Non-Skidded and Non-Enclosed "Junk Loads"

The primary concerns with these loads are the loose pieces of equipment. In the past, equipment such as flare lines, planks, valves, etc, have been stacked or piled wherever they would fit during rig moves. However, these types of loads do not comply with the requirements of the Standard, and this equipment will have to be independently secured or added to a different load where it can be secured.

Not in Compliance

Because this load contains planks of different lengths and widths, it is not possible to secure it in accordance with the Standard.

Photo courtesy of PSAC

Best Practice

This type of load must be fully contained in a bin or basket or the load refused.

In Compliance But Not Best Practice

In this example, the pieces of lumber are piled "neatly" in a rack and attempts have been made to secure them to the trailer. However, there exists a possibility that they have not been immobilized sufficiently to ensure that they do not work loose during transit. Consideration should be given to placing this type of load into a container.

Photo courtesy of PSAC

Securement of Tools and Loose Pieces

Best Practice

The use of a tool box, such as the one shown here, will help ensure that all tools are contained and immobilized.

In Compliance ?

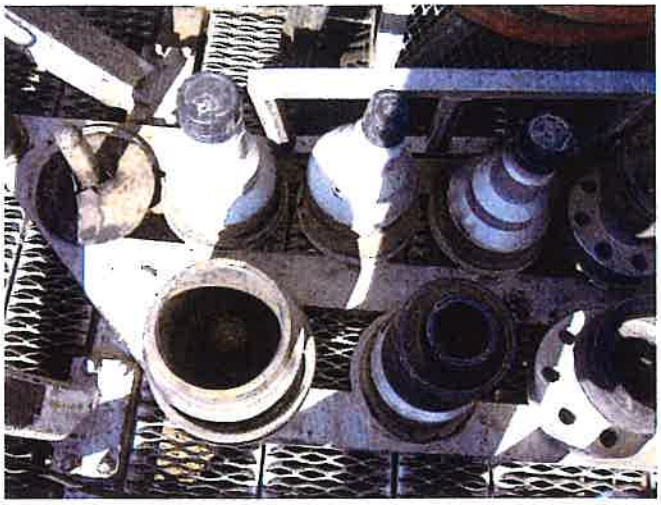
While the hammers shown here appear to be secured in compliance with the Standard, an inspector might have some concerns that the size of the rack holes would allow the hammers to "knock" each other out of the container. To avoid this type of problem, it is recommended that some other type of securement be used, for example a tarp strap as outlined in Division 3 – Section 9 on page 6 of the Interpretation Guide issued by the CCMTA and dated November 18, 2005.

Photos courtesy of Sanjel Corporation

Posts or pins can be used to secure equipment as long as the securement device is of sufficient height and strength. Use the rule of "flush or higher". This rule requires that pins or posts must be at least as high, if not higher, than the equipment being secured.

In Compliance

A pegging system such as the one shown here will help prevent the cargo from sliding. However, the same issue arises as in the previous example and consideration should be given to additional securement.

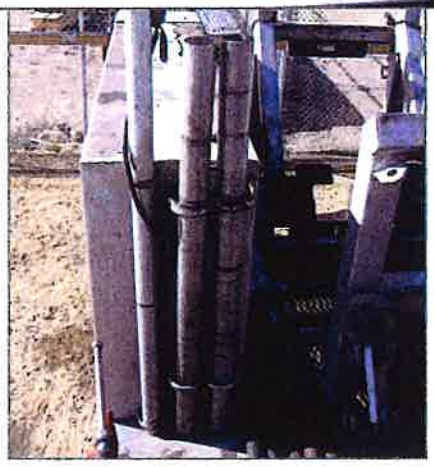


Best Practice

This pegging system is within an enclosed box, ensuring that anything placed on the pegs will stay there.

Not In Compliance

The snipes shown here would not have to bounce very high in order to come out of the bottom restraint and slide sideways or fall off of the vehicle. A pin or clip should be used to lock the snipes in place.



Photos courtesy of Sanjel Corporation

Not In Compliance

The pails in this photograph have not been properly secured or restrained.

