

# Installation Guide for Polyethylene & Fibreglass Underground Tanks



Model Number

Serial Number

Innovative tank solutions...

[www.undergroundtank.co.uk](http://www.undergroundtank.co.uk)

# **IMPORTANT NOTICE**

Although the attached drawings show the V-Tank “Anchoring System”, they are optional extras and not always required – Please refer to the engineering department for further information

When the tank is sitting in the excavation and before back fill commences, please take note of the following points.

- Whether you are using the V-Tank “Anchor” system or not it is advisable to put some water into all the tank chambers of equal levels, to a

**maximum of 300mm deep**

This is to help the tank stay in place and stop the tank from “Riding Up” while the gravel is being put under and around the tank.

- Ensure that the gravel flows under the “Belly” of the tank and all voids are filled.
- Once the gravel back fill has fully supported and cradles the tank upto the tank centre line, additional water can then be added upto the pipe invert level

**If in doubt please contact your nearest V-Tank supplier**

**info@broadwaysystems.co.uk**

**Or call tel: 01753 212897**

**WARNING:**

**OBSERVE ALL OH&S and CONFINED SPACES REQUIREMENTS PRIOR TO ENTERING THE EXCAVATION**

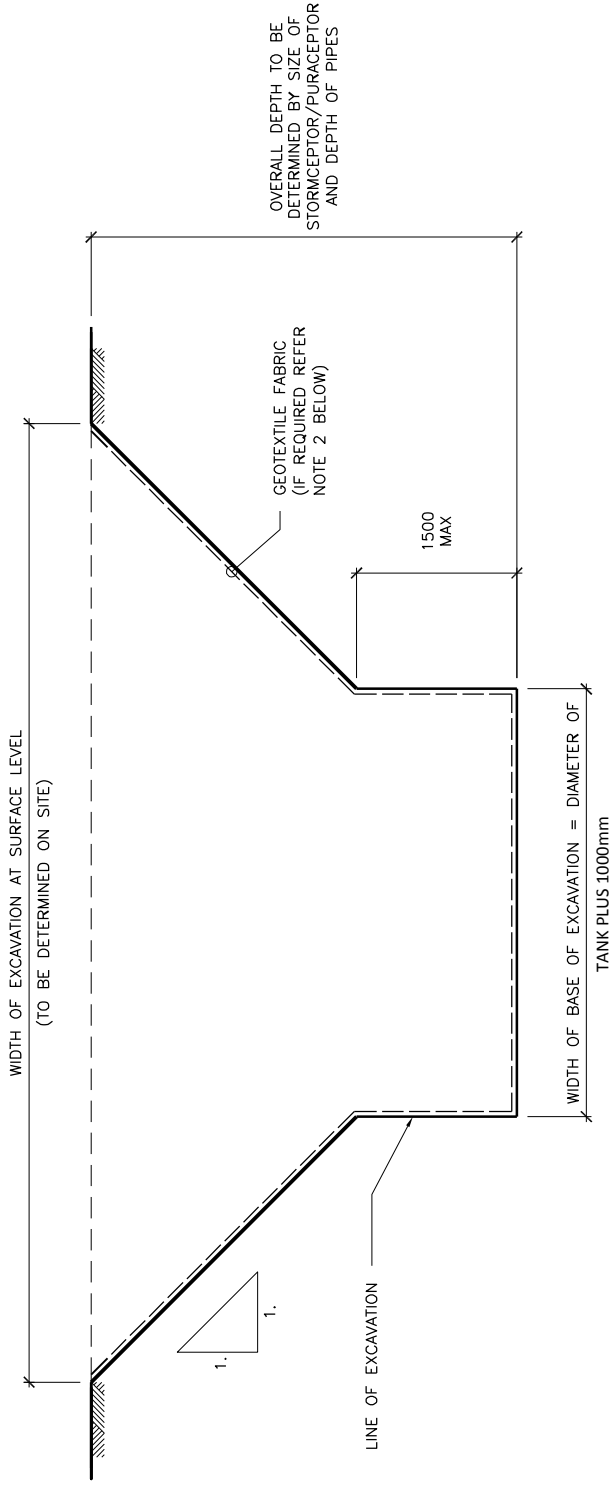
**WARNING NOTICE:**

**INSTALLATION PROCEDURE MUST BE IN ACCORDANCE WITH INSTRUCTION & GUIDANCE MANUAL SUPPLIED WITH THE EQUIPMENT. FOR DETAILED INFORMATION REFER TO ENGINEERS DEPARTMENT.**

# Index

<b>Excavation Detail Drawings:</b>			<b>Page</b>
Option 1	Open Excavation	Non trafficable	4 - 8
Option 2	Shored Excavation	Non trafficable	9 - 13
Option 3	Open Excavation	Trafficable	14 - 18
Option 4	Shored Excavation	Trafficable	19 - 23
Typical Access Manhole Cover Installation			24 - 25
<b>Approved Backfill Specifications</b>			<b>26 - 27</b>
<b>Anchor System Details:</b>			
Anchor Mode:	SA.1500 - 1		28 - 29
Anchor Model:	SA. 1500 - 2		30 - 31
Anchor Model:	SA 3000 - 2		32 - 33
Strap Model:	TD 75		35
<b>Inlet and outlet connections</b>			<b>37</b>
<b>Joining multiple tanks together</b>			<b>37</b>
<b>Suitable backfill materials</b>			<b>38-39</b>
<b>Installation of vertical and horizontal Pump Stations</b>			<b>40-43</b>

## **Open Excavation Non Trafficable Drawings**



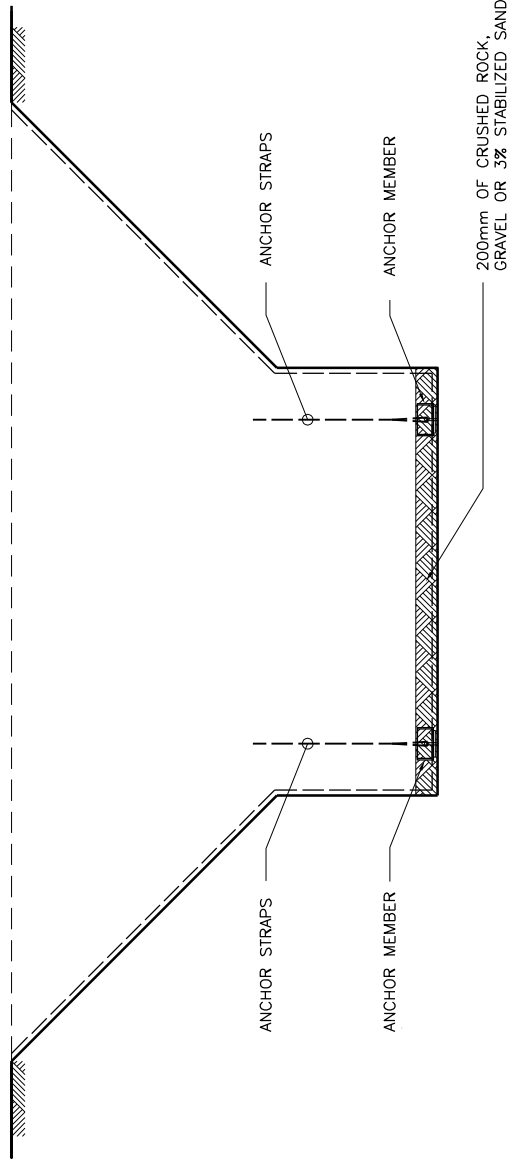
### Stage 1

A : EXCAVATE TO PROFILE SHOWN

### Typical Installation Procedure

- NOTE :**
1. ACCESS PERMITTED TO EXCAVATION DURING CONSTRUCTION
  2. DEPENDING ON EXISTING SOIL CONDITIONS, SUPPLY AND LAY GEOTEXTILE FABRIC TO PERIMETER OF EXCAVATION. FIX GEOTEXTILE FABRIC INTO POSITION ON SIDES OF VERTICAL EXCAVATION.

<b>Page-Green &amp; Associates Pty Ltd</b> CONSULTING ENGINEERS 5 Villamanto St, Geelong West Phone (03) 52 221899 Fax (03) 52 298382 Email pge@pipeline.com.au	Project Typical Installation Details : Option A Non - Trafficable	Design d.c.g. Date April 09	Drawn a.h. Scale 1:50
	Location 13402 - Details Ref No <b>13402 - DA1</b>		



### Stage 2

- B : SUPPLY AND POSITION ANCHOR MEMBERS COMPLETE WITH ANCHOR STRAPS
- C : SUPPLY, LAY AND COMPACTED TO 98% STANDARD COMPACTION  
200mm OF CRUSHED ROCK/GRAVEL  
OR 200mm OF 3% CEMENT STABILIZED SAND TO BASE OF EXCAVATION.  
STABILIZED SAND TO CURE PRIOR TO PROCEEDING TO STAGE 3.

### Backfill M

ALL BACKFILL (UNLESS OTHERWISE NOTED ON THESE DR

A. GRAVEL :

CLEAN NATURALLY ROUNDED AGGREGATE OF  
A NOMINAL SIZE OF 4.75mm TO 19mm

B. CRUSHED ROCK OR CRUSHED GRAVEL :

ALL CRUSHED AGGREGATE SHALL BE WASHED  
WITH A NOMINAL SIZE OF 4.75mm TO 13.2mm  
(LESS THAN 3% PASSING A No. 8 SIEVE)

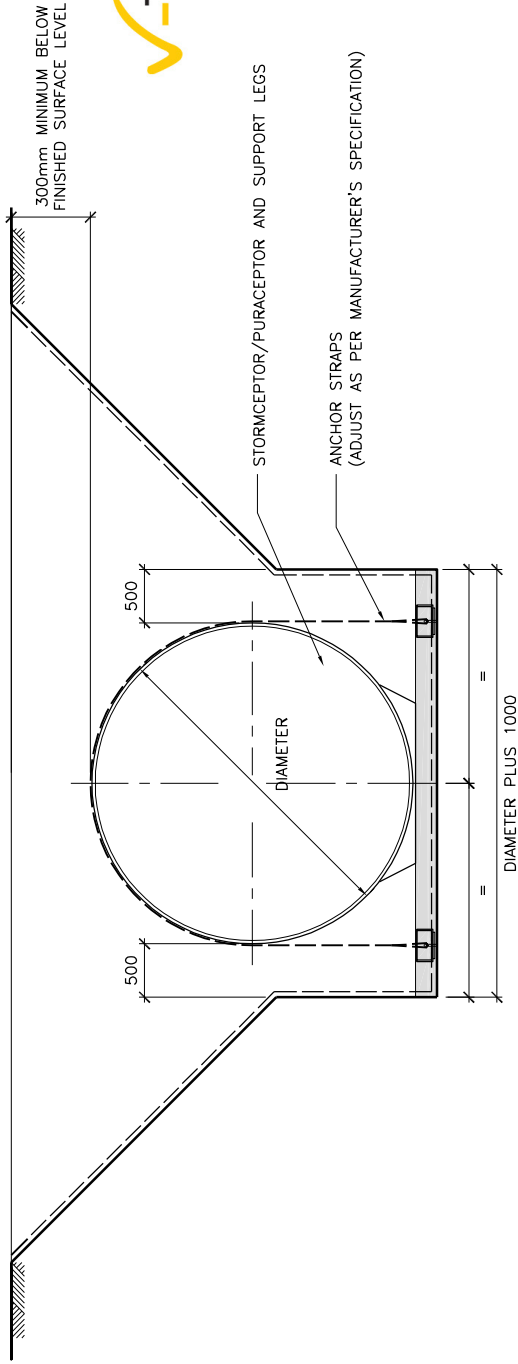
Project  
Location

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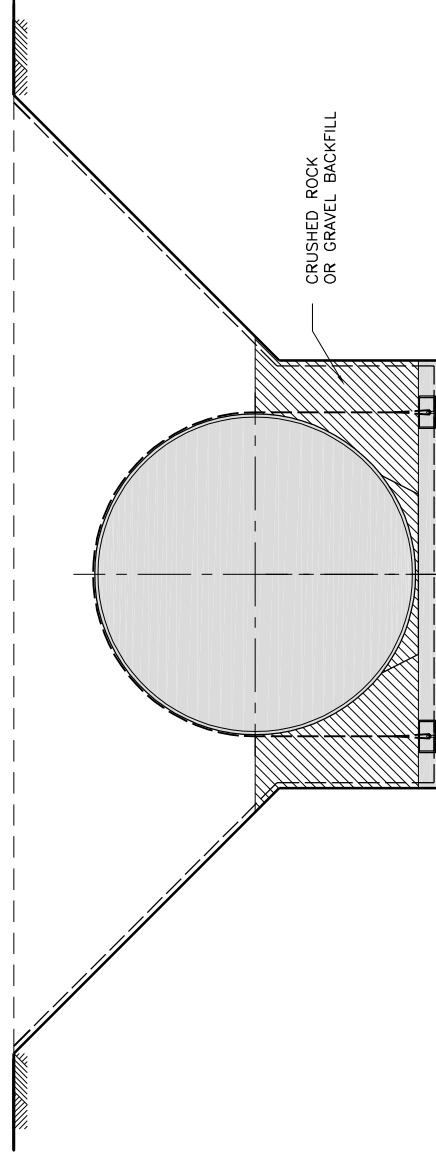
Typical Installation Details : Option A  
Non - Trafficable

Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
AutoCad Filename 13402-Details	Ref No 13402-DA2



**Stage 3**

D : FIT V-Tank INTO EXCAVATION AND FIX INTO POSITION WITH ANCHOR STRAPS



**Stage 4**

E : BACKFILL WITH CRUSHED ROCK OR GRAVEL  
 PUSH AND COMPACT UNDER TANK  
 FULLY COMPACT IN 150mm LAYERS DRY RODDED DENSITY  
 SHALL BE NOT LESS THAN 1500Kg/CUBIC METRE

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	Location	Ref No <b>13402-DA3</b>	

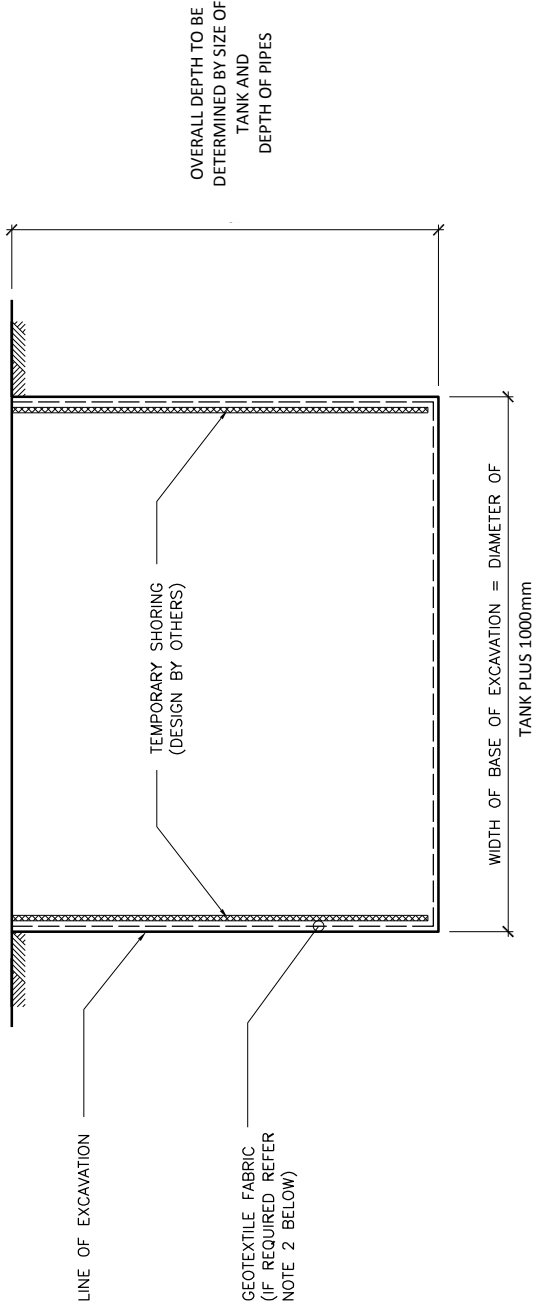




# Option 2

## Shored excavation Non Trafficable Drawings





### Stage 1

A : EXCAVATE TO PROFILE SHOWN

### Typical Installation Procedure

- NOTE :
1. FIT TEMPORARY SHORING TO VERTICAL SIDES OF EXCAVATION (DESIGN OF SHORING AND RECOVERY SYSTEM BY OTHERS)
  2. ACCESS PERMITTED TO EXCAVATION DURING CONSTRUCTION AFTER INSTALLATION OF SHORING
  3. DEPENDING ON EXISTING SOIL CONDITIONS, SUPPLY AND LAY GEOTEXTILE FABRIC TO PERIMETER OF EXCAVATION. PIN GEOTEXTILE FABRIC INTO POSITION ON SIDES OF VERTICAL EXCAVATION.

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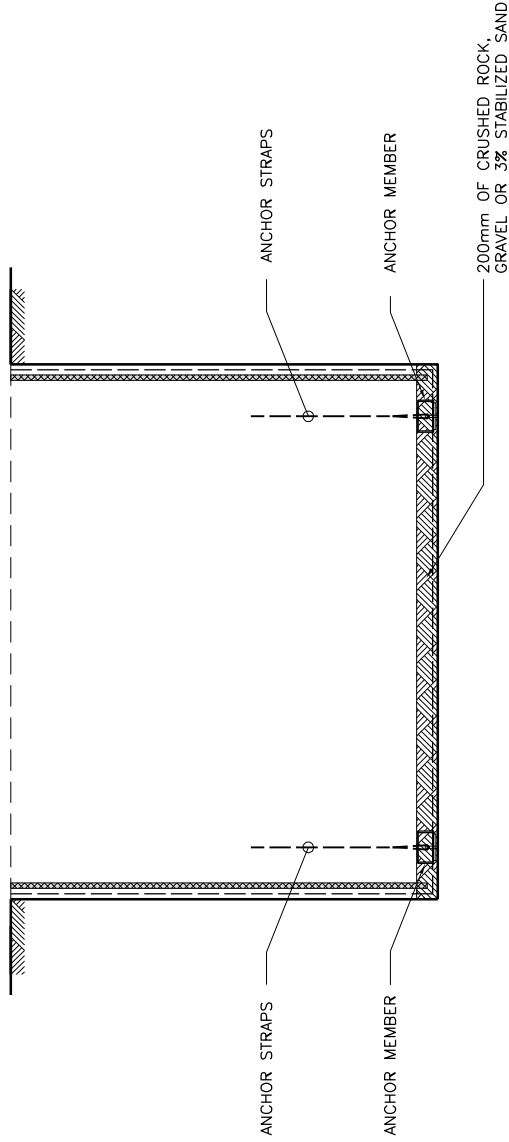
5 Villamanto St, Geelong West  
 Phone (03) 52 221899 Fax (03) 52 298382  
 Email pga@pipeline.com.au

Project

Typical Installation Details : Option B  
 Non-Trafficable : Excavation Shored

Location

Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
Autocad Filename 13402-Details	Ref. No 13402-DB1



### Stage 2

- B : SUPPLY AND POSITION ANCHOR MEMBERS COMPLETE WITH ANCHOR STRAPS
- C : SUPPLY, LAY AND COMPACTED TO 98% STANDARD COMPACTION  
200mm OF CRUSHED ROCK/GRAVEL  
OR 200mm OF 3% CEMENT STABILIZED SAND TO BASE OF EXCAVATION.  
STABILIZED SAND TO CURE PRIOR TO PROCEEDING TO STAGE 3.

### Backfill Material

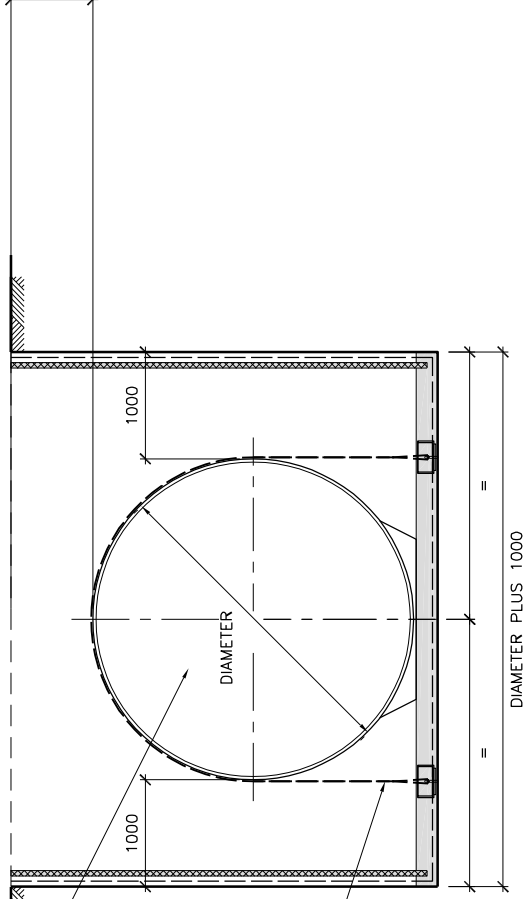
ALL BACKFILL (UNLESS OTHERWISE NOTED ON THESE DRAWINGS) SHALL BE : -

- A. GRAVEL :  
CLEAN NATURALLY ROUNDED AGGREGATE OF  
A NOMINAL SIZE OF 4.75mm TO 19mm
- B. CRUSHED ROCK OR CRUSHED GRAVEL :  
ALL CRUSHED AGGREGATE SHALL BE WASHED  
WITH A NOMINAL SIZE OF 4.75mm TO 13.2mm  
(LESS THAN 3% PASSING A No. 8 SIEVE)

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	Location	AutoCad Filename 13402-Details Ref No <b>13402-DB2</b>	

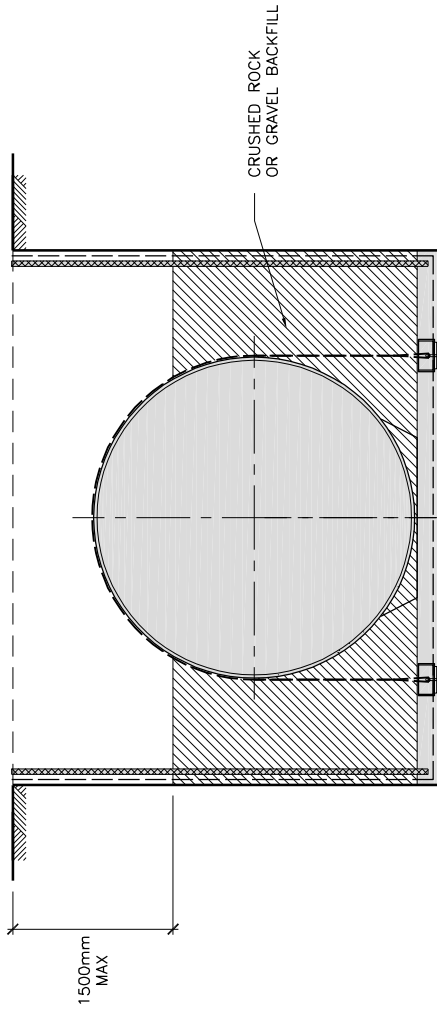


300mm MINIMUM BELOW FINISHED SURFACE LEVEL



**Stage 3**

D : FIT V-Tank INTO EXCAVATION AND FIX INTO POSITION WITH ANCHOR STRAPS



**Stage 4**

E : BACKFILL WITH CRUSHED ROCK OR GRAVEL  
 PUSH AND COMPACT UNDER TANK  
 FULLY COMPACT IN 150mm  
 SHALL BE NOT LESS THAN 1500Kg/CUBIC METRE

