

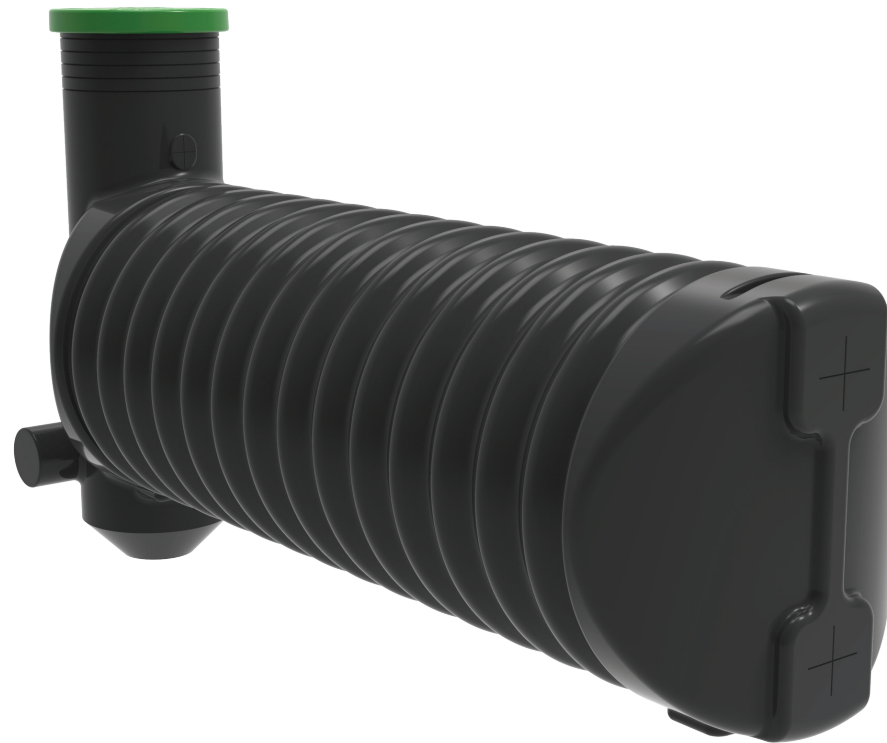


Made to Order Economy.



Doing Good From The Ground Up

StormLite® Installation & Engineering Guide



StormLite® Installation & Engineering Guide

Ph: 09 263 7741 or 0800 263 774, 49 McLaughlins Rd, Wiri 2104, PO Box 12663 Auckland 1642,
sales@apd.co.nz - www.apd.co.nz

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Drawing Notes

These drawings shall be read in conjunction with all architectural, geotechnical and other consultants drawings and specifications and with such other instructions as may be issued during the course of the contract. All discrepancies shall be referred to the engineer for decision before proceeding with the work.

All dimensions relevant to setting out and off-site work shall be verified by the contractor before construction and fabrication is commenced. The engineers drawings shall not be scaled.

During construction the contractor shall be responsible for maintaining the stability of the structure until its completion and shall ensure that no part of the structure is overstressed by excessive loading.

Workmanship and materials shall be in accordance with the relevant New Zealand standards and local authority regulations, except where varied in contract documents.

The location, size, and details of all penetrations, holes, etc in structural members must be approved by the engineer prior to construction unless otherwise shown on structural drawings.

Substitution for or amendment of specified details or materials shall not be carried out without the approval of the engineer.

Tank Location - Proximity to Nearby Structures

Refer to pages 29 and 30.

The location of the tank excavation is the responsibility of the contractor and the tank owner. The contractor is to follow the limitations of the diagrams shown or notify a chartered professional engineer for a site-specific consultation. The contractor is to ensure nearby foundations of new and/or existing structures are not undermined by the excavation for the tank.

Excavation Clearance

The contractor is to ensure a minimum of 200mm between edge of tank and edge of excavation wall at the narrowest location.

Soil Conditions

This design assumes site soils will meet the requirements of NZS3604:2011 classification of 'good ground' and AS2870:2011 soil expansivity class 'S', 'M' and 'H'. The contractor is to confirm the site exhibits these properties or notify a chartered professional engineer for consultation.

For IL2, 50 years design life, $Z \leq 0.4$

Backfill & Basecourse

Backfill and basecourse material to be either:

Crushed stone or gravel: washed, with angular particle sizes no larger than 20mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/cubic metre. Approved backfill should not be mixed with sand or native soils and should always be brought up to at least 150mm above tank crown level. The use of non-specified backfill material could result in tank failure. GAP20 is acceptable.

Or if crushed stone or gravel is not available, then specific quarry aggregate mix of:

Naturally rounded gravel: clean naturally rounded aggregate with particle sizes no larger than 19mm with no more than 5% passing a 2.36mm sieve. Dry density must not be less than 1500kg/cubic metre.

The contractor is to work in maximum backfill lifts of 300mm. After each lift, the contractor is to use long handled probe to work the backfill material under the entire length of the tank and within any ribs. All voids and spaces should be filled to ensure adequate support of tank.

Temporary Support & Shoring

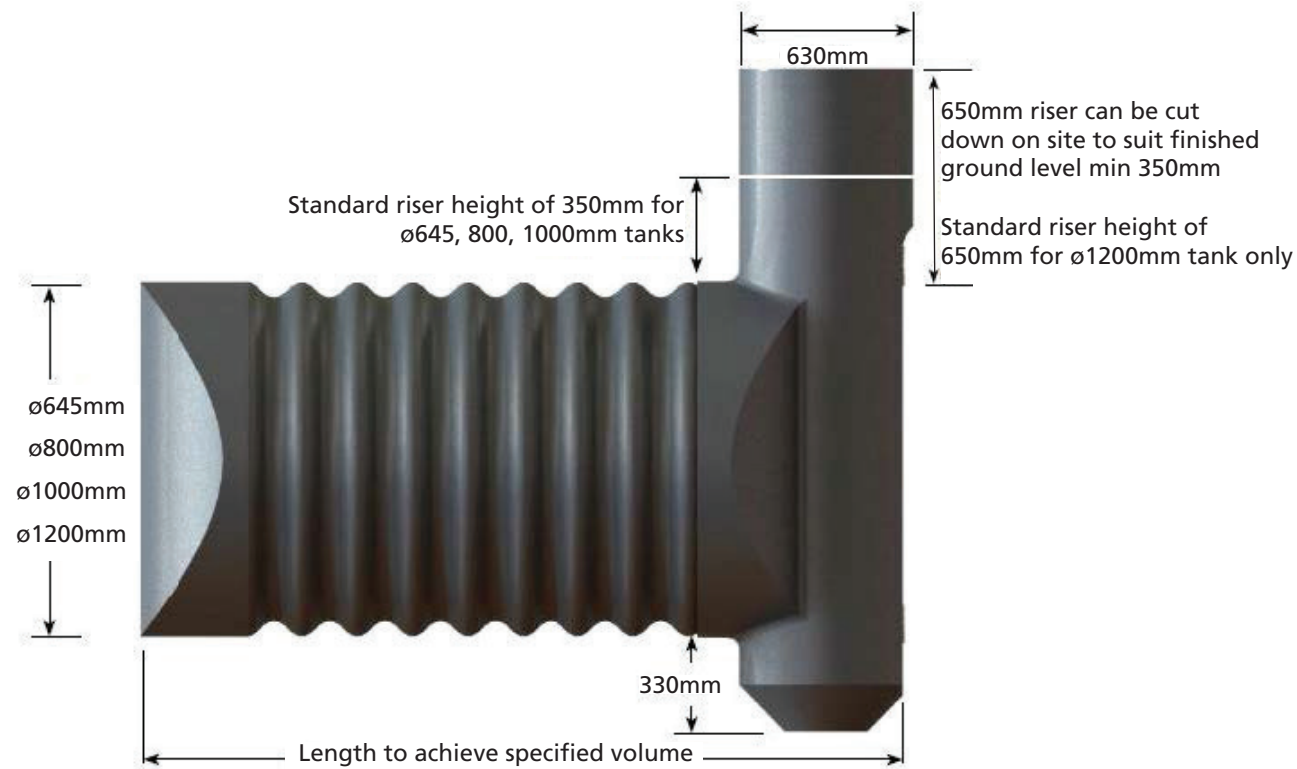
Temporary support and shoring during excavation and preparation is the responsibility of the contractor and should be in accordance with Health and Safety at Work Act 2015 (HSWA), the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016 (GRWM Regulations) and the Health and Safety in Employment Regulations 1995 (HSE Regulations), Regulation 24 for excavations with face more than 1.5m high (as below):

1. Subject to subclause (2) of this regulation, every employer shall take all practicable steps to ensure that, where any face of any excavation is more than 1.5m high, that face is shored
2. Subclause (1) of this regulation does not apply where:
 - a. The face is cut back to a safe slope; or
 - b. The material in the face is of proven good standing quality under all reasonably foreseeable conditions of work and weather; or
 - c. By reason of the nature of the work and the position of any employee in the vicinity, there is no danger to any employee; or
 - d. The provision of shoring is impracticable or unreasonable by reason of the nature of the work and the employer takes all practicable steps to ensure that other precautions are taken to make the face as safe as possible in the circumstances.
3. Every employer shall take all practicable steps to ensure that any shoring used in any excavation at the place of work:
 - a. Consists of materials that are suitable for the purpose for which they are to be used, of sound quality, and adequate strength for the particular use; and
 - b. Has bracings, jacks, and struts that are securely held to prevent accidental displacement, and packings and wedges that are held by nails or spikes; and
 - c. Is placed in a proper manner by an experienced person under competent supervision; and
 - d. Is not altered, dismantled, or interfered with except on the instructions of the employer or a representative of the employer.

StormLite® Standard Tank Dimensions



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APD will manufacture the tank to suit the required volume you need. Below are some indicatives of standard sizes.

Lengths and Weights

	Approximate Length (mm)			
Volume	645mm	800mm	1000mm	1200mm
2000L	6.1m	4.1m	2.7m	1.9m
3000L	9.1m	6.1m	4.0m	2.8m
4000L	12.1m	8.1m	5.3m	3.7m
5000L	15.1m	10.1m	6.6m	4.6m
6000L	18.1m	12.1m	7.9m	5.5m
7000L	21.1m	14.1m	9.2m	6.4m
8000L	2 tanks req	16.2m	10.5m	7.3m
9000L	2 tanks req	18.2m	11.8m	8.2m
10000L	2 tanks req	20.2m	13.1m	9.1m

	Approximate Weight (kg)			
Volume	645mm	800mm	1000mm	1200mm
2000L	125kg	125kg	125kg	100kg
3000L	175kg	175kg	150kg	150kg
4000L	225kg	225kg	200kg	175kg
5000L	275kg	250kg	250kg	200kg
6000L	325kg	300kg	300kg	250kg
7000L	375kg	350kg	325kg	275kg
8000L	2 tanks req	400kg	375kg	325kg
9000L	2 tanks req	450kg	425kg	350kg
10000L	2 tanks req	500kg	450kg	375kg

Tank Accessories



Green lawn lid



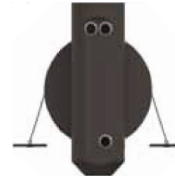
Red support ring and Class D iron Lid



100mm fitting kit supplied with tanks (150mm available upon request)



Welded spigots available upon request



Ground anchors



Warning: Correct hole saw sizes must be used for the wallase seals provided to avoid leaks

100mm Wallase Seal = 121mm Hole Saw
150mm Wallase Seal = 168mm Hole Saw

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Under-Lawn Installation Details



