Unloading & Storage

To reduce the risk of damage, care should be taken in unloading and storing trench material. All material should be stored on level ground. Dunnage should be placed under all bases and road crossing covers. In addition, the dunnage should be placed vertically in-line with underlying dunnage as additional pieces are placed on each stack of material.

Preparation & Excavation

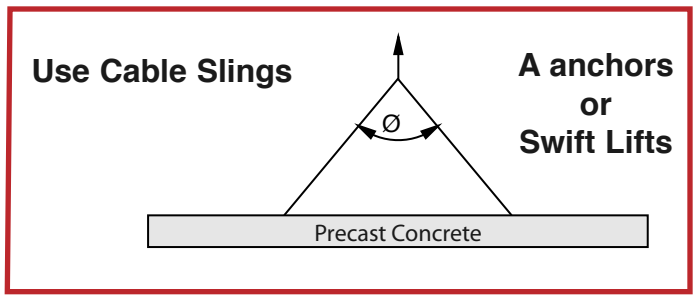
1. The contractor should review the drawings and installation instructions before attempting to install the trench. Establish a starting location, typically at one end of the trench or at a fixed point such as a building or manhole.

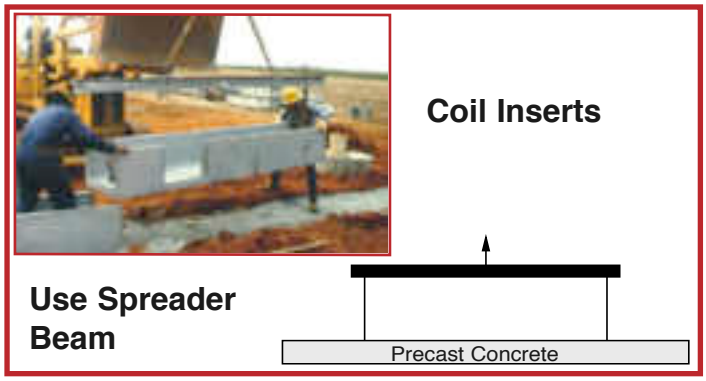
2. Excavate trench to a minimum width for the specified size of trench and to a sub-grade elevation 2"-3" below the bottom of the trench (8"-12" if a drain tile will be placed under the trench). Cut walls as vertical as possible. Deep excavations may require shoring or protection from cave-ins.

3. If a drain tile is used, backfill with crushed stone or pea gravel around the drain tile to within 3" of the trench bottom. A fine, clean backfill material such as sand should then be placed, leveled and compacted to the bottom of trench elevation. For HS20 loading, material should be compacted to 4,000 psf.

Setting Trench Bases

4. All trench bases and lids should be lifted with the coil , A anchors, or swift lift inserts cast into them. If coil inserts are provided, use a spreader beam lifting device (user provided) so that a vertical pull is applied to the coil eye-bolts. If A anchors or swift lift inserts are provided, use cable slings





that are long enough to maintain a 30°-60° angle between the cables at the hook point.

5. A transit or string line should be used to maintain horizontal alignment of the base units. The bases may follow any natural, gentle grade of the area. The first base unit should be set at a fixed point such as a building wall or manhole and subsequent base units placed in sequence so that gapping is minimal. If desired, roofing paper, Con-Wrap sealant, or similar materials may be placed over vertical joints between bases to minimize future silt infiltration.

6. With large trench bases, a chain winch or come-a-long can be attached to the lifting devices to pull the base units together while the crane supports the full weight of one base.

Sealants and Mechanical Connections

7. When installing a trench system that requires water-resistant joints, follow the manufacturers directions for applying the sealant. If sealant is included as part of our design follow the application instructions on the project drawings.

Some installations require a joint sealant material that is applied to the exterior of the base units overlapping the joint. Apply this type sealant material after the base units have been securely set.

8. If a mechanical connection is specified to join the base units, weld the Trenwa supplied steel tie-plate to the weld plates which are embedded in the end of the walls of adjacent bases. Do this after the bases have been securely set and pulled together. Weld the tie-plates prior to removing the chain winch or come-a–long. All exposed weld plates should be treated with a rust inhibitor coating after welding is completed and the trench is securely in place.

9. Any damp proof coating on the base units (if provided) may require touch up after handling.

Backfilling

10. Backfilling should be done with sand or gravel and firmly compacted to the compaction specified in **Step 3.** The backfill can be topped off with excavated soils.

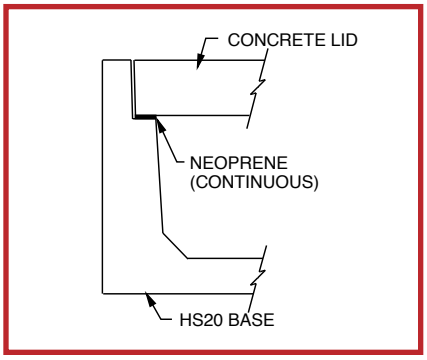
11. With Medium Vehicle and HS20 road crossing trenches, a flowable grout may be placed in the trench excavation after all bases are set so that the grout fills any voids between the bases and the backfill material.

Setting Lids

12. Trench lids can be installed after all cable, piping, insulation, testing, etc. has been completed. Inserts are cast in the Medium Vehicle and HS20 road crossing lids so that lifting devices can be attached. Care must be exercised to maintain an even strain on each lifting insert during lifting and setting of the lids. [Review the instructions for handling the base units in **Step 5**].

13. The lid installation sequence should start at a fixed point (e.g. building, end of trench, manhole, etc.). The lids should match the joint spacing in the base units. Overlapping the joints can create an uneven bearing surface that could cause damage to the lids.