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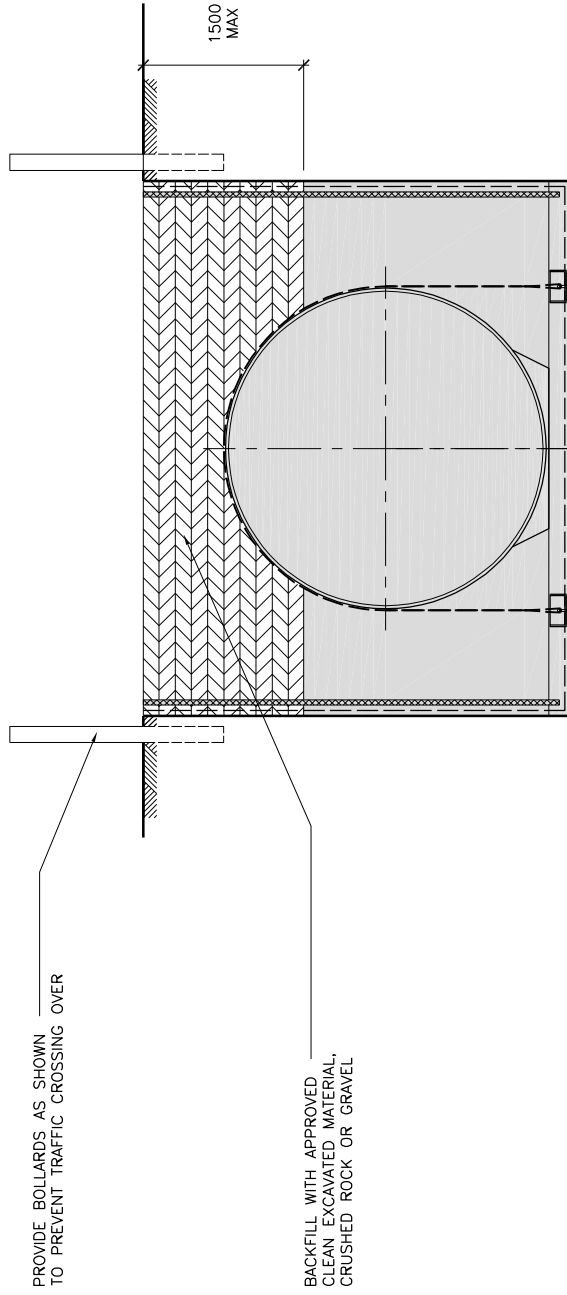
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Project

Typical Installation Details : Option B  
 Non-Trafficable : Excavation Shored

Location

Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
AutoCad Filename 13402-Details	Ref No 13402-DB3



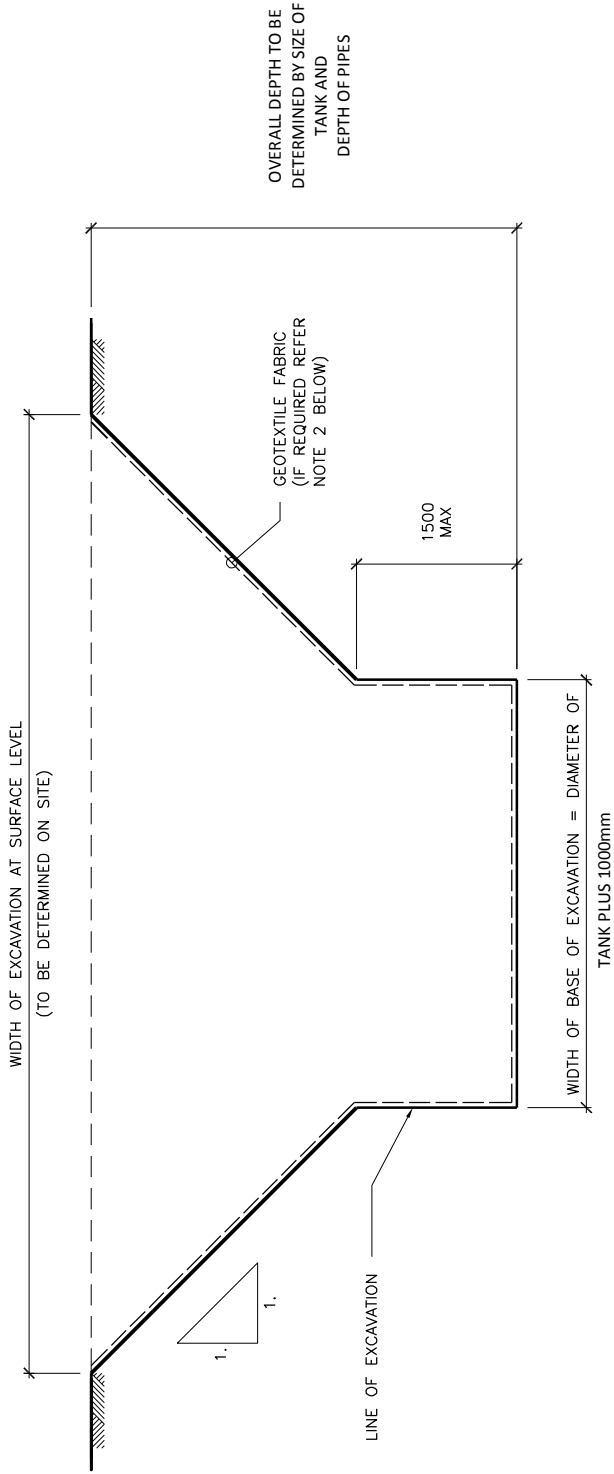
### Stage 5

F : BACKFILL OVER THE TANK WITH APPROVED EXCAVATED MATERIAL, CRUSHED ROCK OR GRAVEL FULLY COMPACTED IN 150mm LAYERS

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	Location	AutoCad Filename 13402-Details Ref No <b>13402-DB4</b>	

## Open Excavation Trafficable Drawings





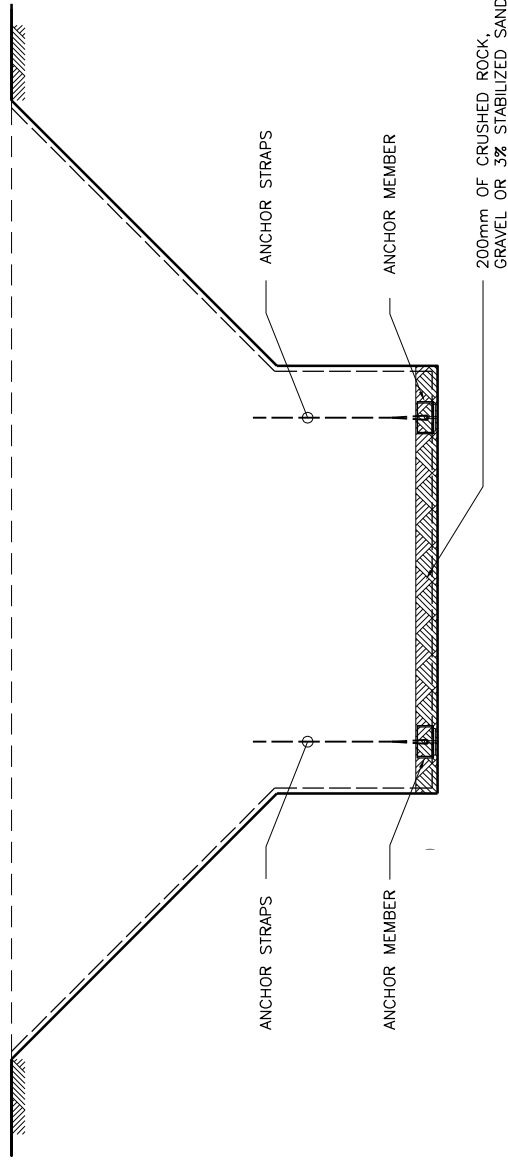
### Stage 1

A : EXCAVATE TO PROFILE SHOWN

### Typical Installation Procedure

- NOTE :**
1. ACCESS PERMITTED TO EXCAVATION DURING CONSTRUCTION
  2. DEPENDING ON EXISTING SOIL CONDITIONS, SUPPLY AND LAY GEOTEXTILE FABRIC TO PERIMETER OF EXCAVATION. FIX GEOTEXTILE FABRIC INTO POSITION ON SIDES OF VERTICAL EXCAVATION.

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	Location 13402-Details Ref No <b>13402-DC1</b>		



### Stage 2

- B : SUPPLY AND POSITION ANCHOR MEMBERS COMPLETE WITH ANCHOR STRAPS
- C : SUPPLY, LAY AND COMPACTED TO 98% STANDARD COMPACTION  
200mm OF CRUSHED ROCK/GRAVEL  
OR 200mm OF 3% CEMENT STABILIZED SAND TO BASE OF EXCAVATION.  
STABILIZED SAND TO CURE PRIOR TO PROCEEDING TO STAGE 3.

### Backfill Material

ALL BACKFILL (UNLESS OTHERWISE NOTED ON THESE DRAWINGS) SHALL BE : -

- A. GRAVEL :  
CLEAN NATURALLY ROUNDED AGGREGATE OF  
A NOMINAL SIZE OF 4.75mm TO 19mm
- B. CRUSHED ROCK OR CRUSHED GRAVEL :  
ALL CRUSHED AGGREGATE SHALL BE WASHED  
WITH A NOMINAL SIZE OF 4.75mm TO 13.2mm  
(LESS THAN 3% PASSING A No. 8 SIEVE)

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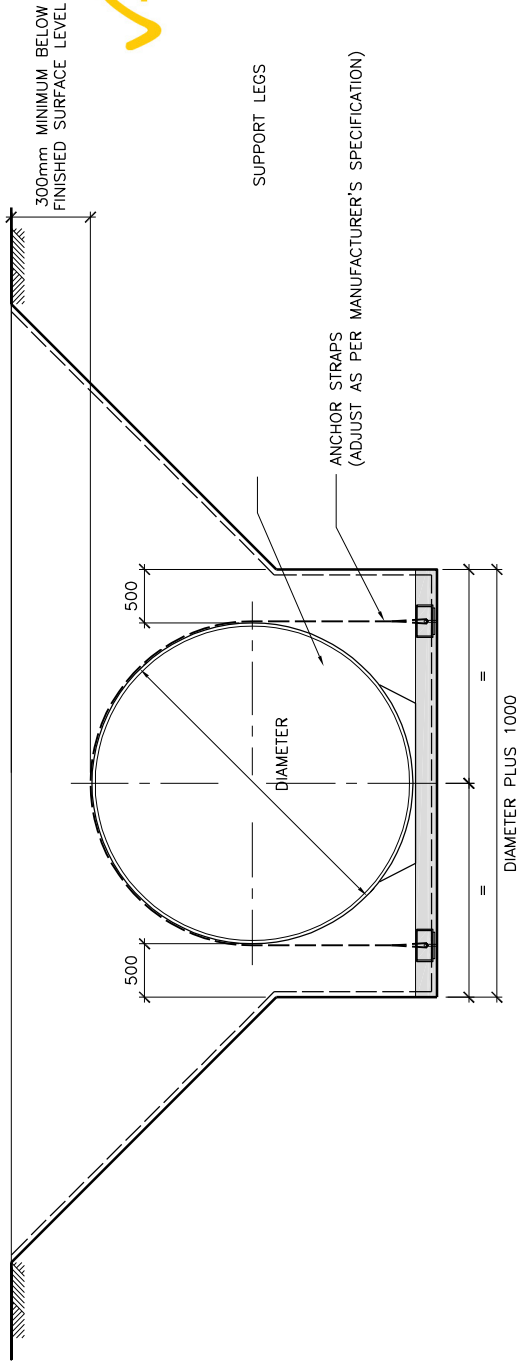
Project

