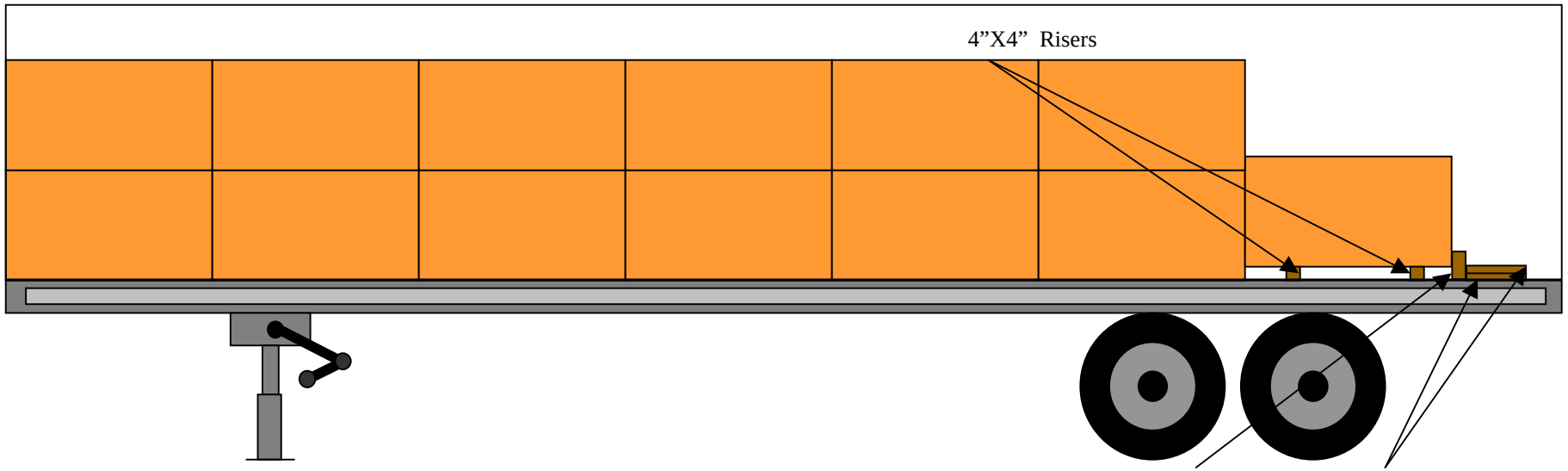
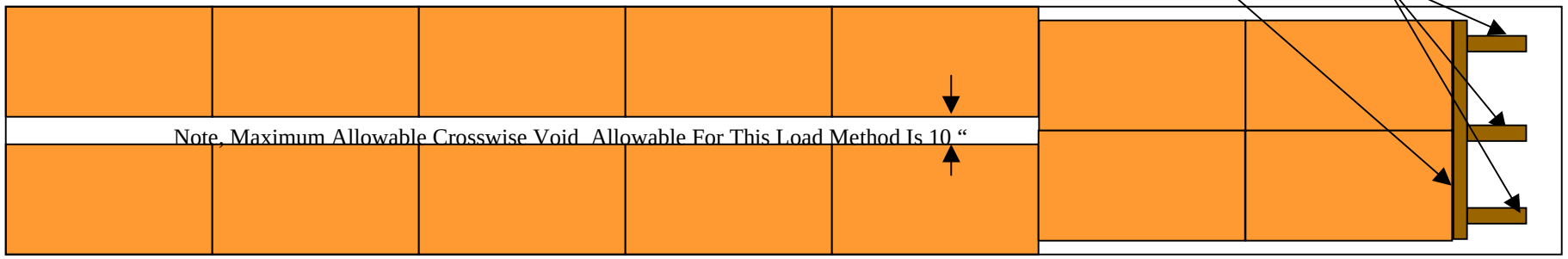
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

REAR VIEW



TOP VIEW



Baled Scrap Paper All Sizes Secured With Wooden Floor Blocking

Baled Scrap Paper 6' to 8' In Length Secured With Wooden Floor Blocking

This method is for bales of scrap paper 6' to 8' in length unitized into bundles with unitizing materials adequate to maintain bundle integrity in the intermodal environment.

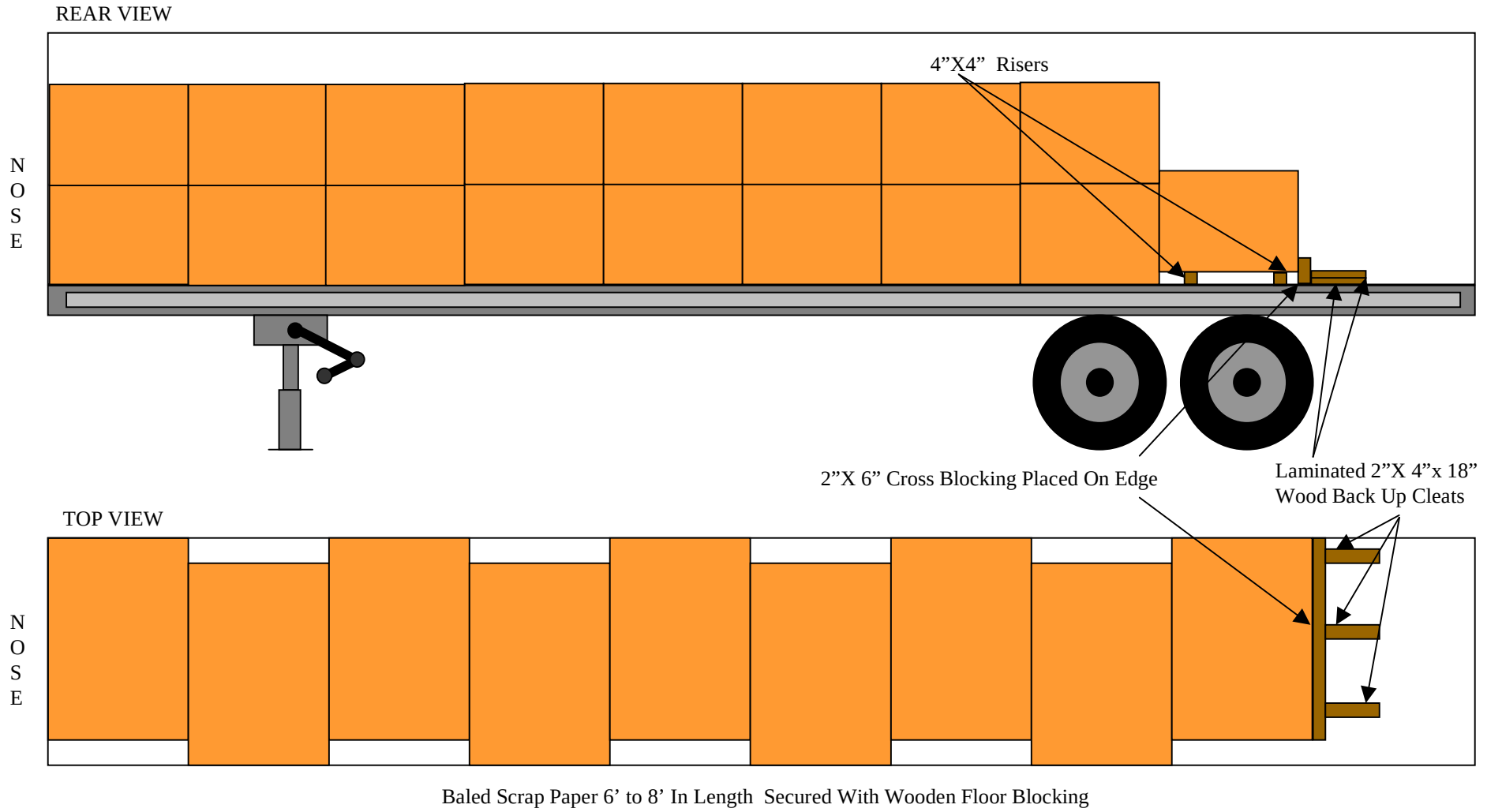
All crosswise voids be staggered against alternating sides of trailer walls.

Place all double stacked units in trailer/container in a staggered pattern against alternating sides of trailer/container. . Then place the remaining stack that is one high on 4"x4" riser material that is of sufficient strength to support the weight of the stack in the intermodal environment. Block the rear stack in place with a 2"x 6" cross board placed on edge and cut to size of rear stack width. Block the 2" x 6" cross board in place with 3 sets of laminated
2' x 4" x 18" back up cleats.

Nails used to secure wooden blocking must be a minimum of 16d and should be placed in a staggered pattern every 6 " of board length.

BNSF

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



Baled Scrap Paper 6’ to 8’ In Length Secured With Wooden Floor Blocking

METAL PRODUCTS

Cut Tinplate On Skids With 2x4 Wood blocking

Apply two 1 1/4" x .031" longitudinal unitizing bands encircling each section of tinplate. Banding seals are to be of approved type for application intended with recommended minimum number of crimps per joint.

Apply 2" x 4" guide rails against skid runners the full length of each section of skids. When not obstructed by skid deck, guide rails will be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern. Guide rails are to be of one piece construction when ever possible.

Apply two, 2" x4" x 18" guide rail side cleats on each side of each skid extending from guide rail toward side wall. Side cleats are to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

Apply 2" x 4" cut to sized of guide rail span lengthwise blocking at each end of each section except for section end placed against trailer / container nose. Lengthwise blocking is to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

Apply three 2" x 4" x 18" lengthwise blocking back-up cleats spaced evenly across and in front of each lengthwise block that was previously applied to each end of each section of tinplate. Lengthwise blocking back-up cleats are to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

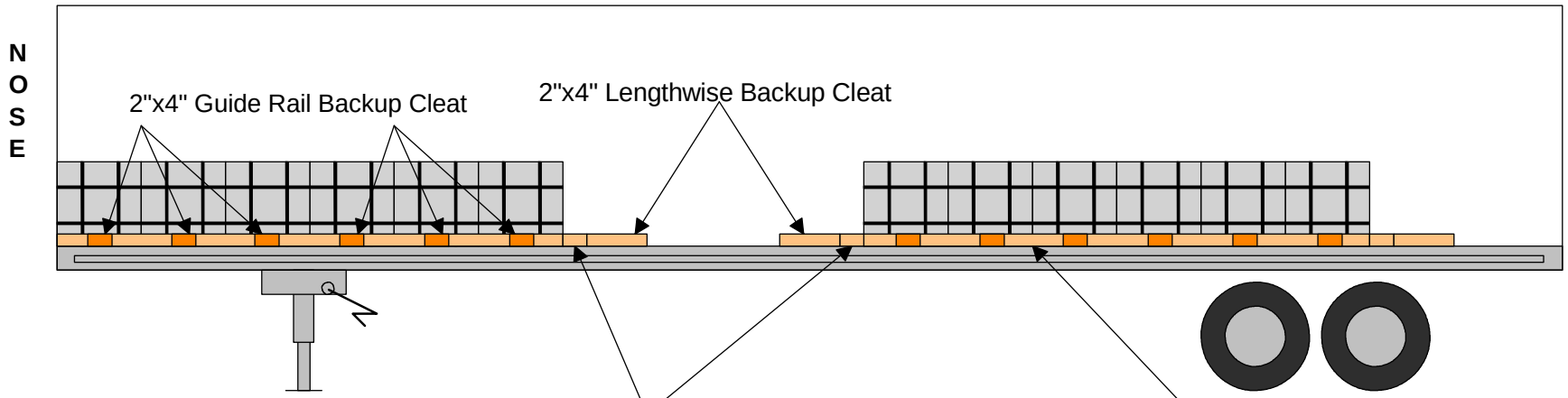
NOTES

Only utilize sound lumber free of cracks or knots in blocking applications.

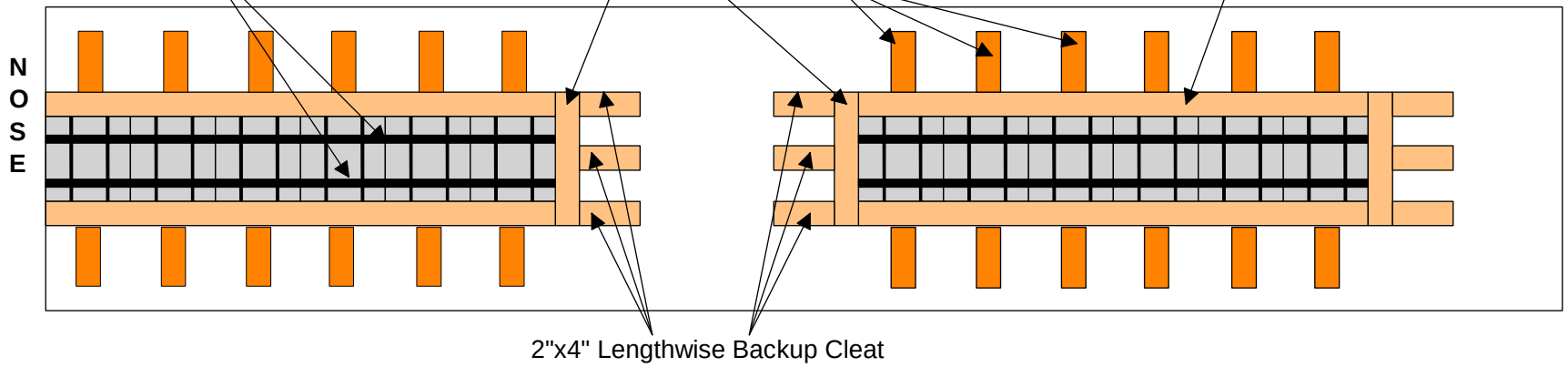
Bracing should be made up continuous length boards; the use of pieced together blocking significantly reduces the holding capacity of the blocking and bracing method shown.

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



Cut Tin Plate On Skids Secured With 2x4 Lumber

DRUM LOADING

Palletized Food Products In Drums

This method is for use with stretch-wrapped, palletized drums of food products.

Each pallet is to be unitized with either shrink- wrap or stretch-wrap in accordance with manufacturer's specifications.

DID bag must be a minimum of 48"x 96" x two ply.

Pallets are to be loaded two across against each side wall of the trailer/container leaving a center void space that is to be filled with suitable center void fillers with the exception of the last four units loaded in the trailer/container.

The rear four units placed in the load must have pallets on the top as well as the bottom of the units that are held in place with four, ½" bands (plastic or metal). Two of the bands are to run lengthwise around the units and two are to run crosswise around the units.

A 48"x 96"x 2 ply DID bag is to be inserted in the center void space between the last four units placed in the load

An optional 2"x 4" x 96" wooden cross block may be added to the rear of the load behind the last two units placed in the trailer/container.

Notes

The DID bags are to be applied to the first two stacks and the last three stacks loaded in the trailer/container.

DID bags must not be used in a void space in excess of 12" wide.

DID bags must not be placed in such a manner that they contact the floor of trailer/container or pallet after inflation.

DID bags must be adequately buffered to prevent contact with sharp or rough surfaces which could cause deflation.

DID bags must be inflated between ½ and 2 PSI depending on the type of trailer/container walls you may encounter.

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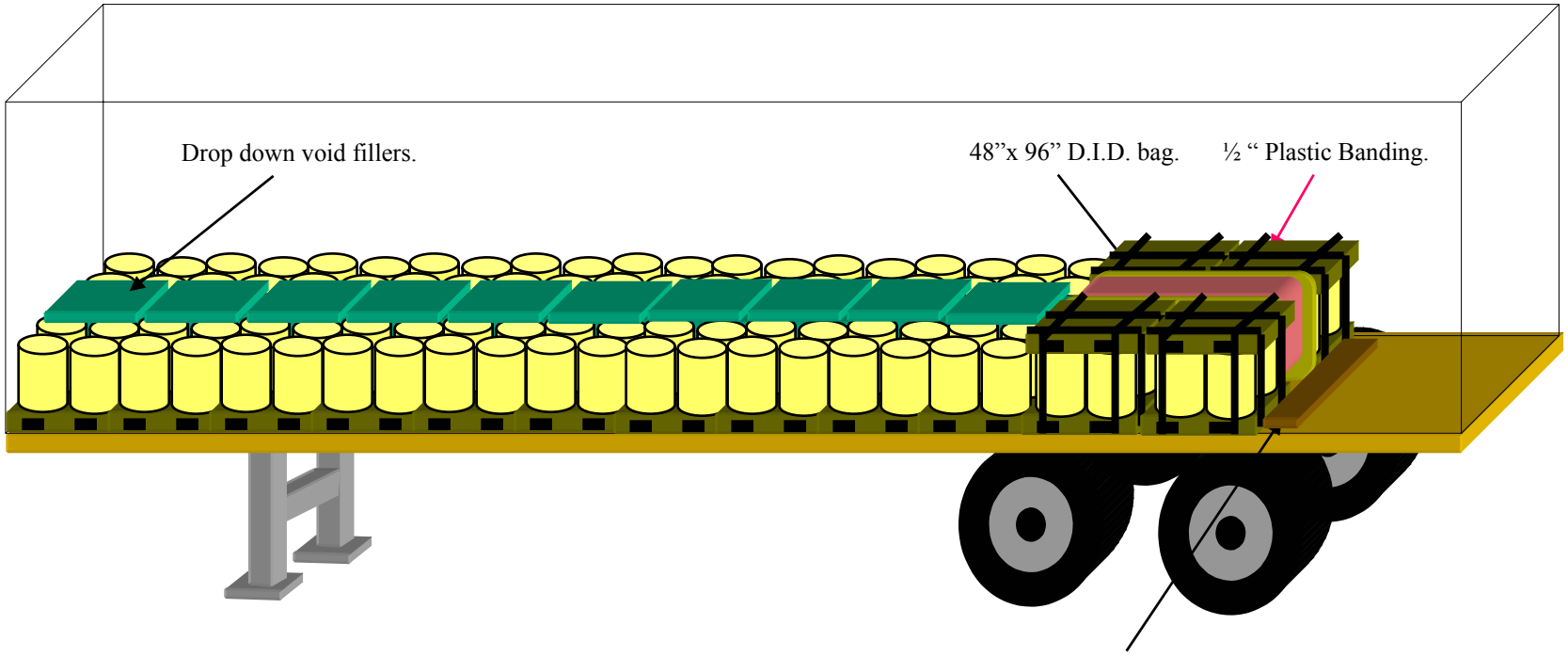
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

FOOD PRODUCT IN DRUMS

Palletized Plastic drums, 4 drums per pallet, secured to pallets with stretch wrap, to include pallets. Center void to be filled with drop down void filler. Last two stacks to have pallets on top of drums, banded with four 1/2" plastic bands, two lengthwise and two crosswise. Then 48" X 96", 2 ply D.I.D. bag in center void. Void not to be over 12"; bag must not touch floor, and must be buffered to protect bag. If void over 10", use a pal-kor type void filler on each side of bag. That will also act as buffer material, if used.



55 Gallon Steel Drums In A 4-3-4 Recessed Pattern

This method is for use in 102" wide trailers/containers with wooden floors to allow for securement of wood floor blocking.

Start the loading process with a 4 drum set followed by a 3 drum set and continue the 4-3-4 pattern moving toward the rear of the trailer/container.

Unitize the last 5 stacks loaded in the trailer/container with two 1 1/4" x .031" steel encircling straps or 1 1/4" Caristraps CW105 WSG type . Strapping to be placed above each rolling hoop.

After loading is completed, enough room must remain in trailer/container to properly apply and secure laminated wooden floor blocking and laminated wooden backup cleats.

Floor blocking is to consist of 2" x 4" lumber that is the full width of the trailer/container , laminated 2 boards high, individually nailed with minimum 16d nails, and placed 6 inches apart in an offset pattern.

Backup cleats are to consist 2" x4" lumber, 18" in length, placed 2 boards high, individually nailed with minimum 16d nails, and placed 6" apart in an offset pattern. Note, four sets of back up cleats are required and should be placed one each adjacent to each of the drums in the last stack.

