

Book 3: Chapter 1 - Handling and Storage

After the piping system has been designed and specified, the components for the piping system must be obtained. Typically, project management and purchasing personnel work closely together so that the necessary components are available when they are needed for the upcoming construction work.

Few things are more frustrating and time consuming than not having what you need, when you need it. Before piping system installation begins, an important initial step is a receiving inspection of incoming products. Construction costs can be minimized, and schedules maintained by checking incoming goods to be sure the parts received are the parts that were ordered, and that they arrived in good condition and ready for installation.

Receiving Inspection

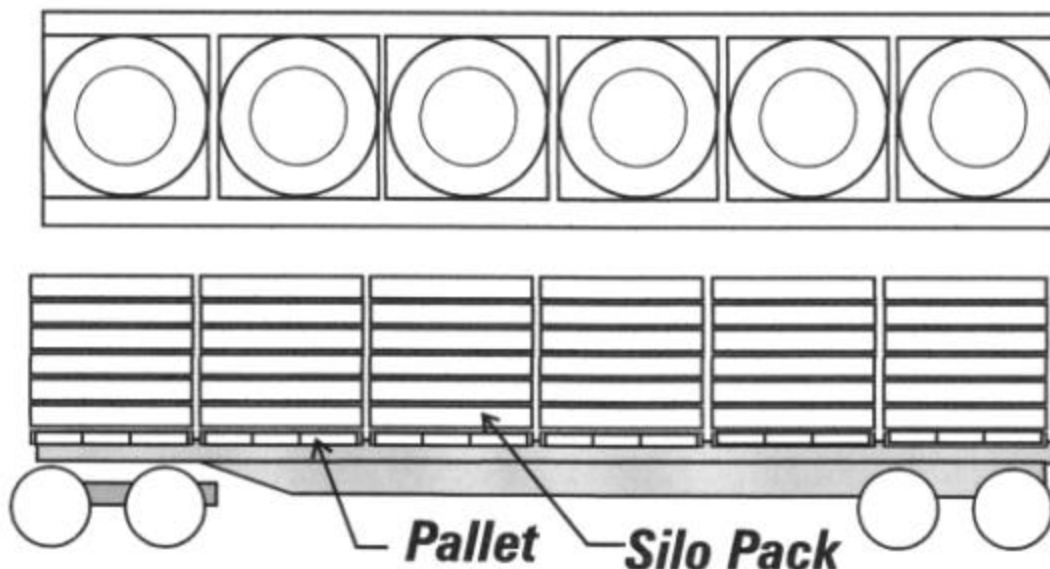
Performance Pipe ships pipe, fittings, and fabrications by commercial carriers who are responsible for the products from the time they leave the manufacturing plant until the receiver accepts them. Pipe is usually shipped on flatbed trailers. Fittings may be shipped in enclosed vans, or on flatbed trailers depending upon size and packaging. Smaller fittings may be boxed, and shipped by commercial parcel services.

Product Packaging

Depending on size, OD controlled pipe is produced in coils or in straight lengths. Coils are stacked together into silo packs. Straight lengths are bundled together in bulk packs or loaded on the trailer in strip loads. Standard straight lengths are 40' long. Straight lengths up to 60' long may be produced. State transportation restrictions on length, height and width usually govern allowable load configurations. Higher freight costs will apply to loads that exceed length, height, or width restrictions. Although polyethylene pipe is lightweight, weight limitations may restrict load size for very heavy wall or longer length pipe.

DriscoPlex™ 2000 SPIROLITE® pipe lengths are 20' (13' special order) and truckload shipments

Figure 1-1 Typical Silo Pack Truckload (40' Trailer)



are usually on standard 40' flatbed trailers. Pipes are commonly packaged in bundles or as strip loads. Pipes 96" ID and 120" ID will exceed 8' overall width, and are subject to wide load restrictions.

Figures 1-1 through 1-3 are general illustrations of truckload and packaging configurations. Actual truckloads and packaging may vary from the illustrations.

Small fittings are packaged in cartons that may be shipped by package carriers. Large orders may be palletized and shipped in enclosed vans. Large fittings and custom fabrications may be packed in large boxes on pallets, or secured to pallets. Occasionally, when coiled pipe silos and boxed fittings are shipped together; fitting cartons are placed in the center of the silo packs. Tanks, manholes, and large fittings and custom fabrications are usually loaded directly onto flatbed trailers.

Product Identification

OD controlled pipe is identified along its length by a printline that repeats every two feet. The printline states the manufacturer, product trade name, material, size and dimension ratio, manufacturing standard, production lot code and manufacturing date.