Typical Installation Details : Option A  
Trafficable

Location

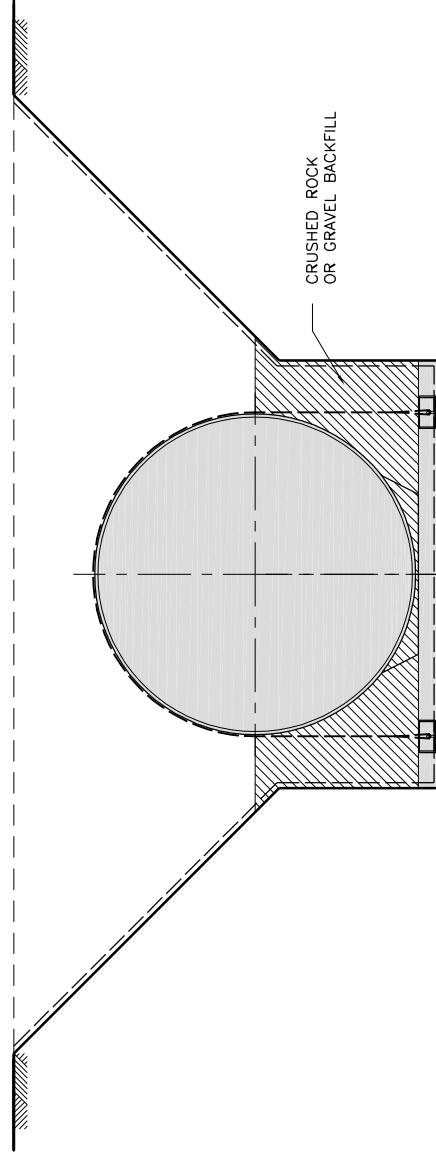
Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
Autocad Filename 13402-Details	Ref No 13402-DC2





**Stage 3**

D : FIT V-Tank INTO EXCAVATION AND FIX INTO POSITION WITH ANCHOR STRAPS



**Stage 4**

E : BACKFILL WITH CRUSHED ROCK OR GRAVEL  
 PUSH AND COMPACT UNDER TANK  
 FULLY COMPACT IN 150mm LAYERS DRY RODDED DENSITY  
 SHALL BE NOT LESS THAN 1500Kg/CUBIC METRE

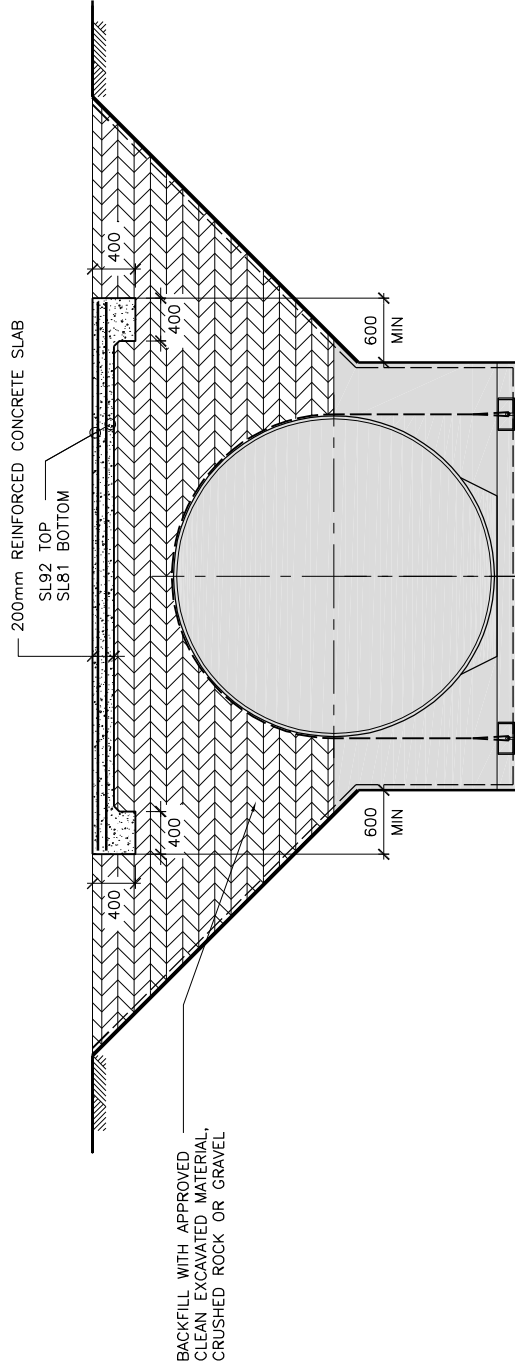
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 Email pge@pipeline.com.au

Project  
 Location

Typical Installation Details : Option A  
 Trafficable

Design	Down
d.c.g.	a.h.
Date	Scale
April 09	1:50
AutoCad Filename	
13402-Details	
Ref. No	
<b>13402-DC3</b>	-



### Stage 5

F : BACKFILL AROUND AND OVER THE TANK  
WITH APPROVED EXCAVATED MATERIAL, CRUSHED ROCK OR GRAVEL  
FULLY COMPACTED IN 150mm LAYERS

G : REINFORCE AND POUR CONCRETE SLAB : CONCRETE SHALL BE GRADE 32

Project	Typical Installation Details : Option A			Design d.c.g.	Down a.h.
	Trafficable			Date April 09	Scale 1:50
Location				AutoCad Filename 13402-Details	
				Ref. No 13402-DC4	-

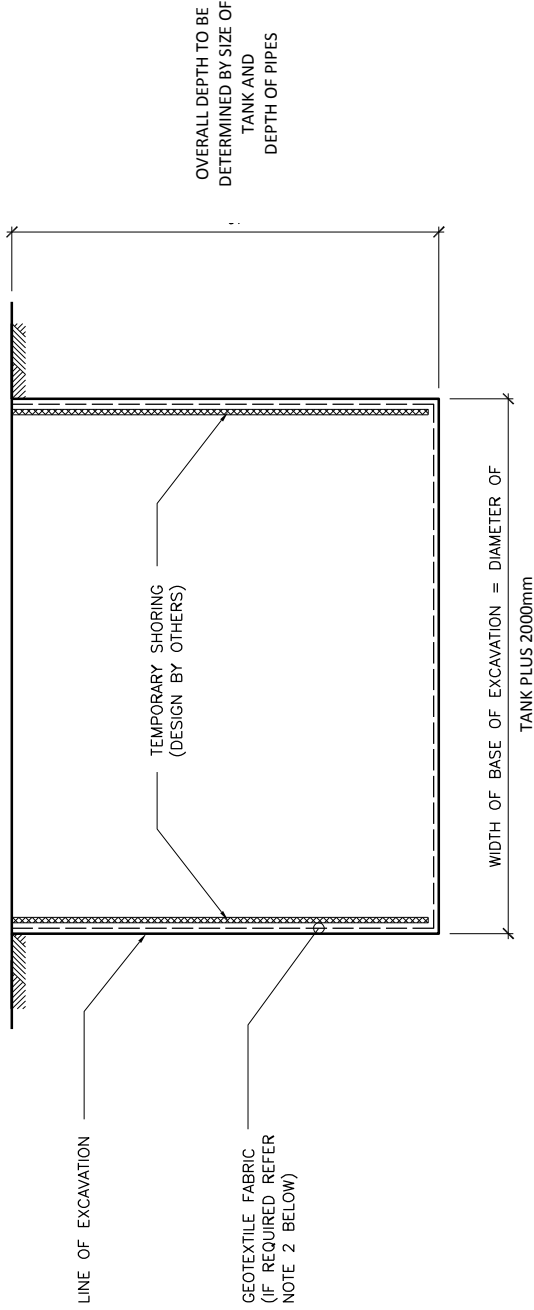
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# Option 4

## Shored Excavation Trafficable Drawings





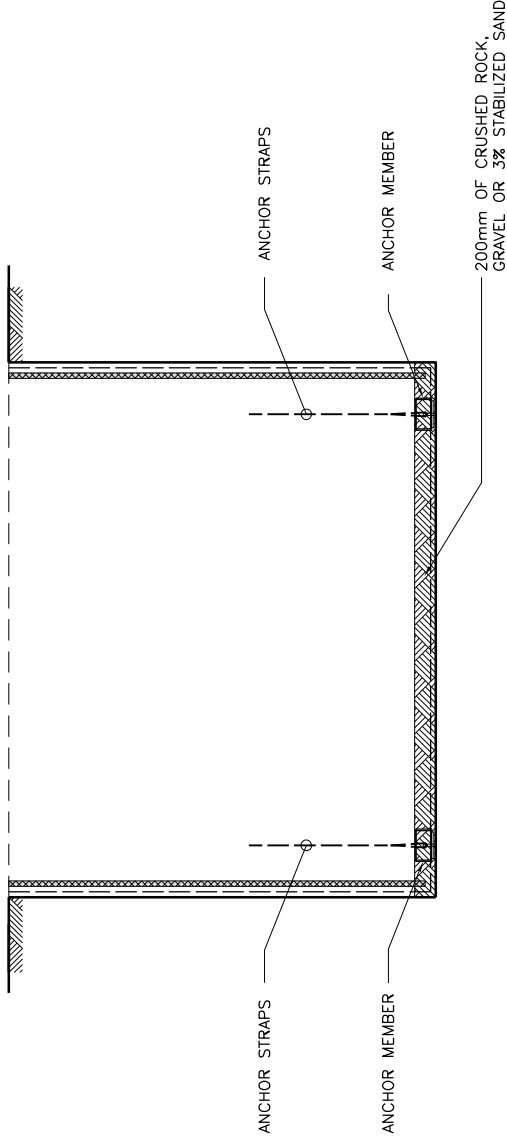
### Stage 1

A : EXCAVATE TO PROFILE SHOWN

### Typical Installation Procedure

- NOTE :
1. FIT TEMPORARY SHORING TO VERTICAL SIDES OF EXCAVATION (DESIGN OF SHORING AND RECOVERY SYSTEM BY OTHERS)
  2. ACCESS PERMITTED TO EXCAVATION DURING CONSTRUCTION AFTER INSTALLATION OF SHORING
  3. DEPENDING ON EXISTING SOIL CONDITIONS, SUPPLY AND LAY GEOTEXTILE FABRIC TO PERIMETER OF EXCAVATION. PIN GEOTEXTILE FABRIC INTO POSITION ON SIDES OF VERTICAL EXCAVATION.

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	Location	Date April 09	Scale 1:50
		AutoCad Filename 13402-Details	Ref. No 13402-DD1
		Typical Installation Details : Option B Trafficcable	



### Stage 2

- B : SUPPLY AND POSITION ANCHOR MEMBERS COMPLETE WITH ANCHOR STRAPS
- C : SUPPLY, LAY AND COMPACTED TO 98% STANDARD COMPACTION  
200mm OF CRUSHED ROCK/GRAVEL  
OR 200mm OF 3% CEMENT STABILIZED SAND TO BASE OF EXCAVATION.  
STABILIZED SAND TO CURE PRIOR TO PROCEEDING TO STAGE 3.