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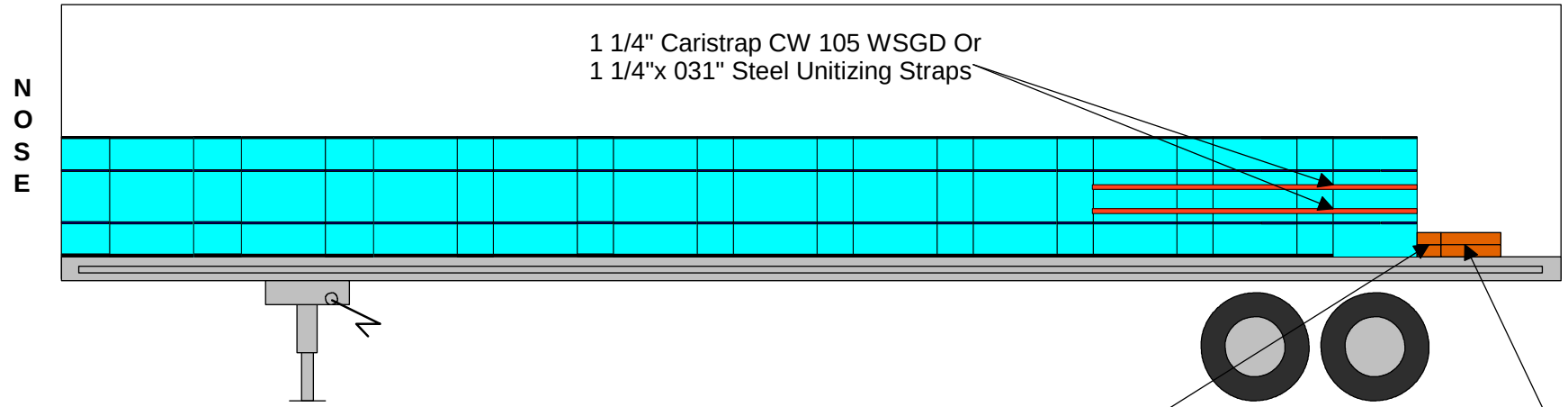
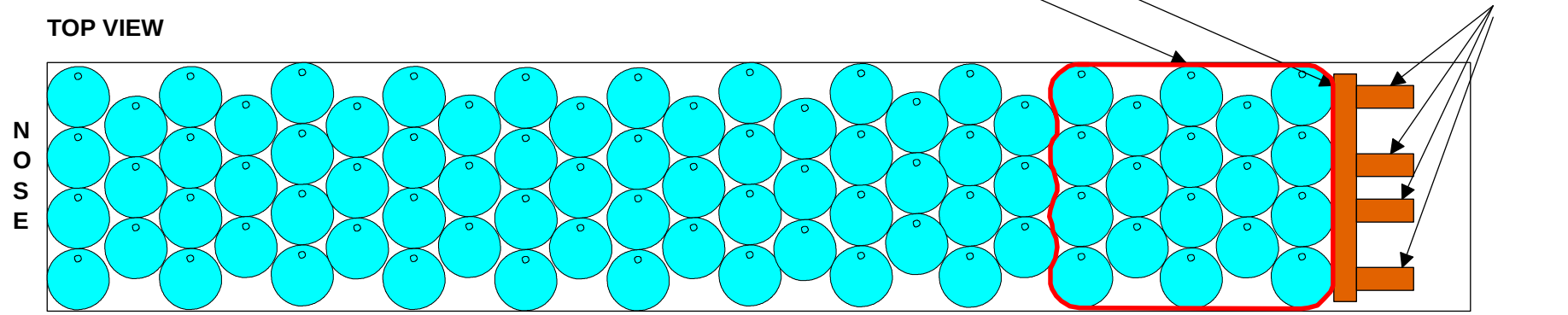
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



NOTE: LAST FIVE STACKS LOADED IN TRAILER/CONTAINER MUST BE UNITIZED

CLOSED HEAD STEEL DRUMS IN A 4-3-4 PATTERN WITH WOODEN FLOOR BLOCKING AND STEEL OR CARISTRAP STRAPPING

55 Gallon Steel Drums In A 4-4 Straight Across Pattern

This method is for use in 102" wide trailers/containers with wooden floors to allow for securement of wood floor blocking.

Start the loading process with a 4 drum set and continue the pattern moving toward the rear of the trailer/container.

Unitize the last 5 stacks loaded in the trailer/container with two 1 1/4" x .031" steel encircling straps or 1 1/4" Caristraps CW 105 WSG type. Strapping to be placed above each rolling hoop.

After loading is completed, enough room must remain in trailer/container to properly apply and secure laminated wooden floor blocking and laminated wooden backup cleats.

Floor blocking is to consist of 2" x 4" lumber that is the full width of the trailer/container , laminated 2 boards high, individually nailed with minimum 16d nails, and placed 6 inches apart in an offset pattern.

Backup cleats are to consist 2" x4" lumber, 18" in length, placed 2 boards high, individually nailed with minimum 16d nails, and placed 6" apart in an offset pattern. Note, four sets of back up cleats are required and should be placed one each adjacent to each of the drums in the last stack.

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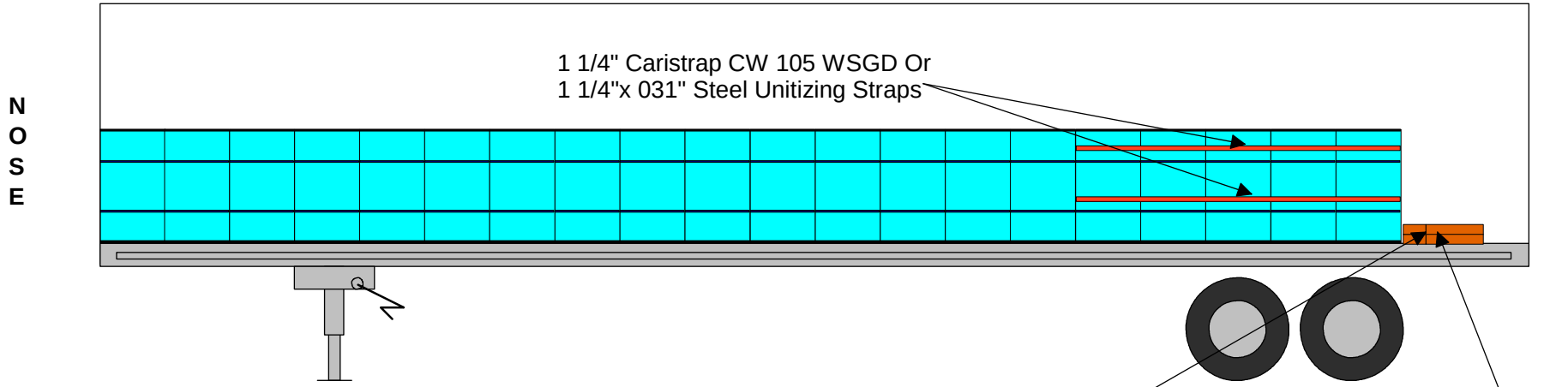
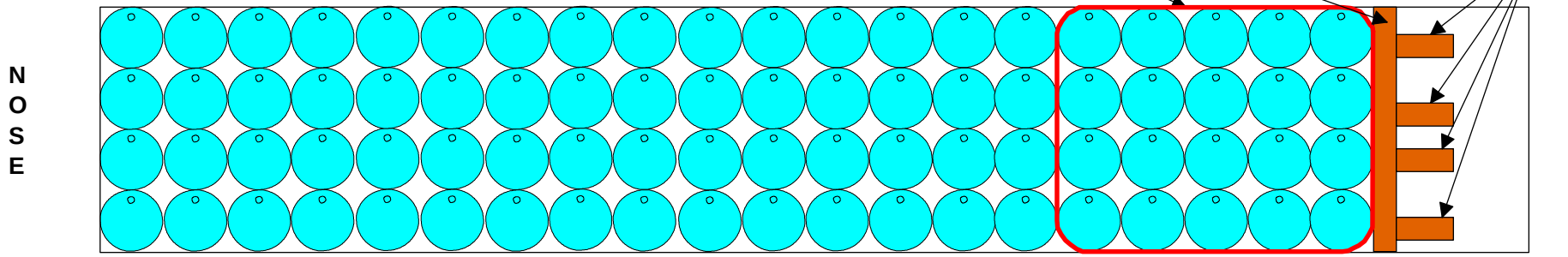
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



NOTE: LAST 5 STACKS LOADED IN TRAILER/CONTAINER MUST BE UNITIZED

CLOSED HEAD STEEL DRUMS IN A 4-4-4 PATTERN WITH WOODEN FLOOR BLOCKING AND STEEL OR CARISTRAP STRAPPING

55 Gallon Steel Drums In A 3-2-3 Recessed Pattern

This method is for use in 96" wide trailers/containers with wooden floors to allow for securement of wood floor blocking.

Start the loading process with a 3 drum set followed by a 2 drum set and continue the 3-2-3 pattern moving toward the rear of the trailer/container.

Unitize the last 5 stacks loaded in the trailer/container with two 1 1/4" x .031" steel encircling straps or 1 1/4" Caristraps CW 105 WSG type. Strapping to be placed above each rolling hoop.

After loading is completed, enough room must remain in trailer/container to properly apply and secure laminated wooden floor blocking and laminated wooden backup cleats.

Floor blocking is to consist of 2" x 4" lumber that is the full width of the trailer/container , laminated 2 boards high, individually nailed with minimum 16d nails, and placed 6 inches apart in an offset pattern.

Backup cleats are to consist 2" x4" lumber, 18" in length, placed 2 boards high, individually nailed with minimum 16d nails, and placed 6" apart in an offset pattern. Note, four sets of back up cleats are required and should be placed one each adjacent to each of the drums in the last stack.

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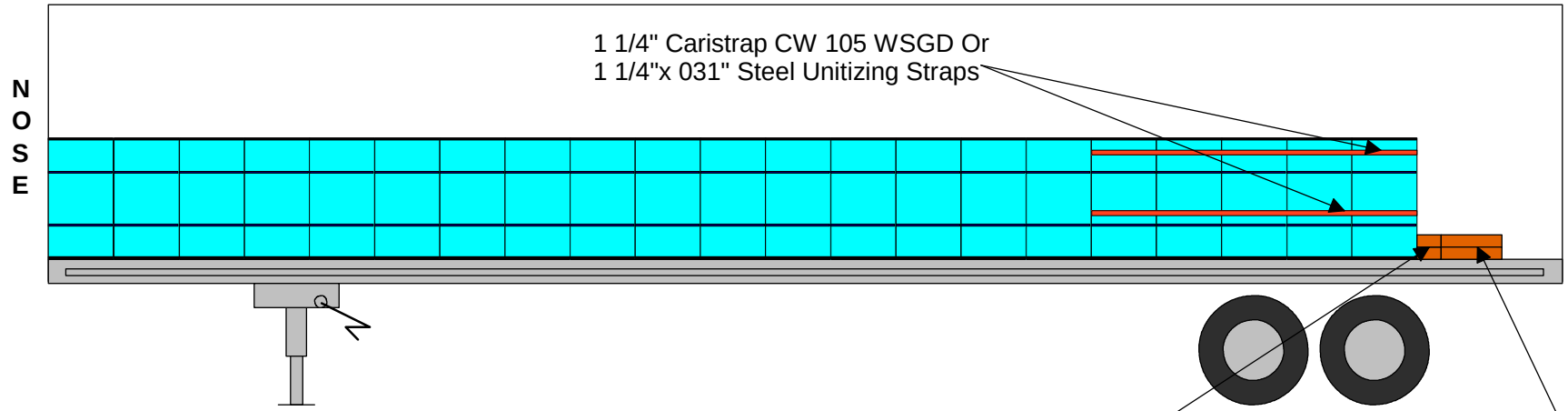
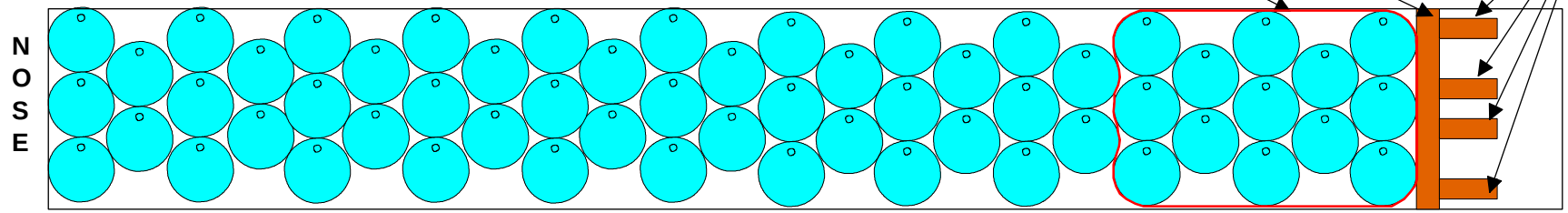
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



NOTE: LAST FIVE STACKS LOADED IN TRAILER/CONTAINER MUST BE UNITIZED

CLOSED HEAD STEEL DRUMS IN A 3-2-3 PATTERN WITH WOODEN FLOOR BLOCKING AND STEEL OR CARISTRAP STRAPPING

CLOSED HEAD STEEL DRUMS IN A 4-3-4 PATTERN
ON RUBBER MATTING WITH STEEL OR CARISTRAP STRAPPING

The following bracing method is for 55-gallon closed head steel drums loaded in a 4-3-4 pattern. The method utilizes ¼" masticated rubber matting and steel or Caristrap strapping.

The rubber mat is a minimum of 62-1/2" wide, and a minimum of 18" longer than the load. Adjust the length to suit each load.

Lay the rubber matting down the center of the trailer floor as the drums are loaded.

Load drums into the trailer in a 4-3-4 pattern.

Unitize the last three rows with one 1-1/4" steel strap or Caristrap strap. Use tape or strap stays to prevent strap from slipping down on drums.

Leave a minimum 3' of space between the back of the load and the trailer doors.

Do not reuse rubber mats for TOFC/COFC shipments if torn or otherwise damaged.

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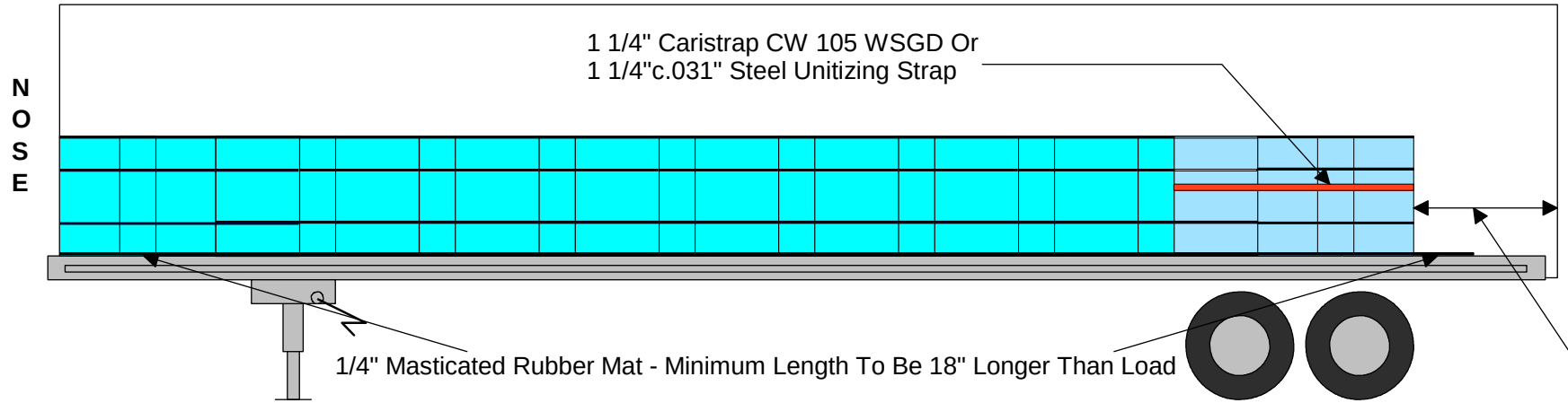
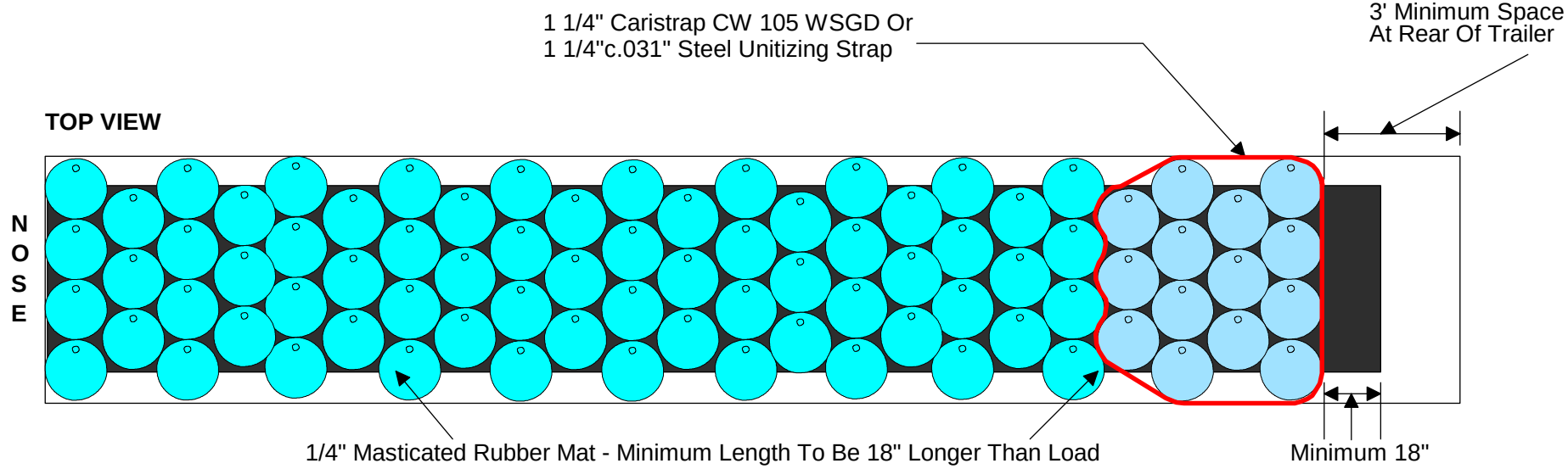
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

Indicates Drums That Are Unitized

SIDE VIEW



TOP VIEW



CLOSED HEAD STEEL DRUMS IN A 4-3-4 PATTERN ON RUBBER MATTING WITH STEEL OR CARISTRAP STRAPPING

Drums loaded in Two or Three Sections Secured with Ty-Gard Barriers

The following bracing method is for drums loaded in a 4-3-4 pattern only. The method of bracing involves restraint of the drums by use of Ty-Gard barriers which are attached to the side walls of the trailer/container. When used in trailers, this method is restricted to trailers with horizontally oriented side wall panels.

The drums are loaded into two or three sections.

In the two-section load each section contains approximately 1/2 of the total drums to be loaded

In the three-section load each section contains approximately 1/3 of the total drums to be loaded.

The last stack in each section is to contain 3 drums as shown in the illustration.

Each section is secured with two 15" wide strips of the Ty-Gard bulkhead material. This is attached to the sidewalls (per manufacturer's instructions) with an adhesive strip at least 60" long and at least 36" back from face of load.

Drum protection consists of drum protectors or angleboard strips. If angleboard strips are used, three thicknesses of .250" solid fiberboard or equivalent are used at the rear barrier at the door of the trailer/container and two thicknesses are used at the other barrier(s) in the load.

Close and seal the Ty-Gard barriers for each section in accordance with manufacturer's instructions. Tape the bulkhead to the drum protectors to prevent slippage during handling.

