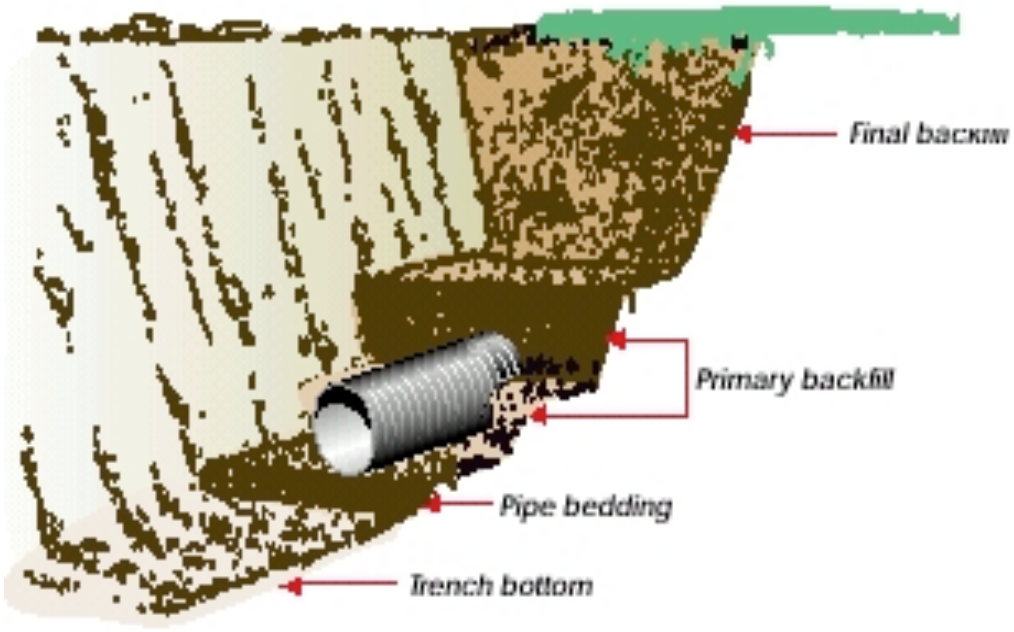
INSTALLATION

BEDDING INSTRUCTIONS – GENERAL INFORMATION



Pipe Bedding

The bedding soil must be free from stones within the breadth of the pipe trench. On the trench bottom a 150mm thick bedding layer is prepared and well compacted. For installation in soft/wet soil, a geotextile is placed under bedding.

Primary Backfill

Backfilling shall be made over the whole width of the trench. Compaction of the backfill material shall be made in layers of 150-300mm. The final layer of the primary backfill should be minimum 300mm above the pipe crown.

Note: No compaction is to be done directly above the pipe until the backfill has reached 300mm above the pipe crown.

Final Backfill

The final backfill is done with regard to the native soil and external loads (traffic). When deemed necessary, the compaction is carried out in several layers.

PIPELAYING

Pipelaying should be carried out in accordance with the latest edition of the Civil Engineering Specification for the Water Industry (CESWI).

Prior to installation commencing, Asset International will provide a site briefing to the developer and his installation contractor.

Asset International will provide training on request to site operatives to deal with the specific requirements of WEHOLITE pipes.

Inspection

Pipes and fittings should be visually checked for any damage immediately prior to installation.

Trench Preperation

The trench should be open for the absolute minimum period of time in advance of pipe laying and should be backfilled as soon as possible. It is essential to ensure that the sides of the trenches are adequately supported. Minimum requirements for trench width and depth of bedding are given below.

Bedding should be properly compacted and finished so as to provide uniform support for the pipe. It is essential that bricks or other hard materials are not placed under the pipes for permanent support.

Pipe laying

The pipes should be jointed in the trench and laid on the prepared bed so that the barrel of the pipe maintains substantially continuous contact. Small depressions should be made to accommodate the pipe sockets or couplings. Once the joint is complete, these depressions should be carefully infilled, taking care that no voids remain under or around the joint.

Traffic, including heavy construction vehicles, should not be allowed to pass over pipes without suitable protection to the pipes.

Care should be taken to prevent pipes from deviating from their design level and line due to flotation prior to backfilling.

When the pipe is placed in the trench, sufficient working space must be provided on either side of the pipe to ensure adequate placing and compaction of the pipe surround material. The following trench widths, taken from EN 1610: 1997 Table 1, are given as a guide.

INTERNAL DIAMETER (mm)	**MINIMUM SUPPORTED TRENCH WIDTH (m) ***
400 - 700	OD + 0.7
700 - 1200	OD + 0.85
> 1200	OD + 1.0

The above trench widths also apply where the side slopes are >60° to the horizontal.

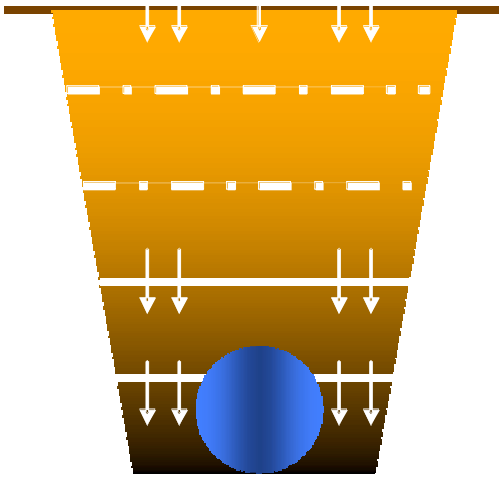
The minimum bed thickness is 100mm in normal soils and 150mm where the trench bottom is rock or hard material.

