Recommended Practice for Truck Transportation of Line Pipe

RECOMMENDED PRACTICE 5LT
FIRST EDITION, MARCH 2012

AMERICAN PETROLEUM INSTITUTE

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Upstream Segment

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Contents

Recommended Practice for Truck Transportation of Line Pipe

1 Scope

The recommendations provided herein apply to the transportation of coated or bare line pipe in sizes 2 3/8 in. (60.3 mm) and larger, on trailer.

2 Purpose

This recommended practice was developed and exists, to minimize transportation damage, including transit fatigue, for bare and coated line pipe of sizes 2 3/8 in. (60.3 mm) and greater.

3 Definitions

3.1
bearing strips
The load bearing dunnage separating the pipe load from the trailer bed.

3.2
carrier
The party contracted to transport the pipe.

3.3
end user
The party using the pipe after it has been delivered and unloaded.

3.4
overhang
The distance from the rearmost bottom bearing strip on the trailer bed to the rear end of the bottom layer of pipe.

3.5
purchaser
The party contracting the shipper.

3.6
separator strips
The dunnage used for separating layers of pipe in the load where pipe layers are not nested.

3.7
shipper
The party contracting the carrier.

4 Additional information

The purchase order shall indicate which of the following provisions apply.

a) Items that apply if agreed between shipper, purchaser, and party responsible for unloading the pipe:

   1) use of containerized or unitized loads (see Section 7).

b) Items that apply if agreed between the shipper and the purchaser:

   1) alternate maximum overhang (see Section 10),

2) use of padded forks to handle bare pipe (see 11.7),

3) exclusion of ropes surrounding pipe (see 12.2.3).

c) Items that apply if agreed between the shipper and end user:

1) use of metal chains or cables to tie-down loads (see 13.2 and 14.3).

d) Items that apply as prescribed unless otherwise agreed by the purchaser:

1) longitudinal weld seam orientation to prevent pipe-to-weld contact and weld to steel banding strap contact (see 12.1.3).

5 Trailer Condition

5.1 Trailers used to ship pipe shall be reasonably free of foreign materials and debris, particularly those of such sizes and hardness that could damage pipe during shipment and handling or that could contribute to movement of the pipe during shipping.

5.2 Where steel uprights or stakes are used, they shall be adequately padded.

5.3 No metal projections on trailers such as bolts, nails or hooks that may come in contact with pipe during loading or transit are permitted.

5.4 When transporting coated pipe, the truck and trailer shall be equipped with mud guards to prevent stones and other debris from impacting the loads.

6 Type of Trailers

One of the following types of trailers shall be used:

— flat bed trailers (including stretch trailers),

— arch trailers (sometimes referred to as aluminum trailers),

— pole trailers (see 14.0),

— if agreed, step bed trailers.

7 Containerized Loads

7.1 By agreement between the shipper, purchaser and the party responsible for unloading the pipe, containerized or unitized loads are permissible.

7.2 Upon consultation with purchaser and party unloading the pipe, the shipper shall determine the necessity of bottom bearing strips considering the unloading party's ability to unload the pipe.

7.3 The shipper shall determine the necessity of separator strips ensuring the unitized load is stable within the container and metal to metal contact is not possible except between adjacent pipe and as permitted by 7.2.

8 Bearing Strips

8.1 Number

The minimum number of bearing strips positioned on the truck bed for pipe loads shall be per Table 1.

Table 1—Bearing strips minimum requirements by random length and overhang

Overhang	Minimum Number of Bearing Strips		
	40 ft (12 m) Random Lengths	60 ft (18 m) Random Lengths	80 ft (24 m) Random Lengths
Greater than 3 times Nominal Diameter	4 bearing strips	6 bearing strips	8 bearing strips
Less than or equal to 3 times Nominal Diameter	3 bearing strips	5 bearing strips	7 bearing strips

8.2 Positioning

8.2.1 If an odd number of bearing strips are used, one bearing strip should be positioned in the approximate center of the load and others spaced appropriately.