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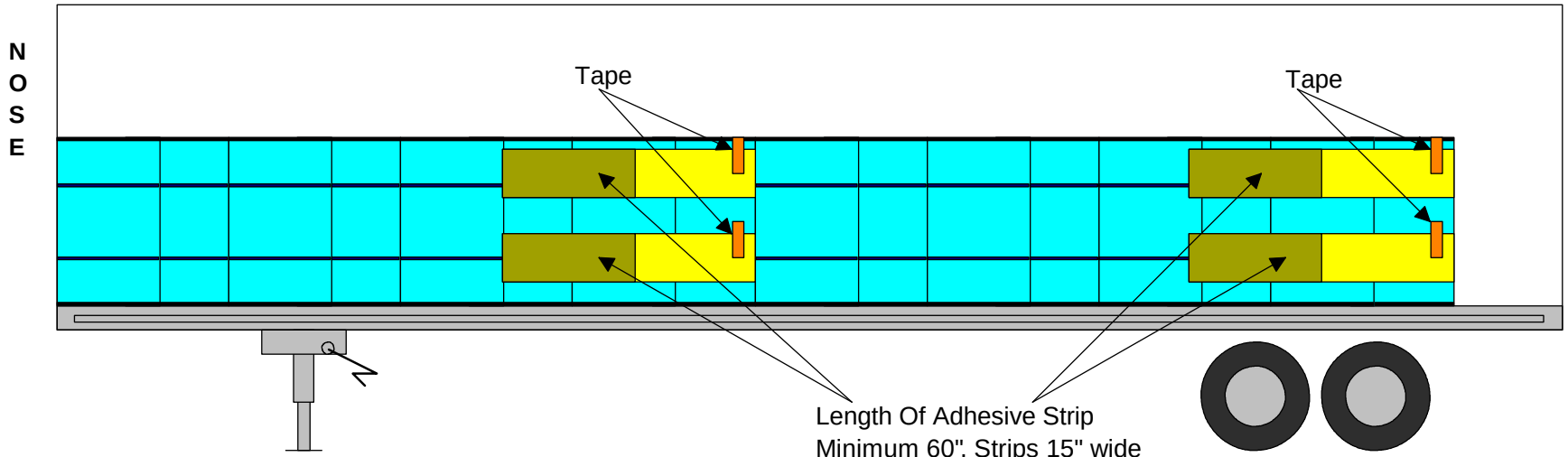
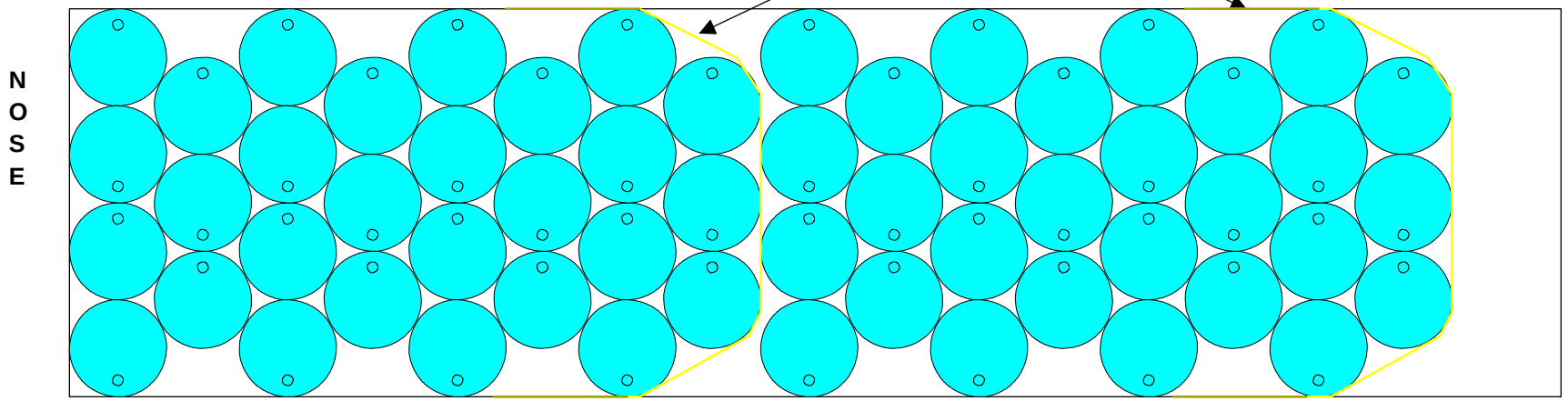
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

4-3-4 Pattern Only. Each Section To Contain Approximately 1/2 Of Total Drums To Be Loaded. Place Barrier In Front of A 3 Wide Location

SIDE VIEW



TOP VIEW



Drums Loaded In Two Sections Secured With Ty-Gard™ Barriers

CONSTRUCTION MATERIALS

Facing Brick In Closed Trailers/Containers

First five stacks or brick are to be placed in trailer/container 2 units across and tight against the nose wall.

Remaining four stacks are to loaded in the trailer/container tightly against the first five stacks and 3 units across.

Apply 2" x 4" guide rails against brick in first five stacks from nose toward rear. Guide rails to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern. Guide rails are to be of one piece construction when ever possible.

Apply 2" x 4" x 8' boards laminated 2 boards high for lengthwise blocking at rear of load abutting brick. Lengthwise blocking is to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

Apply four 2" x 4" x 18" boards laminated 2 boards high for lengthwise blocking back-up cleats spaced evenly across rear of load and abutting the lengthwise blocking. Lengthwise blocking back-up cleats are to be secured with 16d or larger nails spaced 6 inches apart in a staggered pattern.

Apply one per side 2" x 4" abutment joint laminated 2 boards high at the point where loading pattern changes from 2 to three units wide.

NOTES

Standard unit of face brick contains 500 bricks with a weight of 1,800 lbs.

Brick to be unitized with 1/2" x .023" high tension (or equivalent) banding, 5 crosswise, and 1 lengthwise.

Each unit of brick should have a minimum of 3 layers of stretch applied

Only utilize sound lumber free of cracks or knots in blocking applications.

Bracing should be made up continuous length boards; the use of pieced together blocking significantly reduces the holding capacity of the blocking and bracing method shown.

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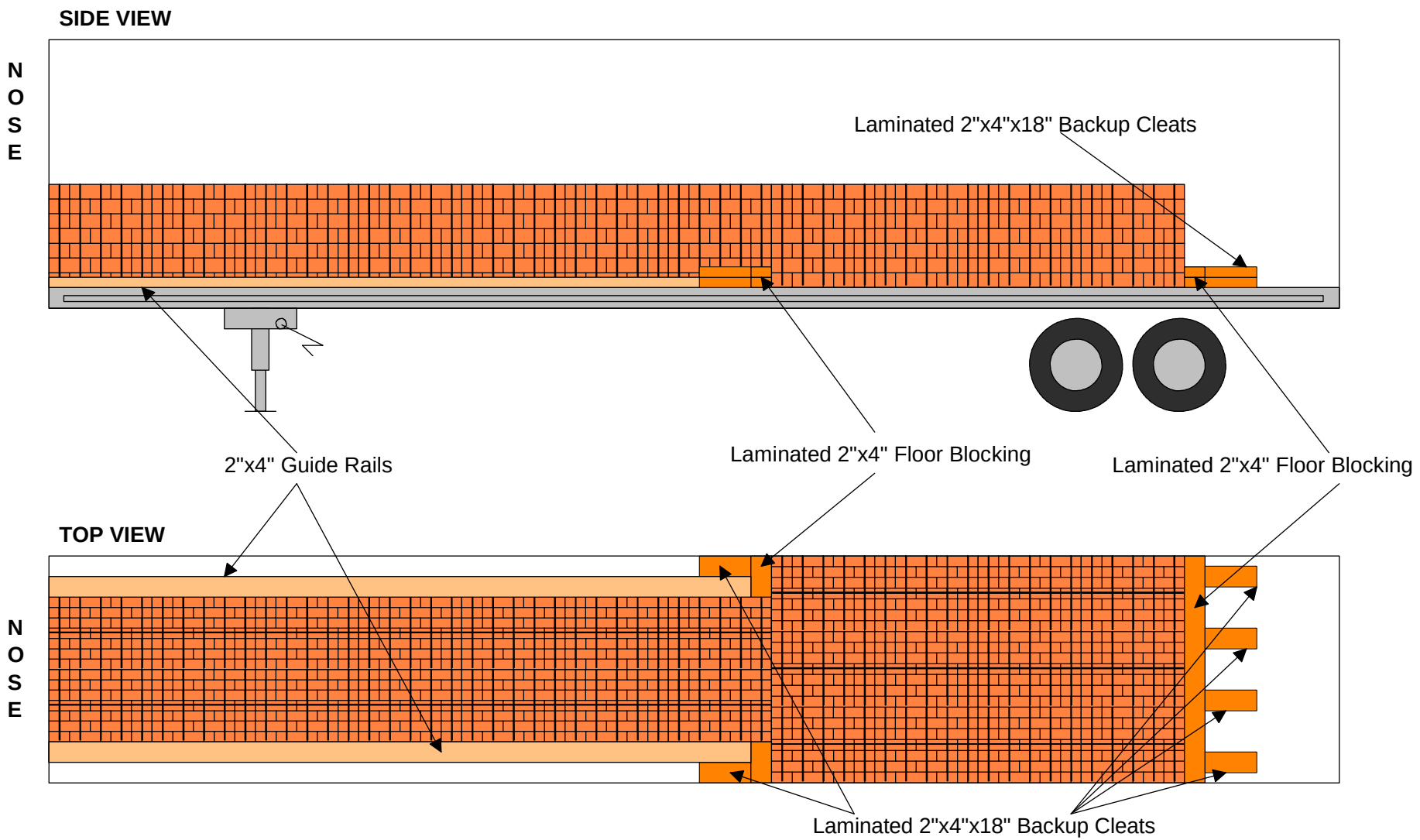
BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING



Facing Brick With Wooden Floor Blocking and Steel Unitizing Bands

Brick Secured with Floor Blocking and Ty-Gard Barriers

This bracing method is for use with packaged brick. It involves restraint of the brick by use of floor blocking and Ty-Gard barriers attached to the side walls of the trailer. Use of this method is restricted to trailers with horizontally oriented side wall panels.

Stretch wrapping of the brick units is required to help maintain the integrity of the units.

Brick multi-pack units (cubes) are loaded three units wide in two sections as shown in illustration. All package bands are to be secure, tight and intact before loading. Do not load cubes with loose or broken bands. Place corrugated fiberboard or equivalent material between the stacks.

The first section, containing approximately half of the load, is placed tight against the trailer nose. Corrugated fiberboard is placed across the face of the brick units to act as a buffer material between the brick units and the barrier.

The brick is secured using two 15" wide strips of Ty-Gard. The Ty-Gard is attached to the trailer side walls using Ty-Bond dry adhesive strips (per manufacturer's instructions). Each Ty-Bond adhesive strip is a minimum of 60" long and located at least 36" from the face of the lading. The Ty-Gard is taped to the corrugated fiberboard to prevent sagging if it becomes slack in transit.

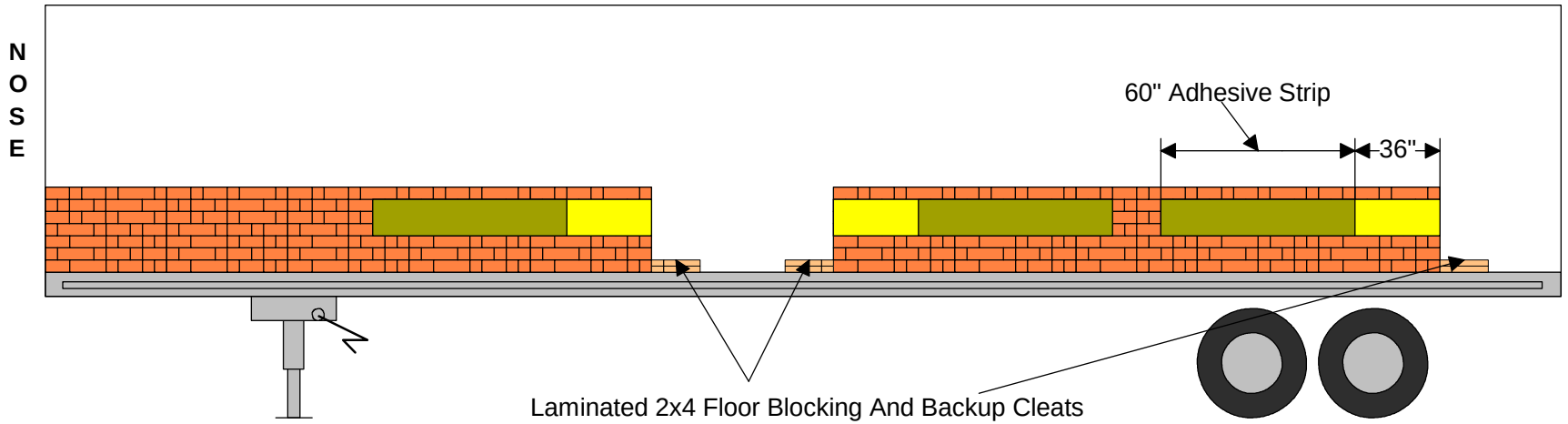
Each strip of Ty-Gard is closed and sealed per manufacturer's instructions.

Laminated 2" x 4" x 8' cross trailer floor blocking is nailed 1" from the face of the brick units
using 22-16d power driven nails. Placing the floor blocking about 1" away from the face is crucial to the success of this method of bracing. This allows the barrier to receive initial forces and then the floor blocking can work in conjunction with the barrier. Five 2" x 4" x 18" laminated backup cleats are nailed perpendicular to the floor blocking using 5-16d power driven nails. Stagger the nails to prevent splitting of the blocking.

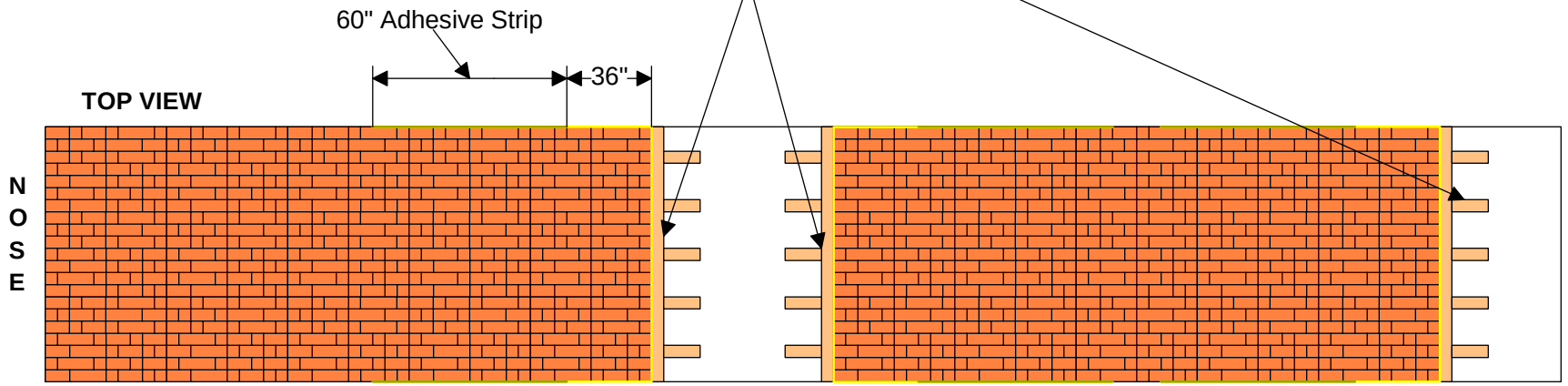
The second section of lading is loaded in the rear of the trailer. Location of this lading may be dependent on required spacing for proper weight distribution.

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

SIDE VIEW



TOP VIEW



Brick Secured With Floor Blocking And Ty-Gard™ Barriers

Palletized Roofing Shingles Secured Using 1 Foot Wide Rubber Floor Mats

This method is for roofing shingles on double deck pallets. The shingles are unitized by stretch wrapping with three wraps at the top and bottom and two wraps around the middle of the unit. The stretch wrap is to extend down and encompass the top of the pallet. Use trailers/containers with wood floors only.

The load is divided into two sections, with two rows per section. Each section contains approximately half of the load.

Each row in each section is loaded on a 1' wide rubber mat centered under the row. The rubber mat extends 6" from under the front and rear of each row. The mats are not secured to the trailer floor.

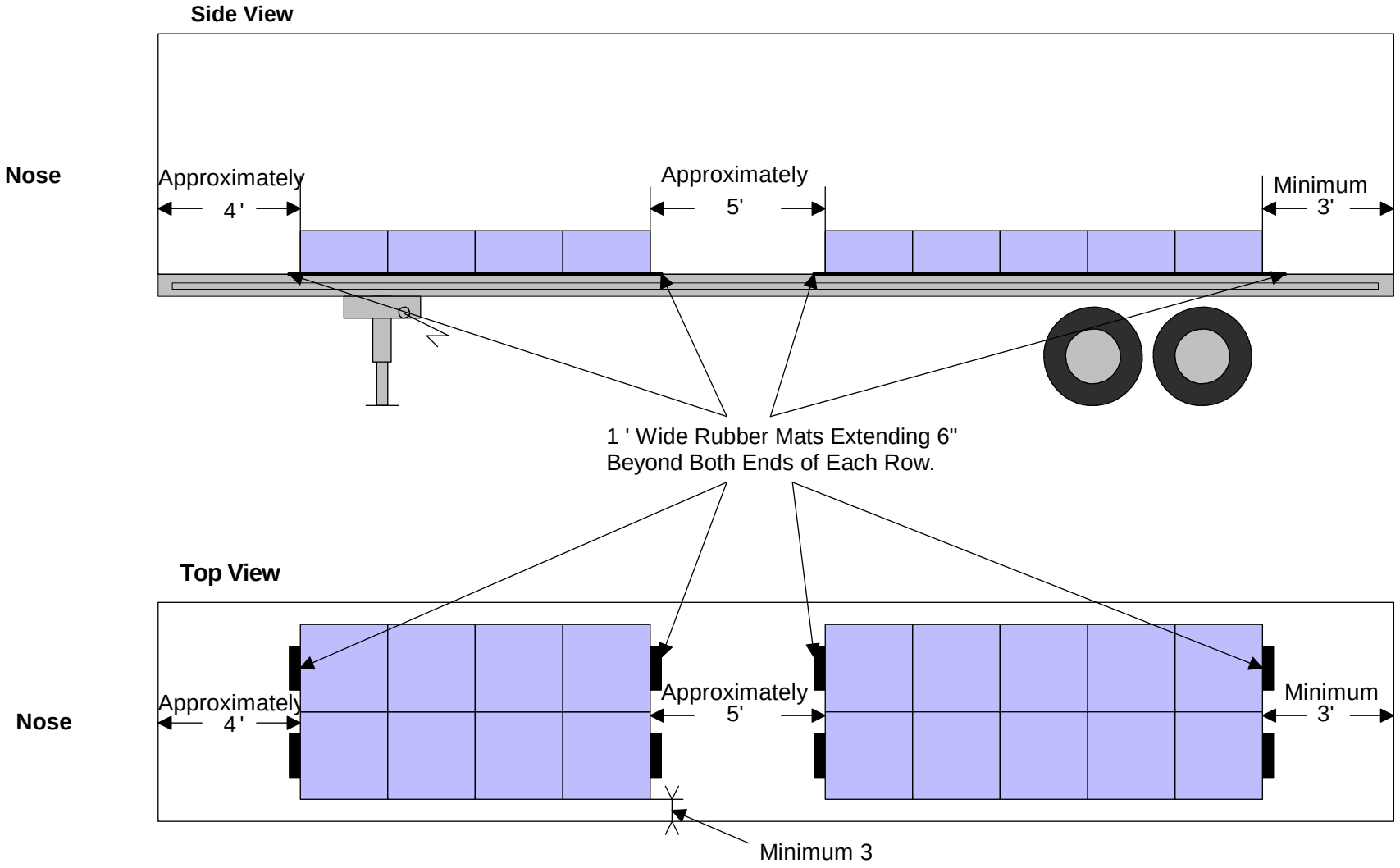
The first section consists of two rows of pallets loaded down the center of the trailer. Position the first stack about 4' from the nose of the trailer.

