

POLYNET™ / FLEXNET™ UNDERGROUND INSTALLATION GUIDELINES

The following trenching and burial procedures should be used to protect a Netafim PolyNet/FlexNet piping system in an underground installation.

TRENCHING

- Excavate the trench in accordance with applicable codes and regulations, ensuring that the sides will be stable under all working conditions.
- Trenching will be done by a backhoe or a trencher, according to the grower. Netafim recommends using a trencher because it is less sensitive to the soil's moisture status and it leaves the ground much more crumbled, which makes the backfilling issue safer for the pipe.
- Minimum trench width shall be not less than the greater of the accessories' outside diameter plus the gap to the closest backhoe/trencher tool's width (see Table 1). Trench width may be different if set by the design engineer, or in accordance with the backhoe's tool width. It is recommended to make the trench **wide enough** to stand inside, in order to make it possible to reinstall or add accessories.
- Install foundation and bedding as required by the engineer and according to conditions in the trench bottom. Provide 4 inches of bedding if rock or unyielding material is encountered in the bottom of the trench. Make sure that no sharp objects will rise above the bedding surface. If the trench has been dug by a trencher and the soil is soft and crumbly, you do not have to put bedding.
- The depth of burying should be established by the grower or hydraulic designer based upon an evaluation of specific project conditions and the grower needs. PolyNet/FlexNet has been functionally tested up to burying depth of 3 feet.
- Minimum depth for burying recommended by Netafim is detailed in Table 1. Recommendations are given to ensure safe shallow tillage, up to 16 inches (disk-harrows, light plowing, bedding, etc.)
- PolyNet/FlexNet pipes are flexible and can be installed in slight curves. Netafim recommends using adequate fittings on straight trenches and in 90° turns.

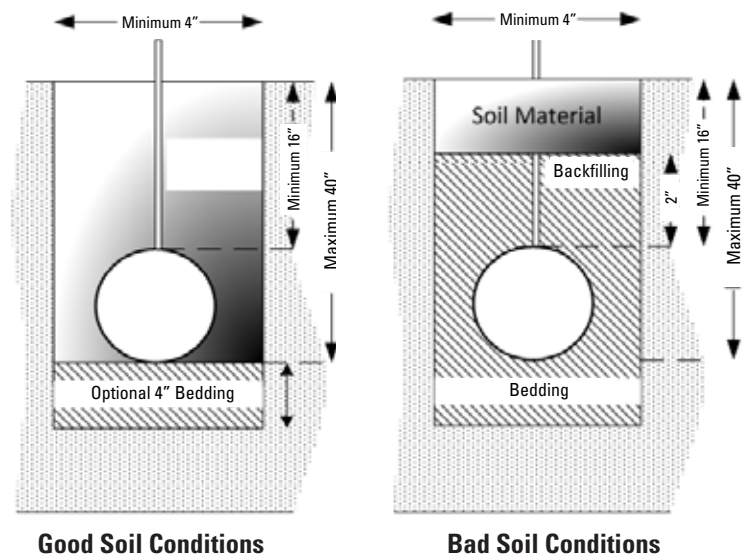
Table 1 **TRENCH WIDTH**

NOMINAL	TRENCH WIDTH (MINIMUM / RECOMMENDED)	TRENCH DEPTH* (MINIMUM RECOMMENDED)
1.96"	7" / 16"	20"
2.95"	9" / 16"	20"
4.33"	11" / 16"	20"

* Includes optional 4" high bedding

ASSEMBLY OF A SUBMAIN PIPE

- The grower will determine the order of assembly.
- It is recommended to assemble the submain with the risers when it is still on ground level.
- After securing all fittings, gently lower the submain into the trench. **DO NOT** use the risers as a lowering rope.
- Make sure that the pipe is laying straight. It is strongly recommended to stretch the pipe inside the trench which keeps it nice and neat and without kinks or folds.
- Ensure the risers position is in accordance with field beds.




Good Soil Conditions

Bad Soil Conditions

TESTING AND INSPECTION

- There are various types of procedures used for testing installed plastic systems. However, a water or hydraulic test is a technically superior test method for inspecting a completed plastic piping system. This is the testing procedure recommended by Netafim. The purpose of the test is to locate any leaks at the joints and correct them prior to putting the system into operation. Since it is important to be able to visually inspect the joints, it is recommended to conduct the water test prior to backfilling.
- Do not perform the pressure test on ground level!
- Prior to testing, safety precautions should be instituted to protect personnel and property in case of test failure.
- All risers should be plugged, but the flushing valve at the submain end must be open/chocked. Head pressure must stay within the pipe's and accessories' limits.
- The piping system should be slowly filled with water, taking care to prevent water hammer, surge and air entrapment. All trapped air must be slowly released. All valves and air relief mechanisms should be opened so that the air can be vented while the system is being filled.
- Any leaking joints or pipe must be cut out and replaced and the line recharged and retested using the same procedure.

**WARNING**

ENTRAPPED AIR

- Pressure surges associated with entrapped air may result in serious personal injury, system failure, and property damage.
- Install air relief valves at the high points in a system to vent air that accumulates during service.
- Failure to bleed trapped air may give faulty test results and may result in an explosion.

**WARNING**

In any test, proper safety procedures and equipment should be used, including personal protective equipment such as protective eyewear and clothing. Installers should always consider local conditions, codes and regulations, manufacturer's installation instructions, and architects'/engineers' specifications in any installation.

BEDDING AND BACKFILLING

- If the soil is in a condition which requires the use of bedding (sharp gravel, big soil clods), then it is necessary to also backfill the pipe with the same material as the bedding material. Backfilling in such cases should cover the pipe up to 2 inches above the top pipe's face.
- The trench should be filled when the submain is full of water, under the nominal working pressure. Head pressure must not exceed the pipe's and accessories' nominal pressure.
- Even though sub-soil conditions vary widely from place to place, the pipe backfill should be stable and provide protection for the pipe.
- The pipe should be surrounded with an aggregate material which is easily worked around the sides of the pipe.
- A mechanical tamper is recommended for compacting sand and gravel backfill when it contains a significant portion of fine-grained material, such as silt and clay. Be mindful if the submain is in the middle of the field, where soil must not be compacted.
- The trench should be completely filled. The backfill should be placed and spread in uniform layers to prevent any unfilled spaces or voids. Large rocks, stones, frozen clods, or other large debris should be removed.
- During backfilling, avoid kinks in the riser or pulling force at the base of it. Do that by applying light pulling tension on the riser or covering it with a hand-shovel just until its base is fully cover.

POST BACKFILLING

- It is strongly recommended to test the buried flat pipe, whether it is a main pipe or a submain pipe. The test should be performed under nominal flow and check if the pressure loss along the pipe is according to the hydraulic design.
- It is also recommended to check each lateral pipe going out of a submain to see that it gets the right hydraulic pressure.