### Backfill Material

ALL BACKFILL (UNLESS OTHERWISE NOTED ON THESE DRAWINGS) SHALL BE : -

- A. GRAVEL :  
CLEAN NATURALLY ROUNDED AGGREGATE OF  
A NOMINAL SIZE OF 4.75mm TO 19mm
- B. CRUSHED ROCK OR CRUSHED GRAVEL :  
ALL CRUSHED AGGREGATE SHALL BE WASHED  
WITH A NOMINAL SIZE OF 4.75mm TO 13.2mm  
(LESS THAN 3% PASSING A No. 8 SIEVE)

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Email [page@pipeline.com.au](mailto:page@pipeline.com.au)

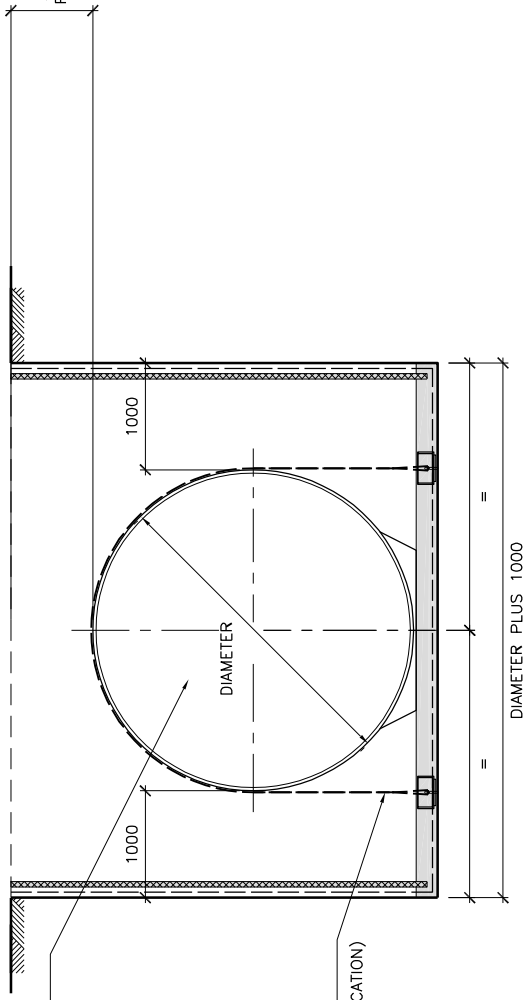
Project

Typical Installation Details : Option B  
Trafficable

Location

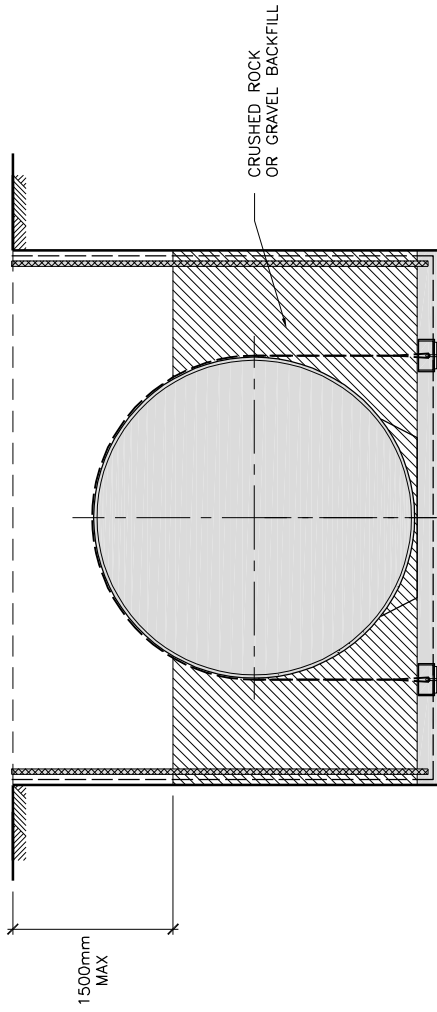
Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
AutoCad Filename 13402-Details	Ref No 13402-DD2

300mm MINIMUM BELOW FINISHED SURFACE LEVEL



**Stage 3**

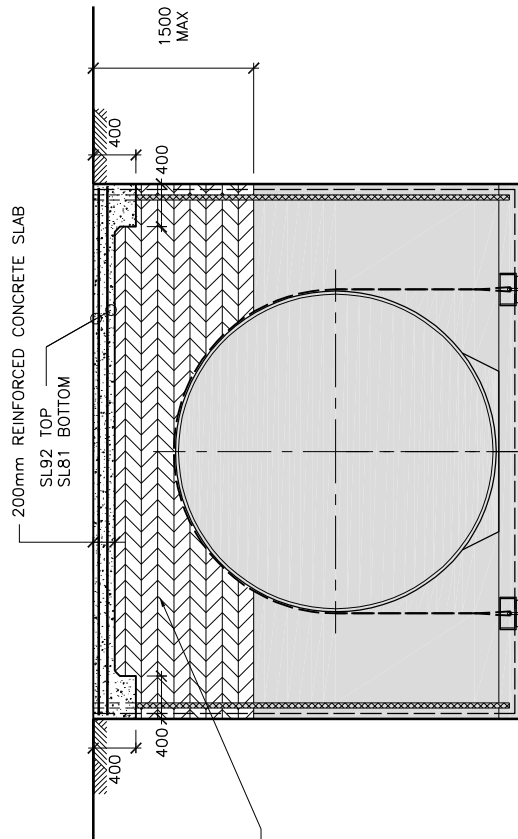
D : FIT V-Tank INTO EXCAVATION AND FIX INTO POSITION WITH ANCHOR STRAPS



**Stage 4**

E : BACKFILL WITH CRUSHED ROCK OR GRAVEL  
 PUSH AND COMPACT UNDER TANK  
 FULLY COMPACT IN 150mm LAYERS DRY RODDED DENSITY  
 SHALL BE NOT LESS THAN 1500Kg/CUBIC METRE

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	<p>Location</p>	<p>Date April 09</p>	<p>Scale 1:50</p>
<p>Typical Installation Details : Option B                  Trafficable</p>	<p>Autocad Filename 13402-Details</p>	<p>Ref No 13402-DD3</p>	<p>-</p>



BACKFILL WITH APPROVED  
CLEAN EXCAVATED MATERIAL,  
CRUSHED ROCK OR GRAVEL

### Stage 5

F : BACKFILL OVER THE TANK  
WITH APPROVED EXCAVATED MATERIAL, CRUSHED ROCK OR GRAVEL  
FULLY COMPACTED IN 150mm LAYERS

G : REINFORCE AND POUR CONCRETE SLAB : CONCRETE SHALL BE GRADE 32

Project

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Email pge@pipeline.com.au

Typical Installation Details : Option B  
Trafficable

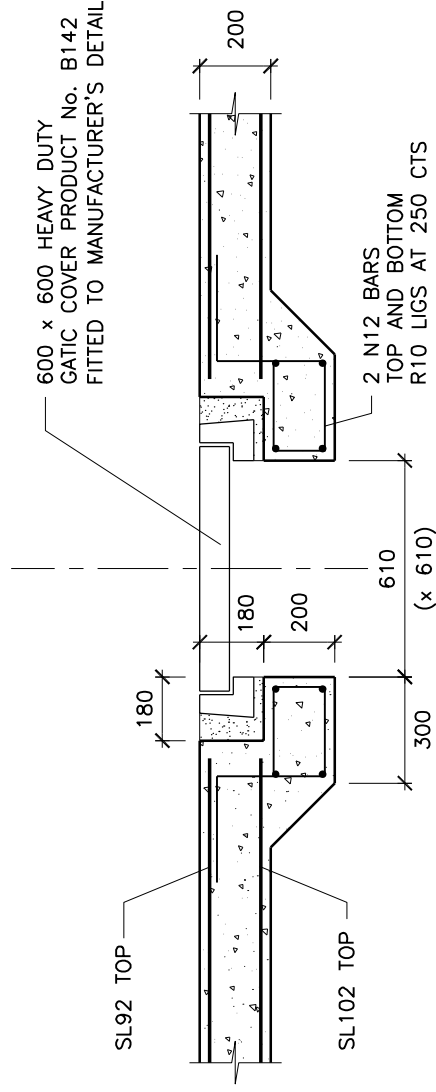
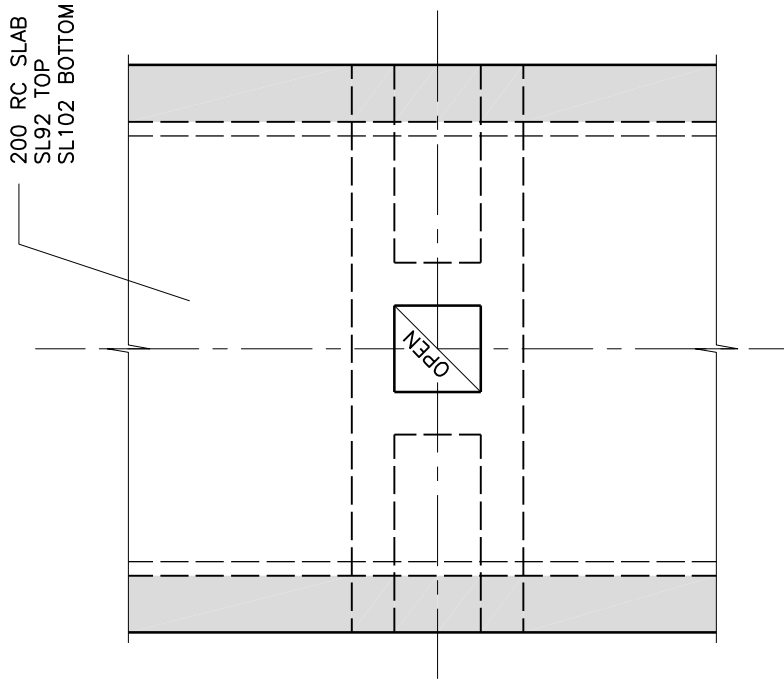
Location

Design d.c.g.	Down a.h.
Date April 09	Scale 1:50
AutoCad Filename 13402-Details	Ref No 13402-DD4

# Typical Access Manhole Cover Installation Drawing







### Part Plan Layout

### Typical Section at Access Manhole

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A.C.N. 005 432 137  
CONSULTING STRUCTURAL & CIVIL ENGINEERS  
5 VILLAMANTA STREET, GEELONG WEST 3218  
PHONE: (03) 5222 1899 FAX: (03) 5229 8382 email : pga@pipeline.com.au

Project:  
Typical Installation Details  
with ground water, Trafficable

Client:

Designer d.c.g.	Date Jan 06
Drawn a.h.	Scale 1:50,20
Job No	-

# Approved Backfill Specifications



## V-Tank Approved Backfill Specifications

### NOTES

The backfill is for the entire tank excavation terminating at the underside of the concrete slab, irrespective of ground conditions, line the excavation with Geofab (Filter Fabric) class A24 to separate native soil from the approved backfill.

The correct backfill medium is one of the critical factors in the successful installation of a inground fibreglass tank.

We insist on backfill compliance prior to starting any installation works.

Request your backfill supplier to certify that the backfill meets this specification in writing by providing a sieve analysis document, which can be kept for your records.

Confirm with your supplier in advance that your backfill will meet or exceed the following:

### SPECIFICATIONS

All aggregate shall conform to British Standards, The dry rodded density shall not be less than 1500 kg/cu m.

Backfill shall be either gravel, crushed stone, crushed gravel sourced from a reputable quarry with a size grading as follows:

Gravel: A clean naturally rounded aggregate of a nominal size range of 19 to 4.75mm.

Crushed Stone or Crushed Gravel: Washed crushed stone or gravel of a nominal size range of 13.2 to 4.75mm.