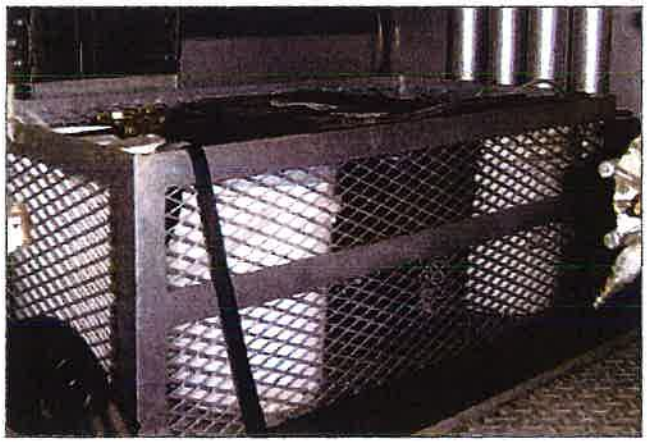
A cargo net placed over the top would help bring this load into compliance.

In Compliance

The pails in the photograph have been placed in a cage that is higher than the tops of the pails.

Best Practice

The pails shown here are in cage that is higher than the tops of the pails and a cover placed on cage as an additional precaution to prevent the pails from bouncing out of the cage during transit.



Photos courtesy of Sanjel Corporation

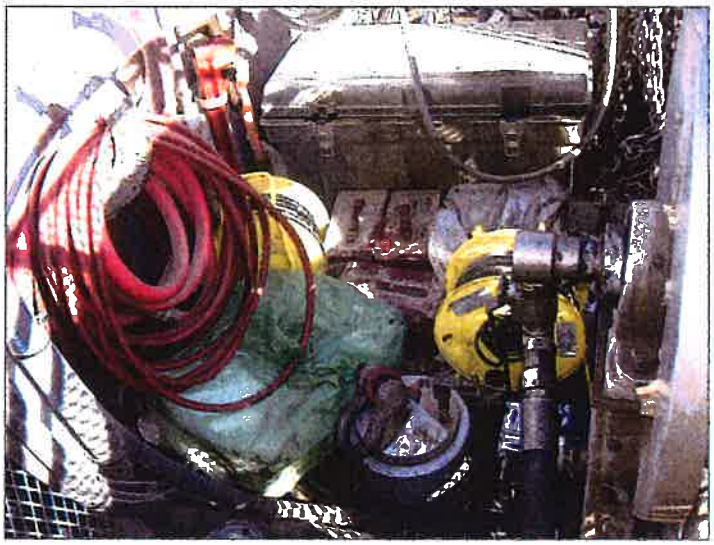
In Compliance

But Not Best Practice

Best Practice requires that all cargo be both contained within a structure and immobilized. While this load may meet the requirements of the Standard, best practice requires that the hose be immobilized.

In Compliance ?

This photograph shows the center of a coil tubing truck being used to hold a number of loose pieces of equipment. The same issues arise as with the loads shown on page 32 of this document.



Photos courtesy of Sanjel Corporation

The Interpretation section of the Standard defines *contained* with respect to cargo as:

(i) the cargo fills a sided vehicle

(ii) every article is in contact with or close to a wall or other articles, and

(iii) the cargo cannot move or tip

Best Practice would be to use a cage. The cage must be high enough to fully contain whatever is placed inside it.

Photos courtesy of Sanjel Corporation

The cage shown in the photograph on the right is higher than the one shown on the left and would help ensure that items in the cage are fully contained.

Best Practice

The chains shown here are secured on hooks long enough to contain them and a clip is used as an additional measure to ensure that the chains will not bounce off the hooks.

Photo courtesy of PSAC

Photos courtesy of Precision Well Servicing, a Division of Precision Drilling Corporation

Tire chain hooks must be a minimum of three times taller than the height of the tire chains, or hooks must be a minimum of three inches taller then the tallest point of the tire chains.

Division 3 – General Requirement 9 of the Standard states:

Cargo shall be firmly immobilized or secured on or within a vehicle by structures of adequate strength, blocking, bracing, dunnage or dunnage bags, shoring bars, tiedowns or a combination of these.

Tubular Products

Introduction:

Examples of tubular products include:

- Line pipe – coated and non-coated e.g. yellow jacket, insulated pipe
- OCTG – Oilfield country tubular goods – 60 mm ($2^{3/8"}$) – 339 mm ($13^{3/8"}$)
- Sucker rods
- Drill pipe and drill collars
- Large Diameter Pipe

Key Considerations

- **Coated vs. Non-coated**

  Pipe coating decreases the friction properties of the load. Snow, ice and water will also reduce the amount of friction between the load and the securement devices and in these circumstances consideration should be given to the use of additional securement devices, such as cement powder.

