

MAXFLO HDPE PIPE INSTALLATION

The following is a summarized explanation of the recommended steps taken to install a quality pipe system. Please use for informational purposes only.

Timewell's recommended installation procedures listed below are based on ASTM D2321 (Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications).

PRE-INSTALLATION STORAGE

Certain steps should be taken for handling and storing pipe properly on job sites. If pipe arrives at a site in pallets, it should remain in pallets until installation. Dragging, dropping, or hitting pipe on the ground or other objects may cause damage. Inspect all pipe and material before installation.

When stacking non-palletized pipe, some form of stop blocks should be used when starting bottom layer to avoid collapse. Pipe stockpiles on jobsites should not exceed 5 feet in height, and should not be walked or climbed upon. The recommended way to stack pipe with attached bells is to alternate the direction of the bell ends in each row of the stack.

Nominal Pipe Diameter in. (mm)	Minimum Trench in. (m)	Nominal Pipe Diameter in. (mm)	Minimum Trench in. (m)
4" (100)	21" (0.5)	18" (450)	39" (1.0)
6" (150)	23" (0.6)	24" (600)	47" (1.2)
8" (200)	26" (0.7)	30" (750)	57" (1.4)
10" (250)	28" (0.7)	36" (900)	64" (1.6)
12" (300)	31" (0.8)	42" (1050)	72" (1.8)
15" (375)	34" (0.9)	48" (1500)	80" (2.0)

Chart 1 - Minimum Trench Widths

TRENCH EXCAVATION

Field surveys are taken to establish the alignment of the system for pipe installation. Proper alignment and grade of pipe is important to assure system will function as designed.

Once the alignment of the system is established, the excavation of the trench can begin. The width of trench should be decided based on the width of pipe being installed. Trenches too narrow do not allow pipe to be installed correctly. Trenches too wide can add to overall cost. Trenches wide enough for proper installation should be used.

When compaction equipment is not needed, 6-8 inches on either side of pipe is the minimum space acceptable for trench width. (Refer to Chart I for minimum trench widths)

The depth of the trench should allow for the proper cover to be added during the backfill process. If the floor of the trench is unsuitable, then, additional excavation may be needed as recommended by engineer. If excavation exceeds desired trench depth, additional backfill may be added to the bedding of the trench.

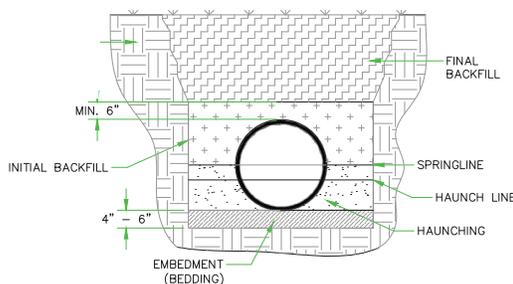
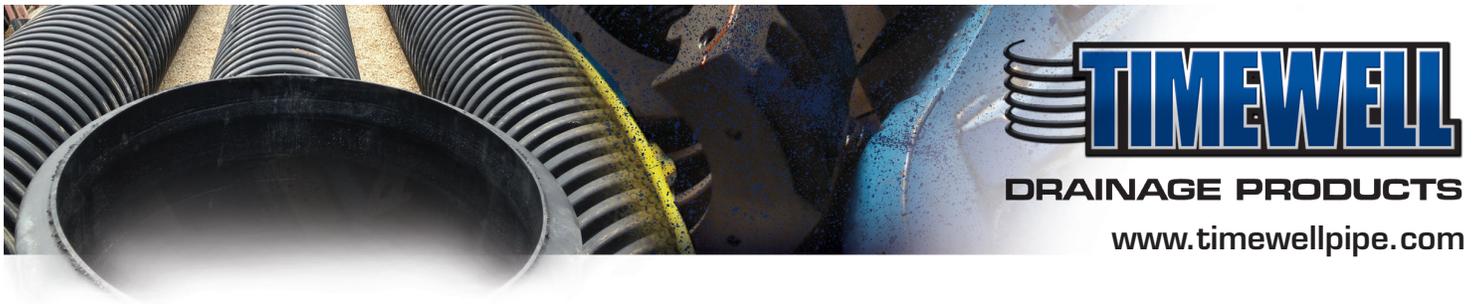