The second section also consists of two rows of pallets loaded down the center of the trailer about 5' behind the first section. This section is to be at least 3' from the doors when loading is completed. Adjust the void at the nose and between the first and second sections of lading, if necessary, to provide proper weight distribution and maintain the minimum 3' void at the rear of the trailer.

Use 3mm (0.125" thick rubber mats. Do not reuse rubber floor mats if they have been torn or in any way damaged.

BURLINGTON NORTHERN SANTA FE

LOAD AND RIDE SOLUTIONS DRAWING



Palletized Roofing Shingles Secured Using Rubber Floor Mats

Dimensional Lumber In Closed Vehicles

Dimensional lumber may be loaded in closed vehicles if loaded tightly both lengthwise and crosswise (elimination of voids) and strict adherence to the following rules is maintained.

Each individual unit (package) of finished lumber must be unitized with two 3/4" x .028 " high tension steel bands.

Each lift of lumber (two individual units) must be unitized with two 1 1/4" x 0.031" high tension steel bands.

Each stack of lumber (two individual lifts) must be secured with a 48" x 96" x 4 ply DID bag placed in the center void between the left and right side lifts. Void not to exceed 12". DID bag not to exceed height of lumber. See notes for proper application.

Suitable buffer sheets (on either side of DID bag between lading and DID bag) of sufficient strength to prevent chafing and puncture of DID bags must be applied to each stack. Size of buffer sheets must be at least equal to the size of the DID bag, and in no case, less.

Lengthwise floor blocking must be constructed of 2" x 4" lumber laminated two boards high, and individually nailed with 16d or larger nails placed every 6 inches in a staggered pattern.

Backup cleats must be constructed of 2" x 4" lumber , a minimum of 18" in length, laminated two boards high, and individually nailed with 16d or larger nails placed every 6 inches in a staggered pattern.

NOTES

Lumber units must be loaded tight to the nose wall of the trailer/container.

Trailer to be loaded in two rows of three to four stacks (depending on length of lumber) and two layers high.

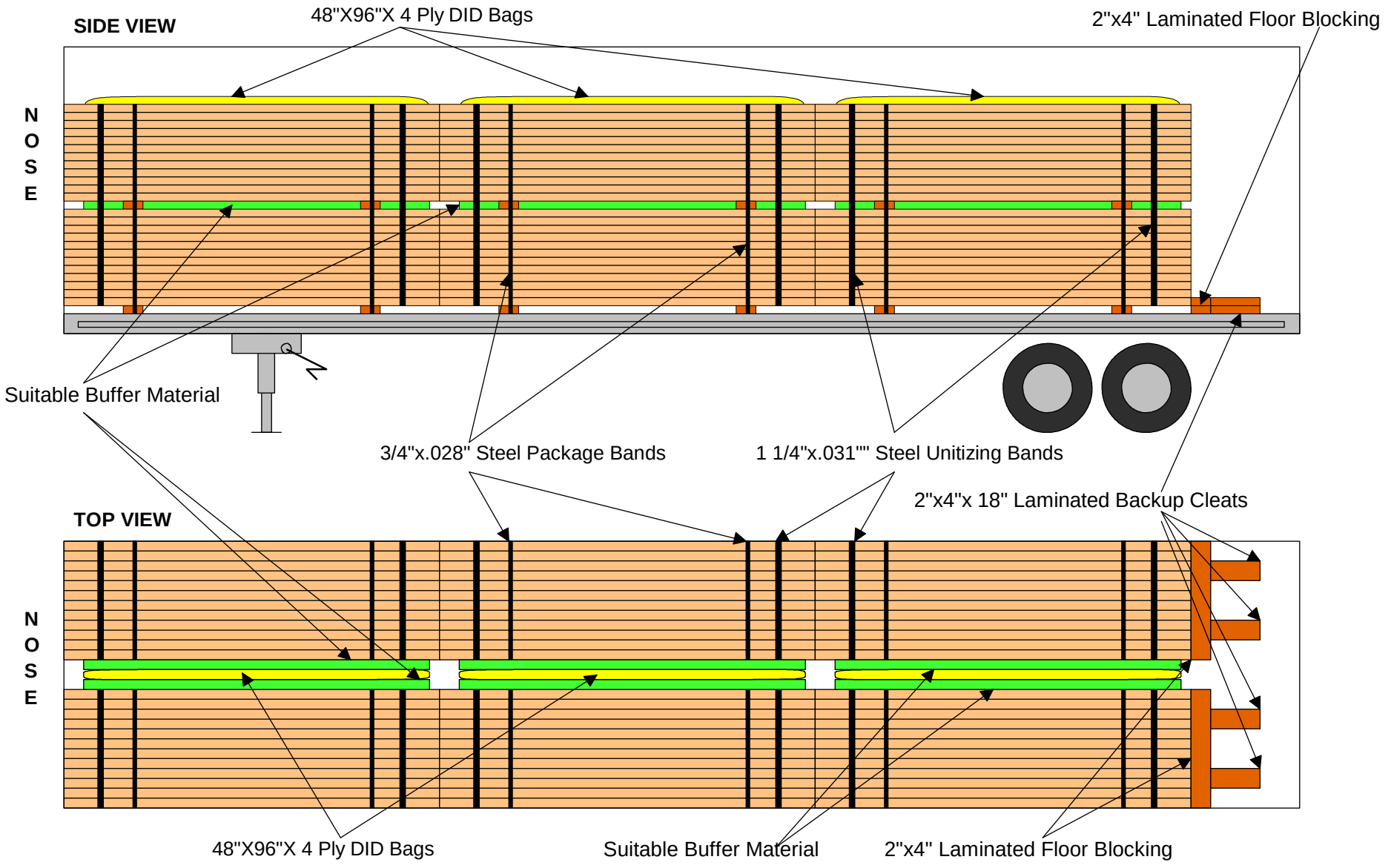
DID bags must conform to AAR requirements. DID bags to be minimum of 4 ply. Apply DID bags so they are a minimum of 1" above floor of trailer/container when inflated. Inflate DID bags with proper filler, check pressure with accurate air gauge and inflate to a maximum of 2 PSI.

One DID bag is to be used per stack with the DID bag applied in center void at end of stack nearest rear of trailer/container.

BNSF

BURLINGTON NORTHERN SANTA FE
LOAD AND RIDE SOLUTIONS DRAWING

NOTE: DID BAGS SHOWN EXTENDING OVER TOP OF BUNDLES FOR ILLUSTRATIVE PURPOSES ONLY



DIMENSIONAL LUMBER IN CLOSED VAN/CONTAINER

LOGS

Nested, Rough Cut Logs With Bark Attached Secured By Bull Boards

This bracing method is for use with rough cut logs in ribbed wall steamship containers in 2, 3, or 4 sections. It involves the restraint of the logs by means of nesting and 2”x 6” bull boards.

1. **The load is divided into 2 to 4 sections with the weight evenly dispersed both lengthwise and crosswise in the container.**

2. **Logs in each section are loaded with the large diameter end alternated from nose to rear.**

3. **Logs must nest a minimum of 1/3 of the logs diameter.**

4. **One 2”x 6” hardwood bull board must be placed at rear of last section for every layer of logs placed in the load.**

5. **Two 2”x 6” vertical stabilizers must be used to maintain bull board alignment as shown in diagram.**

6. **Bull boards may be inserted container ribbed walls or rear door slots.**

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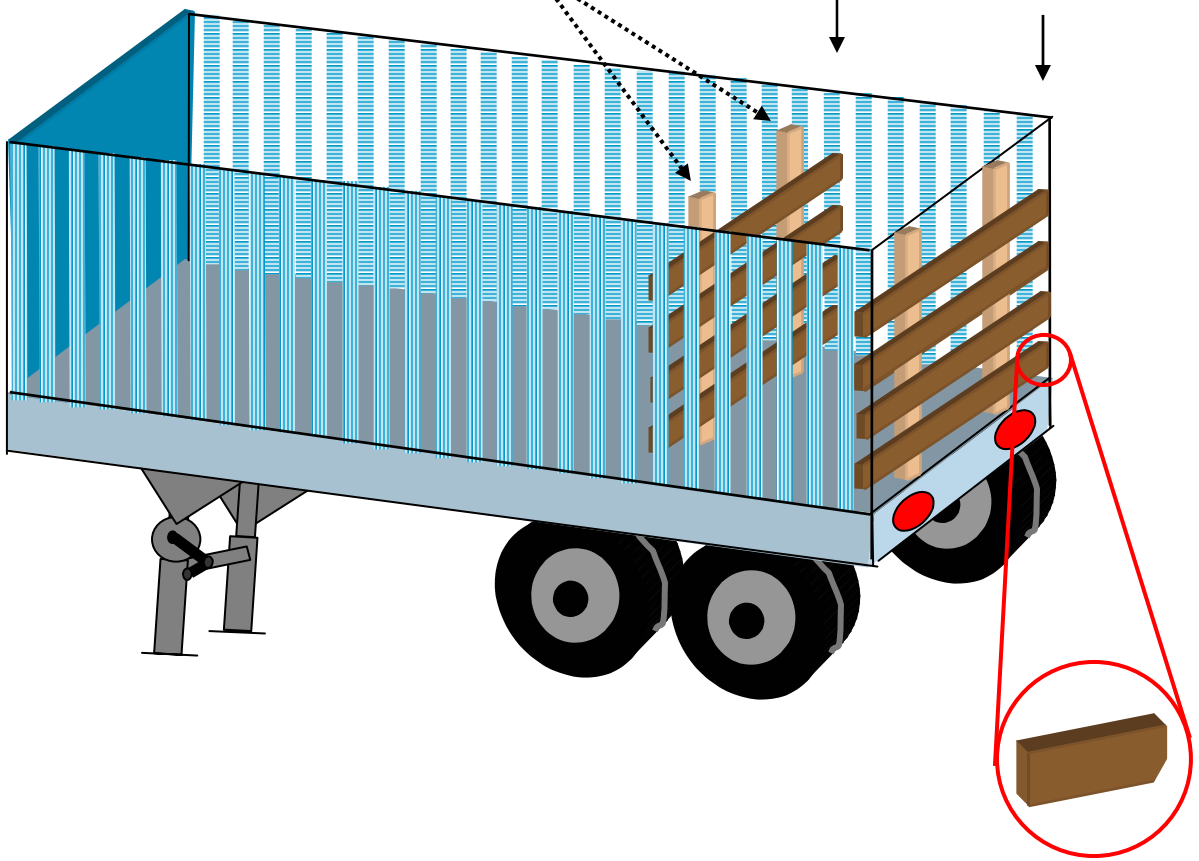
BURLINGTON NORTHERN SANTA FE RAILWAY
LOAD AND RIDE SOLUTIONS DRAWING

BULL BOARDS
(INSERTED INTO SLOTTED DOORPOSTS OR CORRUGATED SIDEWALLS)

THE VERTICAL 2"X4" LUMBER IS SECURED TO THE HORIZONTAL BULL BOARDS IN ORDER TO PREVENT DISPLACEMENT

BULL BOARDS CORRUGATED SIDEWALLS

BULL BOARDS SLOTTED DOORPOSTS

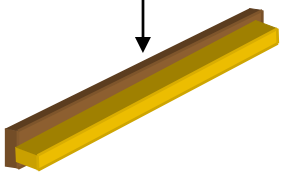


MITER BOTTOM CORNERS TO SIMPLIFY DROPPING BULL BOARDS IN PLACE

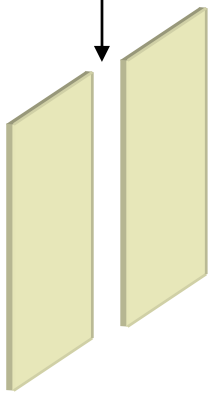
LOAD RESTRAINING CAPACITY

RESTRAINT DEVICE	CAPACITY
2" X 4" BULL BOARD	5,600 LBS
2" X 6" BULL BOARD	8,000 LBS
2" X 4" "T" BRACE	7,000 LBS

"T" BRACE METHOD OF REINFORCING BULL BOARD. SHOWN BACKWARDS FOR CLARITY.



OPTIONAL: PLYWOOD BUFFER MATERIAL CAN BE PLACED BETWEEN LADING & BULL BOARDS TO HELP EVENLY DISTRIBUTE LADING FORCES (NOT SHOWN IN DIAGRAM)



Stacked, Rough Cut Logs With Bark Attached Secured With Bull Boards

This bracing method is for use with rough cut logs in ribbed wall steamship containers in 2, 3, or 4 sections. It involves the restraint of the logs by means of 2" steel banding and 2"x 6" bull boards**.**

1. **The load is divided into 2 to 4 sections with the weight evenly dispersed both lengthwise and crosswise in the container.**

2. **Logs in each section are loaded with the large diameter end alternated from nose to rear.**

3. **Two 2"x .031 steel unitizing bands bust be applied to each section loaded in the container. Bands can be attached to floor securement rings of the container or completely encircle each section. (Diagram Shows Floor Ring Attachment)**

4. **One 2"x 6" hardwood bull board must be placed at rear of last section for every layer of logs placed in the load.**

5. **Two 2"x 6" vertical stabilizers must be used to maintain bull board alignment as shown in diagram.**

6. **Bull boards may be inserted container ribbed walls or rear door slots.**

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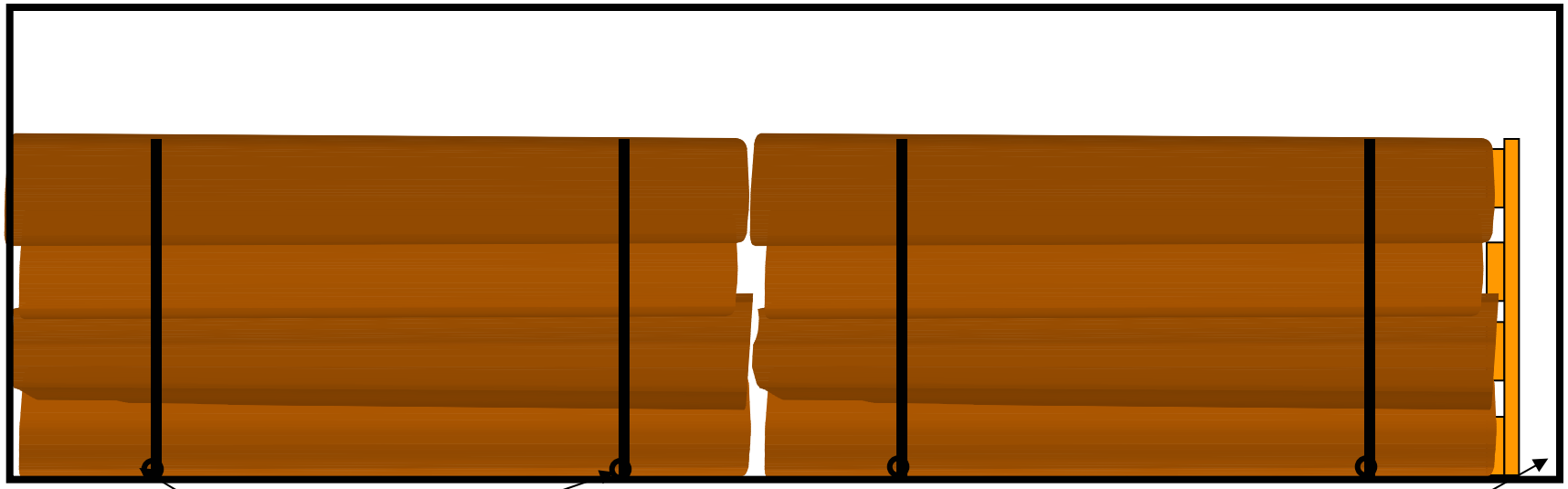
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

LOGS, WITH BARK ATTACHED, LOADED IN INTERNATIONAL CONTAINERS ONLY USING UNTIZING HOLD DOWN BANDS & BULL BOARDS

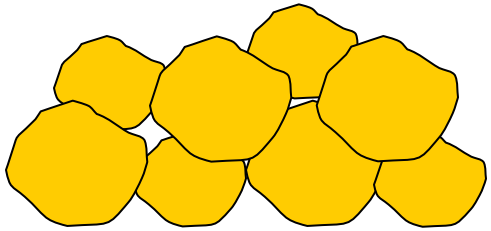
NOTE: DRAWING SHOWN WITH STEEL BANDING APPLIED. SEE BELOW INSETS FOR OTHER APPLICATION



TWO INCH STEEL BANDING SECURED TO FLOOR RINGS AND CRIPMED OVER TOP OF STACKED LOGS

2 X 6 HARDWOOD BULLBOARDS, ONE PER LAYER, WITH VERTICAL STABILIZERS

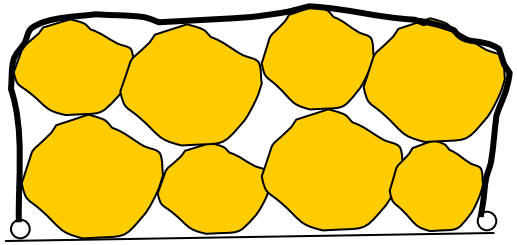
NO BANDING REQUIRED
AS LOGS ARE NESTED



End View Would Indicate Alternating Sized Ends For Fit & Weight Distribution

NOTE: STEEL BANDING IS NOT REQUIRED IF LOGS ARE NESTED A MINIMUM OF 1/3 THE DEPTH OF THE LOGS DIAMETERS

BANDING REQUIRED
AS LOGS ARE STACKED



End View Would Indicate Alternating Sized Ends For Fit & Weight Distribution

LTL SHIPMENTS

LTL Load Planning and Loading

Inspect lading prior to loading into trailer/container. Do not load damaged freight.

Evenly distribute weight of load from side to side and end to end in vehicle and to a uniform height as much as the lading permits. Place lighter lading on top of heavier lading with separating material used as needed between layers. Load like sized and type shipping containers in stacks and use divider material between stacks of different size or type of shipping containers and shipping containers of different densities.

Place shipping containers in the position to best utilize the shipping containers' inherent strength.

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

Plan load so that crosswise void space is minimized. Use appropriate bracing or filler material to maintain vertical alignment and prevent crosswise movement.

Segregate irregular lading from remainder of lading using blocking and bracing or separators and dividers.

Position any hazmat materials placed in the load at least one stack away from the rear doors. Do not place any hazmat materials where it may come in contact with the rear doors directly or indirectly as in the case of load shifting over other stacks toward the rear. Segregate the hazmat materials from other lading placed in the load with blocking and bracing or separators and dividers.

Notes

DID bags must not be used in a void space in excess of 12" wide.
DID bags must not be placed in such a manner that they contact the floor of trailer/container or pallet after inflation.
DID bags must be adequately buffered to prevent contact with sharp or rough surfaces which could cause deflation.
DID bags must be inflated between ½ and 2 PSI depending on the type of trailer/container walls you may encounter.

