NORTHERN ALBERTA

2020

LAFARGE
Building better cities™

CONCRETE PIPE

Precast Stormwater & Wastewater Solutions

CCPPA

MEMBER NASTT

American Concrete Pipe Association

Stormceptor®

StormTrap

CUSTOM SOLUTIONS

At Lafarge we pride ourselves on being a solutions provider. If your project requires a custom product, please get in touch with us as we are always looking to be able to provide a solution and expand our portfolio of custom products. Listed below are some custom products we have produced over the years to meet our customers' project requirements.

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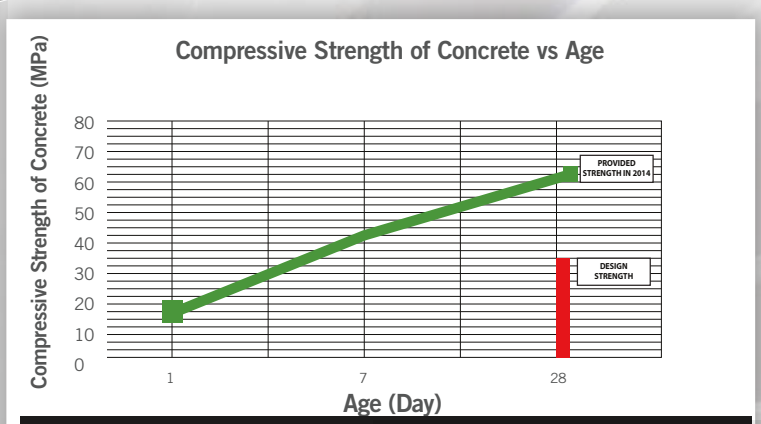
Advantages of Concrete Pipe

CCPPA

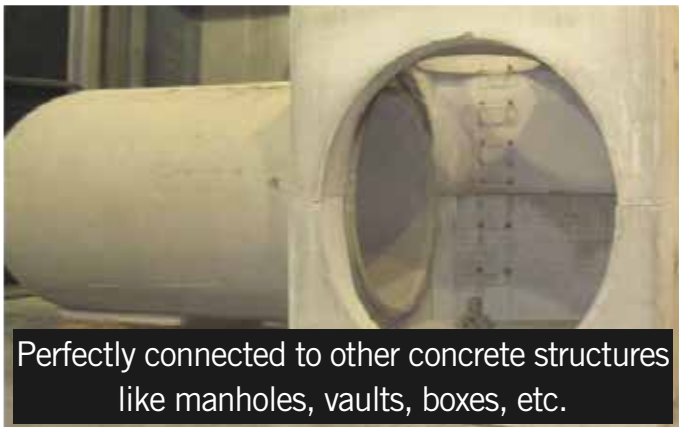
ASTM CSA

DESIGNED IN ACCORDANCE

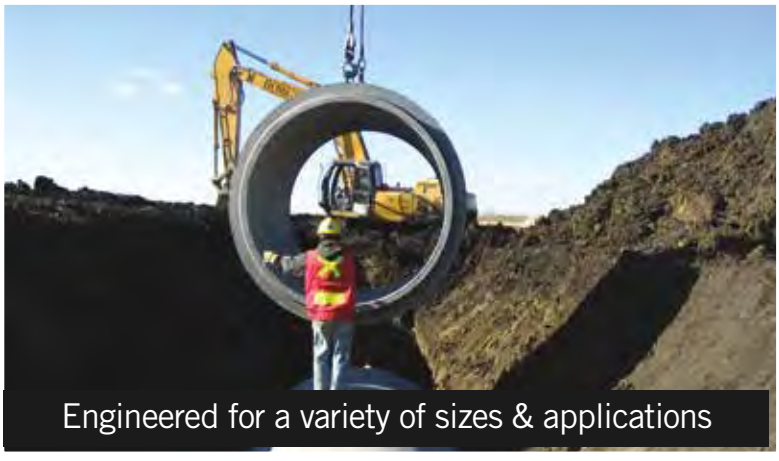
Certified through the Canadian Precast Concrete Quality Assurance Certification Program



