

VERSION 1801

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MCDONALD CONCRETE GROUP
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ELEPIPE CONCRETE DETENTION TANKS

McDonald Concrete Group Ltd are offering an alternative supply for Precast concrete pipes, manufactured in New Zealand to New Zealand Standards.

This guide is for their utilization as water or sewage detention or retention tanks with rated loadings.

Tanks are available as RRJ pipe with access point or as Flanged Base manholes with a precast concrete lid and access.

Steel Reinforced Concrete Pipes

- Low risk option
- Long history of reliability
- Gains strength as time goes on
- Does not lose stiffness
- Self-healing
- No weather exposure time limits
- Sound performance above or below water tables
- Does not buckle or delaminate
- Easy to join and install
- Known material – known performance
- Non flammable
- Robust
- Modular System

The right choice for future generations – designed for 100 year + life spans

APPLICATIONS

- Stormwater
 - Sewerage
 - Irrigation
-

DESIGN SPECIFICATIONS

ELEPIPE pipes are available in a range of diameters from 300mm to 1600mm diameters.

Manufactured to AS/NZS 4058; 2007 standard.

Spun pipes are cast horizontally and are cured in their moulds for set curing times. The thin wall pipes achieve excellent crushing strengths due to high strength reinforcements with smooth, straight bore finish

The products are designed and manufactured using high strength concrete and circular welded steel reinforcement to result in high strength pipes suitable for the majority of applications.

Additional steel reinforcements are available for high axial loadings and/or extra wall thickness when requested.

Further guidance for special loadings is available on publications such as the 'Guide to Understanding AS/NZS 4058 ' from the Concrete Pipe Association of Australasia website.

METHOD OF MANUFACTURE

ELEPIPE pipes are manufactured using the well proven and accepted method of centrifugal roller compaction using low water content and high cement ratio designed to exceed 60MPa in strength.

This provides the highest levels of durability of any commercial casting process.

The rolling bar compaction process also provides straight, smooth and well -formed pipes.

The compaction does not cause torsional stress or twist in the cage and the use of counter rolling ensures additional compaction, strength and smoothness within the pipe.

Curing occurs within the steel moulds under controlled conditions ensuring integrity and durability of the pipe structure.

The use of thin walled concrete pipe has been widespread throughout New Zealand and Australia since the 1930's and provides a proven service life in excess of 100 years.

Currently **McDonald Concrete Group** supply rolling rubber ring joint pipe from 225mm to 1600 mm in diameter and flush joint pipe and risers from 600mm to 1800mm in diameter. These are available in a variety of reinforcement design and wall thicknesses to suit customer requirements

RRJ RETENTION TANKS

Generally utilized for long or narrow sites or where there are loadings where site requires rated designs for specific situations.

Comprised of steel reinforced concrete rubber ring joint pipes with a spigot plugged pipe, intermediate pipes to allow variable volume and a collar plugged pipe

Outlets are designed to suit requirements

FLANGED BASE RETENTION TANKS

Often utilized in small sites due to smaller footprint and is usually utilized for lower volume requirements.

Manufactured from Elepipe flange base manhole risers with precast lid to required volumes

Outlets are designed to suit requirements

GENERAL DESIGN INFORMATION AND SPECIFICATIONS

Tanks are available in various sizes and load classes to suit specific site conditions and design requirements.

Tank diameters and lengths are dependent on-

Storage volumes,

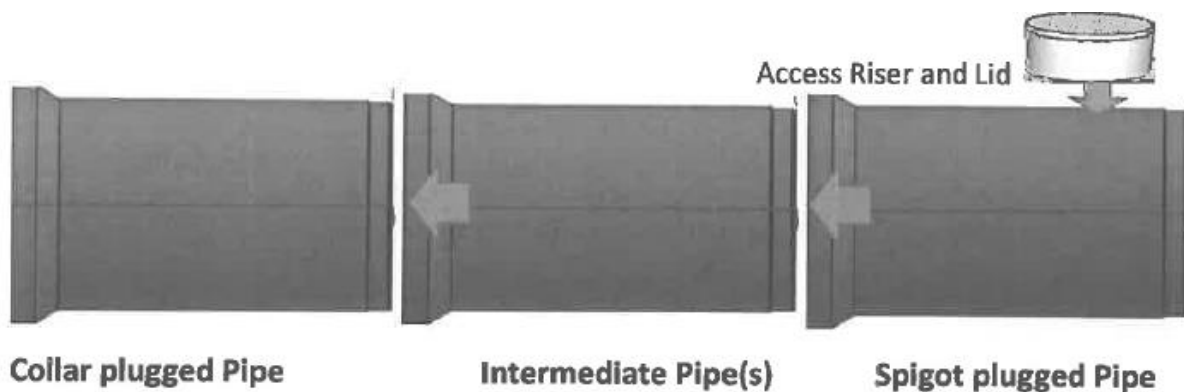
Site configuration,

Site access

Customer needs.

Outlets are designed and installed to suit individual applications with each job usually having different requirements.

Access lids are dependent on site loadings, applications and location on site.



PIPE HANDLING & LIFTING

ELEPIPE pipes 600mm or greater have ‘Swiftlift’ type lifting points incorporated in their design.