Note: The backfill should not have more than 3% passing a No:8 sieve (2.36mm).

## IMPORTANT NOTICE

When the tank is sitting in the excavation and before back fill commences, please take note of the following points.

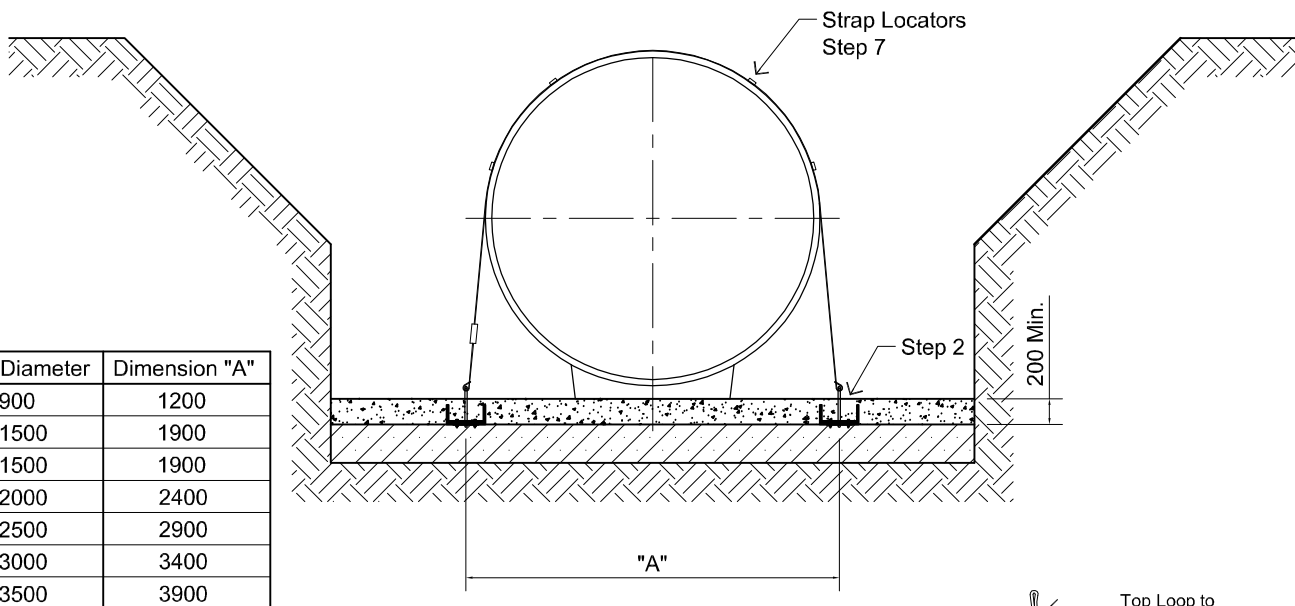
- **Whether you are using the V-Tank “Anchor” system or not it is advisable to put some water into all the tank chambers of equal levels, to a maximum of 300mm deep**
- **This is to help the tank stay in place and stop the tank from “Riding Up” while the gravel is being put under and around the tank.**
- **Ensure that the gravel flows under the “Belly” of the tank and all voids are filled.**
- **Once the gravel back fill has fully supported and cradles the tank upto the tank centre line, additional water can then be added upto the pipe invert level**

**If in doubt please contact your nearest V-Tank supplier**

# Anchor System Detail Drawings



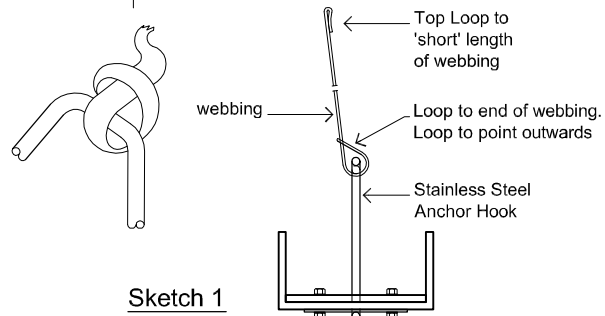




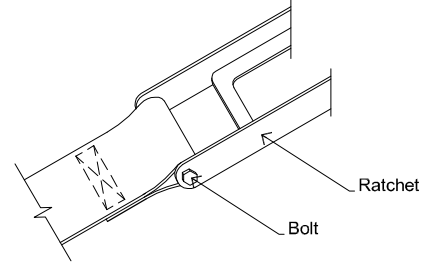
Tank Diameter	Dimension "A"
Ø900	1200
Ø1500	1900
Ø1500	1900
Ø2000	2400
Ø2500	2900
Ø3000	3400
Ø3500	3900

**Installation Procedure for Deadman Anchors**

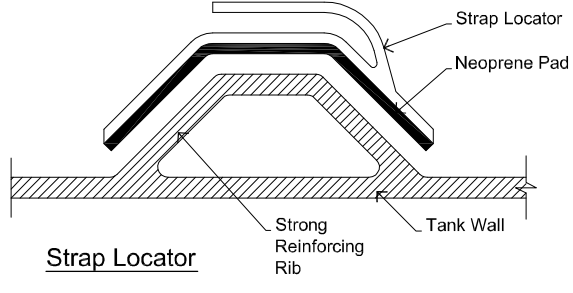
- Step 1. Check Contents of set.
- Step 2. Place Anchors on prepared level gravel base parallel to tanks as drawn. Anchor Points must align with designated marked (><) ribs, plus or minus 25mm. Then cover Anchors with 200mm of gravel.
- Step 3. Using the 'short' length of webbing, pass the loop of the webbing through the Anchor Hook, bringing it back on itself, then pass the remaining webbing through the loop and pull tight. (Sketch 1)
- Step 4. Taking the ratchet, remove the bolt. Place the top loop of the 'short' length of webbing between the opening from where the bolt has been removed and replace the bolt. (Sketch 2) Note: The arm of the ratchet should be facing outwards.
- Step 5. Attach the 'long' length of the webbing to the opposite Anchor Hook, in a similar way to that described in Step 3. Then throw the remaining length of webbing over the tank, making sure that the webbing is not twisted.
- Step 6. Slide the GRP strap locators on to the 'long' length of webbing and position the locators as shown in drawing above.
- Step 7. Taking the end of the 'long' length of webbing, thread it through the slot of the ratchet and tighten uniformly to snug tension, but cause no deflection. Deflection can be checked by measuring diameter before and after tensioning webbing.
- Step 8. On completion, the ratchet tensioners should be well wrapped in 'DENSO' or similar tape for long term protection if the tank is surrounded in pea gravel or similar backfill.



Sketch 1



Sketch 2




Strap Locator


**WARNING:**  
OBSERVE ALL OH&S and CONFINED SPACES REQUIREMENTS PRIOR TO ENTERING THE EXCAVATION

**WARNING NOTICE:**  
INSTALLATION PROCEDURE MUST BE IN ACCORDANCE WITH INSTRUCTION & GUIDANCE MANUAL SUPPLIED WITH THE EQUIPMENT. FOR DETAILED INFORMATION REFER TO ENGINEERS DEPARTMENT.

SA1500-1 Kit Contents List
1 off Deadman Anchors - 1500 long
1 off 5 tonne Ratchet Strap Assemblies
4 off Strap Locators
3 Rolls 'DENSO' Tape or equivalent

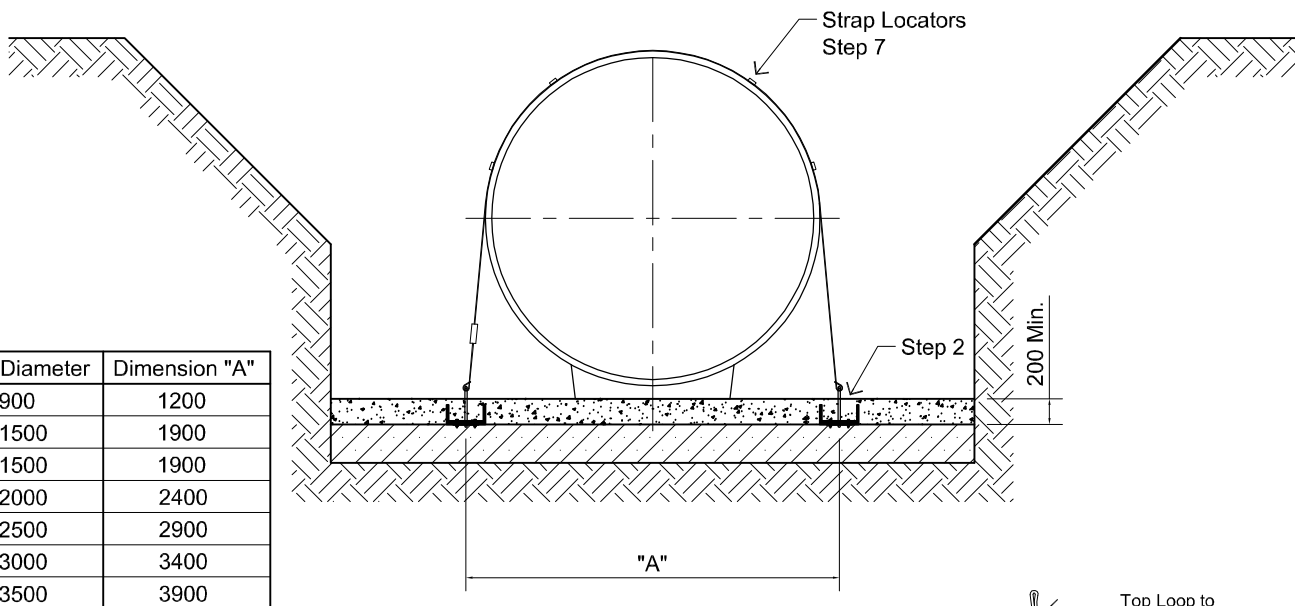
DATE	REVISION	BY
29.10..09	Original Issue	MCW



Installation Procedure for  SA1500-1 Anchor Kit

DRAWN	CHECKED	SCALE	DRAWING NUMBER
M.Watts	NEP	NTS	SA1500-1-IP

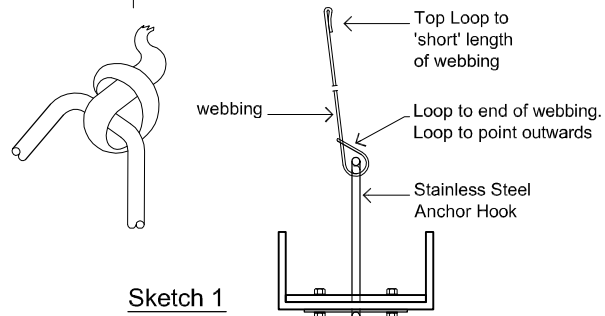




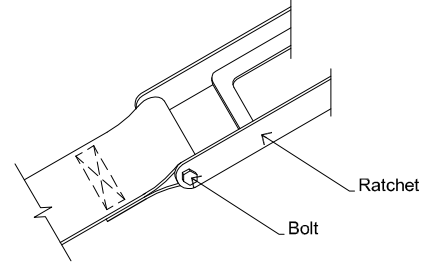
Tank Diameter	Dimension "A"
Ø900	1200
Ø1500	1900
Ø1500	1900
Ø2000	2400
Ø2500	2900
Ø3000	3400
Ø3500	3900

**Installation Procedure for Deadman Anchors**

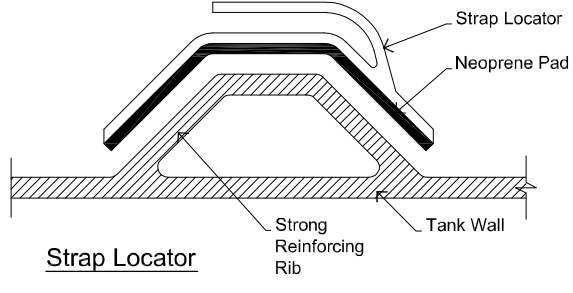
- Step 1. Check Contents of set.
- Step 2. Place Anchors on prepared level gravel base parallel to tanks as drawn. Anchor Points must align with designated marked (><) ribs, plus or minus 25mm. Then cover Anchors with 200mm of gravel.
- Step 3. Using the 'short' length of webbing, pass the loop of the webbing through the Anchor Hook, bringing it back on itself, then pass the remaining webbing through the loop and pull tight. (Sketch 1)
- Step 4. Taking the ratchet, remove the bolt. Place the top loop of the 'short' length of webbing between the opening from where the bolt has been removed and replace the bolt. (Sketch 2) Note: The arm of the ratchet should be facing outwards.
- Step 5. Attach the 'long' length of the webbing to the opposite Anchor Hook, in a similar way to that described in Step 3. Then throw the remaining length of webbing over the tank, making sure that the webbing is not twisted.
- Step 6. Slide the GRP strap locators on to the 'long' length of webbing and position the locators as shown in drawing above.
- Step 7. Taking the end of the 'long' length of webbing, thread it through the slot of the ratchet and tighten uniformly to snug tension, but cause no deflection. Deflection can be checked by measuring diameter before and after tensioning webbing.
- Step 8. On completion, the ratchet tensioners should be well wrapped in 'DENSO' or similar tape for long term protection if the tank is surrounded in pea gravel or similar backfill.