- **Length**

  Cargo netting will help to limit movement of the load on steep/extreme grades. The netting material must be appropriate and durable with respect to the physical load composition. **N.B** - cargo netting is **NOT** a load bearing securement device.

- **Unitization of Cargo**

  Tubular goods may be secured using either (or combination of) a "pyramid" or "bunking" technique. When using a pyramid and/or bunking, the number of straps/chains must be in accordance with Part 1 - Division 3 & 4 of the Cargo Securement Standard.

  Chocks shall be placed at both ends of the dunnage between tiers so as to prevent lateral movement of pipe that is not bundled – not including the bottom row of dunnage (i.e. the bearing pieces on the trailer deck) which are

already secured by the deck pins. There should be a minimum of one strap for every second tier for pipe less than 11.5 cm (4 ½") in diameter and a minimum of one strap every tier for pipe more than 11.5 cm (4 ½") in diameter.

A "pyramid" is defined as, each successive tier of tubular goods having, at most, one less joint of pipe than the total number of joints in the tier below it. Joints of pipe are placed on top of and between two joints of pipe directly below. When securing a pyramid, a minimum of one belly wrap is recommended to unitize as a bundle.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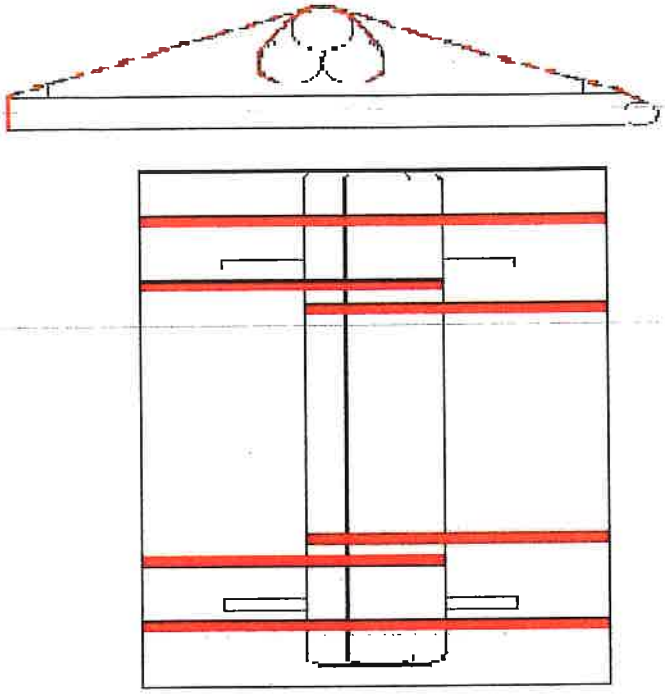
Belly wrap with 'down-pressure'



- **Loading practices**

  The first tier shall be tight with no movement. Deck pins no shorter than ¾ height of the first tier. Deck pins shall be spaced one every 3.5 meters with no less than 3 pins per side.

- **Properties**

  Soft metal e.g. production casing vs. hard metal e.g. drill pipe

- **Conditions/Contamination**

  Oil, mud, hydrocarbon based contamination, NORMs, etc.

- **Road/Weather conditions**

  Load friction will vary under different environmental conditions. Pipe has been lost due to a decrease in friction from wet, cold and icy conditions.

- **Front-End Structures**

  See Part 1 – General Provisions - Division 5 – Front End Structures of the Cargo Securement Standard.

- **Load Inspections**

  See Part 1 – General Provisions – Division 1 – Application of the Standard for information regarding en-route load inspections.

- **Load configuration**

  Mixed loads - each tier shall be equal to or less than the width of the preceding load beneath it.
  Collared pipe - should be staggered to increase load friction.

  The Standard calls for straps every 3 meters and two within the first 3 meters. However, companies that use 2 straps at either end of the load within 2.5 meters and every 2.5 meters thereafter report that they have not lost a single tubular product to load shift. Straps provide better load friction than chains.

  The use of a minimum of three pins on each side of a tubular load is recommended. Experience has shown that bowing and other damage is more likely to result when using only two pins on each side of a tubular load. The use of a minimum of three pins on each side will also reduce the possibility of the load falling off the trailer in the event one of the pins breaks during transportation.

Securement Conditions

- Dunnage/cradles
- Bunks
- Front-end structures
- Rope
- Securing devices – chains, straps

Best Practice

Manufacturers shall provide carriers with details of the surface condition of their products (e.g. coated/non-coated, type of coating, environmental conditions) and the required or recommended securement devices and materials (e.g. chains; straps; dunnage; tarps, load configuration, cement powder). Refer to examples below.