DriscoPlex™ 2000 SPIROLITE® pipe is identified with embossed markings inside the bell and the spigot ends of the pipe. The markings state the manufacturer and trade name, material, size and RSC, ASTM standard, and production code. These markings are also hand lettered on the end of the pipe.

Fittings are individually marked with labels presenting the description, material, manufacturing standard, and production lot number. For boxed fittings, this information is also on the box label. Larger fittings, custom fabrications, tanks, and manholes are individually labeled and hand marked.

Checking the Order

Figure 1-2 Typical Bulk Pack Truckload (40' Trailer)

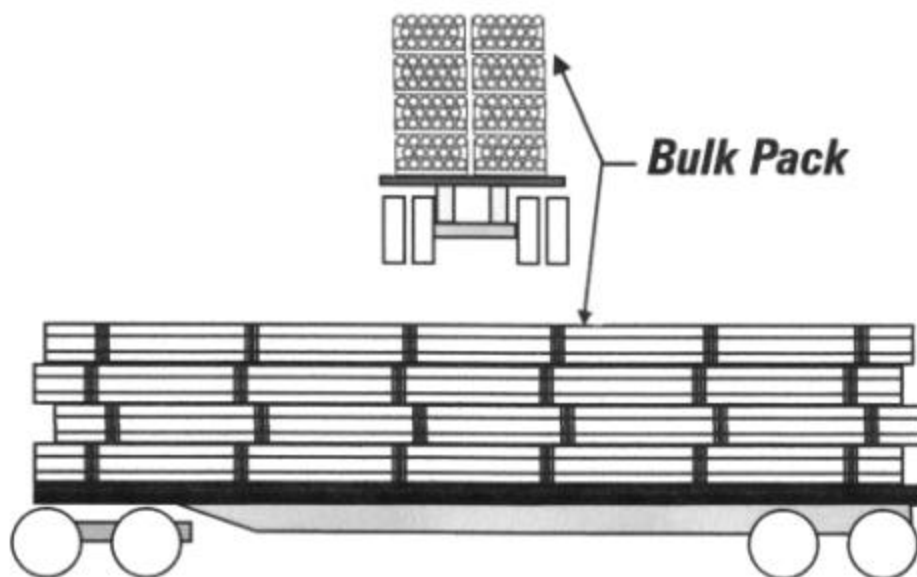
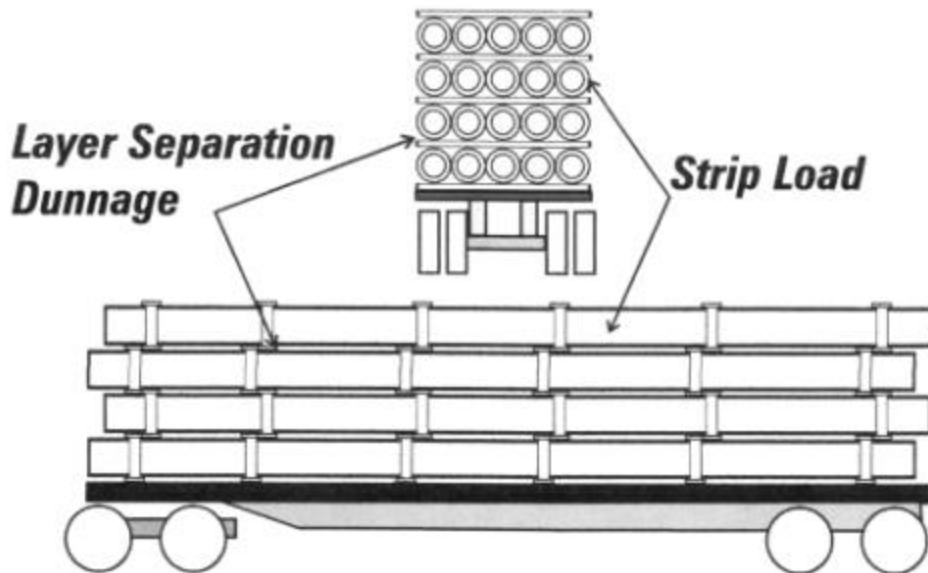


Figure 1-3 Typical Strip Load Truckload (40' Trailer)



When a shipment is received, it should be checked to see that the correct products and quantities have been delivered. Several documents are used here. The *Order Acknowledgment* lists each item by its description, and the required quantity. The incoming load will be described in a *Packing List* that is attached to the load. The descriptions and quantities on the Packing List should match those on the Order Acknowledgment.