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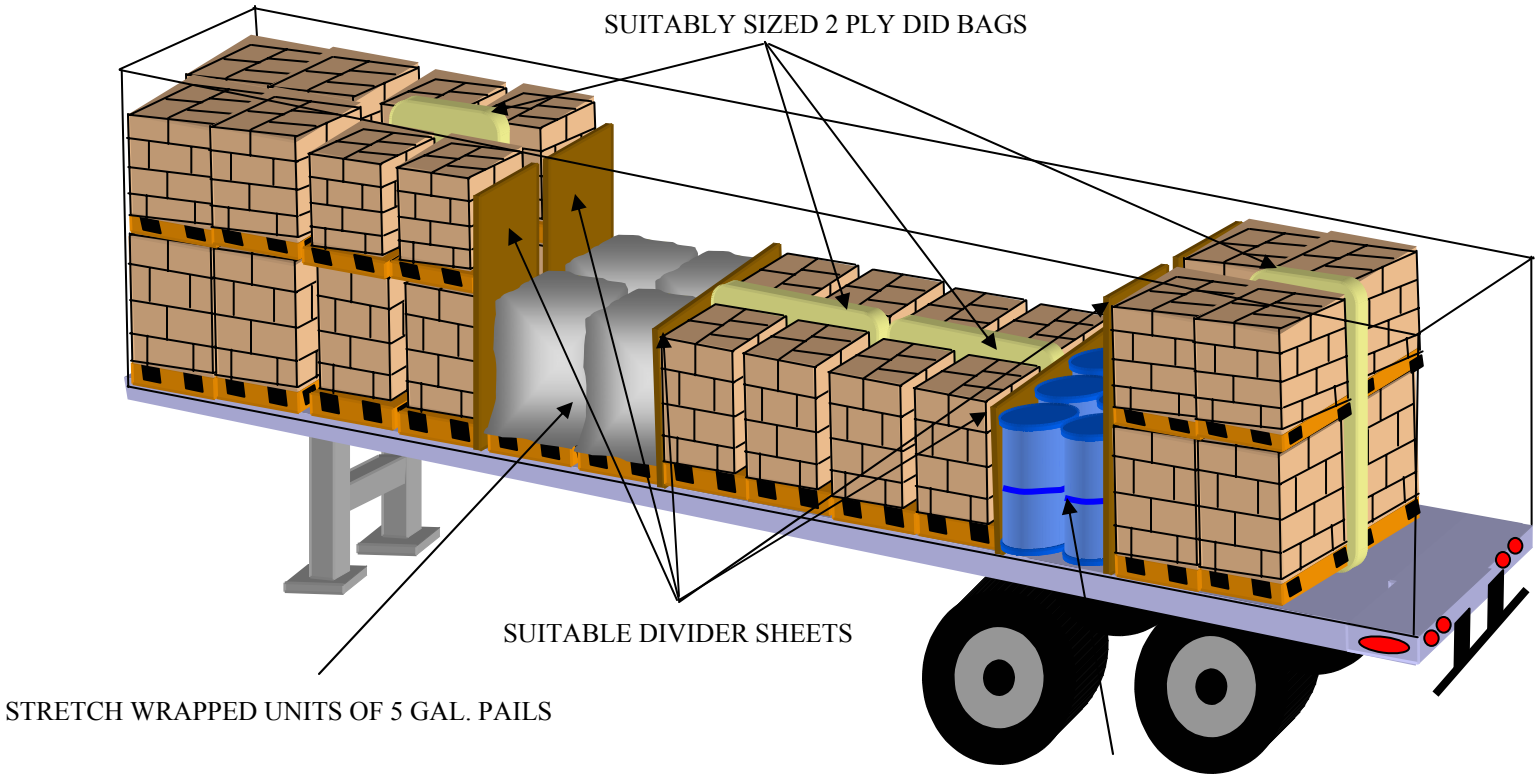
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

MIXED LTL LOAD

LOADING METHOD FOR MIXED LTL LOADS WITH HAZMAT

NOTE: PLACE ANY CROSSWISE UNDERHANG OF PRODUCT TOWARD CENTER VOID IN LOAD

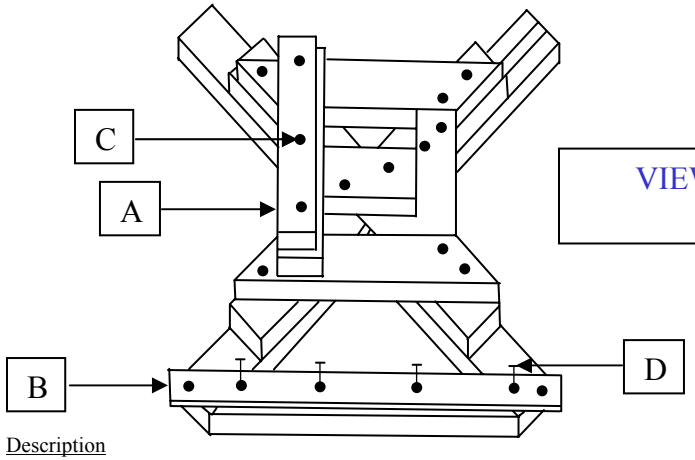


HAZMAT MUST BE PROTECTED FROM OTHER PRODUCT LOADED IN TRAILER WITH DIVIDER SHEETS CAPABLE OF KEEPING THE OTHER PRODUCT LOADED FROM PUNCTURING THE HAZMAT. HAZMAT MUST NOT BE PLACED AGAINST THE DOORS OF THE LOAD.

NOTE: DID BAGS MUST NOT BE USED IN VOID SPACES IN EXCESS OF 12", MUST NOT CONTACT FLOOR OF TRAILER OR PALLET AFTER INFLATION, MUST BE ADEQUATELY BUFFERED WHEN IN CONTACT WITH ROUGH SURFACES, AND SHOULD BE INFLATED BETWEEN 1 & 2 PSI.
ALL UNITS MUST BE PROPERLY STRETCH-WRAPPED TO MAINTAIN ADEQUATE VERTICAL ALIGNMENT DURING THE TRANSPORTATION CYCLE.

MOTOR VEHICLES
&
FORK LIFT TRUCKS

Motor Vehicles In Trailers / Containers



VIEW OF ASSEMBLED CHOCK

Item	No. Of	Description
A	4 Per vehicle	Chock block constructed of 2"x4" lumber, a minimum five boards high at point of wheel contact.
B	1 Per chock block	2"x 30"x 18" steel plate with four evenly spaced predrilled holes.
C	3 Per board on chock	Three, 12d common nails per board securing lumber of chock block to the floor.
D	Minimum 4 nails	Four 20d nails nailed thru the predrilled holes in item B and into the flooring.

NOTE:

1. Place motor vehicle no closer than 10" from end wall (nose), put transmission in "Park" and fully engage parking brake.
2. Place chock blocks firmly against all four wheels (Item B to be closest to sidewall and tallest part of chock block against tires) secure with item D.

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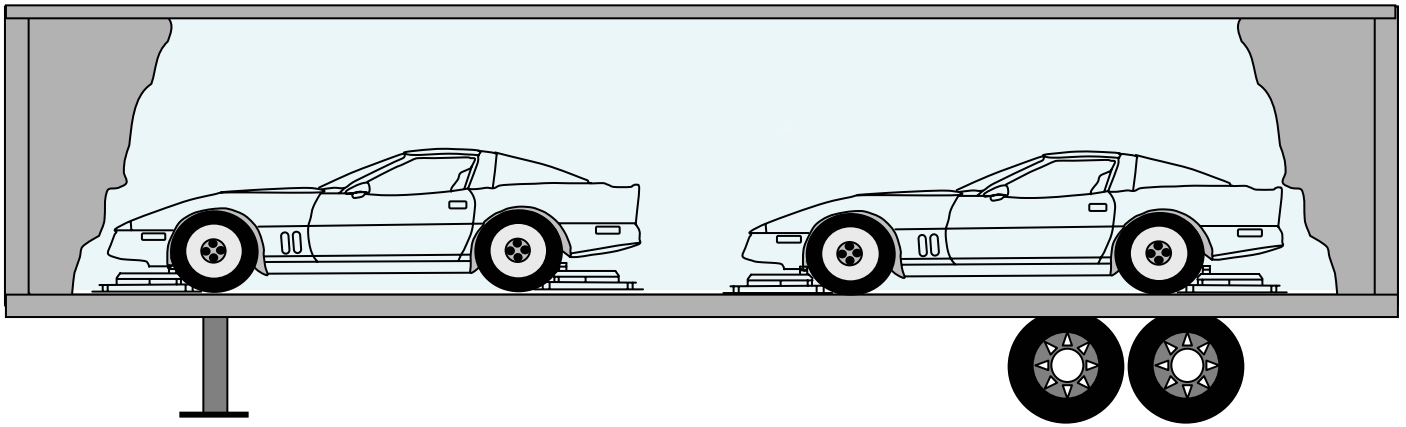
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

AUTOMOBILE LOADING IN WOOD FLOOR TRAILER/CONTAINERS UTILIZING REUSABLE CHOCK BLOCKS

CUT AWAY SIDE VIEW SHOWING LOCATIONS OF CHOCK BLOCKS



Item	No. Of Pieces	Description
A	4 Per vehicle	Chock block constructed of 2”x4” lumber, a minimum five boards high at point of wheel contact.
B	1 Per chock block	2”x 30”x 18” steel plate with four evenly spaced predrilled holes.
C	3 Per board on chock	Three, 12d common nails per board securing lumber of chock block to the floor.
D	Minimum 4 nails	Four 20d nails nailed thru the predrilled holes in item B and into the flooring.

NOTE:

1. Place motor vehicle no closer than 10” from end wall (nose), put transmission in “Park” and fully engage parking brake.
2. Place chock blocks firmly against all four wheels (Item B to be closest to sidewall and tallest part of chock block against tires) secure with item D.

Lift Trucks With Rigid Blocking

This method is for use with commercial fork trucks with lifting forks attached

Fork trucks are to be centered laterally in the load and spaced lengthwise in such a manner that allows a 2’ void between the last unit loaded in the trailer/container and the rear doors.

Each individual unit is to be secured in the trailer/container with laminated 2” x 4” lumber

Lateral blocking to consist of laminated 2”x 4” x 24” lumber applied to the outside of each wheel on each fork truck loaded.

Longitudinal blocking to consist of laminated 2” x 4” x 24” lumber applied in front of each wheel of each fork truck loaded in the vehicle.

Longitudinal blocking must extend out 6” past the outside edge of each tire.

Notes

All floor blocking must be secured with 16D or larger nails placed every 6” in a staggered pattern.

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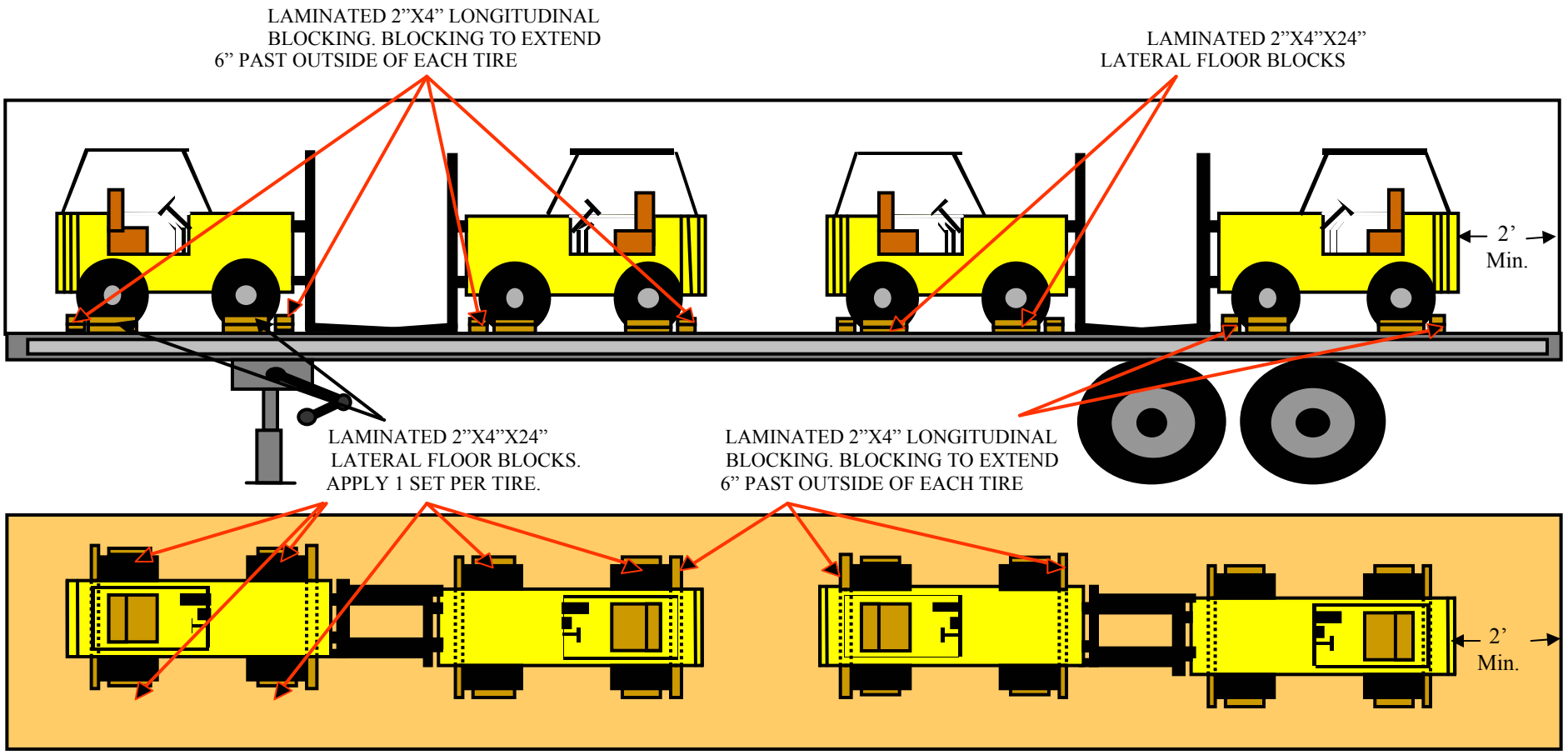
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

LOADING METHOD FOR FORK LIFT TRUCKS IN INTERMODAL SERVICE



NOTE: FLOOR BLOCKING IS TO BE NAILED IN PLACE WITH 16 OR LARGER NAIL NAILED PLACED IN AN OFFSET PATTERN EVERY 6"

PLATE GLASS
&
GLASS BOTTLES

Plate Glass Rigid Blocking

This method is for use with rigidly braced, crated units of plate glass that are unitized in two sections with three 3/4” steel unitizing bands.

Crated units of glass are to be centered in the trailer/container laterally.

Each section of glass is to be braced laterally with 2”x 6” side runners cut to length of each section and applied to each side of section.

Longitudinal bracing consisting of laminated 2”x 6”, cut to size cross blocking is to be applied to each end of each section with the exception of the end of the nose section loaded against the end wall of the trailer/container.

Longitudinal bracing applied to each end of each section with the exception of the end of the nose section loaded against the end wall of the trailer/container must be augmented with two sets of laminated 2”x 6”x 18” back up cleats .

Notes

A minimum of 3’ of void space must be maintained between the last unit loaded in container and the rear doors.

All floor blocking must be secured with 16D or larger nails placed every 6” in a staggered pattern.

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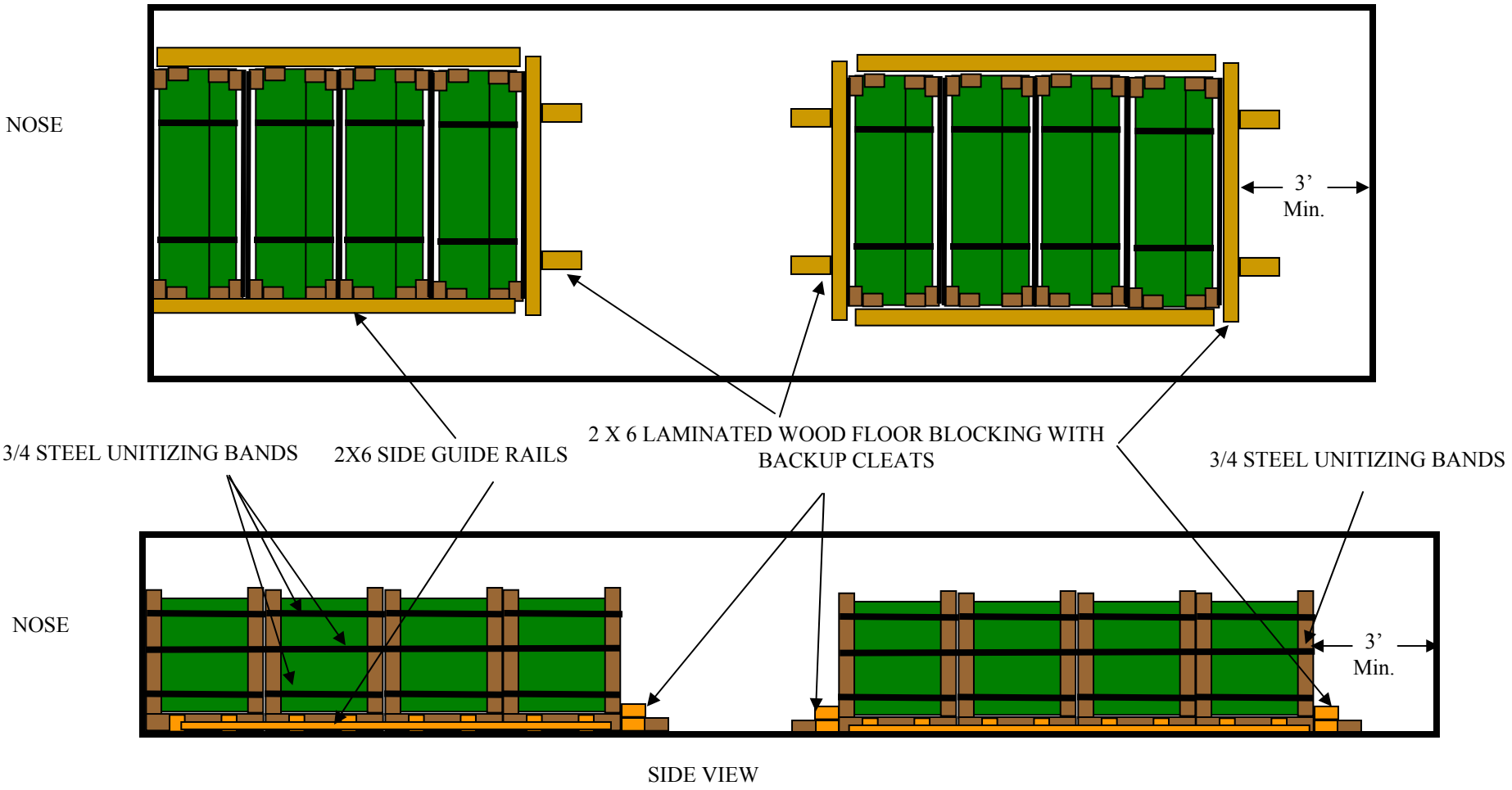
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

PLATE GLASS

GLASS PANELS IN BANDED SKID UNITS USING 2X6 WOOD FLOOR BLOCKING AND STEEL BAND UNITIZING IN CONTAINERS

TOP VIEW



SIDE VIEW

Plate Glass Floating Load Method

This method is for use with crated units of plate glass that are unitized in two sections with three 3/4” steel unitizing bands.

Crated units of glass are to be centered in the trailer/container laterally.

Crated units are to be placed with the runners centered on top of 2’ wide, 3 MM rubber mats that extend 3’ past the ends of each section loaded in the trailer/container with the exception to the unit placed against the nose wall of the load.

Rubber mat sections must be of lengths longer than 8’ to achieve maximum effectiveness

2” x 6” side runners are to be applied over the rubber mats a run along the sides of all units placed in the load. These wooden side runners must extend 3’ past the ends of each section loaded in the trailer/container with the exception to the unit placed against the nose wall of the load.

Notes

A minimum of 5’ of void space must be maintained between the last unit loaded in container and the rear doors.

All floor blocking must be secured with 16D or larger nails placed every 6” in a staggered pattern.