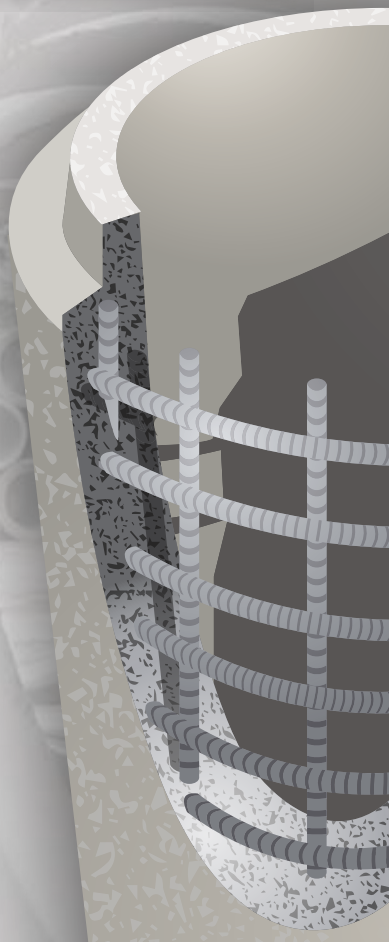
Typically designed for compressive strength of 35MPa, however it normally achieves 50-70 MPa at 28 days



Perfectly connected to other concrete structures like manholes, vaults, boxes, etc.



Engineered for a variety of sizes & applications



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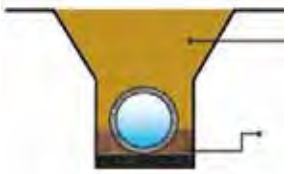
LAFARGE

ASCE

American Concrete Pipe Association

WITH STANDARDS AND GUIDELINES



Overfill Soil

Engineered Backfill

Typical Concrete Pipe Installation

Typical Flexible Pipe Installation

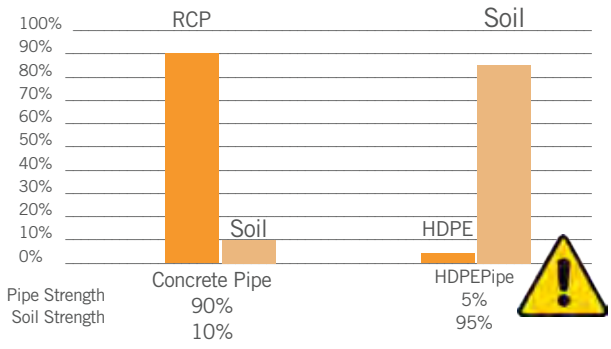
Required Granular Backfill

Required Granular Backfill

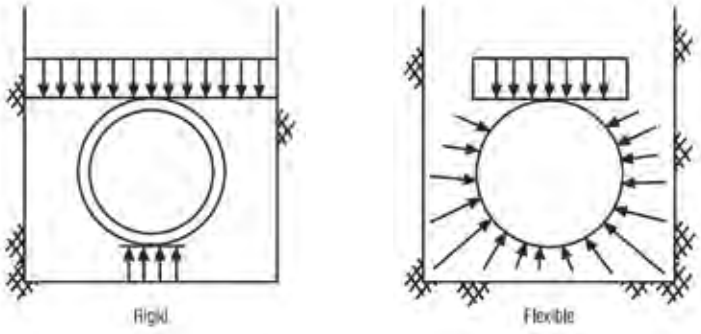
Reduces the engineered fill amount and construction work

Successfully used for over 100 years.

Concrete Pipe



Provides 90% of overall strength, where flexible pipe typically provides 5% of overall strength and mainly relies on back fill material and compaction*