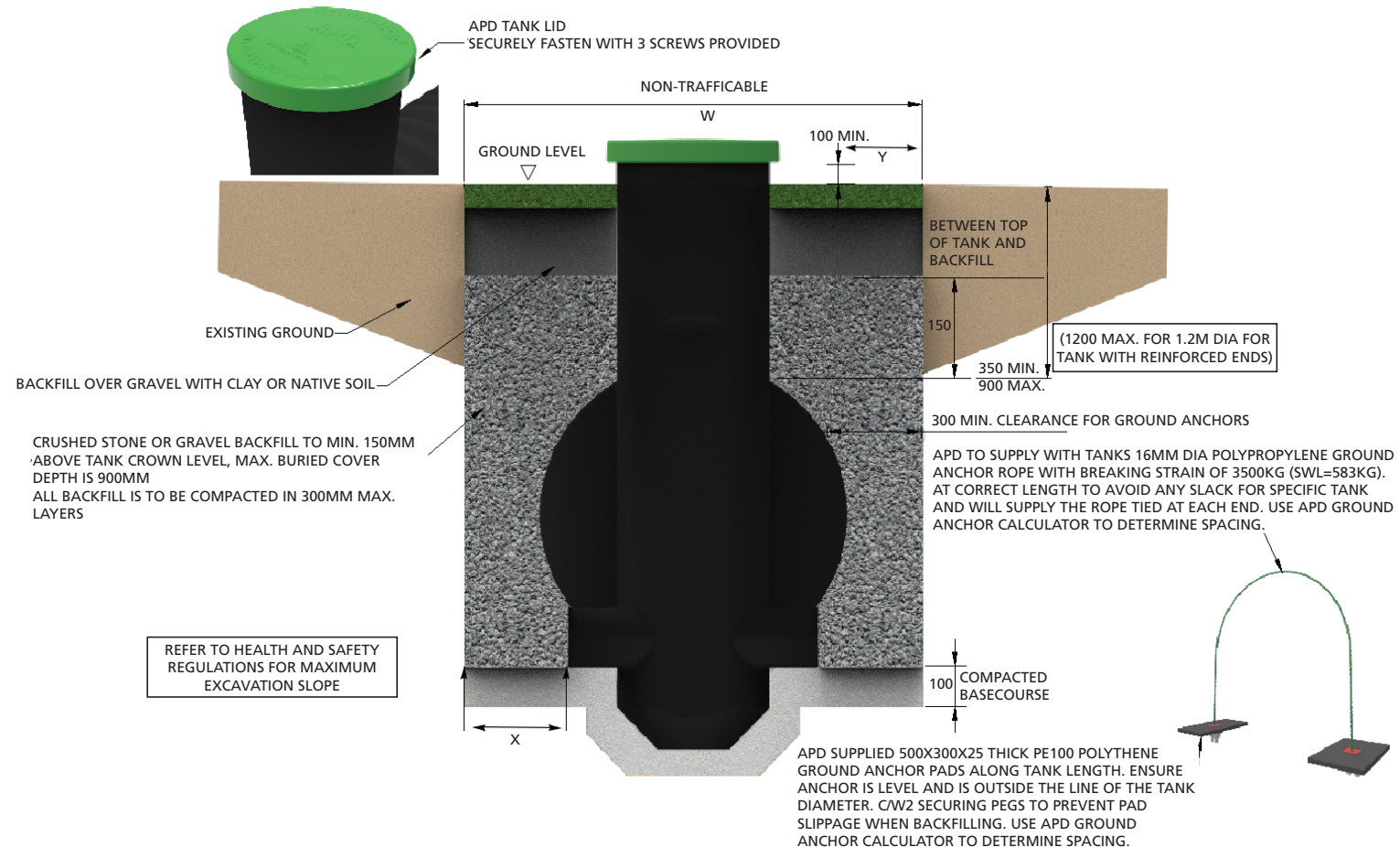
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Residential Lawn Installation

- Standard Cover: 150mm Compacted Hard Fill + 200mm Soil = 350mm Total.
- Max cover 900mm.
- Cover can be increased to 1200mm with 1200 diameter tanks with end strengthening.
- For 1200 diameter tanks, the riser can be cut down to suit finished ground level.
- Ground Anchors: If your site requires less than 350mm cover and/or has a high water table please contact APD.

	Tank Diameters			
	645mm	800mm	1000mm	1200mm
W	1045mm	1200mm	1400mm	1600mm
X	207mm	285mm	385mm	585mm
X+G/A	307mm	385mm	485mm	685mm
Y	200mm	200mm	200mm	200mm
Y+G/A	300mm	300mm	300mm	300mm

Note: Minimum trench specs
Note: G/A = Ground Anchors



PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

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Under-Lawn Installation Details Continued



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Avoid Tanks Floating!

- If possible lay punched drain coil/nova coil in the bottom of excavation to drain water away.
- Backfill and compact around and above tank using e.g. GAP10 or GAP20 - not clay or soil!
- Fill tank with water during installation.

Talk to APD about ground anchors if there is a high water table issue at your site.

IMPORTANT

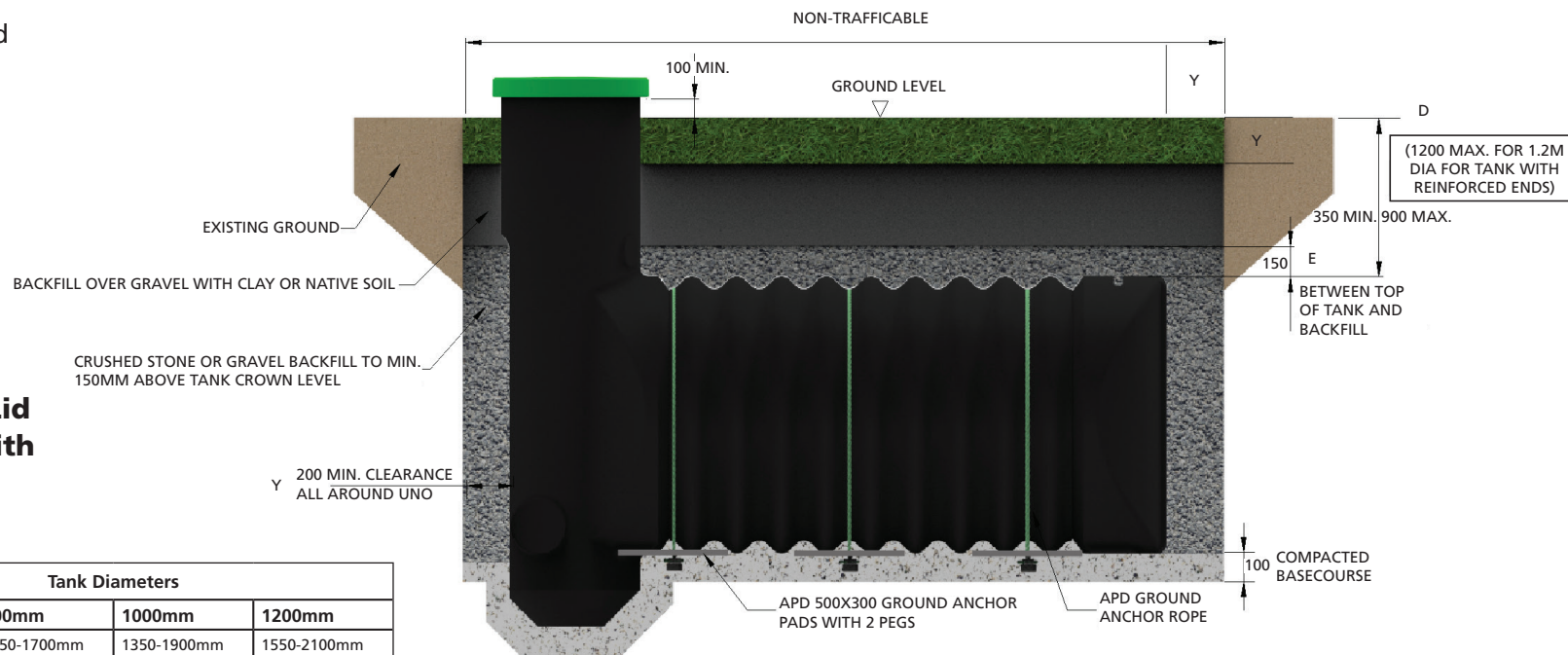
For Safety Reasons the Tank Lid Must be Securely Fastened with the 3 Screws Provided.

	Tank Diameters			
	645mm	800mm	1000mm	1200mm
TD - Trench Depth (min - max)	995-1545mm	1150-1700mm	1350-1900mm	1550-2100mm
TL - Trench Length	Tank Length + 400mm			
L - Tank Length	Refer APD information on quote			
Y	200mm	200mm	200mm	200mm
D (min - max)	350-900mm	350-900mm	350-900mm	350-1200mm
E	150mm	150mm	150mm	150mm

Note: Minimum trench specs unless stated

Note: All measurements to finished ground level

Note: Consult APD for deeper burial requirements



Minimum 100mm compacted base-course underneath tank and sump end.

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Residential Under-Driveway Installation Details



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Driveway Installation

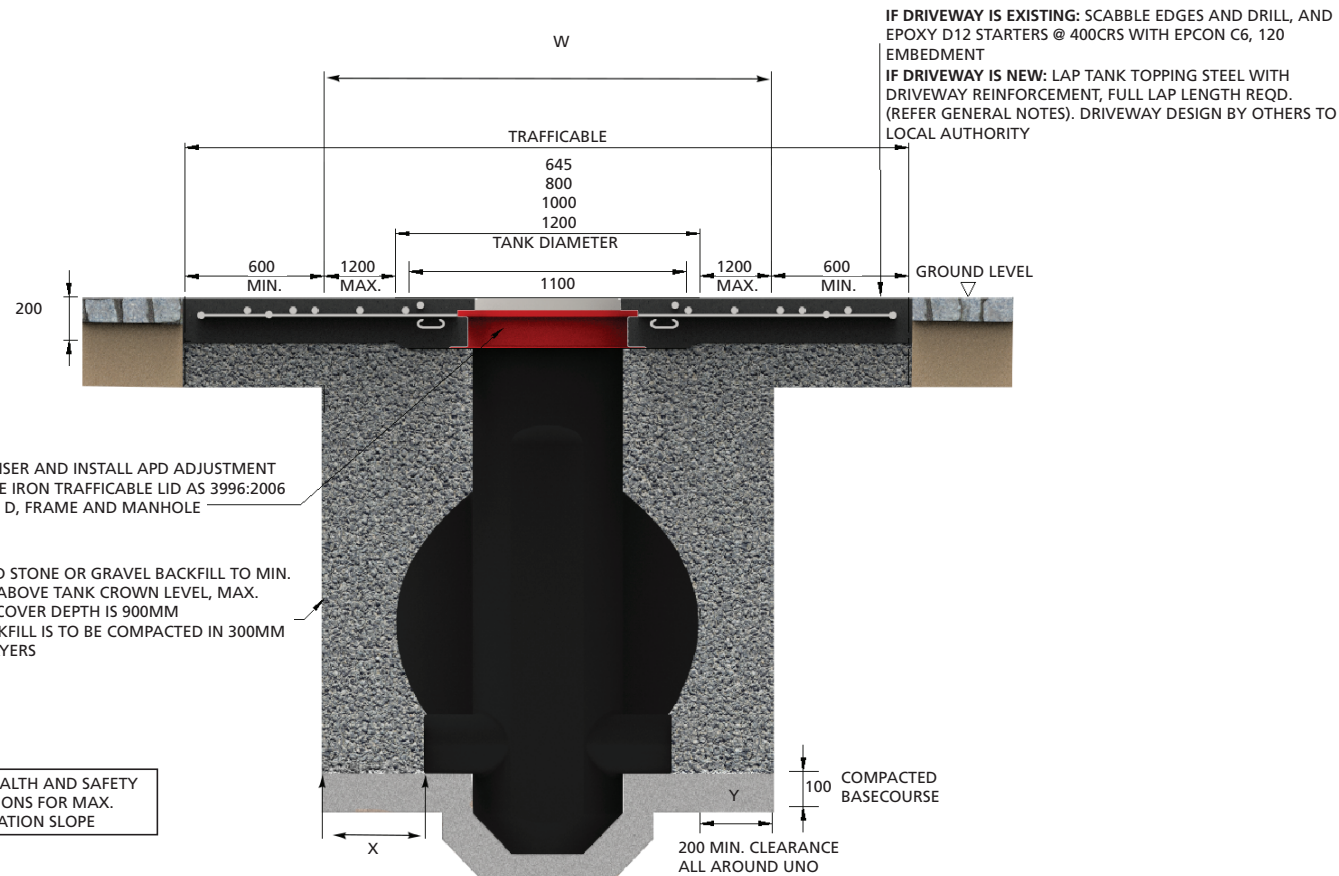
- Cover Requirements: Compacted Hard Fill + Concrete Thickness = 350mm Min Total Cover
- 200mm Thick Reinforced Concrete Over Tank - Residential Driveway
- 250mm Thick Reinforced Concrete Over Tank - Commercial Driveway
- For 1200 diameter tanks, the riser can be cut down to suit finished ground level.