The carrier will present a *Bill of Lading* that generally describes the load as the number of packages the carrier received from the manufacturing plant. The Order Acknowledgment, Packing List, and Bill of Lading should all be in agreement. Any discrepancies must be reconciled among the shipper, the carrier, and the receiver. The receiver should have a procedure for reconciling any such discrepancies.

Load Inspection

There is no substitute for visually inspecting an incoming shipment to verify that the paperwork accurately describes the load. As presented above, Performance Pipe products are identified by markings on each individual product. These markings should be checked against the Order Acknowledgment and the Packing List. The number of packages and their descriptions should be checked against the Bill of Lading.

This is the time to inspect for damage that may occur anytime products are handled. Obvious damage such as cuts, abrasions, scrapes, gouges, tears and punctures should be carefully inspected.

Receiving Report & Reporting Damage

The delivering truck driver will ask the person receiving the shipment to sign the Bill of Lading, and acknowledge that the load was received in good condition. **Any damage, missing packages, etc., should be noted on the bill of lading at that time.**

Shipping problems such as damage, missing packages, document discrepancies, incorrect product, etc., should be reported to Performance Pipe Customer Service immediately. Shipping claims must be filed within 7 days.

Unloading Instructions

Unloading and handling must be performed safely. Unsafe handling can result in damage to property or equipment, and can be hazardous to persons in the area. Keep unnecessary persons away from the area while unloading.

Observe unloading and handling instructions that are supplied with the load and available from the driver.

Before unloading the shipment, there must be adequate, level space to unload the shipment. The truck should be on level ground with the parking brake set and the wheels chocked. Unloading equipment must be capable of safely lifting and moving pipe, fittings, fabrications or other components.

Unloading Site Requirements

The unloading site must be relatively flat and level. It must be large enough for the carrier's truck, the load handling equipment and its movement, and for temporary load storage. Silo packs and other palletized packages should be unloaded from the side with a forklift. Non-palletized pipe, fittings, fabrications, manholes, tanks, or other components should be unloaded from above with lifting equipment and wide web slings, or from the side with a forklift.

Handling Equipment

Appropriate unloading and handling equipment of adequate capacity must be used to unload the truck, and safe handling and operating procedures must be followed.

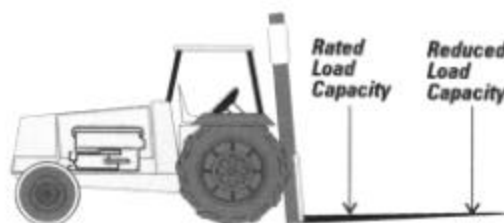
Pipe must not be rolled or pushed off the truck. Pipe, fittings, fabrications, tanks, manholes, and other components must not be pushed or dumped off the truck, or dropped.

Although polyethylene piping components are lightweight compared to similar components made of metal, concrete, clay, or other materials, larger components can be heavy. Lifting and handling equipment must have adequate rated capacity to lift and move components from the truck to temporary storage. Equipment such as a forklift, a crane, a side boom tractor, or an extension boom crane is used for unloading.

When using a forklift, or forklift attachments on equipment such as articulated loaders or bucket loaders, lifting capacity must be adequate at the load center on the forks. Forklift equipment is rated for a maximum lifting capacity at a distance from the back of the forks. (See Figure 1-4.) If the weight-center of the load is farther out on the forks, lifting capacity is reduced.

Before lifting or transporting the load, forks should be spread as wide apart as practical, forks should extend completely under the load, and the load should be as far back on the forks as

Figure 1-4 Forklift Load Capacity



possible.

During transport, a load on forks that are too short or too close together, or a load too far out on the forks, may become unstable and pitch forward or to the side, and result in damage to the load or property, or hazards to persons.

Lifting equipment such as cranes, extension boom cranes, and side boom tractors, should be hooked to wide web choker slings that are secured around the load or to lifting lugs on the component. Only wide web slings should be used. Wire rope slings and chains can damage components, and should not be used. Spreader bars should be used when lifting pipe or components longer than 20'.

Before use, inspect slings and lifting equipment. Equipment with wear or damage that impairs function or load capacity should not be used.

Manholes and Tanks

Smaller diameter DriscoPlex™ 2000 manholes and tanks should be unloaded using a wide web choker sling and lifting equipment such as an extension boom crane, crane, or lifting boom. The choker sling is fitted around the manhole riser or near the top of the tank. Do not use stub outs, outlets, or fittings as lifting points and avoid placing slings where they will bear against outlets or fittings.

Larger diameter manholes and tanks are fitted with lifting lugs. **All lifting lugs must be used. The weight of the manhole or tank is properly supported only when all lugs are used for lifting. Do not lift tanks containing liquids.**

Pre-Installation Storage

The size and complexity of the project and the components, will determine pre-installation storage requirements. For some projects, several storage or staging sites along the right-of-way may be appropriate, while a single storage location may be suitable for another job.