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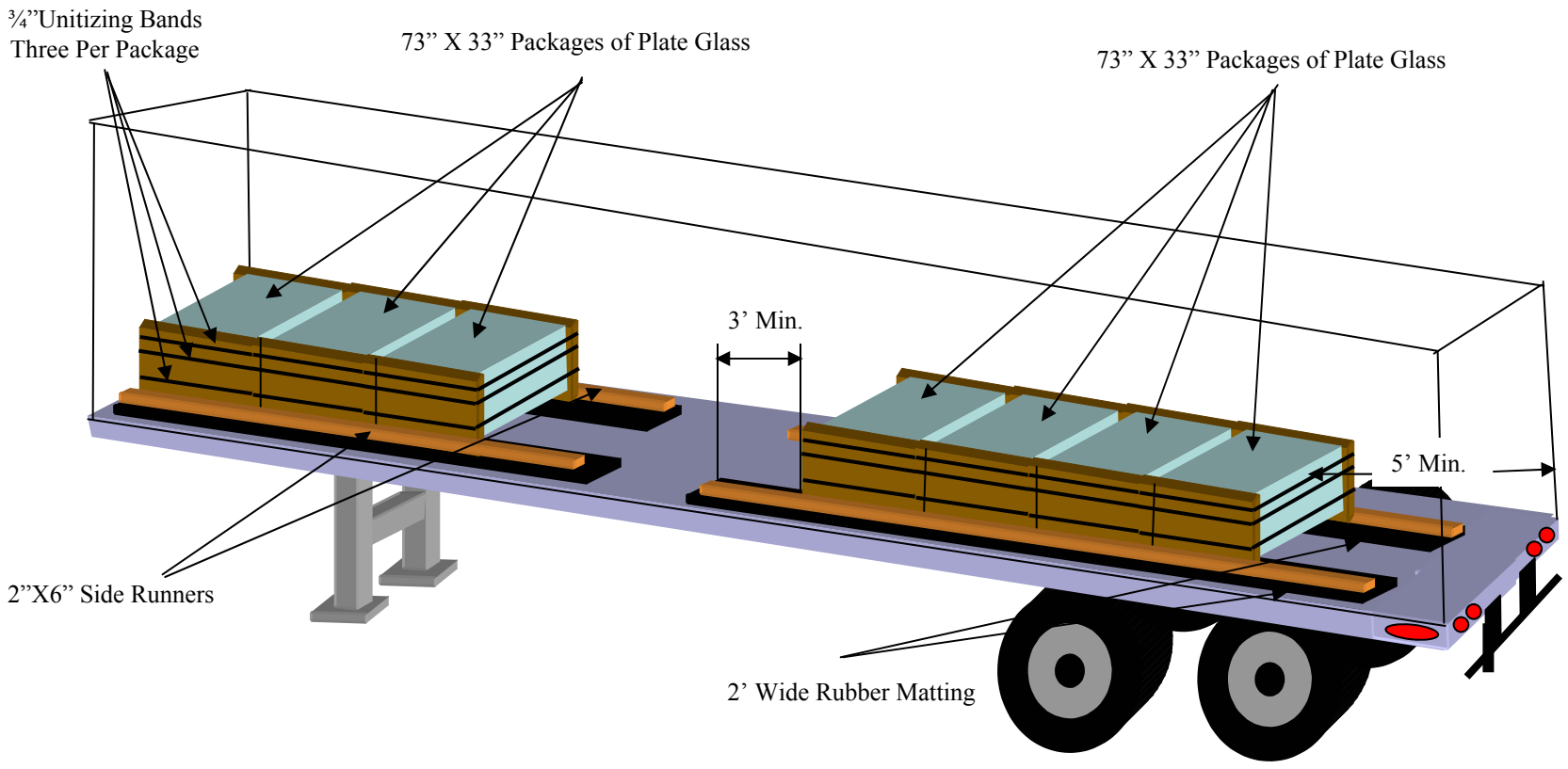
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD & RIDE SOLUTIONS DRAWING

PLATE GLASS

CONTROLLED FLOATING LOADING METHOD FOR PLATE GLASS IN DOMESTIC CONTAINERS



Rubber mats must be a minimum of 2' wide, 3mm thick and must be centered under each runner. Mats must extend out a minimum of 3'beyond the end of each section in container with the exception of the end unit loaded against the nose. Rubber mat sections must be of lengths longer than 8' to achieve maximum effectiveness. A minimum of 5' of void space must be maintained between the last unit loaded in container and the rear doors. Nails used to secure the 2x6 side runners must be 16D or larger and placed in an offset pattern every 6 inches to achieve maximum restraining capacity.

Palletized Bright Stack Bottles Braced With DID Bags

This method is for use with stretch-wrapped, palletized units of bright stack bottles braced with five DID bags.

Each pallet is to be unitized with either shrink- wrap or stretch-wrap in accordance with manufacturer's specifications.

DID bags must be a minimum of 36"x 84" x two ply.

Pallets are to be loaded in a 2-2 offset pattern with the exception of the stacks that contain DID bags.

The stacks that contain DID bags are to be loaded against the sidewalls and the DID bags are to be placed in the center voids in these stacks.

Notes

The DID bags are to be applied to the first two stacks and the last three stacks loaded in the trailer/container.

DID bags must not be used in a void space in excess of 12" wide.

DID bags must not be placed in such a manner that they contact the floor of trailer/container or pallet after inflation.

DID bags must be adequately buffered to prevent contact with sharp or rough surfaces which could cause deflation.

DID bags must be inflated between ½ and 2 PSI depending on the type of trailer/container walls you may encounter.

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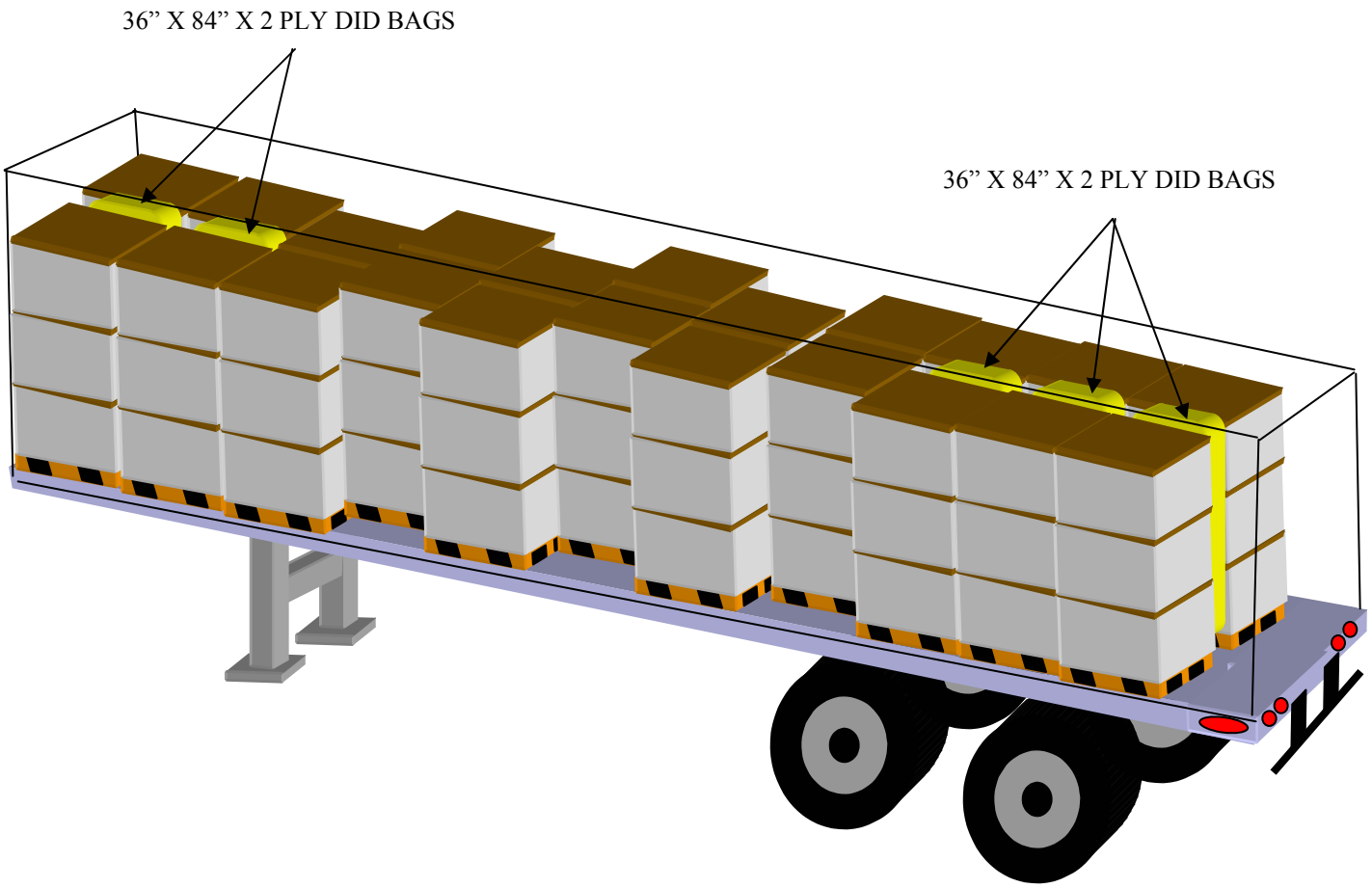
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

GLASS BOTTLES

LOADING METHOD FOR BRITE STACK LOADED EMPTY GLASS BOTTLES STRETCH WRAPPED ON 44” X 56” PALLETS IN 53’ TOFC SERVICE

METHOD DEPICTS THE LOADING OF 22 TOTAL UNITS



NOTE: DID BAGS MUST NOT BE USED IN VOID SPACES IN EXCESS OF 12”, MUST NOT CONTACT FLOOR OF TRAILER OR PALLET AFTER INFLATION, MUST BE ADEQUATELY BUFFERED WHEN IN CONTACT WITH ROUGH SURFACES, AND SHOULD BE INFLATED BETWEEN 1/2 & 1 PSI.

ALL UNITS MUST BE PROPERLY STRETCH-WRAPPED TO MAINTAIN ADEQUATE VERTICAL ALIGNMENT DURING THE TRANSPORTATION CYCLE.

CERAMIC TILE
&
CARPETING

Palletized Floor Tile With Wood Floor Blocking

This method is for use with palletized /shrinks wrapped units of floor tile braced with 2”x 4” wooden floor blocking.

Each pallet is to be unitized with shrink-wrap in accordance with manufacturer’s specifications.

Pallets are to be loaded in a 2-2 offset pattern throughout the load with the exception of the two rear units that are to be loaded against each side wall leaving a center void space.

Any single units loaded are to be centered laterally in the trailer/container and blocked on either side with 2”x 4”x 18” side cleats.

Each pallet is to be shrink wrapped according to manufacturer’s requirements and unitized with three, ¾” steel bands running around the circumference of each unit and two, ¾” steel bands running over the top and under the pallet of each unit.

Each stack of two across pallets must be blocked with 2”x 4”x 18” side cleats placed in the alternating side voids.

Rear of load must be blocked with 2”x 4”x 36” rear cross blocking and two, 2”x4”x 18” back up cleats applied to each pallet at the rear of the load.

Two, 2”x 4”x 18” side cleats must be applied to the side of each rear pallet in the center void space to prevent them shifting enroute.

Notes

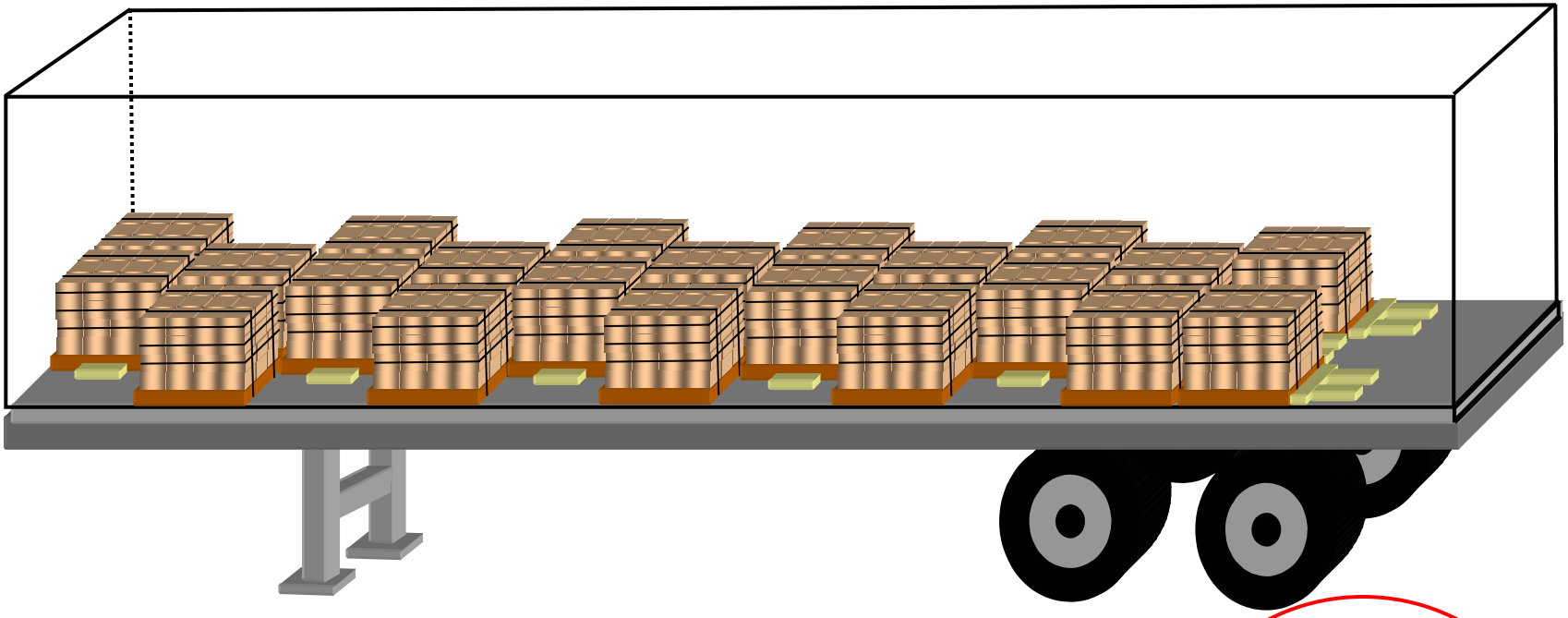
All floor blocking must be secured with 16D or larger nails placed every 6” in a staggered pattern.

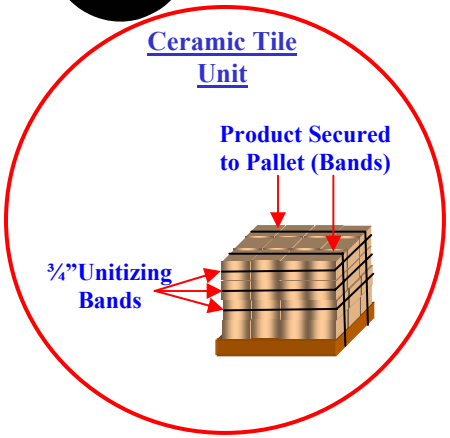
BNSF

BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

CERAMIC TILE





BLOCKING/BRACING OF INTERMODAL SHIPMENT

1.) Boxes of Ceramic Tile Loaded on Pallets. Boxes Unitized with Shrink-Wrap and Bands. Product Secured to Pallet in Order to Eliminate Risk of Product Migration.

2.) The Palletized Product is Loaded in 2-2 Offset Pattern. Any Single-Wide Units Should be Laterally Centered in the Trailer.

3.) Floor Blocking (2"x4" Lumber): Side Blocking = 2"x4"x18" Secured with 3-4 Nails (16d). Rear Blocking = 2"x4"xPallet Size plus 2"x4"x18" Back-Up Cleats Secured with 16d Nails (Staggered Pattern, Every 6"). Note: Single-Wide Units - Side Blocking on Both Sides.

Carpet Rolls Secured by Strapping

This method is for use with rolls of carpet, carpet padding or fabric loaded in 3 sections and secured with suitable unitizing straps.

Each section of rolls must be secured with two 1 ¼" bands made of either steel or polyester web material.

Weight must be evenly distributed throughout the vehicle from nose to rear and side to side.

Notes

A minimum of 3' of void space must be maintained between the last unit loaded in container and the rear doors.

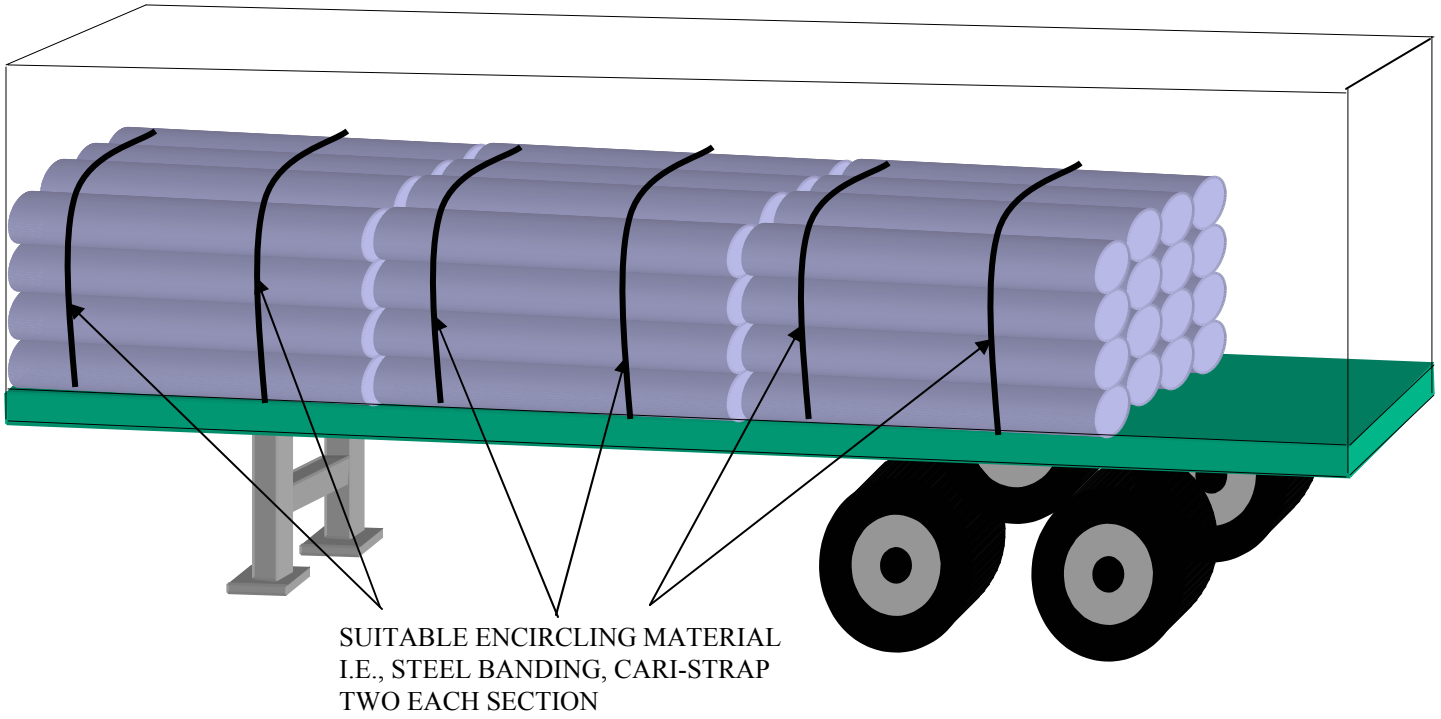
BNSF

BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

ROLLED CARPET AND PADDING IN TRAILERS/CONTAINERS/STACKED OVER 5' HIGH, USING BANDING MATERIAL

Stacked Rolls of Fabric or Carpet, Loaded Three Sections, With Unitizing Bands In Trailers



PLASTIC BULK TANKS

Plastic Bulk Tanks with Wood Floor Blocking

This method is for use with one piece plastic bulk tanks loaded in two sections and braced with 2”x 4” wooden floor blocking.