Considerations if Not Placing Concrete Immediately

- Ground Anchors: If your site requires less than 350mm cover and/or has a high water table please contact APD.
- If possible lay punched drain coil/nova coil in the bottom of excavation to drain water away.
- Backfill and compact around and above tank using e.g. Gap 7, 10 or 20 - not clay or soil!

	Tank Diameters			
	645mm	800mm	1000mm	1200mm
W	1045mm	1200mm	1400mm	1600mm
X	207mm	285mm	385mm	585mm
X+G/A	307mm	385mm	485mm	685mm
Y	200mm	200mm	200mm	200mm
Y+G/A	300mm	300mm	300mm	300mm

Note: Minimum trench specs
Note: G/A = Ground Anchors



Expansive Soil Classes:

Apply a compressive layer of minimum 25mm, 50mm & 100mm below the concrete slab for expansive soil classes S, M and H respectively. i.e. EPS (expanded polystyrene).

PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

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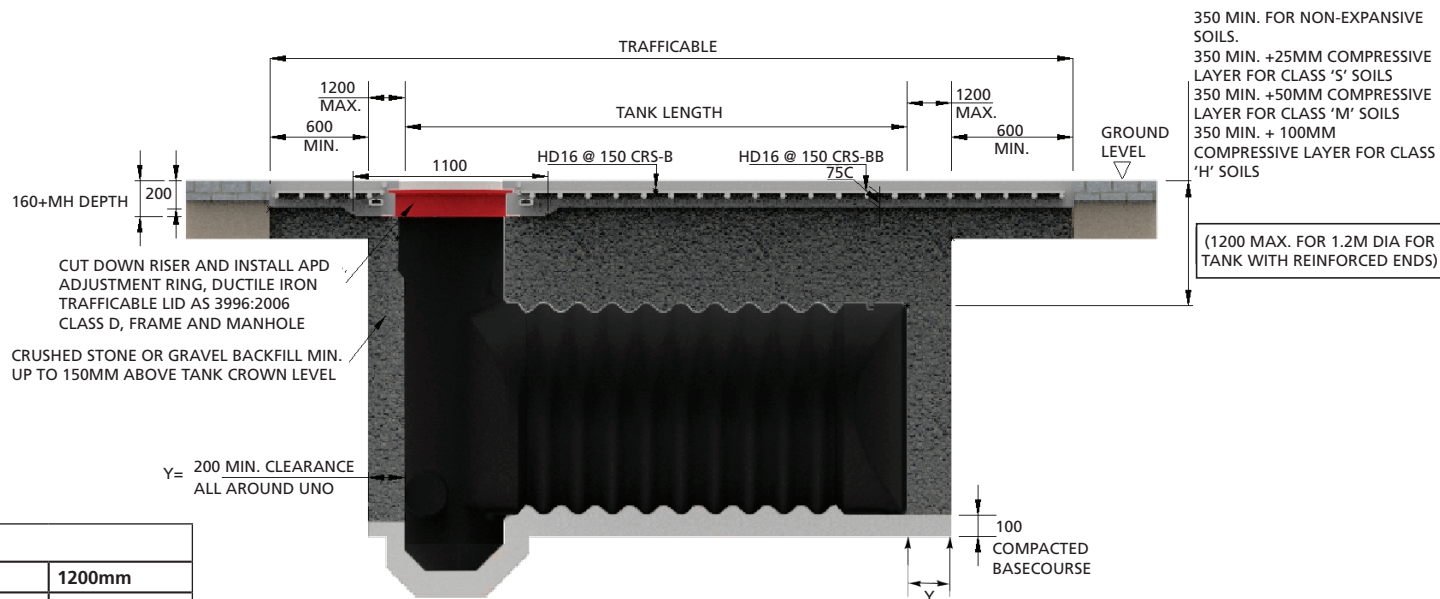
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Residential Under-Driveway Installation Details Continued

Residential and multi-unit residential units for single or twin tank arrangements, use 200mm thick slab with steel reinforcing as shown in consent drawings (RD-01 to RD-12 & RS-01 to RS-12).

Commercial slabs for single or twin tank arrangements, use 250mm thick slab with steel reinforcing as shown in consent drawings (CD-01 to CD-08 & CS-01 to CS-08) .

Apply compressive layer of minimum 25mm, 50mm and 100mm below the concrete slab for site classes S, M and H respectively e.g. EPS (expanded polystyrene).



	Tank Diameters			
	645mm	800mm	1000mm	1200mm
TD - Trench Depth (min - max)	995-1545mm	1150-1700mm	1350-1900mm	1550-2100mm
TL - Trench Length	Tank Length + 400mm			
L - Tank Length	Refer APD information on quote			
Y	200mm	200mm	200mm	200mm
D (min - max)	350-900mm	350-900mm	350-900mm	350-1200mm

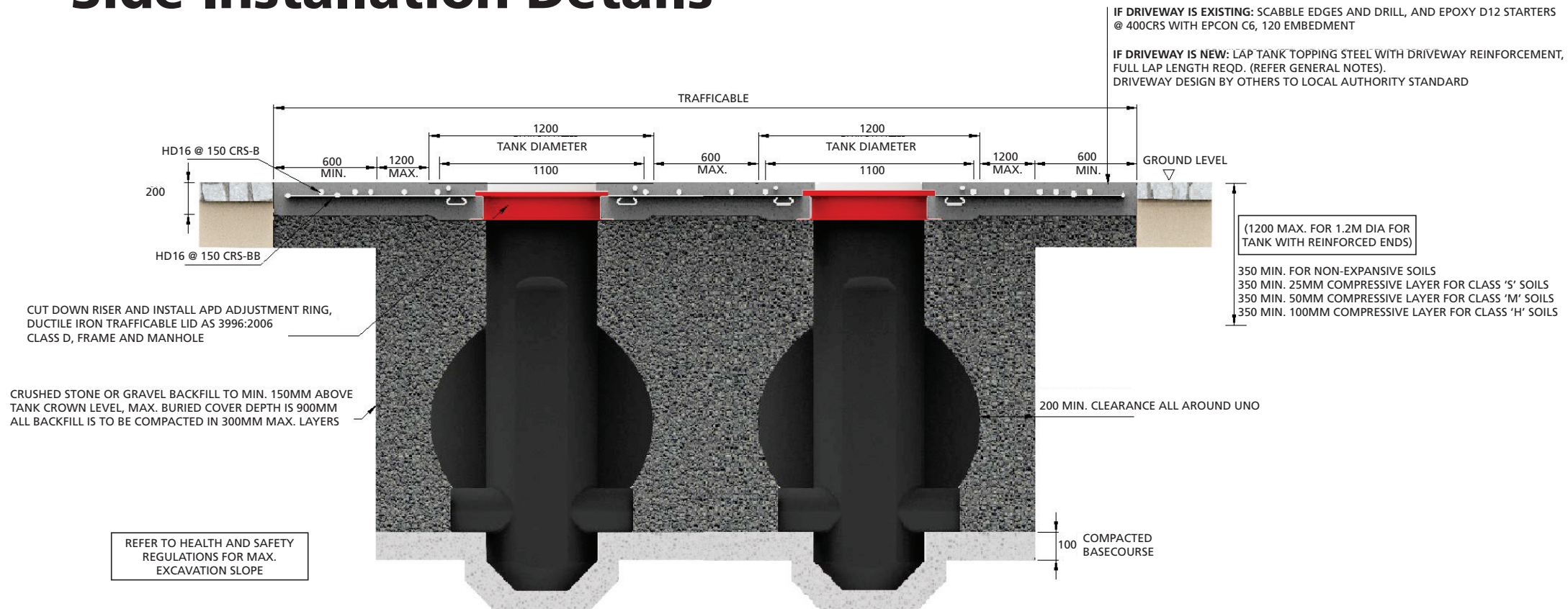
Note: Minimum trench specs unless stated
 Note: All measurements to finished ground level
 Note: Consult APD for deeper burial requirements

PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

Residential Under-Driveway Side by Side Installation Details



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- Maximum of three tanks per pit.
- A gap of 6.1 metres to the next pit if more tanks are needed side by side.

PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

StormLite® Installation & Engineering Guide

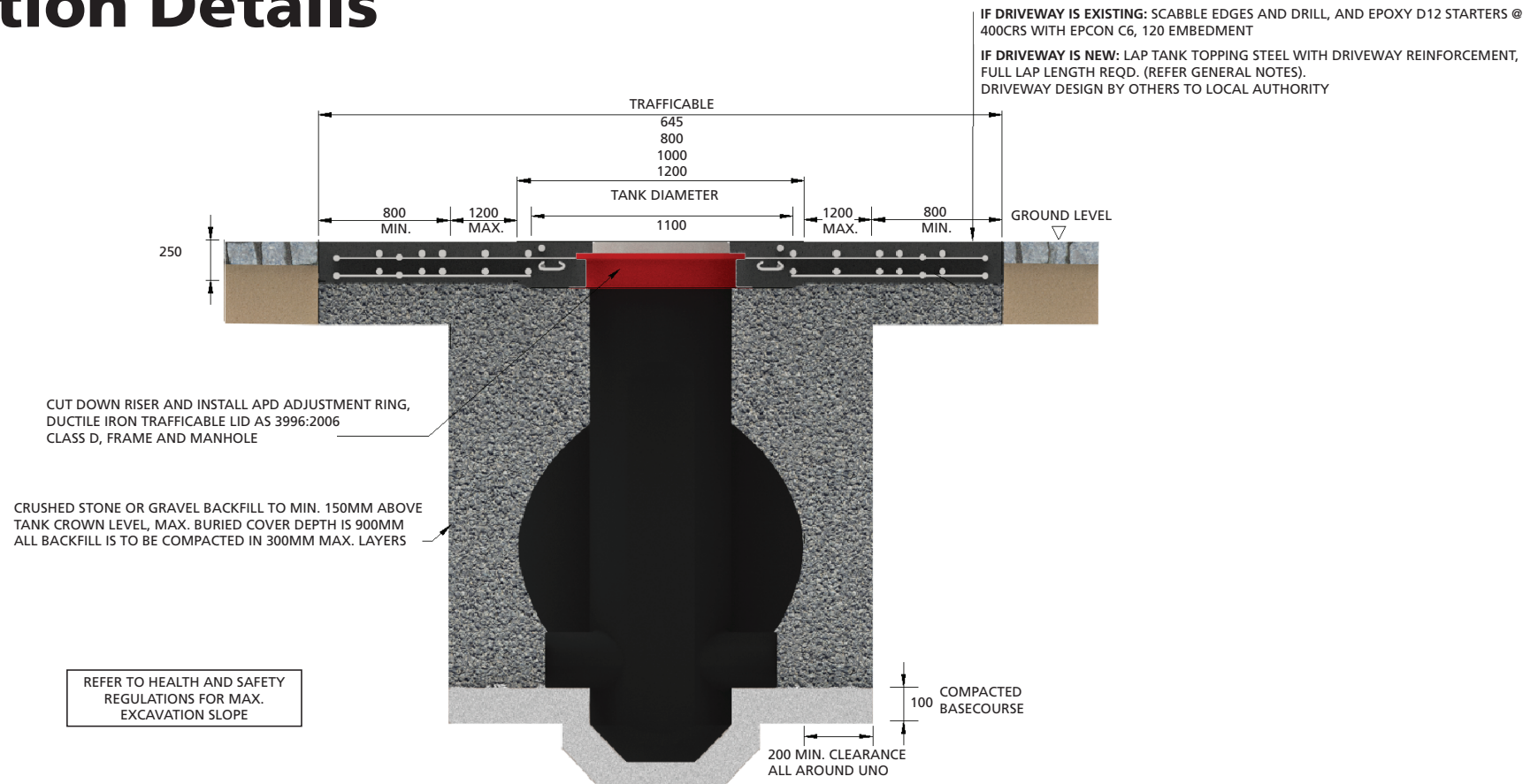
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Commercial Under-Driveway Installation Details



Doing Good From The Ground Up



- Maximum cover to finished ground level is 900mm for all tanks.
- 1200 diameter only can be buried to 1200 if end reinforcing/strengthening is used - see page 15 for details.
- For depths over these maximums, APD recommend StormLite³® - see www.apd.co.nz for details.
- S, M and H soil types: Apply a compressive layer of minimum 25mm, 50mm and 100mm below the concrete slab for site classes S, M and H respectively. i.e. EPS (expanded polystyrene).
- Please refer to StormLite[®] consent drawings.

PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

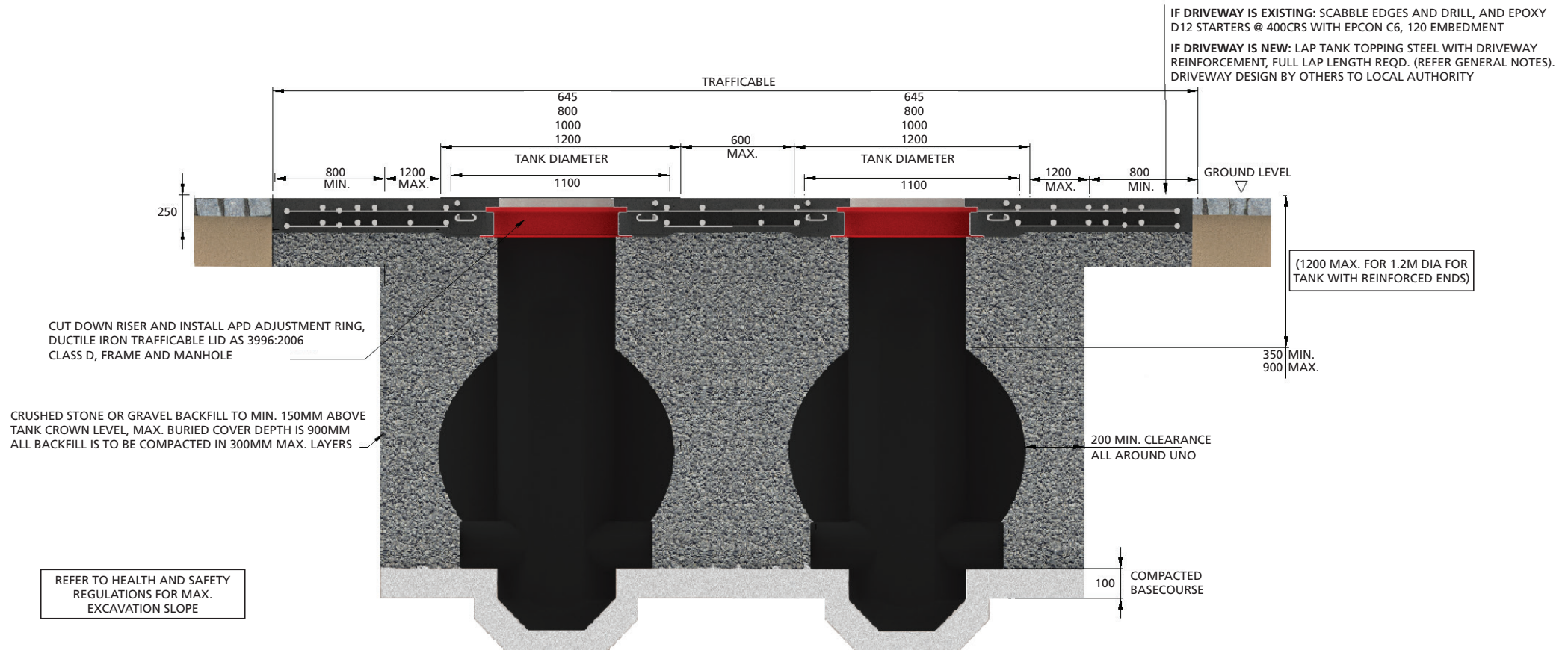
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Commercial Under-Driveway Side by Side Installation Details



Doing Good From The Ground Up



- Maximum of three tanks per pit.
- A gap of 6.4 metres to the next pit if more than three tanks are required side by side.
- S, M and H soil types: Apply a compressive layer of minimum 25mm, 50mm and 100mm below the concrete slab for site classes S, M and H respectively. i.e. EPS (expanded polystyrene).
- Please refer to StormLite® consent drawings.

PS1 and Consent drawings are available from <https://apd.co.nz/brochure-type/stormlite/>

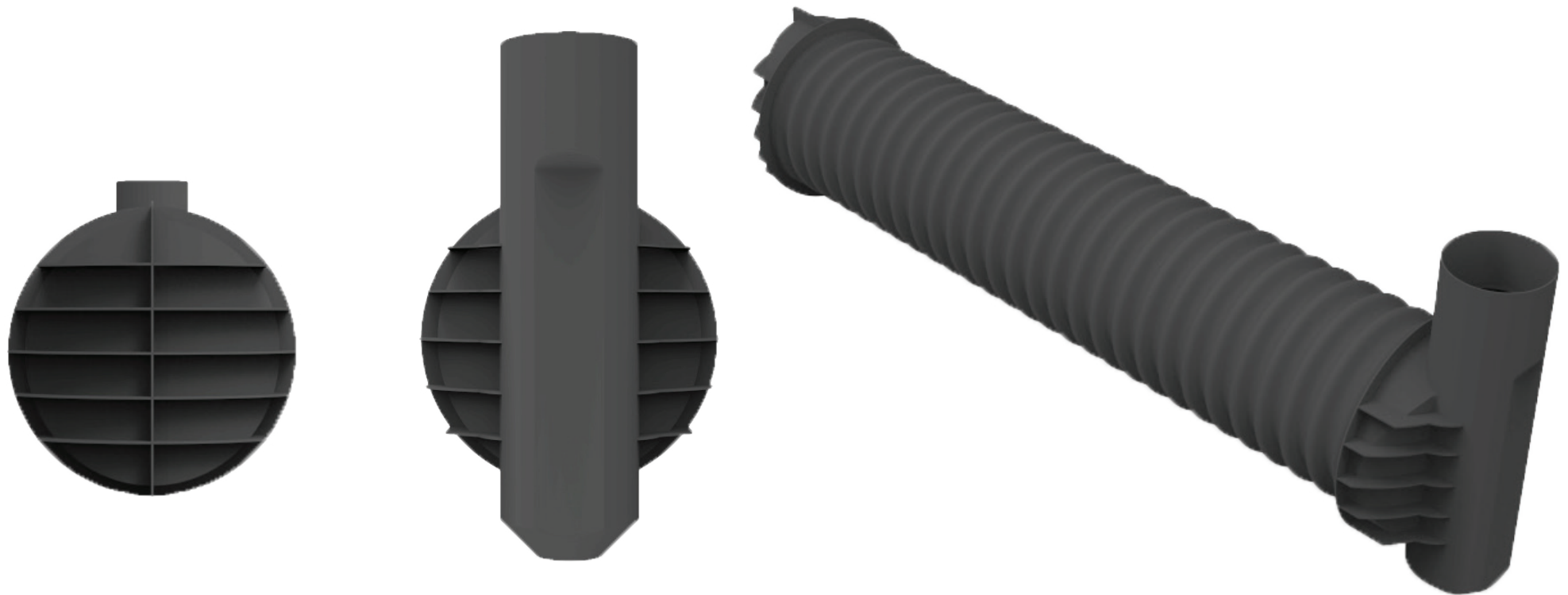
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End Strengthening

- Maximum buried depth of all tanks is 900mm from the finished ground level.
- 1200 diameter tanks can be buried up to 1200mm deep, if end reinforcing/strengthening is used.
- APD can supply tanks with this reinforcing included.
- For buried depths over these maximums, APD recommend the use of StormLite³® - please see www.apd.co.nz for details.



Concrete Requirements

All materials and workmanship shall be in accordance with NZS 3101:2006.

No hole chases or embedment of pipes other than those shown on the structural drawings shall be made in concrete members without the approval of the engineer.

Construction joints shall be properly formed and used only where shown or specifically approved by the engineer.

All concrete to be mechanically vibrated and carefully worked around the reinforcement and into the corners of the formwork.

Minimum compressive strengths of concrete at 28 days shall be as follows unless noted otherwise:

Element	Grade (MPa)
Site concrete	17.5
Slab on grade	30
Suspended slab	30

All concrete is to have 15 x 15 chamfer to all exposed edges unless noted otherwise.

Finishes to concrete to be in accordance with NZS 3114.

Water/cement ratios for concrete used in slabs on grade shall not exceed 0.45.

Reinforcement

All reinforcement shall conform to AS/NZS 4671. All hook bars and bends shall be made without fracture in accordance to NZS 3101. Grade 300 bars may be bent once only.

All reinforcement shall be as follows:

Symbol	Type – to AS/NZS
R	Plain bars grade 300 MPa
D	Deformed bars grade 300 MPa
HD	Deformed bars grade 500 MPa - MA
HR	Plain bars grade 500 MPa - MA
	Mesh to NZS 3421 (500 MPa)

Reinforcement is represented diagrammatically and not necessarily in true projection.

Concrete Requirements Continued

Clear cover to reinforcement shall be as follows unless noted otherwise on the dwgs. Where not specifically designated cover is to be in accordance with NZS 3109.

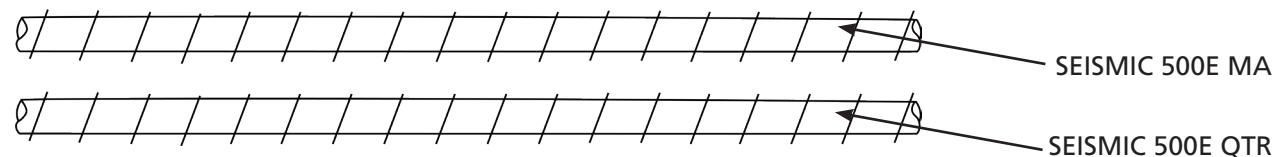
Member	Cast against formwork		Cast against ground (see note below)
	<i>Not exposed to water</i>	<i>Exposed to weather or water</i>	
Strip footings	N/A	50	75*
Slabs	35	50	75*

* Where there is a permanent impermeable membrane between concrete and ground use 50mm cover.
For sites within 500m of mean high water mark increase cover by 10mm.

No reinforcement splices shall be made, other than those shown on the structural drawings, without the prior approval of the engineer. Minimum lap for fabric shall be one mesh plus 50mm.

Welding of reinforcement is not permitted unless shown on the drawings or approved by the engineer. Where welding of reinforcement is permitted grade 500 steel shall not be welded or rebent unless it is clearly marked as micro alloy grade 500, quenched and tempered steel shall not be welded or rebent.

Bar marking for identification of micro alloy (MA) and quenched and tempered (QTR) reinforcing are shown below: (indicative only)



Reinforcement shall be adequately fixed and supported to prevent it sagging or moving. Mesh to be fully supported on proprietary chairs. Refer to specification for minimum fixing requirements.

The minimum clear spacing between conduits, cables, pipes and bars shall be as required by NZS 3101 but not less than three diameters. Conduits in slabs are to be placed above bottom reinforcement and below top reinforcement.