Surround and Backfill

After the pipes have been laid and joints completed the surround material should be placed and compacted evenly in layers on both sides of the pipes ensuring there is no displacement of the pipe.

Any trench supports should be progressively withdrawn so that the surround can be properly compacted between the pipe and the trench walls. In all cases material should be worked under the pipe haunch to eliminate voids.

Unless otherwise specified the material excavated from the trench may be used for the remainder of the backfill above the required top level of the selected sidefill material. The backfill should be compacted as specified. Mechanical compaction should not be used directly above the pipe until the backfill has reached 300mm above the pipe crown, but suitable light vibrating tampers may be used with discretion at any stage of the work to aid compaction.



WELL INSTALLATION

LAYING SINGLE LEG TANKS AND PIPELINES

Introduction

This method statement covers the site establishment, preliminary ground works associated with the laying of 6m lengths of plastic pipe within a deep excavation.

Pre-Site Setup works

Prior to commencement of excavation works, inspect the PUSWAS drawings issued in conjunction with principle contractor(PC) site staff to identify the position of all identified services from pre-construction works. If any services are present which have not been previously identified, PC to liase with the utilities to physically mark the services out.

Carry out a complete CAT scan of the working area to mitigate the risk of damaging unidentified services. Lift any visible chamber covers within the area to help determine routes and confirm the above mentioned.

If services are identified, mitigation works will take place to reduce the risk of damaging these services.

Permit to Work

PC to issue Permit to Dig document. Following the completion of the site establishment works and the checking of physical constraints identified above PC are to issue the Permit To Dig prior to any vegetation or topsoil stripping works being carried out. The permit must be held by the responsible person.

On receipt of the permit to dig, and pre site setup works preparation works can commence on both sides of the canal bank close to the bridge.

Working Area Preparation:

Due to the Type of the works an easement will be fenced using HARAS type fence panels. Signage will be erected on the fencing to highlight the dangers within the fencing i.e – 'Danger – deep excavation' etc. Further signage identifying the easement access and egress points and warning both our operatives and the general public of any interface points i.e 'Caution – Plant Crossing etc'.

Following a permit to dig being issued by PC works can commence

Excavation will commence under the direction of a competent banks man. On completion of the first 7 meters of excavation 2 number trench boxes will be lifted into the excavation using appropriate lifting equipment. Solid barriers must be erected along perimeter of excavation to prevent falls.

Access to the excavation will be gained via a ladder, which will be fix to the trench support system.

Pipe bedding will be placed into the excavation by use of the excavator with the operative at a safe distance. The bedding will then be graded to the correct level by shovel guided by lazer.

The pipe will be placed and surrounded by bedding. Allowing backfill to commence with compaction taking place at the appropriate depths.

This process should then be continued for the required length of pipe run.

LAYING MULTI-LEG AND PIPELINES

Introduction

This method statement covers the site establishment, preliminary ground works associated with the laying of multi-leg tanks and pipe runs.

Note: For Health and Safety guidelines make reference to the above statement

Pre-Site Setup works

Prior to commencement of excavation works, inspect the PUSWAS drawings issued in conjunction with principle contractor(PC) site staff to identify the position of all identified services from pre-construction works. If any services are present which have not been previously identified, PC to liaise with the utilities to physically mark the services out.

Carry out a complete CAT scan of the working area to mitigate the risk of damaging unidentified services. Lift any visible chamber covers within the area to help determine routes and confirm the above mentioned.

If services are identified, mitigation works will take place to reduce the risk of damaging these services.

Sequence of works

1. Bulk excavation to formation
2. Place bedding (refer to Asset **Design** section of manual)
3. Always install manifold first and lay off this pipe section
4. Place line and level pipes tightening steel bands as you progress (This activity should be undertaking using suitable lifting machinery and equipment).
5. Commence the backfill operation starting at manifold end and progressing as evenly as possible down the length of the tank.
6. Backfill as per recommended method in **Pipe laying** section of manual

7. Where working space between legs has been minimized e.g. 450mm between 1800mm diameter pipes Asset recommends the use of a self transporting/self compacting material such as *8mm Embedment Class S1 value for E'= 5MN/m² (Pipe Zone)*
8. Backfill of suitable material to final formation can then take place.

SUMMARY

The keypoints in the backfilling operations are:

1. Use good quality backfill / surround material.
2. Ensure no voids in surround under haunches.
3. Place backfill material in uniform layers not exceeding 250mm uncompacted thickness.
4. Balance fill either side as fill progresses.
5. Compact each layer before adding next layer.
6. Do not allow construction equipment over the structure, without adequate protection, until required minimum depth of cover is achieved
7. Place and compact backfill parallel to structure.

STANDARD BEDDING AND BACKFILL DETAILS