



# Cast Iron Connections, Support & Placement

## Hubless Joints

Hubless cast iron soil pipe is joined by using the no-hub coupling. Several different types of no-hub couplings are available. The following outlines the installation procedures of no-hub couplings that meet the requirements of CISPI 310. It must be noted that these installation procedures are not intended to be applicable for couplings other than those manufactured in accordance with CISPI 310 (See illustration below). These couplings are manufactured using a stainless-steel shield-and-clamp assembly and an elastomeric sealing sleeve conforming to the requirements of ASTM C-564. The following steps should be taken to ensure a proper joint:

- (1) Place the gasket on the end of one pipe or fitting and the stainless steel clamp-and-shield assembly on the end of the other pipe or fitting.
- (2) Firmly seat the pipe or fitting ends against the integrally molded center stop inside the elastomeric sealing sleeve.
- (3) Slide the stainless steel shield-and-clamp assembly into position over the gasket and tighten the bands. The bands should be tightened using a calibrated torque wrench set at 60 in./lbs. For larger diameter couplings that have four bands, the inner bands should be tightened first and then the outer bands tightened. In all cases, when tightening bands, they should be tightened alternately to ensure that the coupling shield is drawn up uniformly.



*No-Hub Coupling by*



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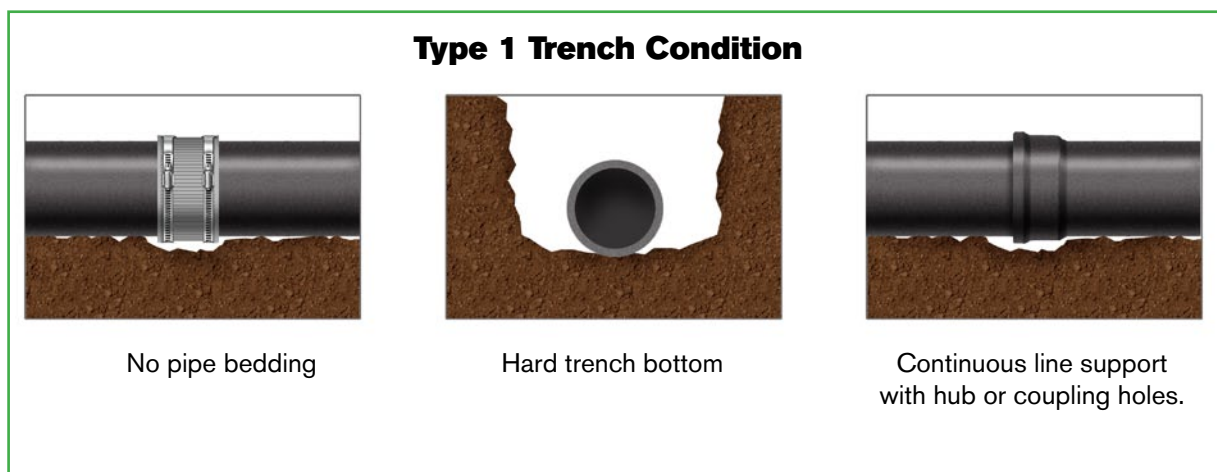
## Underground Installation Procedures

The physical properties of cast iron soil pipe make it the best DWV (Drain, Waste, and Vent) material for underground installation. The two keys to proper underground installation are trench preparation and backfilling.

The trench should be wide enough to assemble the joints. Total load on the pipe includes both earth load and truck load. For additional information, refer to CISPI's brochure, Trenching Recommendations for Cast Iron Soil Pipe. Safety procedures in trenching should be observed, including provisions to avoid collapse of the trench wall.

The trench bottom should be stable enough to support the complete barrel of the pipe. If possible, the barrel should rest on even and undisturbed soil. In certain conditions, e.g., rocky, it becomes necessary to excavate deeper than needed, then place and tamp backfill material to provide an appropriate bed. Holes should be provided at each joint for the hub or couplings to allow for continuous support of the barrel along the trench bottom. (See illustration below.) If the ditch must be excavated deeper than the depth of the drainage pipe, place and tamp backfill material to provide uniform support for the pipe barrel.

Many times in the installation of underground soil pipe it is necessary to change the direction of the line. Cast iron soil pipe will allow this through deflection in the joints. Installation should initially be completed in a straight line and then deflected to the appropriate amount. Maximum deflections should not exceed 1/2 inch per foot of pipe. This would allow five inches of deflection for a ten-foot piece of soil pipe and 2-1/2 inches for five-foot pipe. For changes in direction greater than these deflections, an appropriate fitting should be used.