Legend used for reinforcement location:

- BS both sides
- B bottom
- T top
- EF each face
- FF far face
- BB bottom bottom
- TT top top
- EW each way
- NF near face
- ABR alternate bars reversed

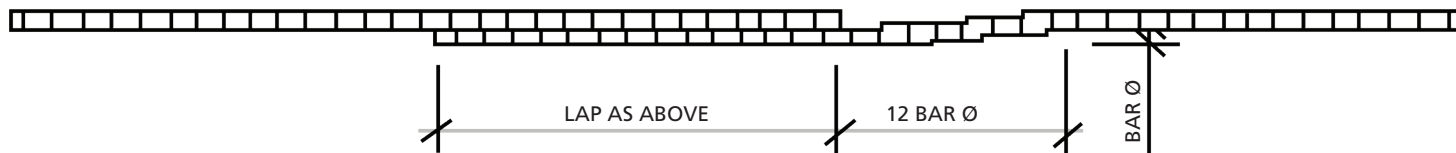
Concrete Requirements Continued

Standard splice lap lengths for deformed bars:

Concrete Laps		
Bar size diameter	D Grade 300	HD Grade 500
10	400	600
12	450	750
16	600	1000
20	750	1200
25	900	1500
28	1100	1700
Mesh		1 Mesh SQ.+50mm

Note: for round bars splice lap length to be twice the splice length of deformed bars.

Laps in beams and columns shall be via an offset lap created by cranking of the bar as shown below:

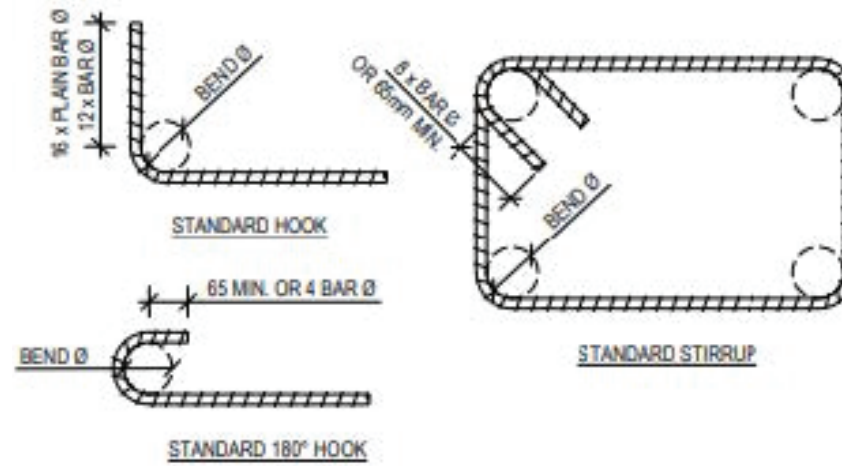


Reverse cold bending shall not be carried out on-site. Hot bending may be carried out at the discretion and with the written approval of the engineer. Refer to specification for heating and hot bending procedure.

Cold bending of reinforcement shall be in accordance with NZS 3109.

Concrete Requirements Continued

Bends for all bars except stirrups and ties:



Steel grade	Bar diameter	Minimum bend diameter
300 & 500	6 to 20	5 bar diameters
300 & 500	25 to 40	7 bar diameters

Foundations

Foundations are to be founded on original undisturbed ground, at a minimum depth of 600mm. Before any concrete is placed the soils shall be verified to be 'good ground' to NZS 3604.

50mm of site concrete may be placed under foundations to create a clean surface to place reinforcing on when required.

Ground Anchors



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You May Need to Use Ground Anchors if:

- There is a high water table at the site where the tank(s) are to be installed or
- Water will collect in the ground around the installed tank(s) following a rainfall event.

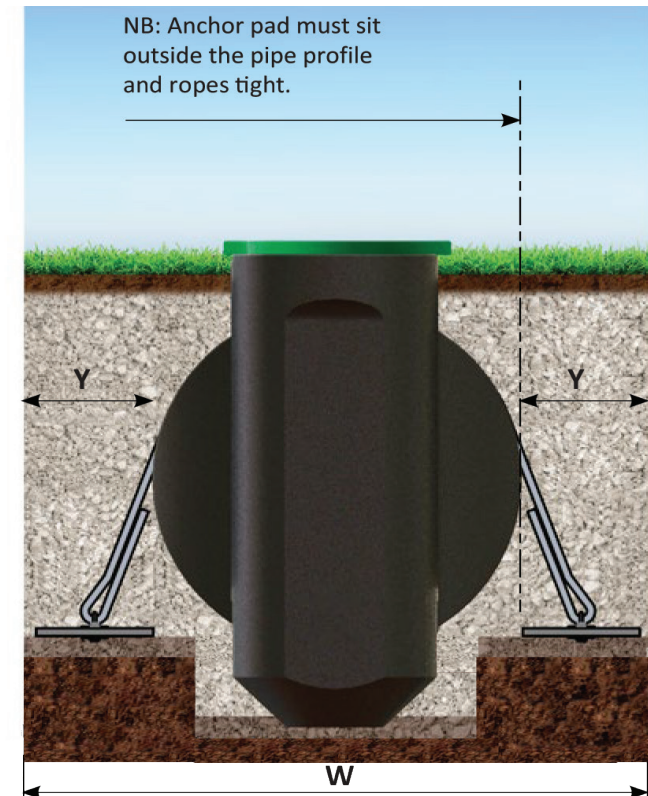
Ground Anchor Installation

- Anchor pads are 300mm x 500mm.
- Based on your tank buried depth/cover height and max water table level, APD can calculate how many ground anchors you will need.
- Ground anchors are supplied with rope attached and ready to install.
- Pegs provided to secure anchor pad in place to prevent pad slipping when backfilling. 2 pegs per pad.
- Excavation needs to be wide enough to allow for the anchor pads (e.g. 1200 diameter tank needs a minimum 1960mm wide excavation).
- Anchor pads must be placed past edge of tank as per diagram.
- Insert pegs into holes drilled to secure pad firmly past edge of tank.
- First ground anchor rope needs to be hard against the riser.
- If the ground anchors are installed correctly as per the diagrams, then the weight of backfill on top of the pads will stop the tank from lifting up during a heavy rain event or high water table issue.



New slimmer design 300mm wide anchors for narrower trenches. Securing pegs now provided to secure pads in place to prevent pad slippage when backfilling!

Please contact APD to discuss your installation and to calculate if ground anchors will be required.



	Tank Diameters			
	645mm	800mm	1000mm	1200mm
W	1245mm	1400mm	1600mm	1960mm
Y	300mm	300mm	300mm	300mm
Note: Minimum trench specs				

Ground Anchors

Anchor Requirements

645mm		Total cover depth to top of tank barrel						
Volume	Length	0.35m	0.4m	0.5m	0.6m	0.7m	0.8m	0.9m
2000L	6.1m	0	0	0	0	0	0	0
3000L	9.1m	0	0	0	0	0	0	0
4000L	12.1m	0	0	0	0	0	0	0
5000L	15.1m	0	0	0	0	0	0	0
6000L	18.1m	0	0	0	0	0	0	0
7000L	21.1m	0	0	0	0	0	0	0
800mm		Total cover depth to top of tank barrel						
Volume	Length	0.35m	0.4m	0.5m	0.6m	0.7m	0.8m	0.9m
2000L	4.1m	3	3	0	0	0	0	0
3000L	6.1m	3	0	0	0	0	0	0
4000L	8.1m	4	0	0	0	0	0	0
5000L	10.1m	5	0	0	0	0	0	0
6000L	12.1m	5	0	0	0	0	0	0
7000L	14.1m	0	0	0	0	0	0	0
8000L	16.2m	0	0	0	0	0	0	0
9000L	18.2m	0	0	0	0	0	0	0
10000L	20.2m	0	0	0	0	0	0	0

1000mm		Total cover depth to top of tank barrel						
Volume	Length	0.35m	0.4m	0.5m	0.6m	0.7m	0.8m	0.9m
2000L	2.7m	3	3	2	0	0	0	0
3000L	4.0m	3	3	0	0	0	0	0
4000L	5.3m	4	3	0	0	0	0	0
5000L	6.6m	4	3	0	0	0	0	0
6000L	7.9m	5	4	0	0	0	0	0
7000L	9.2m	6	4	0	0	0	0	0
8000L	10.5m	6	5	0	0	0	0	0
9000L	11.8m	7	5	0	0	0	0	0
10000L	13.1m	8	6	0	0	0	0	0
1200mm		Total cover depth to top of tank barrel						
Volume	Length	0.35m	0.4m	0.5m	0.6m	0.7m	0.8m	0.9m
2000L	1.9m	2	2	2	2	2	2	0
3000L	2.8m	3	3	3	3	2	0	0
4000L	3.7m	4	4	3	3	0	0	0
5000L	4.6m	4	4	3	3	0	0	0
6000L	5.5m	5	4	4	3	0	0	0
7000L	6.4m	5	4	4	3	0	0	0
8000L	7.3m	6	5	5	4	0	0	0
9000L	8.2m	7	5	5	4	0	0	0
10000L	9.1m	7	6	6	4	0	0	0

Cover based on minimum of 150mm compacted backfill gap 7, 10 or 20 and a minimum of 350mm to finished ground level.

These tables assumes water table is at ground level

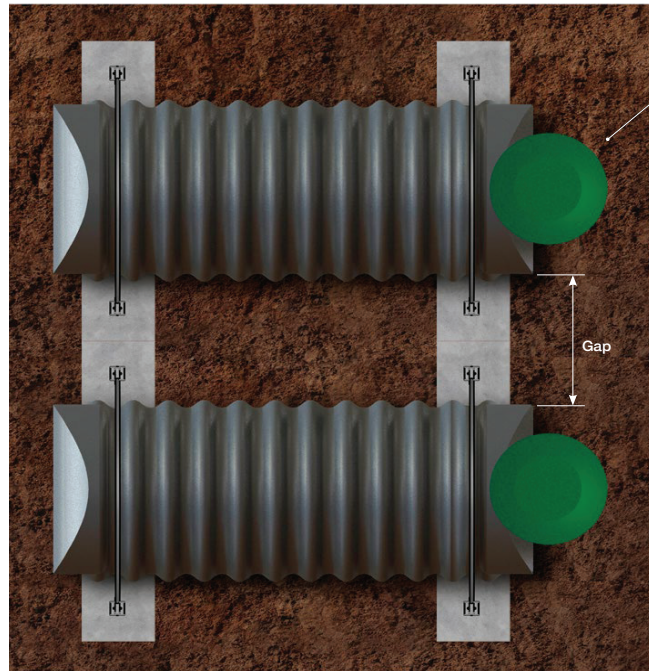
Contact APD for more information should you have water table queries

Pit Detail When Using Ground Anchors



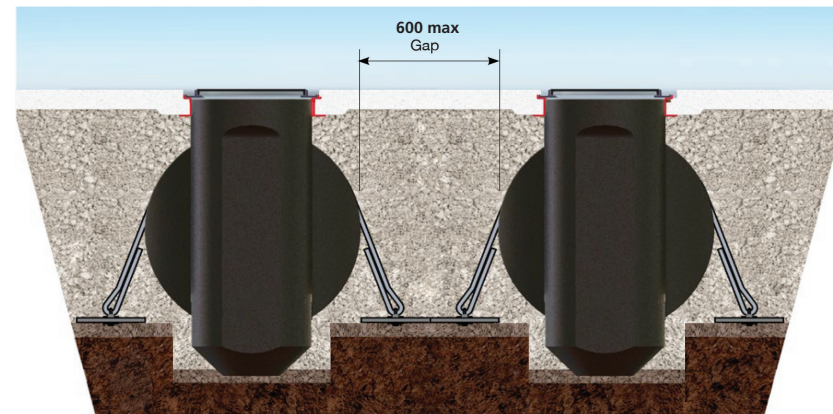
Doing Good From The Ground Up

- Multiple Tank Design



Only local excavation required for each sump end

Pads come supplied with temporary hold down pins to ensure that the pads remain outside the overhang of the tank while backfilling.

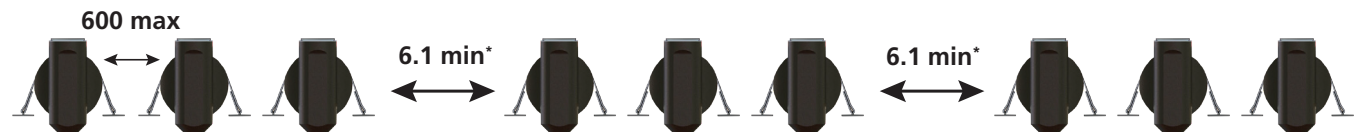


Rope:

16mm polypropylene with breaking strength of 3500kg.