8.2.2 Bearing strips shall be solidly attached where practical across the width of the trailer deck and shall be spaced to accommodate loading and unloading by forklift. The maximum spacing of bearing strips shall not exceed 10 ft (3 m), excluding the gap in stretch trailers.

8.2.3 The front most bearing strip should be placed under the pipe near the front of the trailer.

8.3 Blocking and Shimming

8.3.1 Wooden blocking, where required because of uneven trailer sides, should be positioned between trailer sides and stakes, and firmly attached to stakes.

8.3.2 Blocking used for leveling shall be firmly attached to the bearing strips.

8.3.3 Bottom bearing pieces may require shims to ensure that the load is in contact with all bottom pieces.

8.3.4 Side protection shall be provided for pipe shipped in trailers where the pipe may contact the sides of the trailer.

8.4 Dimensions

The thickness of the bearing strips shall be sufficient to prevent pipe from touching the bed or protrusions thereon and to allow sufficient spacing to accommodate handling with forklifts. Bearing strip dimensions shall not be less than 2 in. (50 mm) nominal thickness and 4 in. (100 mm) nominal width. Bearing strip thickness shall not exceed bearing strip width.

8.5 Materials

8.5.1 Bearing strips shall be wood of appropriate strength, dimensions and condition to properly support the load for which it is intended. Bearing strips with rounded corners, with splits or showing signs of rotting shall not be used.

8.5.2 Bearing strips shall be free of metallic protrusions (nails, staples, steel shavings, etc.) that could come in contact with the pipe.

9 Separator Strips

9.1 Location of Separator strips

Separator strips shall be located so as to be in approximate vertical alignment with the bottom bearing pieces. Efforts shall be made to move the shorter pieces on the load such that the location of the separator strips minimizes the instances of separator strips over an unsupported pipe section.

9.2 Materials

9.2.1 Separator strips shall be wood of appropriate strength, dimensions and condition to properly support the load for which it is intended. Separator strips with rounded corners, with splits or with signs of rotting shall not be used.

9.2.2 Separator strips shall be free of metallic protrusions (nails, staples, steel shavings, etc.) that could come in contact with the pipe.

10 Overhang

If agreed between the shipper and purchaser, maximum allowable overhang limits may be defined.

11 Handling Equipment

11.1 Handling equipment (including end hooks, vacuum lifts, slings, and padded forklifts) that prevents the pipe or coating from having contact with brass, copper, bronze, or any other copper alloy shall be used.

11.2 If steel end hooks are used to handle the pipe, they shall be designed to prevent pipe end damage and shall be lined with a cushioning material such as rubber, plastic, composite, or aluminum in the area where the hook contacts the pipe end bevel and land face.

11.3 End hooks shall have sufficient width, depth, and configuration to fit the internal curvature of the pipe.

11.4 End hooks (excluding the bearing area) and adjacent cables shall have sufficient protection with a durable non-metallic padding to prevent damage to pipe ends or surfaces.

11.5 Lifting shall be carried out in such a manner that impact loading sufficient to cause local denting or out-of-roundness of pipe body, pipe ends, adjacent pipe or other objects does not occur.

11.6 If slings are used for pipe handling, they shall be made of a non-metallic material, such as nylon banding and shall have sufficient strength to safely support the load. The slings shall also be placed in positions to maximize load stability and to prevent injury or damage to personnel, pipe and coatings.

11.7 When forklifts are used for handling coated pipe, fork tips and clamps shall be properly padded to protect the pipe being handled and adjacent pipe in the load or stack. If agreed between the shipper and purchaser, padded forks, clamps, etc. shall also be used to handle bare pipe.

12 Positioning and Loading of Pipe with Filler Metal

12.1 SAWL & COWL Pipe

12.1.1 Pipe with filler metal weld seams shall be positioned or padded in such a manner that the weld does not contact either the blocking or adjacent pipe.

12.1.2 When horizontal bearing strips are used, the weld seam shall be positioned at 45°, ±5°, from vertical.

12.1.3 When the pipe is nested, unless otherwise agreed to by the purchaser, pipe with a straight filler metal weld seam shall be positioned in order to prevent pipe-to-weld seam contact, weld-to-bearing strip contact, or weld-to-trailer contact. Unless otherwise agreed to by the purchaser, weld seams shall be oriented to avoid contact with steel banding straps.