FIG. 1 Trench Cross Section Showing Terminology

ENVELOPE CONSTRUCTION

In a compacted envelope, the load is distributed to the initial backflow, haunching material, bedding and foundation. Once the trench has been excavated, the construction of the

envelope begins. Once in place, the envelope is covered by the final backfill. When native soil is not an acceptable material for backfill, additional material will need to be brought in.



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BACKFILL PLACEMENT & MINIMUM COVER

Before placing any backfill, the floor of the trench must be made suitable for proper installation. Pipe should have a firm bedding no less than 4 inches deep, up to 6 inches in cases where rock or other coarse material is present. Uniform placement and compaction of bedding allows for equal load distribution of pipe and protruding features of pipe connections. Class I, II and III material should be used in the bedding zone.

Haunching is the next and most important layer of backfill that is put into place. The haunching should be worked in and compacted around the curvature of the bottom half of the pipe before the rest of backfill is placed.

The springline height is half of the outside diameter of the pipe. Class I, II and III material should be used in the haunching zone that is the same, or very similar to, material used in the bedding zone. This helps to maintain side support of the envelope.

The initial backfill begins at the springline and extends to a minimum of 6 inches above the top of the pipe. Class I, II and III materials can be used in the initial backfill zone. If different classes of material are used within the envelope, a geotextile is required between layers. It is very important not to use compaction equipment directly over pipe while placing initial backfill.

The final backfill is not quite as crucial as the envelope around the pipe, but it is still important to keep a good level of compaction to prevent rutting at the top of trench. The final backfill extends from the initial backfill to the surface and should be a minimum of 6 inches deep. Recommended minimum height of cover for 4 – 48 inch diameter pipe is 12 inches in a typical trench installation. Height of cover in flexible pavement applications (asphalt) is measured from top of pipe to the bottom of flexible pavement. In a rigid pavement application (concrete), height of cover is measured from top of pipe to the top of the rigid pavement application. When hydrohammer type compactors

are approved for use, a minimum of 48 inches of cover is recommended. If excessive construction loads are passing over pipe system, minimum cover may be increased. The excavated material from digging the trench may be used for the final backfill stage, unless otherwise required.

POST-CONSTRUCTION INSPECTION

Deflection testing may be required by the engineer to ensure deflection limits are not exceeded. At least 30 days should be given to allow the system and soil to stabilize before deflection testing is performed.

COMPACTION & COMPACTION EQUIPMENT

There are different methods of compaction used to achieve desired density. There is very little compaction required for crushed stone. For Class II and III backfill material, hand-held or walk behind compaction equipment is recommended. This equipment eliminates any damage to the pipe and will ensure proper compaction density.

OTHER CONSIDERATIONS

Parallel Pipe Installation –

Special considerations and construction techniques are used when installing parallel pipe. Side support of the pipe must be maintained by allowing the proper amount of backfill to be compacted between parallel pipes. One foot of space should be used between pipe up to 24 inches in diameter. For pipe more than 24 inches, half of the diameter is recommended for proper spacing.

Connecting Different Pipe Types –

When installing a new system, there may be a need to connect different types of pipe together. In these cases, a specific adaptor may be available to complete the connection. Another option is the use of a concrete collar. When using this method, a geotextile wrap is put around the joining ends to keep out foreign materials. Then, concrete is poured around the connection.

Vertical Installation –

When installing access risers, meter pits, and catch basins, pipe is installed vertically. In any load situation, the frame and cover should be secured to a concrete collar around the vertical pipe. These concrete collars transfer load into the soil to keep stress off of the pipe.

Joints – The assembly and lubrication of joints should comply with Timewell's recommendations.