APD LTD to supply with tanks at correct length to avoid any slack for specific tank and should supply the rope tied at each end to enable development of full strength of rope.

Maximum three tanks in a trench (5.4m). When designing for more tanks, leave a 6.1 metre maximum block of good ground and then start a new excavation for the next tank, up to three more per trench, then repeat.



*6.4 for commercial driveways

StormLite® Installation & Engineering Guide

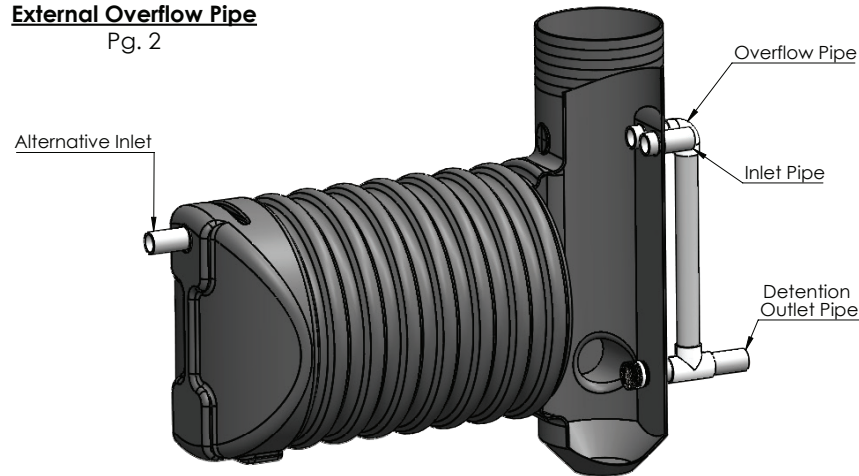
Ph: 09 263 7741 or 0800 263 774, 49 McLaughlins Rd, Wiri 2104, PO Box 12663 Auckland 1642,

sales@apd.co.nz - www.apd.co.nz

StormLite® Detention Tank Pipe Installation

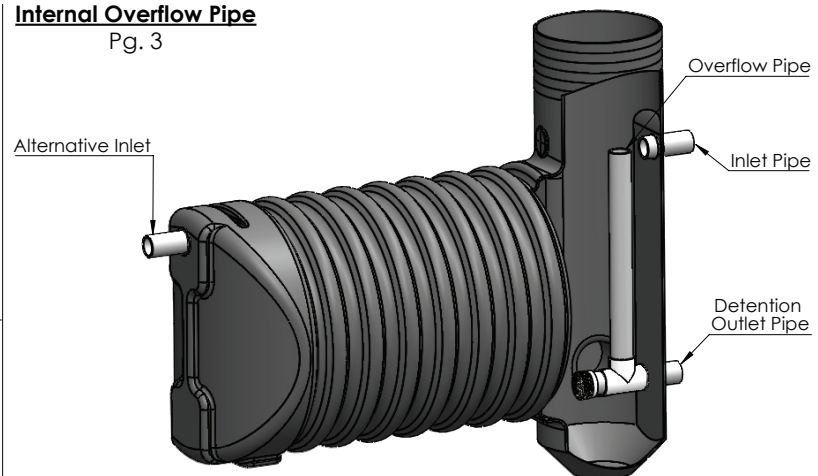
External Overflow Pipe

Pg. 2



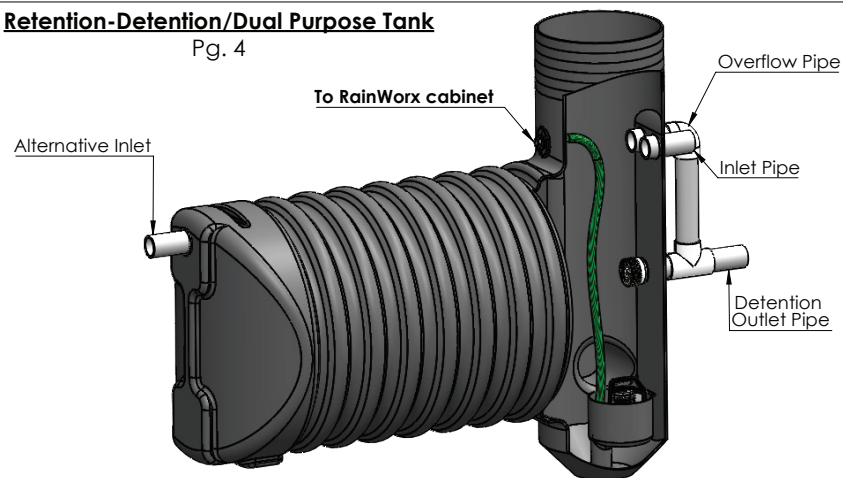
Internal Overflow Pipe

Pg. 3



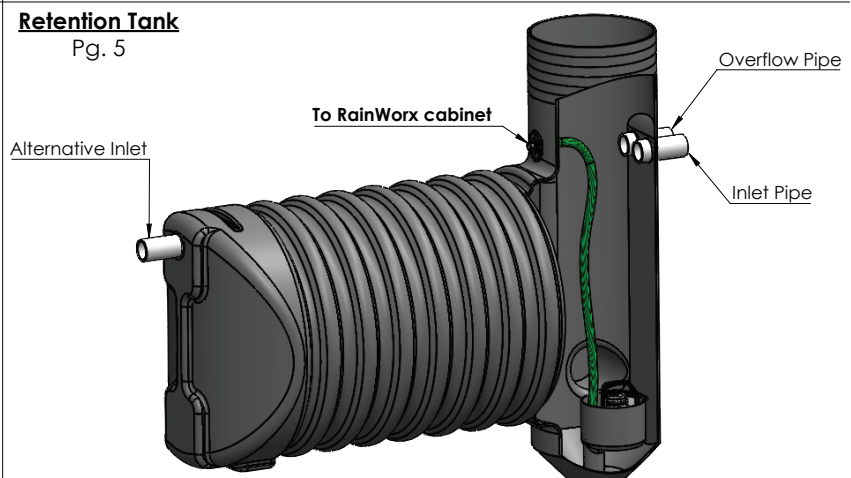
Retention-Detention/Dual Purpose Tank

Pg. 4



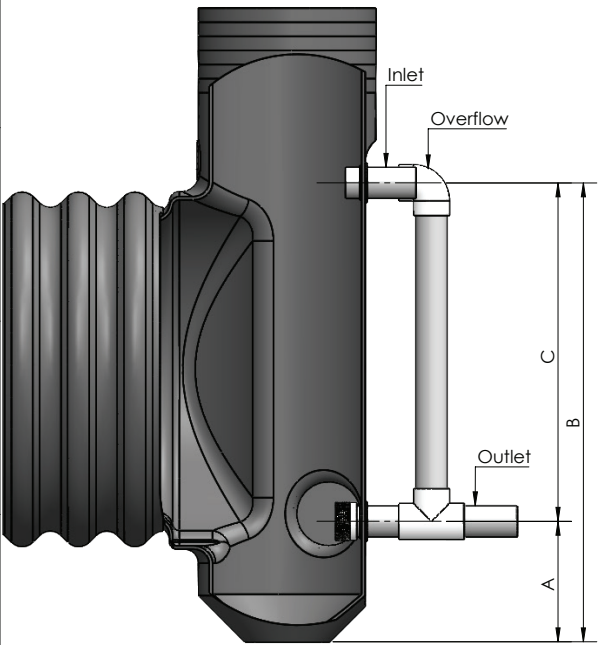
Retention Tank

Pg. 5



StormLite® Detention Tank Pipe Installation

- External Overflow Detention

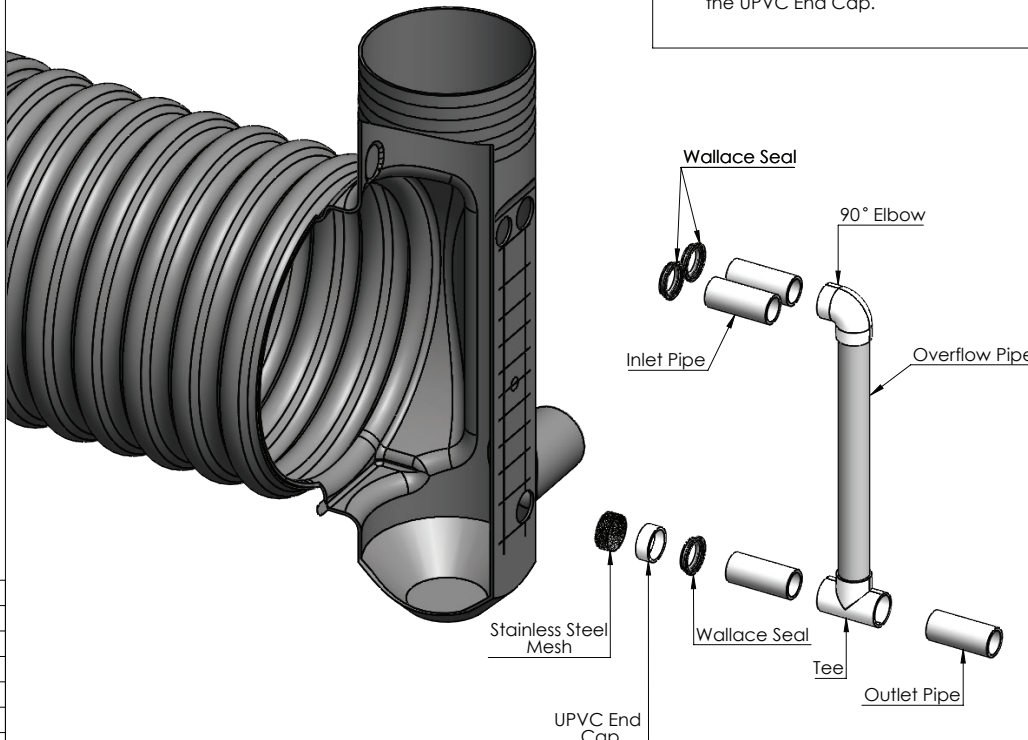


	100mm Pipe			150mm Pipe		
Tank Ø	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "A"	Dim. "B"	Dim. "C"
Ø 1200	380mm	1580mm	1200mm	405mm	1605mm	1200mm
Ø 1000	380mm	1380mm	1000mm	405mm	1405mm	1000mm
Ø 800	380mm	1180mm	800mm	405mm	1205mm	800mm
Ø 645	380mm	1025mm	645mm	405mm	1050mm	645mm

NOTE: All Dimensions are to the Centre of the Pipes

NOTES:

- APD Standard Fitting Kit Includes:
 - 3 x 100mm Wallace Seals
 - 1 x 100mm End Cap
 - 1 x Stainless Steel Mesh
- This Standard kit can also be supplied in 150mm if required at an additional cost.
- The Orifice hole needs to be drilled in the UPVC End Cap.