The site and its layout should provide protection against physical damage to components. General requirements are for sufficient size to accommodate piping components, to allow room for handling equipment to get around them, and to have a relatively smooth, level surface free of stones, debris, or other material that could damage pipe or components, or interfere with handling. Pipe may be placed on 4-inch wide wooden dunnage, evenly spaced at intervals of 4 feet or less.

Pipe Stacking Heights

Coiled pipe is best stored as received in silo packs. Individual coils may be removed from the silo pack without disturbing the stability of the package.

Pipe received in bulk packs or strip load packs should be stored in the same package. If the storage site is flat and level, bulk packs or strip load packs may be stacked evenly upon each other to an overall height of about 6'. For less flat or less level terrain, limit stacking height to about 4'.

Before removing individual pipe lengths from bulk packs or strip load packs, the pack must be removed from the storage stack and placed on the ground.

Individual pipes may be stacked in rows. Pipes should be laid straight, not crossing over or entangled with each other. **The base row must be blocked to prevent sideways movement or shifting.** (See Figure 1-5; Table 1-1 and Table 1-2.)

Figure 1-5 Loose Pipe Storage

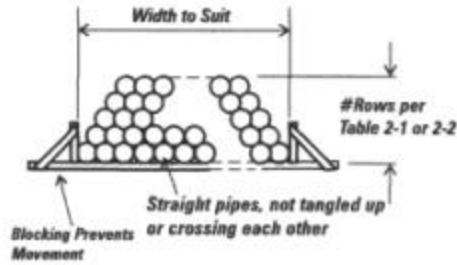


Table 1-1 Suggested Jobsite Loose Storage Stacking Height for OD Controlled Pipe

Nominal Size	Stacking Height, rows	
	DR Above 17	DR 17 & Below
4	15	12
5	12	10
6	10	8
8	8	6
10	6	5
12	5	4
14	5	4
16	4	3
18	4	3
20	3	3
22	3	2
24	3	2
26	3	2
28	2	2
30	2	2
32	2	2
36	2	1
42	1	1
48	1	1
54	1	1

Suggested stacking heights based on 6' for level terrain and 4' for less level terrain.

Table 1-2 Suggested Jobsite Loose Storage Stacking Heights for DriscoPlex™ 2000 SPIROLITE® Pipe

DriscoPlex™ 2000 SPIROLITE® Pipe Size	Suggested Stacking Height, rows
18	4
21	3
24	3
27	2
30	2
33	2
36	2
42	1
48	1
54	1
60	1
66	1
72	1
84	1
96	1
120	1

Suggested stacking heights based on 6' for level terrain and 4' for less level terrain.

The interior of stored pipe should be kept free of debris and other foreign matter.

Exposure to UV and Weather

Performance Pipe polyethylene pipe products are protected against deterioration from exposure to ultraviolet light and weathering effects.

Both color and black products are compounded with antioxidants, thermal stabilizers, and UV stabilizers. Color products use sacrificial UV stabilizers that absorb UV energy, and will eventually be depleted. In general, non-black products should not remain in unprotected outdoor storage for more than 1 year.

Some products such as yellow gas pipe have special UV protection systems that allow unprotected outdoor storage for about 4 years.

Black products contain 2% to 3% carbon black to protect the material from UV deterioration. Black products with and without stripes are generally suitable for unprotected outdoor storage and service.

Cold Weather Handling

Temperatures near or below freezing will affect polyethylene pipe by increasing stiffness, vulnerability to impact damage and sensitivity to suddenly applied stress especially when cutting. Polyethylene pipe will be more difficult to uncoil or field bend in cold weather.

Significant impact or shock loads against a polyethylene pipe that is at freezing or lower temperatures can fracture the pipe.

- ***Do not drop pipe. Do not allow pipe to fall off the truck or into the trench.***
- ***Do not strike the pipe with handling equipment, tools or other objects.***
- ***Do not drag pipe lengths at speeds where bouncing against the surface may cause impact damage.***

Pipe should be firmly supported on both sides when cutting with a handsaw. Low temperature can cause the pipe to split at the cut if bending stress is applied.

Ice, snow, and rain are not harmful to the material, but may make storage areas more troublesome for handling equipment and personnel. Unsure footing and traction require greater care and caution to prevent damage or injury.

Performance Pipe cautions against walking on pipe at any time. In particular, inclement weather can make pipe surfaces especially slippery. Do not walk on pipe when footing is unsure.