Sketch 1



Sketch 2


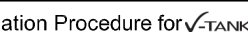


Strap Locator

**WARNING:**  
OBSERVE ALL OH&S and CONFINED SPACES REQUIREMENTS PRIOR TO ENTERING THE EXCAVATION

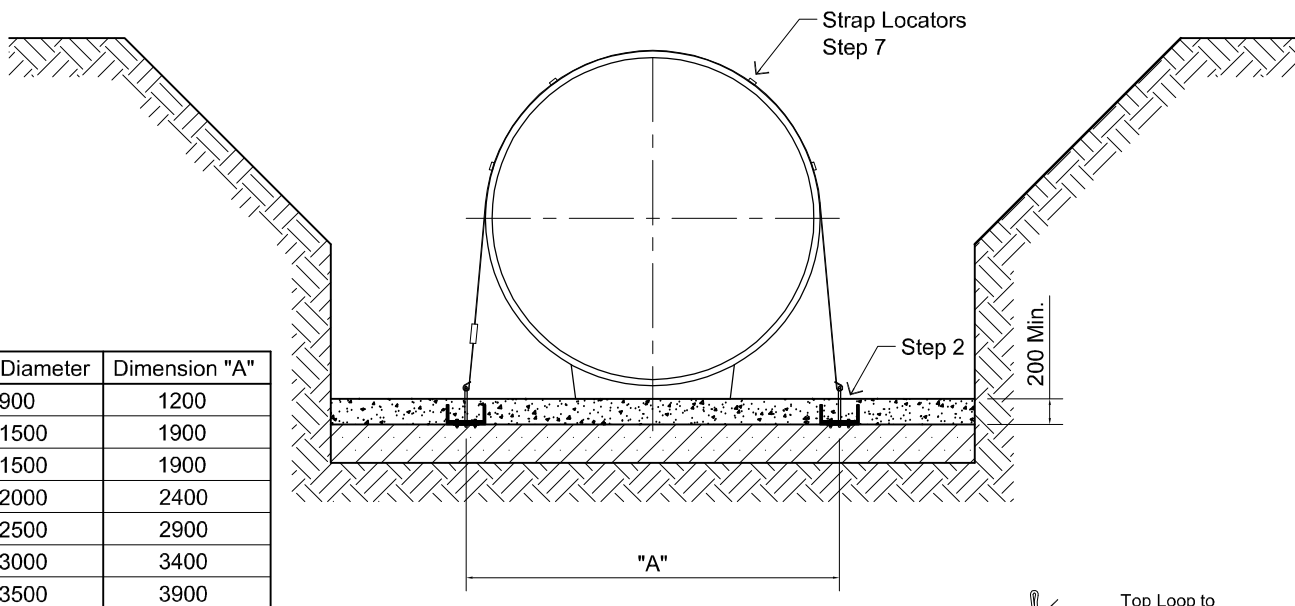
**WARNING NOTICE:**  
INSTALLATION PROCEDURE MUST BE IN ACCORDANCE WITH INSTRUCTION & GUIDANCE MANUAL SUPPLIED WITH THE EQUIPMENT. FOR DETAILED INFORMATION REFER TO ENGINEERS DEPARTMENT.

SA1500-2 Kit Contents List
2 off Deadman Anchors - 1500 long
2 off 5 tonne Ratchet Strap Assemblies
8 off Strap Locators
6 Rolls 'DENSO' Tape or equivalent

DATE	REVISION	BY				
29.10..09	Original Issue	MCW				
			Installation Procedure for  SA1500-2 Anchor Kit			
			DRAWN	CHECKED	SCALE	DRAWING NUMBER
			M.Watts	NEP	NTS	SA1500-2-IP



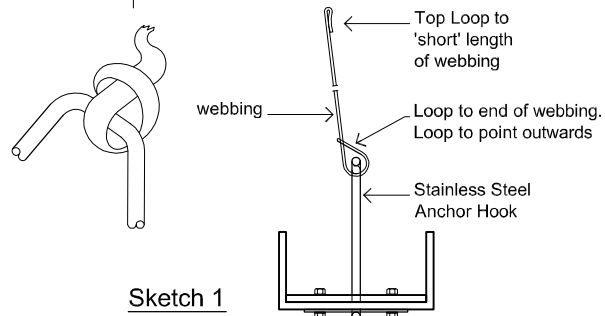




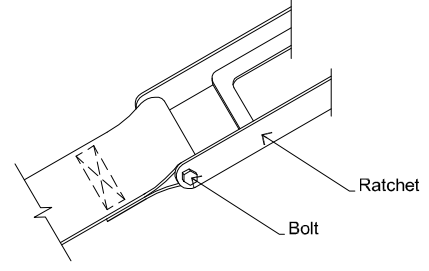
Tank Diameter	Dimension "A"
Ø900	1200
Ø1500	1900
Ø1500	1900
Ø2000	2400
Ø2500	2900
Ø3000	3400
Ø3500	3900

**Installation Procedure for Deadman Anchors**

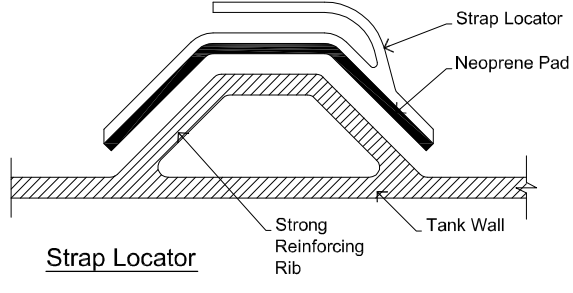
- Step 1. Check Contents of set.
- Step 2. Place Anchors on prepared level gravel base parallel to tanks as drawn. Anchor Points must align with designated marked (><) ribs, plus or minus 25mm. Then cover Anchors with 200mm of gravel.
- Step 3. Using the 'short' length of webbing, pass the loop of the webbing through the Anchor Hook, bringing it back on itself, then pass the remaining webbing through the loop and pull tight. (Sketch 1)
- Step 4. Taking the ratchet, remove the bolt. Place the top loop of the 'short' length of webbing between the opening from where the bolt has been removed and replace the bolt. (Sketch 2) Note: The arm of the ratchet should be facing outwards.
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- Step 6. Slide the GRP strap locators on to the 'long' length of webbing and position the locators as shown in drawing above.
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- Step 8. On completion, the ratchet tensioners should be well wrapped in 'DENSO' or similar tape for long term protection if the tank is surrounded in pea gravel or similar backfill.



Sketch 1



Sketch 2




Strap Locator

**WARNING:**  
OBSERVE ALL OH&S and CONFINED SPACES REQUIREMENTS PRIOR TO ENTERING THE EXCAVATION

**WARNING NOTICE:**  
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SA3000-2 Kit Contents List
2 off Deadman Anchors - 3000 long
2 off 5 tonne Ratchet Strap Assemblies
8 off Strap Locators
6 Rolls 'DENSO' Tape or equivalent

DATE	REVISION	BY
29.10..09	Original Issue	MCW



Installation Procedure for √-TANK  
SA3000-2 Anchor Kit

DRAWN	CHECKED	SCALE	DRAWING NUMBER
M.Watts	NEP	NTS	SA3000-2-IP

# V-Tank Anchor Straps

MODEL: TD 75

5000kgs Lashing capacity



V-Tank anchor straps are a high quality tiedown system produced by 'SECURE-A-LOAD' and are suitable for medium duty commercial applications.

The construction of the system is tested with the 75 mm x 10 Mtr strapping manufactured from 100% polyester having a "Breaking" strength of 11 100 kgs.

The ratchet buckle is type 45 steel with 2mm side plates, the metal hook and keeper are "20 Mn2" steel and they are all zinc plated, gold chromate, these components are further protected, when buried, by being wrapped in "Denso" waterproofing tape, prior to back fill.

# **Inlet and outlet connections**

## **Joining multiple tanks together**



## Inlet & Outlets

Inlet and outlet connections can be prefitted on the tanks prior to delivery to site or using the V-Tank Inlet seal kit, inlets can be installed on site.



Large groutable inlet for concrete



Various types of connections



Drill required hole



Insert V-Tank rubber seal

After installation of connecting pipework to inlet and outlet connections, the pipework must be tested to suitable standards to ensure no leaks.

When using the V-Tank Inlet seal, it is important to use the correct size holesaw on diameters up to 200mm and thereafter using a jigsaw to accurately cut the correct size hole otherwise the seal will not be watertight.



Ready for pipe insertion

## Connecting Multiple Tanks



Flexseal coupling to connect all types of pipe up to 1200mm



Low level interconnecting pipework



Low level interconnecting pipework

Multiple tanks can be installed together to increase the overall capacity of storage, commonly used where the diameter of the tank is kept to a minimum to reduce the digging depth. The PP range of tanks inlet outlet connections range from 50mm to 225mm. The GRP tanks range from 50mm up to 1200mm. The joints can be fusion welded PP, flexseal couplings or even push fit PVC.





✓-TANK



# **Installation of vertical & horizontal Pump Station tanks**





## **All V-Tank underground tanks must be installed according to these instructions.**

The local authority and the local region of the Environment Agency should also be consulted as to whether any particular code applies to installation. Failure to follow these installation instructions will make void our warranty and may result in tank failure.

### **Site access and conditions**

It is the responsibility of the contractor to ensure suitable access to good hard ground that is safe and suitable for off-loading.

### **Wide/long loads**

Where the tank is of such size that police/private escort is required delivery times given are estimates only. In the event of delays outside our control eg. police re-routing or escort delays, the extra charges that result will be forwarded to the contractor.

### **Off-loading/handling**

The contractor is responsible for off-loading. The tank must be handled with care to prevent accidental damage from impact or contact with sharp objects.

Tanks should be lifted using slings, not chains or wire ropes. Do not drag tanks along the ground for any distance and avoid jarring or bumps. Do not lift with water in the tank. (See page 42)

### **Storage**

Set tank on smooth ground free of bricks and sharp objects. Chock/tie down to prevent movement in high winds. (See page 2)

### **Tank dimensions**

Dimensions given on drawings and literature shall be subject to manufacturing tolerances and should be checked physically prior to installation.

### **Installation procedures**

The alternative methods of installation depend on the ground conditions, water table, the tank's location and whether the tank is fitted with feet or not.