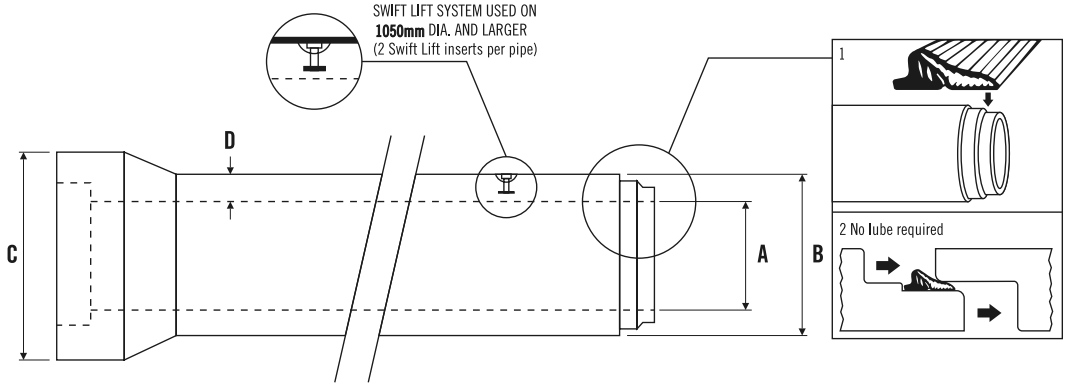
Ref: American Concrete Pipe Association (ACPA)

CONCRETE PIPE PRICING

Diameter (mm)	(in.)	Length (m)	ASTM C-14		ASTM C-76					
					III		IV		V	
			CSA A257.1		CSA A257.2					
					65D		100D		140D	
			$/m	$/pipe	$/m	$/pipe	$/m	$/pipe	$/m	$/pipe
250	10"	1.25	$73.60	$92						
300	12"	2.45							$68.79	$168
375	15"	2.45							$88.69	$217
450	18"	2.45							$122.87	$301
525	21"	2.45							$154.89	$379
600	24"	2.45			$183.44	$449	$194.26	$475	$208.54	$510
675	27"	2.45			$234.50	$574	$268.24	$657	$307.62	$753
750	30"	2.45			$276.90	$678	$310.21	$760	$364.73	$893
900	36"	2.45			$403.67	$988	$448.23	$1098	$526.54	$1290
1050	42"	2.45			$591.87	$1450	$664.56	$1628	$813.82	$1993
1200	48"	2.45			$766.23	$1877	$921.12	$2256	$1121.44	$2747
1350	54"	2.45			$976.93	$2393	$1134.42	$2779	$1301.42	$3188
1500	60"	2.45			$1149.99	$2817	$1400.50	$3431	$1630.67	$3995
1650	66"	2.45			$1462.80	$3583	$1702.49	$4171	$2027.84	$4968
1800	72"	2.45			$1770.85	$4338	$2041.26	$5001	$2354.50	$5768
1950	78"	2.45			$2383.05	$5838	$2608.47	$6390	$3318.88	$8131
2100	84"	2.45			$2603.27	$6378	$2839.07	$6955	$3679.71	$9015
2400	96"	2.45			$3475.93	$8516	$3726.01	$9128	$4237.40	$10381
2700	108"	2.45			$4182.46	$10247	$4721.54	$11567	$5218.23	$12784
3000	120"	2.45			$6084.83	$14907	$6620.89	$16221	$7297.99	$17880

Self-Lubricated Gaskets are included with pipe material. If extra gaskets are required, an extra charge will apply.

For Nitrile Gasket substitution, please call for pricing and availability.