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## Aboveground Installation Procedures

With attention to a few basic rules, the installation of cast iron soil pipe and fittings is easily accomplished. (1) Cast iron soil pipe installed in the horizontal position shall be supported at every hub (hub and spigot) or coupling (hubless). The hanger shall be placed within 18” of the hub or coupling. Joints used for connecting cast iron soil pipe possess sufficient shear strength to require one hanger per joint or hub. (2) Installations requiring multiple joints within a four-foot developed length shall be supported at every other or alternating hubs or couplings. (3) Vertical components shall be secured at each stack base and at sufficiently close intervals to keep the system in alignment and to adequately support the pipe and its contents. Riser clamps, sometimes called floor or friction clamps, are required for vertical piping in multi-story structures in order for each floor not to exceed 15’0”.

### GENERAL INSTALLATION INSTRUCTIONS

#### Vertical Piping

- Secure vertical piping at sufficiently close intervals to keep the pipe in alignment and to support the weight of the pipe and its contents. Support stacks at their bases and at sufficient floor intervals to meet the requirements of local codes. Approved metal clamps or hangers should be used for this purpose.
- If vertical piping is to stand free of any support or if no structural element is available for support and stability during construction, secure the piping in its proper position by means of adequate stakes or braces fastened to the pipe.

#### Horizontal Piping, Suspended

- Support horizontal piping and fittings at sufficiently close intervals to maintain alignment and prevent sagging or grade reversal. Support each length of pipe by an approved hanger located not more than 18 inches from the joint.
- Support terminal ends of all horizontal runs or branches and each change of direction or alignment with an approved hanger.
- Closet bends installed above ground should be firmly secured.



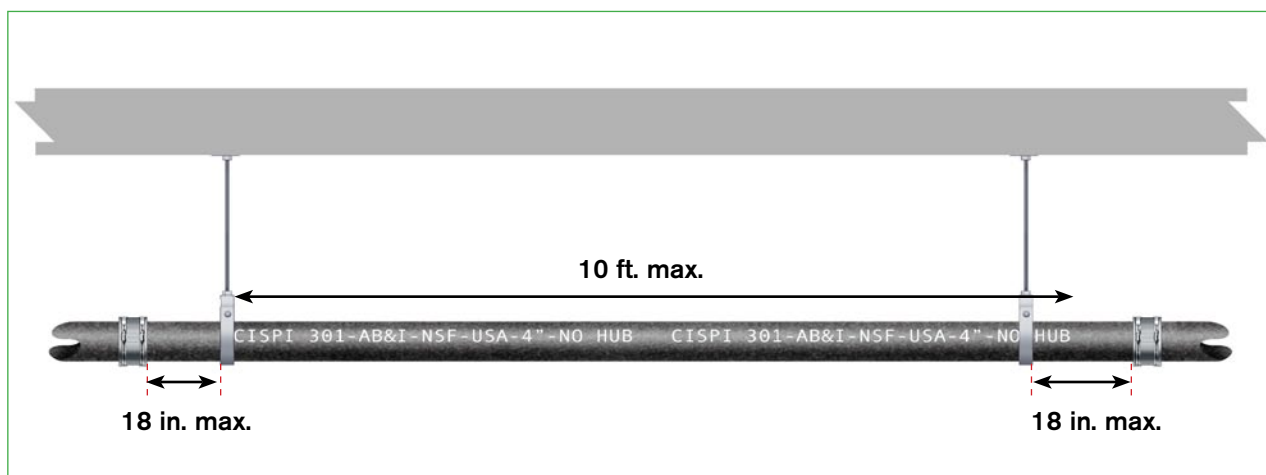
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## Horizontal Piping, Underground

- To maintain proper alignment during backfilling, stabilize the pipe in the proper position by partial backfilling and cradling.
- Piping laid on grade should be adequately secured to prevent misalignment when the slab is poured.
- Closet bends installed under slabs should be adequately secured.

## Installation Inside the Building

- According to most authorities and plumbing codes, it is sufficient to support horizontal pipe at each joint, i.e., five-inch pipe should be supported at five foot intervals, ten inch in length may be supported at ten-foot intervals. Supports should be adequate to maintain alignment and prevent sagging and should be placed within 18 inches of the joint.



No-Hub Pipe by 



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When the system is filled with water, sufficient beam strength is provided by cast iron soil pipe to carry the load with hangers every 10 feet.