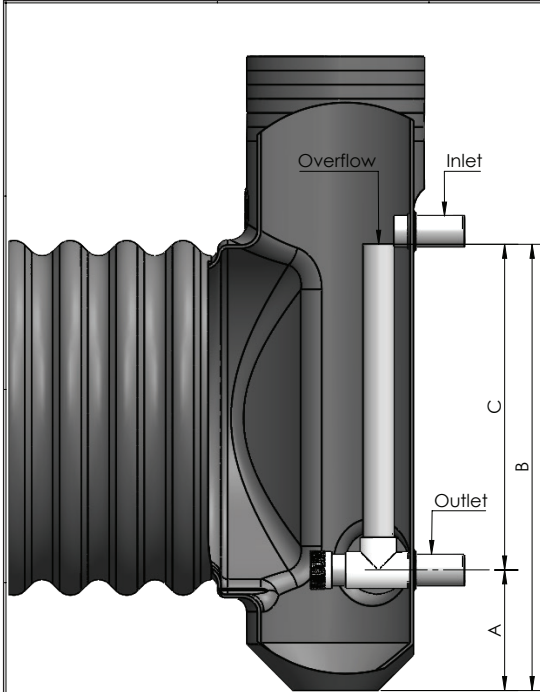


StormLite® Detention Tank Pipe Installation



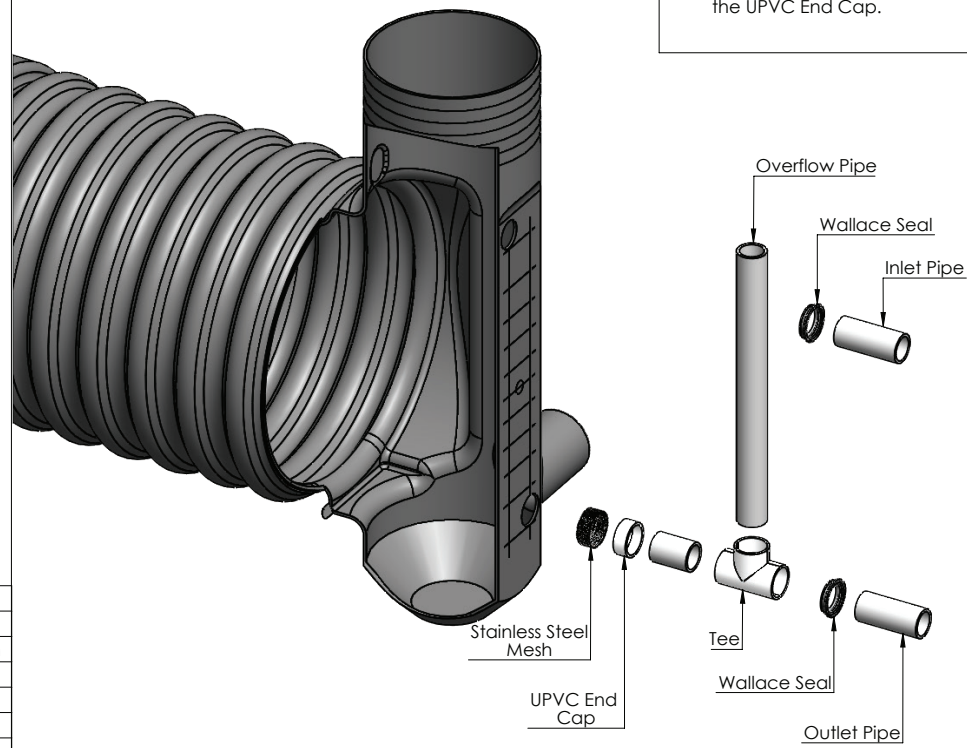
Doing Good From The Ground Up

- Internal Overflow Detention



Tank Ø	100mm Pipe			150mm Pipe		
	Dim. "A"	Dim. "B"	Dim. "C"	Dim. "A"	Dim. "B"	Dim. "C"
Ø 1200	380mm	1530mm	1150mm	405mm	1530mm	1125mm
Ø 1000	380mm	1330mm	950mm	405mm	1330mm	925mm
Ø 800	380mm	1130mm	750mm	405mm	1130mm	725mm
Ø 645	380mm	975mm	595mm	405mm	975mm	570mm

NOTE: All Dimensions are to the Centre of the Pipes



NOTES:

- APD Standard Fitting Kit Includes:
 - 3 x 100mm Wallace Seals
 - 1 x 100mm End Cap
 - 1 x Stainless Steel Mesh
- This Standard kit can also be supplied in 150mm if required at an additional cost.
- The Orifice hole needs to be drilled in the UPVC End Cap.

StormLite® Detention Tank Pipe Installation

- Combined Detention-Retention



Doing Good From The Ground Up

NOTES:

- APD Standard Fitting Kit Includes:
 - 3 x 100mm Wallace Seals
 - 1 x 100mm End Cap
 - 1 x Stainless Steel Mesh
- This Standard kit can also be supplied in 150mm if required at an additional cost.
- The Orifice hole needs to be drilled in the UPVC End Cap.
- The **Pump stand and pipework should be fitted** into the tank prior leaving APD.
- RainWorx Submersible Pump System can be supplied by APD.

Tank ϕ	100mm Pipe		150mm Pipe	
	Dim. "A"	Dim. "B"	Dim. "A"	Dim. "B"
ϕ 1200	As Per Vol. Req'd	1580mm	As Per Vol. Req'd	1605mm
ϕ 1000	As Per Vol. Req'd	1380mm	As Per Vol. Req'd	1405mm
ϕ 800	As Per Vol. Req'd	1180mm	As Per Vol. Req'd	1205mm
ϕ 645	As Per Vol. Req'd	1025mm	As Per Vol. Req'd	1050mm

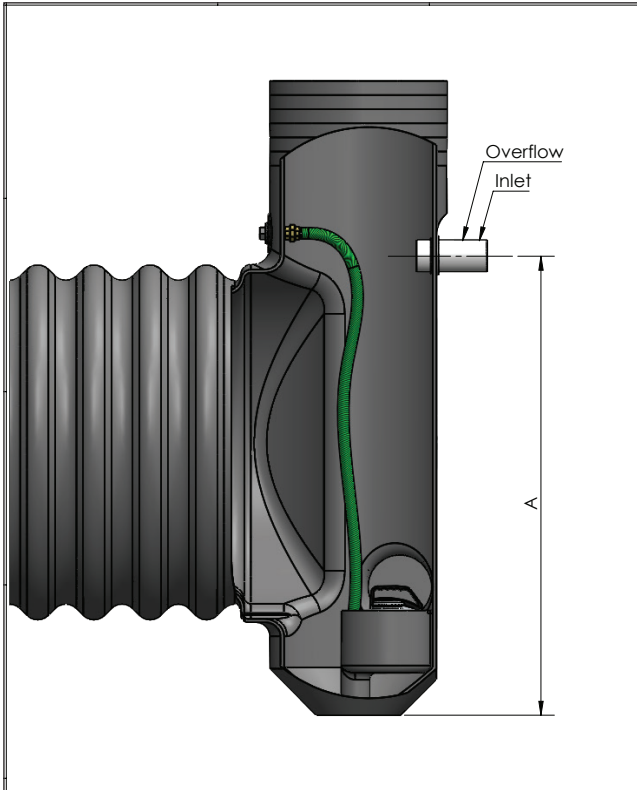
NOTE: All Dimensions are to the Centre of the Pipes

StormLite® Detention Tank Pipe Installation



Doing Good From The Ground Up

- Retention

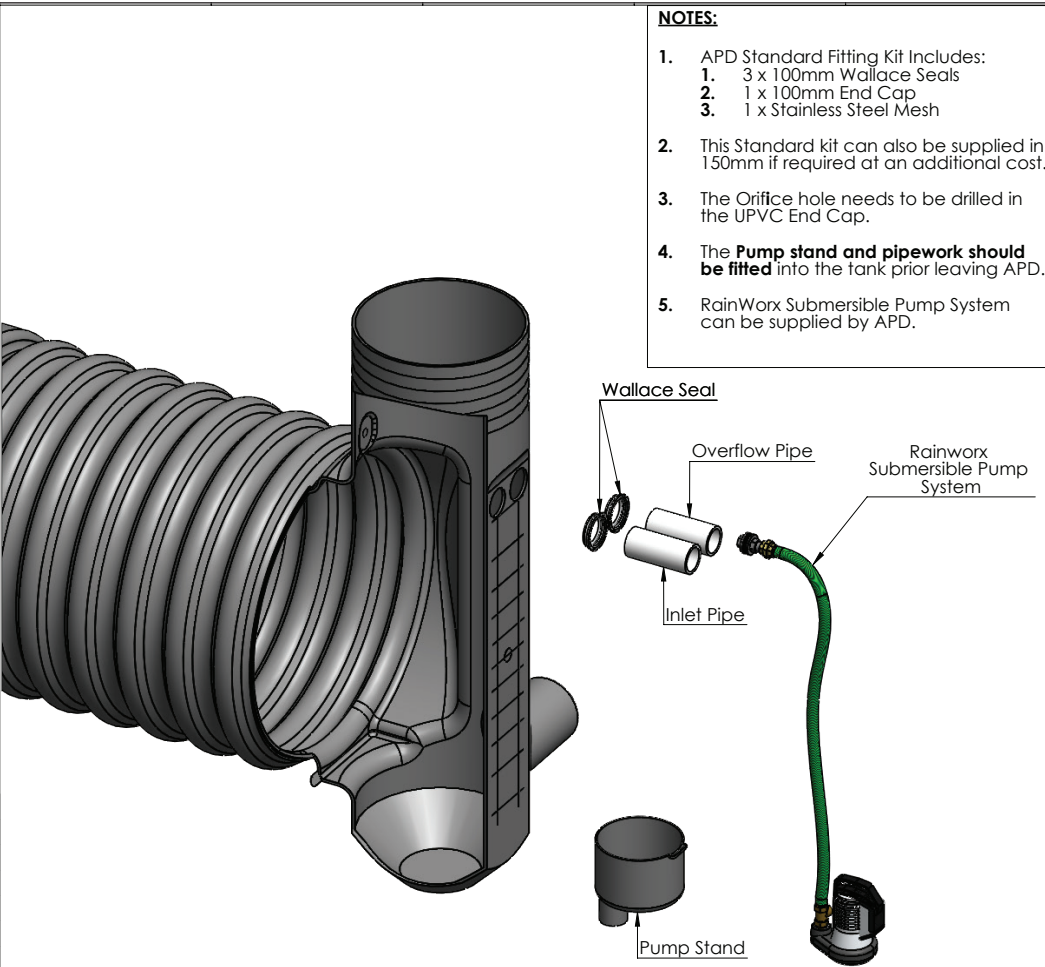


	100mm Pipe	150mm Pipe
Tank ϕ	Dim. "A"	Dim. "A"
ϕ 1200	1580mm	1605mm
ϕ 1000	1380mm	1405mm
ϕ 800	1180mm	1205mm
ϕ 645	1025mm	1050mm

NOTE: All Dimensions are to the Centre of the Pipes

NOTES:

- APD Standard Fitting Kit Includes:
 - 3 x 100mm Wallace Seals
 - 1 x 100mm End Cap
 - 1 x Stainless Steel Mesh
- This Standard kit can also be supplied in 150mm if required at an additional cost.
- The Orifice hole needs to be drilled in the UPVC End Cap.
- The **Pump stand and pipework should be fitted** into the tank prior leaving APD.
- RainWorx Submersible Pump System can be supplied by APD.