Bulk tanks must be of suitable materials and construction to be able to withstand the forces exerted in the intermodal environment.

Bulk tanks are to be loaded in two sections in a 2-2 offset pattern. Should and single units be loaded in vehicle they should be centered laterally in the vehicle and braced on each side with 2”x 4” x 18” wooden “T” braces.

Lateral blocking of the two across bulk tanks to consist of 2”x 4” x 18” wooden “T” braces applied to the side of the bulk tank adjacent to the lateral void.

Rear of nose section to be blocked longitudinally with a single 2”x 4”x 96” cross block and two 2”x 4” x 18” back up cleats.

Front and rear of rear section to be blocked longitudinally with a single 2”x 4”x 96” cross block and two 2”x 4” x 18” back up cleats.

Notes

All floor blocking must be secured with 16D or larger nails placed every 6” in a staggered pattern.

BNSF

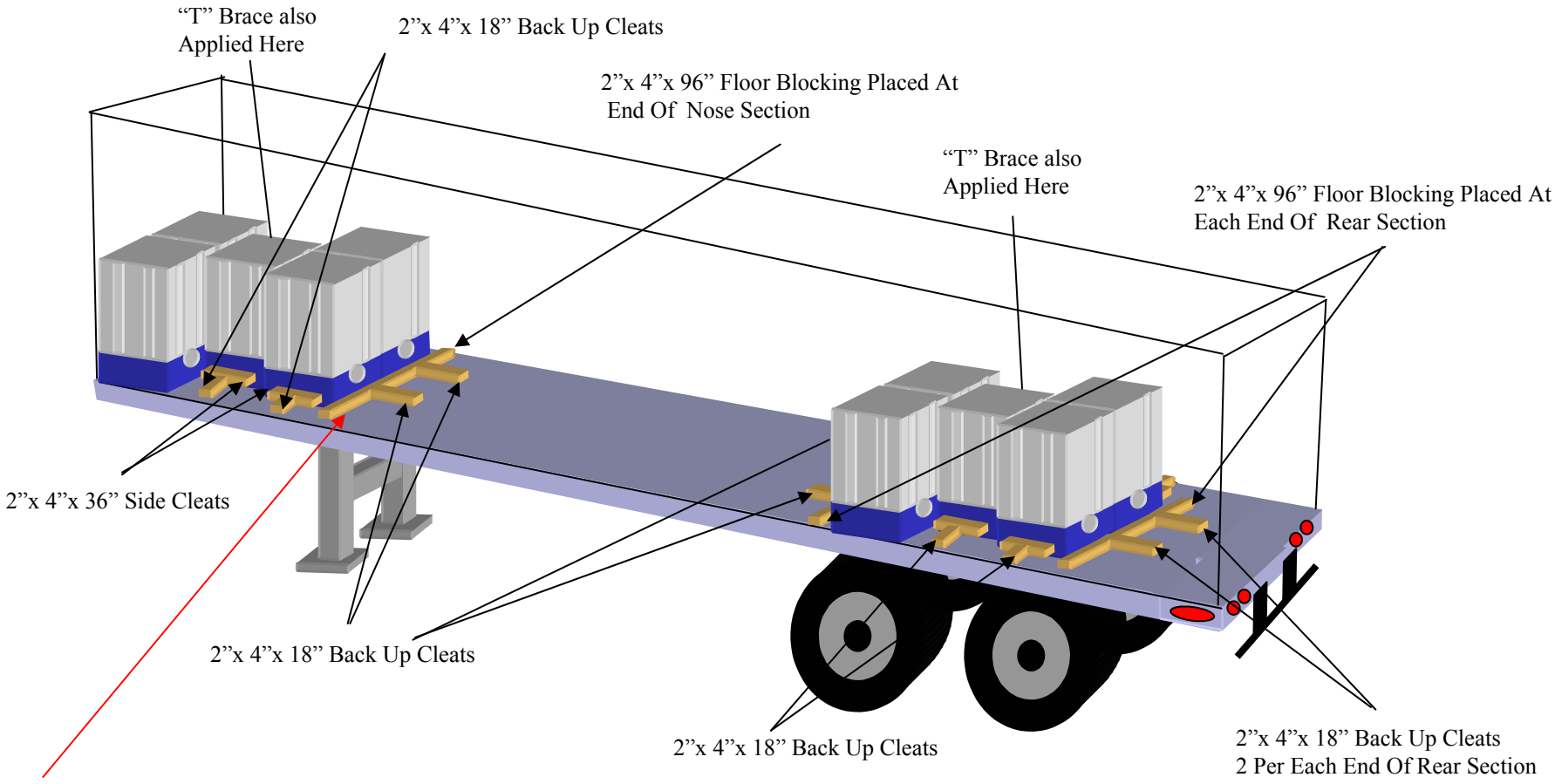
BURLINGTON NORTHERN SANTA FE RAILWAY

LOAD AND RIDE SOLUTIONS DRAWING

PLASTIC BULK TANKS

LOADING METHOD FOR PLASTIC BULK TANKS IN INTERMODAL SERVICE IN A FIVE AND FIVE PATTERN

NOTE: EACH STACK OF TWO IS TO BE STAGGARED FROM SIDE TO SIDE IN LOAD AND BRACED WITH "T" BRACING AS SHOWN IN DRAWING
SINGLE UNITS ARE TO BE CENTERED IN LOAD AND BRACED ON BOTH SIDES WITH "T" BRACING AS SHOWN IN DRAWING.

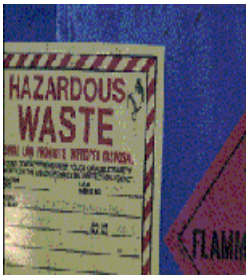


NAIL ALL BLOCKING WITH 16d NAILS SPACED 6-8" APART IN STAGGERED PATTERN

ONLY UTILIZE SOUND 2"X4" LUMBER FREE OF CRACKS OR KNOTS IN BLOCKING APPLICATIONS

SECTION VIII
RESTRICTED COMMODITIES

Restricted Commodities



Coiled metal, rolled paper, and hazardous materials are classified as restricted commodities, but that doesn't mean you can't transport them with The Burlington Northern and Santa Fe Railway Company.

It just means you need special arrangements, and that's something BNSF handles easily every day. As you know, a load that's not properly prepared can damage freight, equipment or the environment. That's why BNSF restricts the movement of some commodities. However, restricted doesn't necessarily mean forbidden. With special arrangements like equipment selection, loading/securement and a special price authority, BNSF can move your intermodal shipments safely and efficiently.

So if you're shipping Restricted Commodities, just call your Intermodal Marketing Representative at 1-888-IBU-BNSF (1-888-428-2673) and arrange for a special price authority. Then call the BNSF Load and Ride Solutions (formerly known as Damage Prevention Services) Representative nearest you for a detailed loading program.

Some Restricted Commodities include:

Air-flight training aids or devices	**Animals or carcasses**	**Asphalt**
Bulk bakery product waste	**Bulk commodities or products**	**Carbon blacks**
Christmas trees	**Cigarettes**	**Class 8 liquids**
Coiled metal products	**Copra**	**Creosote**
Dimensional high/wide loads	**Dump carts**	**Explosives**
Fish scrap	**Flammable liquids**	**Fresh fruits and vegetables**
Hazardous materials	**Hides, pelts, skins**	**Household goods**
Military communications	**Missiles and rockets**	**Motor vehicles**
Polychlorinated biphenyl	**Printed materials**	**Property of extraordinary value**
Railway wheels	**Rolled paper**	**Rolling mills**
Scrap batteries	**Scrap metals**	**Shellfish**
U.S. mail	**Vanadic acid**	**Vanadium ore**
Vehicle components	**Waste materials**	

For a complete list of Restricted Commodities, see the BNSF Intermodal Rules & Policies Guide .

Intermodal Home

Contacts
Customer Updates
Equipment
Facilities
Frequently Asked Questions
Glossary
Maps
Mexico Intermodal
New Customers
References
Services

Intermodal Marketing Companies
International (Ocean Carriers)
Parcel & Less-Than-Truckload Carriers
Retailers & Manufacturers
Tank Container Carriers
Temperature Controlled Carriers (Perishable)
Truckload (Motor Carriers)

iPower Login

username

Load and Ride Solutions (formerly Damage Prevention Services)

Our Load and Ride Solutions team works closely with our Intermodal Operations, Marketing and Logistics groups to provide you with an array of services.

No matter if you're shipping restricted or non-restricted commodities, there's a BNSF Load and Ride Solutions manager ready to meet with you at your place of business.

1. We Help You Load

- Free loading assistance at your place of business
- On-site loading seminars

2. We Make It Secure

- BNSF-approved loading/securement methods with computer-generated diagrams
- Sealing and security recommendations
- Approved loading practices from the Association of American Railroads.

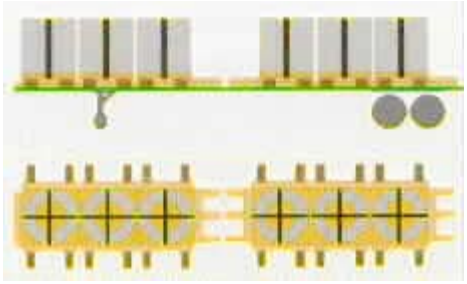
3. We Monitor

- Ride-quality monitoring of shipments
- Real-time monitoring of load dynamics from a manned rail car
- Origin-to-destination test loads/analysis
- Simulated Dynamic Rail Testing BNSF's careful car handling, monitoring and impact testing

In the unlikely event any damage should occur, call 1-800-333-4386 to document your damage.

Below are examples of loading diagrams that your BNSF Load and Ride Solutions team will tailor just for you. View additional loading diagrams, on the Intermodal equipment loading diagrams web page.

Sample rolled paper loading diagram



Sample coiled metal loading diagram

For loading assistance, please call the Load and Ride Solutions Representative in your area.

SECTION IX
VENDOR LISTINGS

APPENDIX B

Damage Prevention Product Vendor List

Revised March 1, 2001

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Purpose:

This list is provided as a service to rail customers and member carriers. The Association of American Railroads does not endorse or guarantee the use or reliability of the products produced or distributed by the vendors listed herein.

The list is divided into two sections. The first contains an Alphabetical listing of vendors; the second is organized by Product Category. This list is not a complete list, and any vendors not shown have not been intentionally left out. Addresses shown are generally the company's headquarters office address. Each company may also have regional offices and/or regional contacts for product availability and distribution.

Submit Changes to: Mr. Gary L. Held, Director
Damage Prevention and Loading Services
RAIILINC/AAR
7001 Weston Parkway, Suite 200
Cary, NC 27513
(919)651-5027
Fax: (919)651-5405
email: gary.held@railinc.com

ALPHABETICAL LIST

United States

Allegheny Industrial Associates, Inc.
311 Plus Park Blvd., Suite #110
Nashville, Tennessee 37217
(800)444-6337
(615)399-9987
Fax: (615)399-9982
Products:
- Beverage Bulkheads
- Contour Polyfoam Pads
- D.I.D. Bags
- Polyester Cord Strap
- Rebonded Rubber Mats
- Risers
- Separators
- Void Fillers

Acme Packaging Corporation
13500 S. Perry Avenue
Riverdale, IL 60627-1182
(708)849-2500
Fax: (708)849-4945
Products:
- Plastic Strap
- Steel Strap

Amorim Industrial Solutions
26112 110th Street
Trevor, WI 53179
(800) 558-3206
Fax: (262)862-2500
Products:
- Rebonded Rubber Mats

Ancra International
4880 West Rosecrans Avenue
Hawthorne, California 90250
(310)973-5000
Products:
- Beam End Sockets
- Cargo Restraining Devices
- Corner Protectors
- Custom Design Products
- Shoring Beams
- Strap Anchors
- Strap Assemblies
- Winches

BJK Industries, Inc.
P.O. Box 2949
Fort Smith, Arkansas 72913
(501)646-9300
Products:
- Trailer Liners

Boomerang Packaging, Inc.
18207 Chisholm Trail, #216
Houston, TX 77060
(281)821-1121
(800)214-2803
Fax: (281)443-6392
Products:
- Polyester Cord Strap

Caristrap International, Inc.
1760 Fortin Boulevard
Laval, Quebec Canada H7S 1N8
(514)667-4700
(800)361-9466
Fax: (514)663-1520
Products:
- Cargo Restraining Devices
- Custom Design Products
- Industrial Tapes
- Non Wovens
- Plastic Strap
- Polyester Cord Strap
- Strap Anchors

Centerload Shipping Technologies
2 Porto Marino Lane
San Carlos, CA 94070
(800)304-0031
Fax: (415)365-8912
Products:
- D.I.D. Bags (Vinyl)

Converdis U.S. Inc.
210 Walnut Street
Lockport, NY 14094
(716)433-7430
Fax: (716)433-7230
Products:
- D.I.D. Bags

Cordstrap BV
Geyserstraat 4
Deurne 5750 AH
The Netherlands
011 31 493 320005
FAX: 011 31 493 320115
Products:
Polyester Cord Strap

Circle Inc.
Specialized Paper Converting
911 Milwaukee Avenue
Burlington, Wisconsin 53105
(262)763-8172
Fax:(262)763-8176
Products:
Bulkheads
Contour Buffer Pads
Corner Protectors
Custom Designed Products
D.I.D. Bags
Risers
Rubber Mats
Void Fillers

Corrugated Systems, Inc.
14700 Harvard
Dolton, Illinois 60419
(708) 849-0667
Products:
Bulkheads
D.I.D. Bags
Risers
Separators
Void Fillers

Cougar Packaging Designers, Inc.
800 Regency Drive
Glendale Heights, Illinois 60139
(630)539-7361 Fax: (630)539-7398
Products:
Cushion Contour Polyfoam Pads

(The) Damage Prevention Company
4120 Brighton Blvd.
Unit A-23
Denver, Colorado 80216
(303)295-3003
Products:
Bulkheads
Coil/Roll Side & Edge Protectors

The) Damage Prevention Company - continued
Contour Buffer Pads
(Corner Protectors
Custom Design Products
D.I.D. Bags
Risers
Separators
Thermal Barriers
Void Fillers

Damage Prevention Industries, Inc.
Route 2, Box 309
Owensville, Missouri
(573)437-6780
Fax: (573)437-6780
Products:
Bulkheads
Custom Design Products
Thermal Barriers
Void Fillers

Dunnage Systems, Inc.
P.O. Box 656
Sheridan, Arkansas 72510
(800)288-4830
(870)942-4830
Fax: (888)942-4710
Products:
Air Compressors
Bulk Containers
Bulkheads
Contour Buffer Pads
D.I.D. Bags
Risers
Separators
Slip Sheets
Void Fillers

Engineered Fabrics Corporation
669 Goodyear Street
Rockmart, Georgia 30153-2417
(770)684-7855
Fax: (770)684-7438
Products:
Rubber Dunnage Bags

Fleet Products & Equipment, L.L.C
1920 Swift Avenue, Suite 202
N. Kansas City, Missouri 64116
(861)474-1056
Fax: (816)221-1664

Fleet Products & Equipment, L.L.C - continued
Products:
- Bulk Containers
- Cargo Restraint Devices
- D.I.D. Bags
- Separators
- Slip Sheets
- Stretch Wrap
- Void Fillers

4B, Inc.
5472 E. Galbraith Road
Cincinnati, Ohio 45236-2826
(513)792-9568
Fax: (513)792-9568
Products:
- Plastic Wrap (Tyvek)

Freight Securement Systems, Inc.
135 Dale Street
Babylon, NY 11705
(516)694-1150
Fax: (516)694-6712
Products:
- Metal Blocking Devices

Greif Bros. Corporation (formerly Down River, Intl.)
425 Winter Road
Delaware, OH 43015
(888) 603-7343
(740) 549-6100
(800) 727-3737
Products:
- Buffer Material / Contour Buffer Pads
- Bulkheads
- Car Liner Sheets
- Corner Protectors
- D.I.D. Bags
- Drum Separators
- Honeycomb Panels
- Risers / Seperator Pads
- Slip Sheets / Tier Sheets

Hayes Manufacturing Group Inc.
(Now Newark paperboard Products)
8555 Martin Drive
Neenah, Wisconsin 54956
In Wisconsin:(920)725-1781
Outside Wisconsin:(800)236-0410
Fax: (920)727-5590
Products:

Hayes Manufacturing Group Inc.
(Now Newark paperboard Products) - continued
- Contour Buffer Pads
- D.I.D. Bags
- Plastic Strap
- Rebonded Rubber Mats
- Risers
- Separators
- Strap Hangers
- Void Fillers

HEX-A-COMB
See Tenneco

Industrial Packaging Supplies
1528 Roper Mountain Road
Greenville, South Carolina 29616
(864)288-8510
Fax: (864)288-9995
Products:
- D.I.D. Bags
- Plastic Strap
- Steel Strap

Industrial Packaging Systems, Inc.
1225-H Corporate Drive E.
P.O. Box 202183
Arlington, TX 76006
(817)640-1315
Fax: (817)633-3276
Products:
- D.I.D. Bags

Interlake Packaging Corp.
6843 Santa Fe Drive
Hodgkins, Illinois 60525
(800)323-4424
(708)482-9500
Products:
- Plastic Strap

International Paper Company
300 South Edgar
Fordyce, Arkansas 71742
(870)352-5700
Fax: (870)352-2324
Products:
- D.I.D. Bags

ITW CargoSafe
1203 N. Main Street
Mt Pleasant, Tennessee 38474
(888)489-7328
Fax: (615)379-9327
Products:
- Beam End Sockets
- Cargo Restraint Devices
- Corner Protectors
- Load Bars
- Shoring Beams
- Strap Anchors
- Strap Assemblies
- Track
- Winches

Kinedyne Corp.
3701 Greenway Circle
Lawrence, Kansas 66046-5442
(785)841-4000
Fax: (785)841-3668
Products:
- Beam End Sockets
- Cargo Restraint Devices
- Corner Protectors
- Custom Design Products
- Shoring Beams
- Strap Anchors
- Strap Assemblies
- Winches

Koneta Rubber Company
Matting Division
P.O. Box 150
Wapakoneta, Ohio 43895
(419)738-2155
Products:
- Rubber Mats

Key Tech Corporation
12420 Evergreen Drive
Mukliteo, WA 98275
(206)347-3600
Fax: (206)290-6464
Products:
- Lock ‘n’ Pop
- Friction Mats

Litco Industries
One Litco Drive
Vienna, OH 44473-9989
(330)539-5433
Fax: (330)539-5388
Products:
- D.I.D. Bags

Lydall, Inc./Southern Products Division
3021 Vernon Road
P. O. Box 9550
Richmond, Virginia 23228
(804)266-9611
Fax: (804)266-3875
Products:
- Bulkheads
- D.I.D. Bags
- Separators
- Slip Sheets
- Top Caps
- Void Fillers

Menasha Corp.
Fibre Products Group
Box 259
352 6th Street
Menasha, Wisconsin 54952-0259
(414)751-1509
Products:
- Bulk Containment Doors
- Car Liner Sheets
- Risers

Moldwood Corp.
P.O. Drawer 430
York, Alabama 36925
(205)392-5256
Products:
- Core Plugs

Newark Paperboard Products
See Hayes

NRI Industries, Inc.
31500 Northwestern Hwy., Suite 180
Farmington Hills, MI 48334
(800)600-6332
(248)538-4393
Fax: (248)538-4395
Products:

NRI Industries, Inc. - continued
Custom Design Products
Masticated Rubber
Rubber Mats