12.2 SAWH & COWH Pipe

12.2.1 As helical seam pipe (spiral weld) has a weld seam that winds around the pipe, special care shall be taken to prevent contact with the seam.

12.2.2 Except as permitted by 12.2.3 and unless provisions exist that prevent metal contact between the weld seams of adjacent pipes, bare and coated spiral weld pipe shall have at least four ropes of sufficient diameter and quality to prevent metal-to-metal contact and coating damage surrounding each joint of pipe prior to loading.

NOTE The type of coating should be considered in determining whether or not to use ropes. Ropes should not be used for polyethylene or polypropylene coating due to the likelihood of coating damage.

12.2.3 If agreed between the shipper and purchaser, ropes surrounding each pipe are not required (e.g. for transport over short distances, polyethylene or polypropylene coatings, etc.).

12.2.4 Where possible, spiral pipe on the bottom layer should be rotated while loading to prevent weld seams from contacting bottom bearing strips. Where this is not possible, sufficient padding shall be used on the bottom strips to protect the weld seam.

13 Banding and Tie-down

13.1 The quantity of nylon bands (or equivalent) to secure the cargo on the trailer shall be determined according to their safe working load along with the weight and length of the cargo to be secured.

13.2 If agreed between shipper and end user, metal chains or cables may be used for tie-downs. In this case, sufficient padding to prevent damage shall be used to separate the chains from direct contact with the pipe.

13.3 It is the responsibility of the carrier to choose the number and location of tie-downs to ensure pipes are adequately secured to the trailer in accordance with all governmental regulations ensuring load shifting and subsequent damage to the pipe load is minimized.

14 Pole Trailers

14.1 General

When pole trailers are used to transport pipe, the sections of this document addressing bearing and separator pieces (Section 7 through Section 10, and Section 13) do not apply.

14.2 Cradles

14.2.1 At least one wood cradle at each end of the pipe load shall replace bearing and separator strips.

14.2.2 Cradles shall be situated within metallic bunks attached to the trailer and contoured to the loaded pipe diameter.

14.2.3 When transporting coated pipe, the contact area of the cradles shall be covered with clean cushioning material such as carpet remnants or rubber.

14.2.4 The nominal cradle width of each cradle shall be at least 6 in. (150 mm).

14.2.5 Consideration should be given to wider cradles or additional contours when transporting pipe with nominal lengths greater than 60 ft (18 m).

14.3 Strapping

14.3.1 If agreed between shipper and end user, metal chains or cables may be used for tie-downs. In this case, sufficient padding to prevent damage shall be used to separate the chains from direct contact with the pipe load.

14.3.2 It is the responsibility of the carrier to choose the number and location of tie-downs ensure pipes are adequately secured to the trailer in accordance with all governmental regulations ensuring load shifting and subsequent damage to the pipe load is minimized.

14.4 Overhang

14.4.1 General

The distance from the rear load bearing contour to the pipe end (overhang) shall be minimized giving due consideration to end swing from truck movement.

14.4.2 Protection during Transport

Pole trailers and tractors shall be equipped with fenders and mud flaps to sufficiently protect pipe and coating from impact damage from gravel and other debris flying up from the roadway.

15 Loading Diagrams

Loading diagrams which demonstrate compliance to this recommended practice shall be available upon request.

16 Inspection

16.1 Purchaser Access

The purchaser’s representative (or inspector) shall have access to loading and unloading facilities with reasonable advance notice of loading and unloading activities.

16.2 Damaged Pipe

16.2.1 Unless authorized by the purchaser, damaged pipe shall not be transported. If damaged pipe is detected on board, it shall be noted on the bill of lading and the pipe marked by the carrier (or the inspector) to indicate pre-transit damage.

16.2.2 Pipe damage detected during transportation or unloading should be promptly reported (with photographs if possible) to the owner and the party responsible for the transportation, appropriately marked and set aside for further disposition.

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