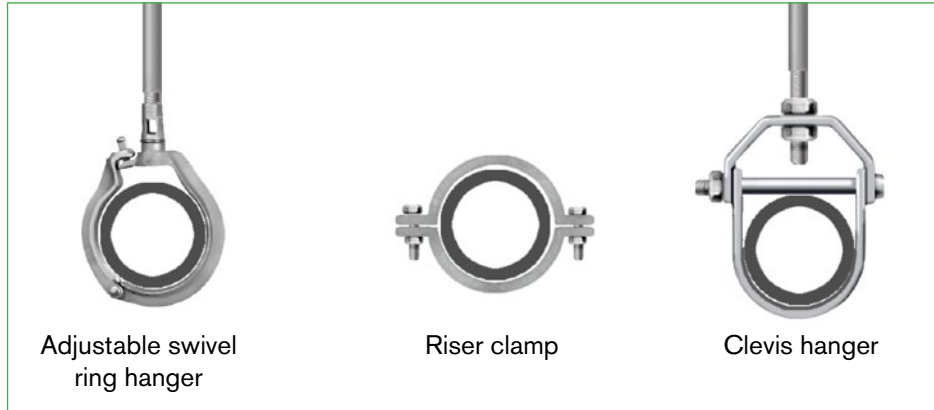
Any of the horizontal supports or clamps illustrated in the illustrations on this and the next page may be used, depending on conditions or what is regarded as essential by the contractor, architect, or engineer. Whatever method of support or clamp is used for the horizontal line, care should be exercised to make certain that the line has a proper grade (1/4 inch or more per foot).

Hangers may be fastened to wood members or beams with wood screws, lag screws, or large nails. For fastening to "I" beams, bar joists, junior beams, or other structural members, beam clamps or "C" clamps may be used. Fasteners for masonry walls may be expansion bolts or screws, or where a void is present, toggle bolts may be used. Studs shot into the masonry by the explosion method may also be used. Along a wall, a bracket made of structural members or a cast bracket may be used.

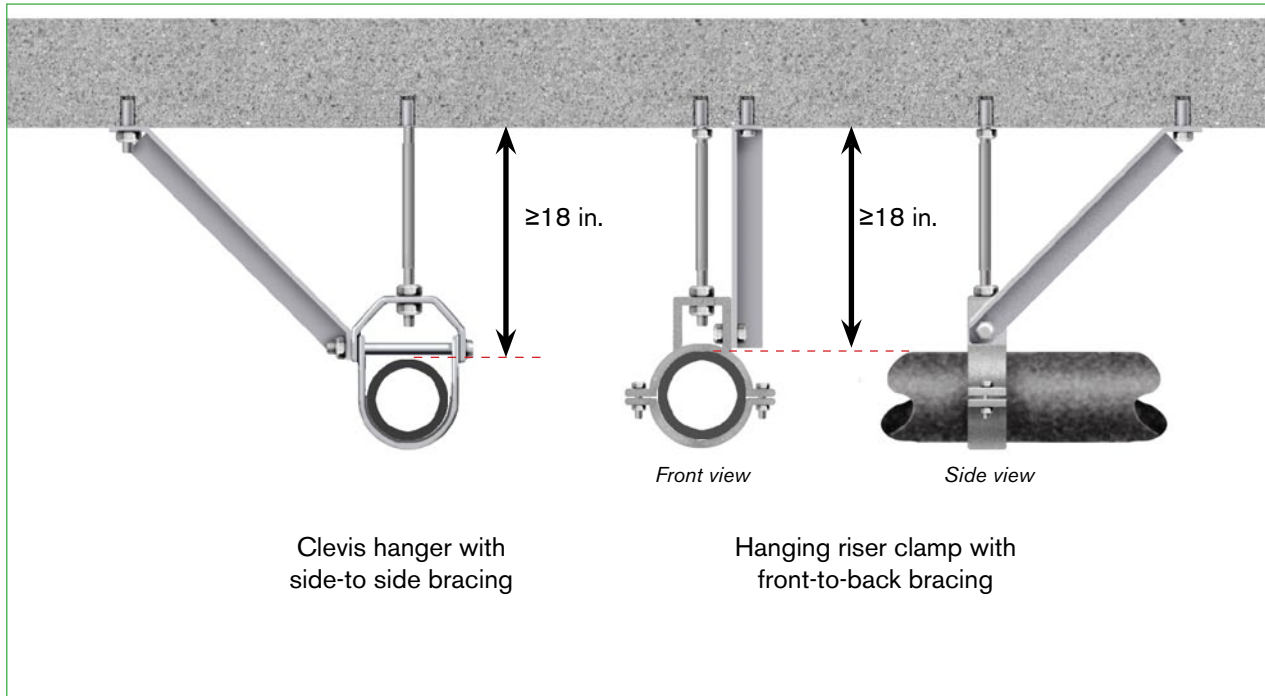




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Adequate provision should be made to prevent “shear.” Where components are suspended in excess of 18 inches by means of non-rigid hangers they should be suitably braced against horizontal movement, often called sway bracing. Examples of sway bracing are illustrated below:



Information courtesy of



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*The Industry Standard Since 1949*