These points require suitable lifting equipment and methods to ensure that angles of lift are correct and that shock loadings from transport over uneven ground or sudden dynamic load applications do not exceed the individual anchors capacity.

Small pipes can have on request the ‘Balance’ point indicated on the pipe.

If elliptical cages are utilized (600mm +) then the pipes will be marked with a “TOP” inscription on the pipe and the pipes must be transported and stored with this marking in the visible top position (12 o’clock).

INSTALLATION

Installation procedure should be in accordance with AS/NZS 3725: 2007 “Design for Installation of Buried Concrete Pipe” in order to ensure correct pipe installation choices and procedures.

Appropriate bedding and compaction techniques should be utilized with no use of heavy vibratory rollers until a minimum of 600mm cover has been achieved using material and compaction standards complying with The Standard.

Excessive compaction at a higher trench level in the hope that the desired compaction is achieved in the critical zones may not only fail to reach the required compaction but could also damage the pipe. This type of impact is reported as ‘ the greatest cause of pipe cracking in Australia and New Zealand today’

See Technical Note 1 from CPAA Website

PIPE JOINTS

ELEPIPE pipes are designed with a rolling rubber ring joint with male spigot and female collar ends.

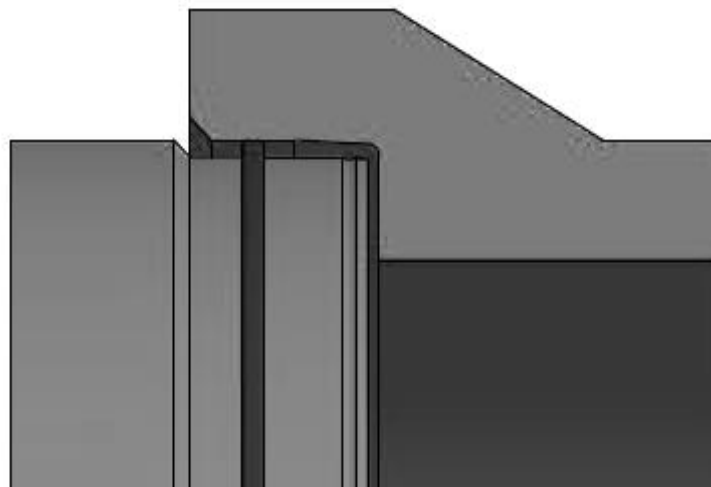
The pipes may not be compatible with VT or BIDI manufactured product and careful analysis should be undertaken before trying to extend existing pipelines.

MCG recommends the use of a suitable manhole or chamber for extension or replacement applications where a mixture of pipe types are to be utilized.

JOINT CONFIGURATION OF MCG PIPES

Joints are rolling ‘O’ profile rubber rings which ensure a flexible pipeline with structural integrity.

Rubber Rings manufactured in accordance with AS 1646:2000- Elastomeric Seals for Waterwork Purposes



ELEPIPES are designed to be capable of withstanding an internal pressure of 6m head (60kPa) whilst maintaining a flexible joint configuration

DIMENSIONS

ELEPIPE Spun Rubber Ring Joint Pipe Range															
Nominal Pipe Diameter		225	300	375	450	525	600	675	750	825	900	1050	1200	1350	1600
Internal Diameter	ID														
Wall Thickness	t	32	35	35	42.5	48	56	60	68	70	73	86	92	96	108
Weight of Pipe	Kg		270	325	475	615	790	944	1170	1413	1615	2188	2697	3140	4305
Overall Length	mm	2565	2575	2575	2575	2590	2530	2530	2550	2555	2580	2597	2597	2603	2640
Barrel Diameter	mm	280	360	445	536	616	700	780	866	942	1039	1219	1371	1524	1753
Barrel Length	mm	2495	2497	2497	2497	2500	2440	2440	2440	2440	2440	2440	2440	2440	2440
Nominal Laying Gap	mm	5	5	5	5	5	5	5	8	8	8	10	10	10	12
Effective Length	mm	2500	2503	2503	2503	2505	2445	2445	2448	2448	2448	2450	2450	2450	2452
Collar Diameter	mm	370	450	540	640	730	820	910	1000	1085	1039	1219	1543	1635	1990
Collar Length	mm	70	77	80	115	135	135	135	145	150	170	170	170	170	200
Bell Length	mm	90	90	95	115	135	135	135	155	150	150	150	150	150	190
Point of Balance	mm	1325	1325	1230	1200	1220	-	-	-	-	-	-	-	-	-
Lifting Anchor Pos 1	mm						420	440	440	440	450	480	525	630	510
Lifting Anchor Pos 2	mm						1885	1735	1790	1790	1890	1990	1835	1770	1750
Swiftlift Lifting Clutch	T						1.3	1.3	1.3	1.3	1.3	2.5	2.5	2.5	2.5

Notes

- Internal diameter and wall thicknesses given are for Class 4 and are rounded to nearest whole number
- Weights based on spun density of 2550kg/m³
- Effective length values include nominal laying gap

ECONOMICAL LIFE CYCLE

- Recent studies are confirming that Spun Concrete Pipe gives the most economical life cycle in comparison to other pipe types. See
- Specifying concrete pipe manufactured to AS/NZS 4058 and installed to AS 3725 assures a design life of 100 years.
- ELEPipe are committed to quality management and production to assure our customers that we deliver on industry benchmarks.