OMS America, Inc.
11108 Downs Road
Pineville, NC 28134
(704) 504-3693
Fax: (704) 504-3697
Products:
Polyester Strapping
Strapping Machines

Ovalstrapping Inc.
Forest Products Division
120-55th Street N.E.
Fort Payne, AL 35967-8140
(205)845-1914
Fax: (205)845-1493
Products:
Polyester Cord Strap

Packaging Un-Limited Inc.
20 West 11th, P.O. Box 626
Covington, Kentucky 41011
(606)431-6194
Fax: (606)431-0808
Products:
Bulkheads
Corrugated Pallets
Custom Wood & Paper Products
Edge Protectors
Poly Foam pads
Risers
Roll Headers
Separator Pads
Void Fillers

Palla-Gard International
360 Pierce Avenue, Suite 208 B
P.O. Box 1845
N. Mankato, MN 56002-1845
(507)344-8078
Fax: (507)344-8079
Products:
Cargo Restraining Devices

Pensacola Skid & Pallet
P.O. Box 81
Cantonment, Florida 32533
(904)968-1504
Fax: (904)968-9393
Products:
Pre-assembled Bulkheads

PlasTech Inc.
70 S. Eaton Ct.
Lakewood, Colorado 80226
(800)919-6919
(303)202-0852
Fax: (303)202-0454
Products:
Separators
Slip Sheets
D.I.D. Bags
Void Fillers

Prom Industries
13812 N.E. Clark Road
Vancouver, Washington 98685
(360)573-3611
Fax: (360)573-8110

RB Rubber Products
904 E. 10th Avenue
McMinnville, OR 97128
(503) 472-4691 / (800) 525-5530
Fax: (503) 434-4455 / (800) 888-1183

RC Packaging Systems, Inc.
4935 Technical Drive
Milford, MI 48381
(248)684-6363
Fax: (248)685-3521
Products:
Polyester Cord Strap

S-Line
11414 Mathis
Dallas, Texas 75234
(800) 687-9900
(972) 402-9000
Fax: (972) 402-9020
Products:
Beam End Sockets
Binder Chains
Cargo Restraint Devices
Corner Protectors

S-Line - continued
- Field Repairable Jack-Lok Bars
- Shoring Beams
- Strap Anchors
- Strap Assemblies
- Winches

Safety Corporation of America - (Formerly: Vetter Systems, Inc.)
1005 International Drive
Oakdale, Pennsylvania 15071
(412)695-3100
Fax: (412)695-3232
Products:
- Rubber Lifting Bags

Samuel Strapping Systems
3900 Groves Rd.
P.O. Box 32468
Columbus, OH 43232
(614)864-3400
Fax: (614)863-7330
Products:
- Steel Strap
- Plastic Strap

Shippers Paper Products
1203 N. Main Street
P.O. Box 69
Mt. Pleasant, Tennessee 38474
(615)379-7731
(800)933-7731
Fax: (615)379-7735
Products:
- Air Compressors
- Angleboard
- Bulk Containers
- Coil/Roll Edge Protectors
- Contour Buffer Pads
- D.I.D. Bags
- Load Bars
- Roll Risers
- Rubber Mats
- Separators
- Slip Sheets
- Void Fillers

Shippers Paper Products
Blake Road
P.O. Box 7
Sheridan, Arkansas 72150
(501)942-2151
Fax: (501)942-5933
Products:
- D.I.D. Bags

Shipping Systems/Bulk-Pack
1025 North 9th Street
1811 Roselawn Ave.
West Monroe, Louisiana 71201
(800)643-1568
Fax: (318)387-8871
Products:
- D.I.D. Bags

Ship Tech International, Inc.
385 Montana Drive
P.O. Box 492
Seely Lake, MT 59868
(800)771-2196
(406)677-2907
Fax: (406)677-5021
Products:
- Bulkheads
- Contour Buffer Pads
- D.I.D Bags
- Poyester Cord Strapping
- Rebonded Rubber Mats
- Risers
- Void Fillers

Signode Corp.
3640 W. Lake Avenue
Glenview, Illinois 60025
(847)657-4383
Fax: (847)657-5365
Products:
- Load Cushioners
- Plastic Strap
- Polyester Cord Strapping
- Steel Strapping
- Strap Anchors

Southern Bracing Systems, Inc.
P.O. Box 761
Armuchee, Georgia 30105
1(800)524-7513
Fax: (706)291-0229
Products:
- Bulkheads
- Cargo Restraining Devices
- Contour Buffer Pads
- Corner Protectors
- Custom Design Products
- D.I.D. Bags
- Polyester Cord Strap
- Risers
- Rubber Mats
- Separators
- Laminated Bulkhead (Ty-gard™)
- Void Fillers

Sunrise Arkansas, Inc.
P.O. Box 1005
Benton, Arkansas 72015
(501)778-5411
Products:
- Bulkheads
- D.I.D. Bags
- Risers
- Separators
- Void Fillers

Sunrise Mfg., Inc
11389 Trade Center Drive
Rancho Cordova, California 95742
(916)635-6262
Fax: (916)635-9730
Products:
- Buf-Bags
- Bulkheads
- D.I.D. Bags
- Laminated Bulkheads (Ty-gard™)
- Separators
- V-Boards
- Void Fillers

Superior Packaging Company
1028 Ogden Avenue
P.O. Box 1142
Superior, Wisconsin 54880
(800)705-5279
(715)394-3955
Fax: (715)394-7688
Products:
- Buf-Bags
- Bulkheads
- Corner Protectors
- D.I.D. Bags
- Laminated Bulkheads (Ty-gard™)
- Slip Sheets
- Steel Strap
- Stretch Wrap
- Separators
- V-Boards
- Void Fillers

Syn-tex USA
1465 Barrier Road
Marietta, GA 30066-1805
(770)928-5970
Product:
- D.I.D. Bags (Woven Polypropylene)

Tapex American Corporation
P.O. Box 610233
Port Huron, MI 48061-0233
(810)987-4722
Fax:(810)987-4728
Products:
- Polyester Cord Strap

Tenneco Packaging/Hexacomb
75 Tri-State International
Lincolnshire, IL 60069
(800)835-1357
Fax: (847)317-0007
Products:
- Risers
- Void Fillers
- Contour Buffer Pad
- D.I.D. Bags

Ultimate Systems Ltd.
1430 N. Main St
P.O. Box 465
Delphos, OH 45833
(419)692-3005
Fax: (419)692-1401
Products:
- Rubber Mats

Vin-Tex Sealers, Inc.
1447 W. Ardmore Avenue
Itasca, Illinois 60143
(630)7721920
Fax: (630)773-3913
Products:
- D.I.D. Bags (Nylon Reinforced Urethane)

Walnut Industries Inc.
1356 Adams Road
P.O. Box 624
Bensalem, Pennsylvania 19020
(800)523-6536
(215)638-7847 (in PA)
Fax: (215)638-4939
Products:
Laminated Bulkheads (Ty-gard™)

ALPHABETICAL LIST

Canada

Ancra Canada Ltd.
390 Tapscott Road, Unit 10
Scarborough, Ontario M1L 4A9
(416)299-3200
Fax: (416)299-4274
Products:
- Beam End Sockets
- Cargo Restraining Devices
- Corner Protectors
- Shoring Beams
- Strap Assemblies
- Strap Anchors
- Winches

Caristrap International, Inc.
1760 Fortin Boulevard
Laval, Quebec Canada H7S 1N8
(514)667-4700
Fax: (514)663-1520
Products:
- Cargo Restraining Devices
- Custom Design Products
- Industrial Tapes
- Non Wovens
- Plastic Strap
- Polyester Cord Strap
- Strap Anchors

Cascades Enviropac Inc.
541, Melchers/P.O. Box 1620
Berthierville, Quebec Canada J0K 1A0
(514)836-1799
Fax: (514)836-8235
Products:
- Honeycomb Products
- Polyester Cord Strap
- Rubber Mat

Converdis Inc.
571, Melchers
Berthierville, Quebec Canada J0K 1A0
Products:
- Honeycomb Products
- Polyester Cord Strap
- Rubber Mat

C.C.T. Paper Inc.
830 St. Viateur
Berthierville, Quebec Canada J0K 1A0
(514)836-3846
Fax: (514)836-4983
Products:
- Dunnage Bags

Gerrard-Ovalstrapping
Forest Products Division
5330 South Service Road
Burlington, Ontario L7L 5L1
(905)632-3662
Fax: (905)639-2290
Products:
- Polyester Cord Strap

Honeycomb Construction Services Ltd.
P.O. Box 368
Tillsonburg, Ontario N4G 4H8
(519)688-0990
Fax: (519)688-1009
Products:
- Separators
- Void Fillers

International Paper Company of Canada
1210 Sheppard Avenue East
Willowdale, Ontario M2K 1E3
(416)499-0277
Fax: (416)499-0320
Products:
- D.I.D. Bags

Kinedyne Canada Limited
120 Commander Blvd.
Agincourt, Ontario M1S-3H7
(416)291-7168
Fax: (416)291-0814
Products:
- Beam End Sockets
- Cargo Restraint Devices
- Corner Protectors

Kinedyne Canada Limited - continued

Custom Design Products
Shoring Beams
Strap Anchors
Strap Assemblies
Winches

NRI Industries, Inc.
394 Symington Avenue
Toronto, Ontario M6N 2W3
(416)652-4247
Fax: (416)652-4212
Products:

Custom Design Products
Masticated Rubber
Rubber Mats

Provincial Paper Products
6935 Davand Drive
Missisauga, Ontario L5T 1L5
(905)670-7928
Fax: (905)670-0531
Products:

Bulkheads
D.I.D. Bags
Industrial Tapes
Risers
Separators
Stretch Wrap Equipment and Films
Void Fillers

Samuel - Acme Strapping
743 Warden Avenue
Scarborough, Ontario M1L 4A9
(416)751-1811
Fax: (514)752-7711
Products:

D.I.D. Bags
Plastic Strap
Steel Strap
Strap Anchors

Signode Canada Inc.
115 Ridgetop Road
Scarborough, Ontario M1P 2K3
(416)293-2411
Fax: (416)293-9761
Products:

D.I.D. Bags
Load Cushioners
Plastic Strapping
Steel Strapping
Strap Anchors

Syn-tex Convertors Ltd.
211 Hutchings Street
Winnipeg, Manitoba R2X 2R4
(204)632-5667
Fax: (204)633-4125
Products:
D.I.D. Bags (Woven Polypropylene)

Product Category List

** Canada*
 # US and Canada

Air Compressors-
Dunnage Systems Inc.
Shippers Paper Products Co.

Angleboard-
Shippers Paper Products Co.

Beam End Sockets-
*Ancra Canada Ltd.
Ancra International
ITW CargoSafe
*Kinedyne Canada Ltd.
Kinedyne Corp.
S-Line

Beverage Bulkheads-
Allegheny Industrial Associates, Inc.

Bulk Containers-
Dunnage Systems Inc.
Fleet Products & Equipment, L.L.C.
Shippers Paper Products Co.

Bulk Containment (Grain) Doors-
Menasha Corp.

Bulkheads-
Circle, Inc.
Corrugated Systems, Inc.
(The) Damage Prevention Company
Damage Prevention Industries, Inc.
Dunnage Systems Inc.
Greif Creative Packaging
Lydall, Inc./Southern Products Division
Packaging Un-Limited Inc.
*Provincial Paper Prod.
Southern Bracing Systems, Inc.
Sunrise Arkansas, Inc.
Sunrise Mfg., Company
Superior Packaging Company

Bulkheads(Pre-assembled)-
Pensacola Skid & Pallet

Car Liner Sheets-
Menasha Corp.

Cargo Restraining Devices-
*Ancra Canada Ltd.
Ancra International
#Caristrap International, Inc.
Fleet Products & Equipment, L.L.C.
ITW CargoSafe
*Kinedyne Canada, Ltd.
Kinedyne Corp.
Palla-Gard International
S-Line
Southern Bracing Systems, Inc.

Core Plugs-
Moldwood Corp.

Corner Protectors-
*Ancra Canada Ltd.
Ancra International
Circle, Inc.
(The) Damage Prevention Co.
ITW CargoSafe
*Kinedyne Canada, Ltd.
Kinedyne Corp.
S-Line
Southern Bracing Systems, Inc.

Contour Buffer Pads-
Circle Inc.
(The) Damage Prevention Co.
Dunnage Systems Inc.
Greif Creative Packaging
Hayes Manufacturing Group Inc.
Shippers Paper Products Co.
Southern Bracing Systems, Inc.
Tenneco Packaging

Cushion Contour Polyfoam Pads-
Allegheny Industrial Associates, Inc.
Cougar Packaging Designers, Inc.
Packaging Un-Limited Inc.

Custom Design Products-
*Ancra Canada Ltd.
Ancra International
#Caristrap International, Inc.
Circle, Inc.
(The) Damage Prevention Co.

Custom Design Products- - continued
Damage Prevention Industries, Inc.
*Kinedyne Canada, Ltd.
Kinedyne Corp.
#NRI Industries
Packaging Un-Limited Inc.
Southern Bracing Systems, Inc.

D.I.D. Bags-
Allegheny Industrial Associates, Inc.
*C.C.T. Paper Inc.
Centerload Shipping Technologies
Circle Inc.
Converdis U.S. Inc.
Corrugated Systems, Inc.
(The) Damage Prevention Co.
Dunnage Systems Inc.
Fleet Products & Equipment, L.L.C.
Greif Creative Packaging
Hayes Manufacturing Group Inc.
Industrial Packaging Supplies
Industrial Packaging Systems, Inc.
International Paper Company
*International Paper Company of Canada
Litco Industries
Lydall, Inc./Southern Products Division
Packaging Un-Limited Inc.
Prom Industries
*Provincial Paper Products
Samuel-Acme Strapping
Shippers Paper Products Co.
Shipping Systems/Bulk-Pack
*Signode Canada Inc.
Southern Bracing Systems, Inc.
Sunrise Arkansas, Inc.
Sunrise Mfg., Company
Superior Packaging Company
*Syn-tex Convertors Ltd.
Syn-tex USA
Tenneco Packaging
Vin-Tex Sealers, Inc.

Doorway Protection Strips-
Industrial Packaging Supplies

Edge Protectors (Coils and Rolls)-
(The) Damage Prevention Co.
Packaging Un-Limited Inc.
Shippers Paper Products

Friction Panels/Mats-
Greif Creative Packaging
Key Tech Corporation

Industrial Tapes-
Allegheny Industrial Associates, Inc.
#Caristrap International, Inc.
*Provincial Paper Products

Laminated Bulkheads-
Southern Bracing Systems, Inc. (Ty-gard™)
Sunrise Mfg., Inc. (Ty-gard™)
Superior Packaging Company (Ty-gard™)
Walnut Industries Inc. (Ty-gard™)

Load Bars-
ITW CargoSafe
*Kinedyne Canada, Ltd.
Kinedyne Corp.
S-Line
Shippers Paper Products

Load Cushioners-
*Signode Canada, Inc.
Signode Corp.

Masticated Rubber-
#NRI Industries (US & Canada)

Metal Blocking Devices-
Freight Securement Systems, Inc.

Non-wovens-
#Caristrap International, Inc.

Plastic Strap-
Acme Packaging
Hayes Manufacturing Group Inc.
Industrial Packaging Supplies
Interlake Packaging Corp.
Samuel - Acme Strapping
*Samuel Strapping Systems
*Signode Canada Inc.
Signode Corp.

Plastic Wrap-
4B, Inc.

Polyester Cord Strapping-
Allegheny Industrial Associates, Inc.
Boomerang Packaging, Inc.
#Caristrap International, Inc.
*Cascades Enviropac Inc.
Converdis Inc.
Cordstrap BV
*Gerrard-Ovalstrapping
Ovalstrapping Inc.
RC Packaging Systems, Inc.
Signode Corp.
Tapex American Corporation

Rebonded Rubber Pads-
Allegheny Industrial Associates, Inc.
Circle, Inc.

Risers-
Allegheny Industrial Associates, Inc.
Circle Inc.
Corrugated Systems, Inc.
(The) Damage Prevention Co.
Dunnage Systems Inc.
Greif Creative Packaging
Hayes Manufacturing Group Inc.
Menasha Corp.
Packaging Un-Limited Inc.
*Provincial Paper Products
Shippers Paper Products Co.
Southern Bracing Systems, Inc.
Sunrise Arkansas, Inc.
Sunrise Mfg., Company
Tenneco Packaging

Rubber Dunnage Bags-
Engineered Fabrics Corp.
Safety Corporation of America

Rubber Mats-
Allegheny Industrial Associates, Inc.
Amorim Industrial Solutions
*Cascades Enviropac Inc.
Circle, Inc.
*Converdis Inc.
Hayes Manufacturing Group Inc.
Koneta Rubber Company
#NRI Industries (US & Canada)
Southern Bracing Systems, Inc.

Rubber Mats- continued
Shippers Paper Products Co.

Separators-
Allegheny Industrial Associates, Inc.
Circle, Inc.
Corrugated Systems, Inc.
(The) Damage Prevention Co.
Dunnage Systems Inc.
Fleet Products & Equipment, L.L.C.
Greif Creative Packaging
Hayes Manufacturing Group, Inc.
*Honeycomb Construction Services Limited
Lydall, Inc./Southern Products Division
Packaging Un-Limited Inc.
PlasTech Inc.
*Provincial Paper Products
Shippers Paper Products
Sunrise Arkansas, Inc.
Sunrise Mfg., Company
Superior Packaging Company
Tenneco Packaging

Shoring Beams-
*Ancra Canada Ltd.
Ancra International
ITW CargoSafe
*Kinedyne Canada Ltd.
Kinedyne Corp.
S-Line

Slip Sheets-
Circle, Inc.
Dunnage Systems Inc.
Fleet Products & Equipment, L.L.C.
Lydall, Inc./Southern Products Division
PlasTech Inc.
Shippers Paper Products
Superior Packaging Company

Steel Strapping-
Acme Packaging
Industrial Packaging Supplies
*Samuel - Acme Strapping
Samuel Strapping Systems
*Signode Canada Inc.
Signode Corp.
Superior Packaging Company

Strap Anchors-
*Ancra Canada Ltd.
Ancra International
#Caristrap International, Inc.
ITW CargoSafe
*Kinedyne Canada Ltd.
Kinedyne Corp.
S-Line
*Samuel - Acme Strapping
*Signode Canada Inc.
Signode Corp.

Strap Assemblies-
*Ancra Canada Ltd.
Ancra International
ITW CargoSafe
*Kinedyne Canada Ltd.
Kinedyne Corp.
S-Line

Stretch Wrap Equipment and Film-
Fleet Products & Equipment, L.L.C.
*Provincial Paper Products
Superior Packaging Company

Thermal Barriers-
(The) Damage Prevention Co.
Damage Prevention Industries, Inc.

Trailer Liners-
BJK Industries, Inc.

Top Caps-
Lydall, Inc./Southern Products Division

Void Fillers-
Allegheny Industrial Associates, Inc.
Circle Inc.
Corrugated Systems, Inc.
(The) Damage Prevention Co.
Damage Prevention Industries, Inc.
Dunnage Systems Inc.
Fleet Products & Equipment, L.L.C.
Greif Creative Packaging
Hayes Manufacturing Group, Inc.
*Honeycomb Construction Services Limited
Industrial Packaging Supplies
Lydall, Inc./Southern Products Division
Packaging Un-Limited Inc.
Prom Industries
*Provincial Paper Products
Shippers Paper Products Co.
Southern Bracing Systems, Inc.
Sunrise Arkansas, Inc.
Sunrise Mfg., Inc.
Superior Packaging Company
Tenneco Packaging

Winches-
*Ancra Canada Ltd.
Ancra International
ITW CargoSafe
*Kinedyne Canada, Ltd.
Kinedyne Corp.
S-Line