Shippers shall provide carriers with details of any contaminants (e.g. oil or any other substances) or construction (e.g. light-wall pipe) that could affect securement of the product. Shippers shall also provide the carriers with details of any Naturally Occurring Radioactive Materials (NORMs) that may be present in or on the product.

Carriers shall secure the cargo in compliance with the Standard and according to the information supplied by the manufacturer/shipper.

Equipment

- Dunnage - 90° corners, preferably one piece, the full width of the trailer, rough-cut and in good condition.

- Securement devices – See Standard Part 1 – General Provisions – Division 3 – Requirements for Cargo Securement System.

Large Diameter Pipe

These large diameter pipes weigh approximately 11,000 pounds each. Because the pipe is coated, chains cannot be used to secure the load. The securement shown in this picture does not meet the requirements of the Standard. 10 straps would be required to meet the 50% load requirement.

Photo courtesy of Premay Pipline

Photo courtesy of Premay Pipline

Not in Compliance

Five belts front and back are required to meet the Standard.

The wooden bunks that the pipe sits in are carpeted to help avoid damage to the pipe coating.

Photo courtesy of Premay Pipline

In Compliance

This small diameter pipe has been strapped and tarped for transport.

Examples of tubular products and securement methods

	Line Pipe	OCTG	Sucker Rods	Drill pipe/drill collars
Dunnage	1. Coated vs. non-coated e.g. yellow jacket, insulated pipe, and placement/spacing 2. Pipe coating decreases friction 3. Environmental considerations (i.e. frost, snow, water)	1. Environmental Contamination (i.e. frost, snow, dirt). 2. Hydro-carbon-based contamination 3. Manufacturer/Shipper Coatings 4. Post-Production Contamination (i.e. "mud", Naturally Occurring Radioactive Materials (NORMs)). 5. Slotted (oily)	1. Contamination – Hydro-carbon-based, NORMs	1. Environmental contamination (i.e. frost, snow, dirt). 2. Hydro-carbon-based contamination. 3. Manufacturer/Shipper coatings
Load Configuration	1. Length 2. Diameter 3. Weight 4. Pipe ends 5. Deck pins 6. Tarpaulin 7. Mixed-loads	1. Pyramid 2. Tiered 3. Bundled 4. Weight 5. Length 6. Diameter 7. Mixed loads 8. Thread protection 9. Tarps	1. Crated Tier, mixed loads New rods – Crated Used rods – Bundled	1. Pyramid 2. Tiered 3. Mixed loads 4. Bundled 5. Weight 6. Length 7. Diameter 8. Deck pins 9. Pipe ends 10. Thread protection 11. Tarps
Securement Devices	1. Chains 2. Straps 3. Rope 4. Cement powder 5. Chocks	1. Chains 2. Straps 3. Chocks 4. Binders 5. Deck pins	1. Straps 2. Banding	1. Chains 2. Straps 3. Chocks 4. Binders 5. Deck pins 6. Baskets 7. Pipe tables 8. Pipe tubs
Standard Says:	See Division 4 – Tie-downs	See Part 1, Divisions 2-5		See Part 1, Divisions 2-5

Tie-downs - Inspection for Wear

The following is an extract from the *North American Cargo Securement Standard Instructor Guide, November 2003:*

Chains, load binder attachments, and anchor points must be maintained in good condition. A complete listing of what constitutes defective securing devices can be found in the Commercial Vehicle Safety Alliance's (CVSA) Cargo Securment Tiedown Requirements and Out-of-Service criteria. Here are some commonly cited deficiencies that would prohibit the use of tie-down equipment.

The following conditions in tie-downs are **not** acceptable for load securement:

- Chain containing cracked welds or links
- Chain containing bent, twisted, stretched, or collapsed links
- Chain links weakened by gouges, nicks or pits
- Chains incorrectly repaired
- Links obviously worn or showing other visible evidence of loss of strength
- Knots in any portion of the chain, wire rope, or webbing
- Spread or disturbed grab hooks
- Cuts, nicks, or splits in nylon webbing
- Wire cable with missing strands or wraps
- An anchor point that is weakened or shows loss of strength due to cracks, breaks or distortion
- Split lumber that is used as dunnage to prevent movement or distribute the load

See also The CVSA "Cargo Securement Tie-Down Guidelines at: www.cvsa.org

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