14. For HS20 trenches with concrete lids, Trenwa can provide a neoprene gasket for the lids to bear on to minimize movement that may chip the lids. If provided, place the neoprene strips the full length of the horizontal lid bearing surface on each side of the base.



15. Connect a chain winch or come-a-long to the lifting hardware of the lid being installed and the previous lid. While the crane is supporting the full weight of the lid, pull the lids together, then release the crane support. Pulling the lid with its full weight on the trench may damage the joint sealant on the top of the walls.

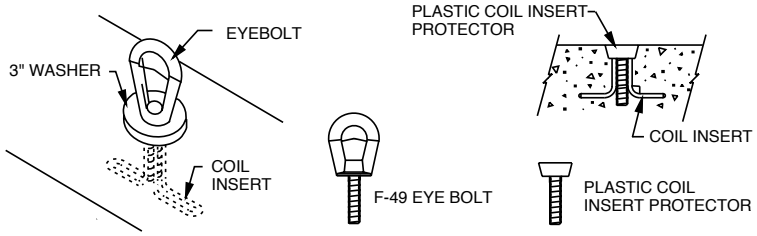
LIFTING DEVICES

Trenwa uses different lifting devices, depending on the project size and type of trench piece.

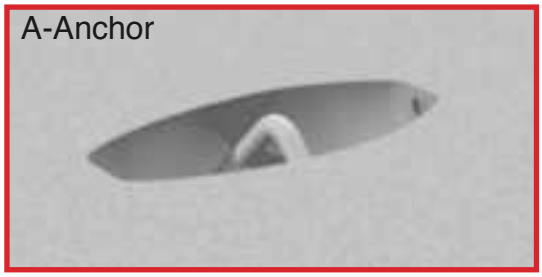
	Coil inserts	Transfix	A anchors	Swift lifts
Pedestrian bases	x			
MV bases	x			o
MV lids		x		
HS20 bases			x	o
HS20 lids	x			o

Swift lifts are optional and cost extra.

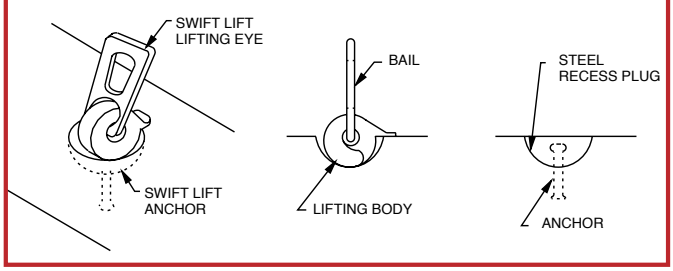
THREADED COIL INSERT & EYEBOLT



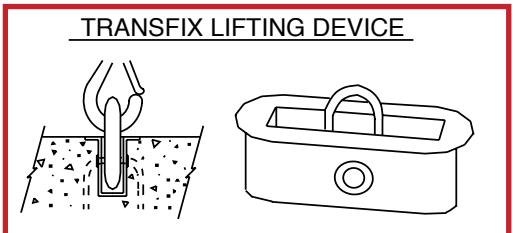
A-Anchor



SWIFT LIFT SYSTEM



TRANSFIX LIFTING DEVICE



Unloading & Storage

To reduce the risk of damage, care should be taken in unloading and storing pallets of trench material. If a forklift is not available for unloading, use a spreader bar to separate lifting cables or chains so material is not pinched. Pallets should be stored on level ground. Dunnage should be placed under road crossing bases and covers. In addition, the dunnage should be placed vertically in-line with underlying dunnage as additional pieces are placed on each stack of material.

Preparation & Excavation

1. The contractor should review the drawings and installation instructions before attempting to install the trench. Establish a starting location, typically at one end of the trench or at a fixed point such as a building or manhole.

2. Excavate trench to a minimum width for the specified size of trench and to a sub-grade elevation 2"-3" below the bottom of the trench (8"-12" if a drain tile will be placed under the trench). Cut walls as vertical as possible. Deep excavations may require shoring or protection from cave-ins.

3. If a drain tile is used, backfill with crushed stone or pea gravel around the drain tile to within 3" of the trench bottom. A fine, clean backfill material such as sand should then be placed, leveled and compacted to the bottom of trench elevation.

Setting Trench Brackets & Sidewalls

4. Support brackets should be set on maximum 5'-0" centers (or less, as required by the layout). After setting each bracket to the required spacing, the bracket should be checked for level and alignment. A transit or string line should be used to maintain horizontal alignment of the brackets. At entrances to hand holes or buildings set trench support brackets on footings provided in foundation construction.

5. After setting the support brackets, place sidewalls on both sides of the support brackets (with the smooth side of the sidewall facing outside) so that they span from the center of one bracket leg to the center of the next bracket leg. Backfill should be placed against the sidewalls as soon as is reasonably possible to hold the sidewalls in place.

6. A minimum 4" bedding of sand should then be placed in the trench to form a level bottom, just covering the support brackets. If required, trench dividers or cable support blocks should be placed in the trench at this time.

Backfilling

7. Backfilling should be done with sand in layers and firmly compacted. Be careful not to over-compact as this can damage the sidewalls The backfill can be topped off with excavated soils.

Setting Lids

8. Trench lids can be installed after all cable has been placed in trench. **Use care in handling and placing pedestrian covers. Impact from dropping a cover can exceed the pedestrian design load and damage the cover.**

9. The lid installation sequence should start at a fixed point (e.g. building, end of trench, manhole, etc.). The lids should match the joint spacing in the base units. Overlapping the joints can create an uneven bearing surface that could damage the lids.