Installation should be carried out by a competent contractor in accordance with the above procedures, Health & Safety at Work legislation and good building practice.

It is not possible to cover every condition in these instructions, therefore if in doubt contact

### **Tank specification**

Check that you have received the correct specification tank.

V-Tank underground tanks are available in specifications to suit invert depths, concrete or pea gravel surround and ground water conditions; standard, heavy, extra heavy and special.

For most applications the standard or heavy specifications are adequate. If the tank invert depth and/or water table depth is outside the range we shall be pleased to advise accordingly.

### **Siting V-Tank septic tanks**

British Standard BS 6297: 1983 recommends that sewage treatment works should be as far from habitable buildings as is economically practicable. The direction of the prevailing wind should be considered in relation to any properties when siting the works.

In accordance with the Building Regulations 2000. H2 2002 edition V-Tank septic tanks should be sited at least 7m from any habitable parts of buildings, and preferably downslope.

The tank should not be installed near a road or driveway, where it could be subjected to high external loads, unless the installation is designed to withstand such loadings so they are not transferred to the tank shell.

Where the tank is to be emptied using a tanker, it should be sited within 30m of a vehicle access provided that the invert level of the septic tank is no more than 3m below the level of the vehicle access. This distance may need to be reduced where the depth to the invert of the tank is more than 3m. There should also be a clear route for the hose such that the tank can be emptied and cleaned without hazard to the building occupants and without the contents being taken through a dwelling or place of work.

### **Siting V-Tank cesspools**

V-Tank cesspools should be sited at least 7m from any habitable building and preferably downslope. They should however be sited within 30m of a sludge removal tanker access and at such levels and position to operate and

### **Extension access shafts**

Check if extension shafts are required.

These are available in 500mm high increments.

Note: Where coalescer units or pumps are incorporated that require guide rails, or ladders are fitted, the height of the extension access shaft/s should be measured accurately before ordering.

### **Health and safety**

Installation should be carried out by a competent contractor in accordance with the above procedures, Health & safety at Work legislation and good building practice.

A warning notice should be visible at the top of each access shaft – 'danger, harmful fumes' and 'respirators must be worn in this tank'. Before entering persons must be qualified in accordance with 'confined space'

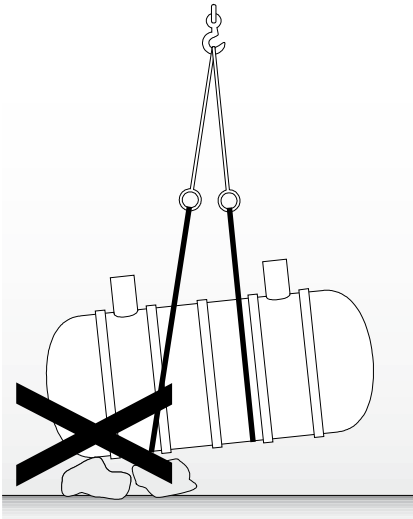
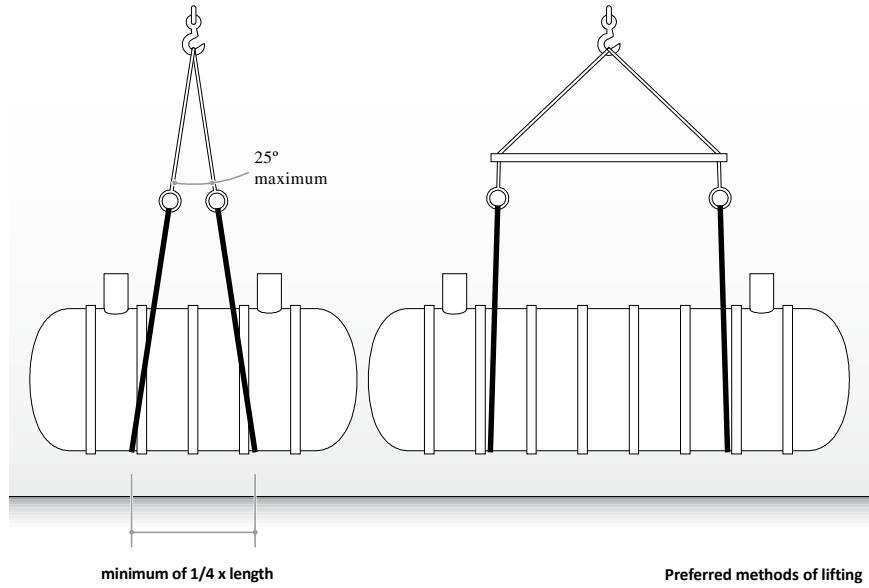


Information contained in this data sheet is approximate and for general guidance only. In accordance with the company's policy of constant improvement and development The Broadway Group reserves the right to change the specification without prior notice.

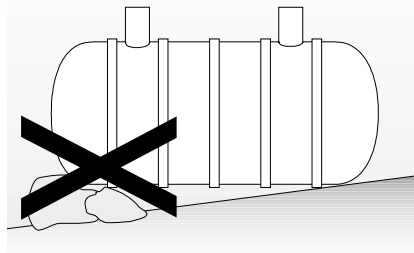
## Lifting, handling and storage

### Lifting and handling – preferable methods

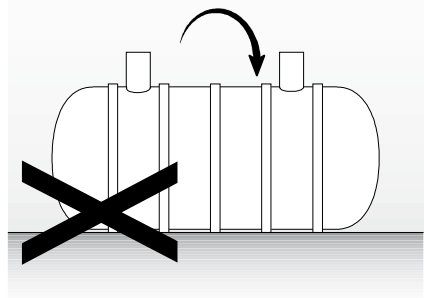
- Do not roll or drop tanks. Only move tanks by lifting. Rolling tanks could damage fittings.
- Tanks can be lifted using slings/webbing straps as illustrated.
- Where necessary a spreader bar should be used.
- Guide the tank with guide lines.
- Never use chains or steel cables around tank shell
- Do not drag tanks along ground for any distance.
- Avoid jarring or bumps.
- Do not lift with liquid in the tank.
- Set tanks on smooth ground, free of rocks or other sharp objects.



Never drag along the ground or lift unevenly



Place tanks on smooth, level ground



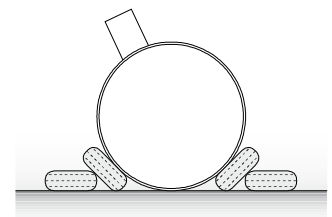
Do not roll or drop tank



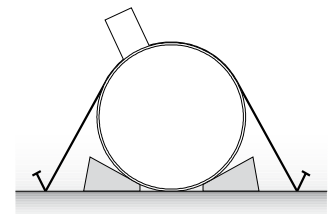
### Storage – preferable methods

If tanks have to be stored temporarily prior to installation, they should be located:

- in an area where the chance of accidental damage or vandalism will be minimised.
- on a flat surface free from small or sharp objects
- with efficient temporary anchorage to prevent high winds causing damage



Prevent any movement



Tie down against high winds

### Preliminary

Determine the size of the excavation from the

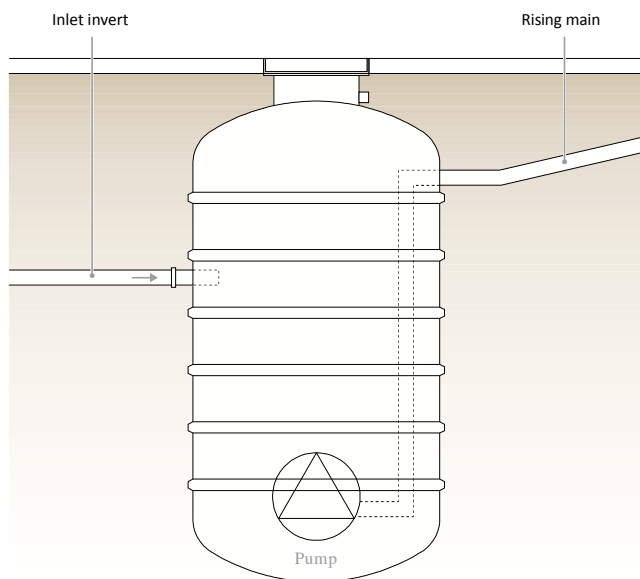
dimensions of the tank and the incoming drain invert depth allowing for a minimum of 200-250mm (250-300mm for 500/600 Series tanks) of concrete all round the tank. Where difficult ground conditions or the possibility of external loading exist, the concrete surround should be designed accordingly, i.e. extra thickness and/or the use of reinforcing.

### Excavation

Excavate allowing for easy placing of the tank and concrete and for consolidating concrete around the bottom half of the tank when backfilling. Allowance should be made for any timbering or sheeting that may be required.

If the base of the excavation is of unstable ground - loose gravel, running sand, landfill type areas, peat, swamp or in clay areas subject to swelling/shrinking etc., excavate to allow for 250-3000mm of hardcore and cover with a polythene membrane prior to placing concrete.

A typical pumping station installation



### Procedure

1. Pour concrete base to correct depth and level off. Base to be reinforced as necessary.
2. When this concrete has set sufficiently, place the tank in position, check for levels including inlet/outlet inverts and fill with water in accordance with table below. Ensure concrete slab is clean ready for placing concrete surround. Surround should preferably be placed within 48hrs of casting the base slab.
3. Place backfill concrete (ST4 mix) up to the depth of the water in the tank ensuring the concrete is properly consolidated under the tank to prevent voids. Consolidate by hand – do not using vibrating poker.
4. Continue by placing concrete around the tank at the same time filling with water to equalise pressure and resist floatation. Where the tank is divided into chambers ensure all chambers are filled equally.
5. Connect up pipework, seat access shaft into socket and apply waterproof mastic/ adhesive, or as applicable.
6. Top up the tank with water to invert level and place remainder of concrete to a depth of approximately 250mm above the top of the tank. Where extension access shafts are fitted, these can be surrounded in concrete once the main tank surround concrete has set. Important: Before surrounding circular or rectangular shafts with concrete, shutter internally to support the sides and safeguard against distortion.
7. Where the concrete slab over the tank is to take vehicle loading, it should be reinforced in accordance with good practice to take the maximum load and should be extended onto unexcavated ground. It is important that vehicle loading is not transferred to the tank itself.
8. Incorporate inspection cover frames in the normal manner.

- SPEL package pumping station installations**
- Adam Pfeifer (Hall Cough Swcetz), Manchester
  - Agecroft Prison, Manchester (3 stations)
  - Asda Stores, Crawley
  - Ashford Prison, Ashford Middlesex
  - B&Q Stores, Belvedere
  - B&Q Stores, Plymouth
  - Cambridge County Council
  - Gatwick Airport
  - Heathrow Terminal 5 Control Tower
  - HMS Collingwood, (3 stations)
  - HMS Faslane, (balancing station)
  - Marchington Prison, Severn Trent Water
  - National Police Training College, Ryton
  - Neasden Depot, London Underground
  - NEC, Birmingham
  - RAF Lakenheath
  - Saltash Tunnel, dump tank
  - Southend College
  - Whittlesford
  - Maintenance Depot, M11 South Barnes

Excavation details (mm)	1000mm & 1200mm Ø	1800mm Ø	2600mm Ø	3500mm Ø	4000mmØ
Minimum hardcore thickness – dependent upon ground conditions	100	200	250	300	300
Concrete base slab thickness	150	150	220-240	240-300	250-300
Maximum initial water fill depths prior to backfilling	200	300	400	500	500
Tank internal diameters	1200	1800	2600	3500	4000
Tank external diameter including ribs	1080&1250	1875	2700	3650	4150





TM

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[www.undergroundtank.co.uk](http://www.undergroundtank.co.uk)

The Broadway Group

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