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CONCRETE PIPE

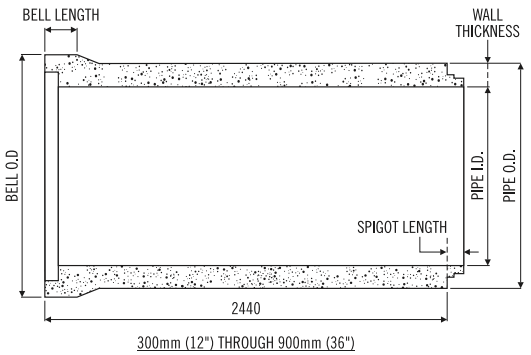
Diameter (mm)	Diameter (in.)	Length (m)	Style	Wall	Weight (kg/pc.)	Lifting Pins	Dimensions (mm)					
							Pipe I.D.	Pipe O.D.	Bell O.D.	Wall Thickness	Bell Length	Spigot Length
250	10”	1.25	Belled	B	140	None	254	336	406	41		
300	12”	2.44	Belled	C	515	None	305	444	510	70		92
375	15”	2.44	Belled	C	685	None	381	533	610	76	127	92
450	18”	2.44	Belled	B	740	None	447	585	711	64	127	92
525	21”	2.44	Belled	C	1100	None	533	711	806	89	127	98
600	24”	2.44	Belled	C	1335	None	610	800	900	95	152	98
675	27”	2.44	Belled	C	1600	None	685	890	1000	102	165	102
750	30”	2.44	Belled	C	1900	None	762	978	1099	108	165	102
900	36”	2.44	Belled	C	2480	None	914	1156	1302	121	178	102
1050	42”	2.44	Straight	C	2977	4 T	1067	1333	N/A	133	N/A	108
1200	48”	2.44	Straight	B	3100	4 T	1219	1475	N/A	127	N/A	102
1200	48”	2.44	Straight	C	3690	4 T	1219	1512	N/A	146	N/A	102
1350	54”	2.44	Straight	C	4410	4 T	1372	1687	N/A	158	N/A	127
1500	60”	2.44	Straight	B	4716	8 T	1524	1828	N/A	152	N/A	127
1500	60”	2.44	Straight	C	5390	8 T	1524	1866	N/A	171	N/A	127
1650	66”	2.44	Straight	C	6321	8 T	1676	2044	N/A	184	N/A	127
1800	72”	2.44	Straight	B	6564	8 T	1829	2184	N/A	178	N/A	127
1800	72”	2.44	Straight	C	7512	8 T	1829	2221	N/A	196	N/A	127
1950	78”	2.44	Straight	C	8759	8 T	1981	2401	N/A	223	N/A	140
2100	84”	2.44	Straight	B	8760	8 T	2134	2540	N/A	203	N/A	159
2400	96”	2.44	Straight	B	11261	8 T	2438	2895	N/A	229	N/A	127
2400	96”	2.44	Straight	C	12400	8 T	2438	2933	N/A	248	N/A	127
2700	108”	2.44	Straight	C	15200	20 T	2743	3289	N/A	273	N/A	127
3000	120”	2.44	Straight	B	17617	20 T	3048	3607	N/A	279	N/A	152

Dimensions subject to change. If precise measurements are needed, please contact us.

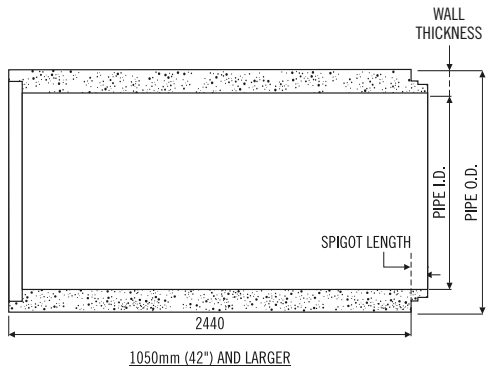
Self-Lubricated Gaskets are used with all Lafarge pipe (except 250mm) and require no external lubrication.

All product is rated for 13psi (90KPa).

Lafarge requires that the lifting pin cavaties be grouted after installation.



300mm (12") THROUGH 900mm (36")



1050mm (42") AND LARGER

PIPE CLASS ESTIMATION TABLE

Pipe Diameter (mm)	Installation Type	Maximum Depth to Invert (m) for:			
		Class II	Class III	Class IV	Class V
300	1		7.2	10.7	15.6
	2		5.0	7.4	11.0
375	1		7.4	11.4	16.1
	2		5.3	8.0	11.4
450	1		7.7	11.5	16.3
	2		5.3	8.2	11.4
525	1		7.7	11.7	16.6
	2		5.4	8.2	11.6
600	1	6.3	8.0	12.1	16.7
	2		5.6	8.4	11.7
675	1	4.5	8.0	12.2	16.8
	2		5.6	8.5	11.8
750	1	6.4	8.1	12.2	16.9
	2		5.7	8.6	11.9
900	1	4.7	8.1	12.1	16.8
	2		5.8	8.7	11.9
1050	1	6.6	8.2	12.3	16.9
	2		5.9	8.8	12.1
1200	1	4.8	8.4	12.5	17.1
	2		6.1	9.0	12.3