Other Acceptable Pit Details

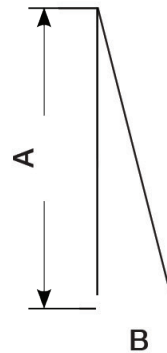


Doing Good From The Ground Up

- Excavation Options

Battered pit sides

Ratio A:B less than 4:1
X = 200mm

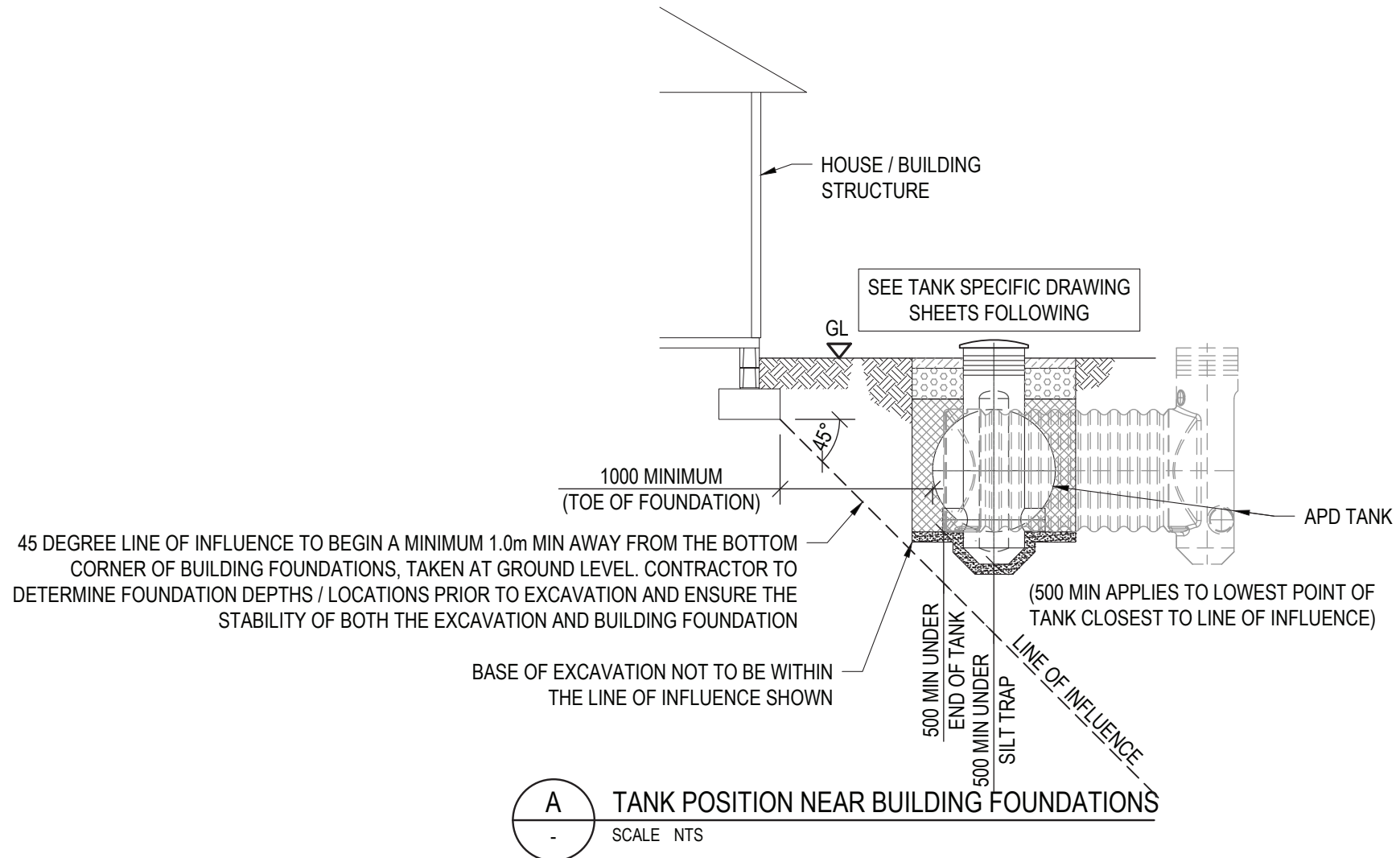


Stepped pit sides

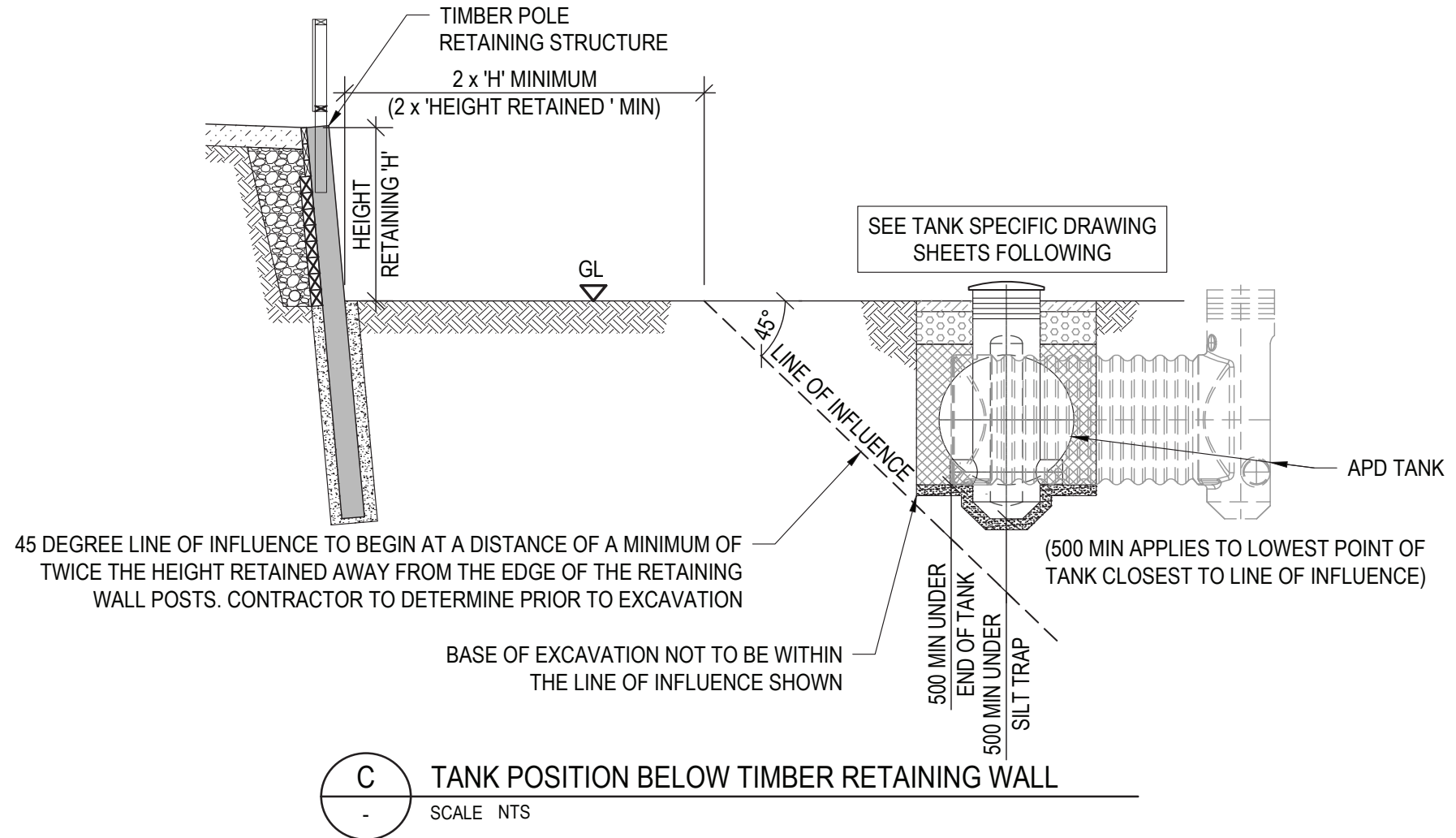
Ratio A:B less than 4:1
Length A less than 1200mm
X = 200mm



Installations Close to a Structure



Installations Close to a Retaining Wall



Additional Installation Notes



Doing Good From The Ground Up

Things to Note With Respect to Installation Details

- Excavation walls can be sloped as shown in attached details or can be vertical, and stepped if required, to comply with relevant health and safety requirements. (Note that choice of excavation wall geometry needs to take into account ultimate loading from traffic if tanks in a driveway area).
- Ground anchors will not be required for installations under driveways constructed in accordance with APD installation details, once the driveway is formed.
- Ground anchors may be required for tanks installed under lawns where there is a high water table or water can pool around tank installation.

Design life for APD StormLite® Cylindrical Tanks is 50 years.

Maximum depths of cover for APD StormLite® Cylindrical Tanks are as follows:

645mm diameter – 900mm cover

800mm diameter – 900mm cover

1000mm diameter – 900mm cover

1200mm diameter – 900mm cover (standard ends)

1200mm diameter – 1200mm cover (reinforced ends)

APD tank installation guidelines for tank installations not following APD standard installation detail manuals – all tank diameters

Wherever APD standard installation details are not adhered to then the following statement now applies to all diameters of APD underground cylindrical tanks (StormLite® tanks).

“APD StormLite® tanks are suitable to withstand loads as specified in Table 3.1G medium vehicle traffic areas as specified in NZS 1170.0. This being a 5 kPa UDL or a 31 kN half axle load over a 0.025m². This loading is based on an installed tank depth of 500mm from the crown of the tank to the surface level using compacted GAP20 or equivalent and a concrete slab as specified on the standard APD installation drawings. For alternative solutions such as varying depths of cover and other finished surfaces such as reinforced concrete or bitumen it is the client's engineers responsibility to demonstrate that these do not compromise the integrity of the tank.

A specific installation detail and a PS1 to cover the structural aspects of the installation including trafficability of tanks, and Building Code Clause B1 would need to be generated by the client's engineer at the client's cost. Both these documents need to be supplied to APD as the tank warranty will be dependent on these.”

Where APD StormLite® cylindrical tanks are specified for installation and the installation does not adhere to the APD standard installation detail manuals the generic PS1 that goes with the APD standard installation detail manuals cannot be used and the engineer specifying the tank also needs to:

- Provide a specific engineering detail for the installation.
- Source or provide a PS1 for the installation to cover Building Code B1 in the event that it is required by the local Council.
- The specific engineering detail and PS1 needs to be submitted to APD Ltd for its records to ensure the tank warranty is honoured.

StormLite® Detention/Retention Tank Inspection & Maintenance Instructions

****APD recommend using a suitably qualified plumber/drain layer for servicing of tanks.**

Thank you for choosing an APD StormLite® detention/retention tank. Please read these instructions carefully before attempting to maintain the tank.

These tanks are designed to meet council requirements to limit the flow of water to the stormwater system during heavy rainfall events. APD tanks feature a silt trap designed to minimise silt flowing into the stormwater system. All of our detention tanks are supplied with a mesh screen that is fitted over the outlet orifice and is designed to prevent large debris from blocking it. APD recommends an annual visual inspection of the silt trap, mesh and orifice(s) to determine if the silt trap requires removal of silt build up and to ensure the mesh screen and fixed orifice are free of debris. For ease of inspection these items are located directly below the manway access.

Inspection & Maintenance Procedure

- Remove the screws holding the green lid on the tank in place. If the manway access riser is located in a driveway, lift the cast iron lid. Be careful as cast iron lids are heavy and may require assistance and the correct tool to lift.
- Using a torch if necessary, inspect the mesh covering the outlet orifice(s), the orifice outlet and the level of silt build up in the silt trap.

Outlet Mesh Screen & Orifice

- Ensure the mesh is not blocked with debris as this may affect the rate at which water can exit the tank. If the mesh and orifice are clear, no further action is required.
- If the mesh has debris covering it and depending upon the nature of the debris, it may be possible to remove by hosing off, or with a suction device or a long stick and clamp. If this is not practical then it will be necessary to enter the tank to manually clear the debris.
- Caution: Entering the tank should be treated as a confined space. See confined space warning on following page.
- Clear debris from the mesh and inspect the orifice(s) for any obstructions. If the orifice is obstructed, it may be necessary to remove the mesh.
- To remove the mesh, remove the screws and pull the mesh from the orifice endcap. Clean and remove all debris and other obstructions from the orifice.
- Dispose of all debris and obstructive materials outside of the tank as leaving them in the tank may lead to a fresh blockage. Refit the mesh and secure with screws.

Silt Trap

- Check the level of silt build up in the sump. If the silt level is more than 50mm from the bottom of the silt trap, it is recommended that it be removed. APD recommends that professionals with a vacuum suction truck or similar be used to perform this task as the silt can be removed without the need to enter the tank.

Please ensure the tank lid is correctly fastened down upon completion of inspection.



DO NOT inspect the tank if it is raining or has recently rained. Allow time for the water level to reduce to the minimum level.

Caution – Confined Space

If it is necessary to enter the detention tank to undertake inspection or maintenance, you must follow the 'Safe Working in a Confined Space' guidelines provided by WorkSafe NZ or use professionals who are trained in these requirements. It is the responsibility of the person or persons entering the tank to formulate an appropriate entry plan and rescue plan. APD recommends a minimum of two (2) competent persons using suitable harness and winch equipment for tank access, with one (1) person to remain outside the tank at all times.

Tank Inspection Record

Date of Inspection	Notes