Pipe Diameter (mm)	Installation Type:	Maximum Depth to Invert (m) for:			
		Class II	Class III	Class IV	Class V
1350	1	6.6	8.4	12.5	17.1
	2	4.9	6.2	9.1	12.3
1500	1	6.7	8.5	12.6	17.2
	2	5.0	6.3	9.2	12.5
1650	1	6.9	8.6	12.7	17.3
	2	5.2	6.4	9.3	12.6
1800	1	6.9	8.6	12.7	17.2
	2	5.2	6.5	9.4	12.6
1950	1	7.0	8.8	12.8	17.3
	2	5.3	6.6	9.5	12.8
2100	1	7.2	8.9	12.9	17.5
	2	5.5	6.8	9.7	13.0
2400	1	7.3	9.1	13.1	17.6
	2	5.7	7.0	9.9	13.2
2700	1	7.5	9.2	13.2	17.7
	2	5.9	7.2	10.2	13.4
3000	1	7.6	9.4	13.3	17.8
	2	6.1	7.4	10.4	13.7

Notes:

1. The above table is based on Standard Installation Beddings as shown on the following page.
2. A type 2 installation is considered typical for Edmonton area.
3. Type 3 and 4 installations are also available, but very rarely used.
4. **The table above is listed for estimation purposes only & does not constitute structural design. Please call for detailed design as per project requirements.**

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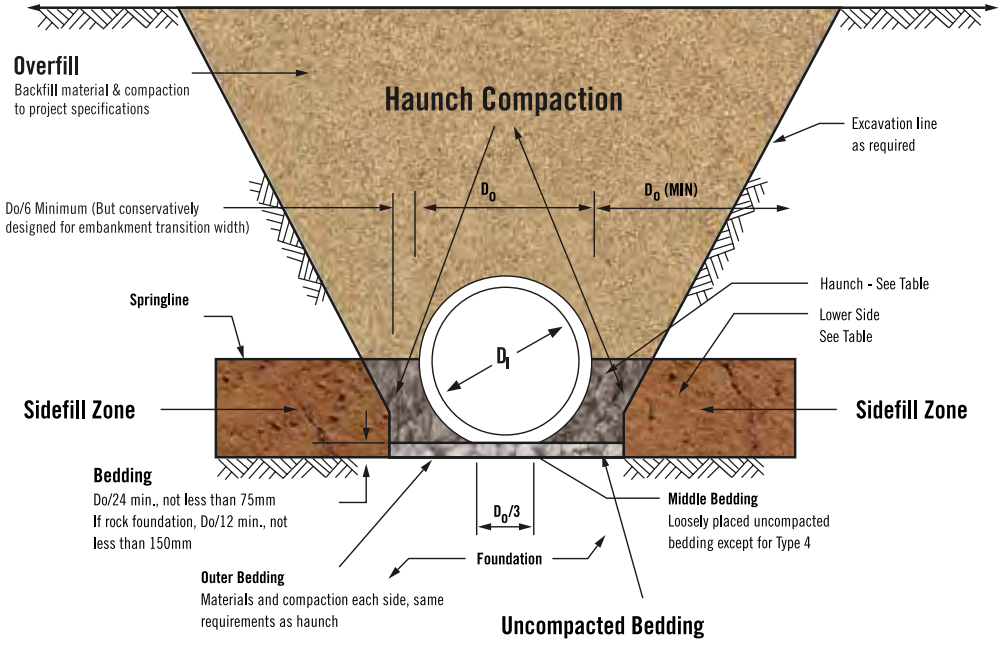
LAFARGE

STANDARD INSTALLATION BEDDINGS

Soil & Compaction Requirements		
Installation Type	Haunch & Outer Bedding	Lower Side
Type 1	95% Category I	95% Category I, 95% Category II, or 100% Category III
Type 2	90% Category I, or 95% Category II	85% Category I, 90% Category II, or 95% Category III

Soil Classifications	
Soil Description	USCS Soil Types
Gravelly Sand (Category I)	SW, SP GW, GP
Sandy Silt (Category II)	GM, SM, ML Also GC, SC with less than 20% passing #200 sieve
Silty Clay (Category III)	CL, MH GC, SC, CH



The Pipe Class Estimation Table on the previous page is based on Standard Installation Beddings, with calculations generated from 3EB module of the PipePac concrete pipe design software package using the following parameters:

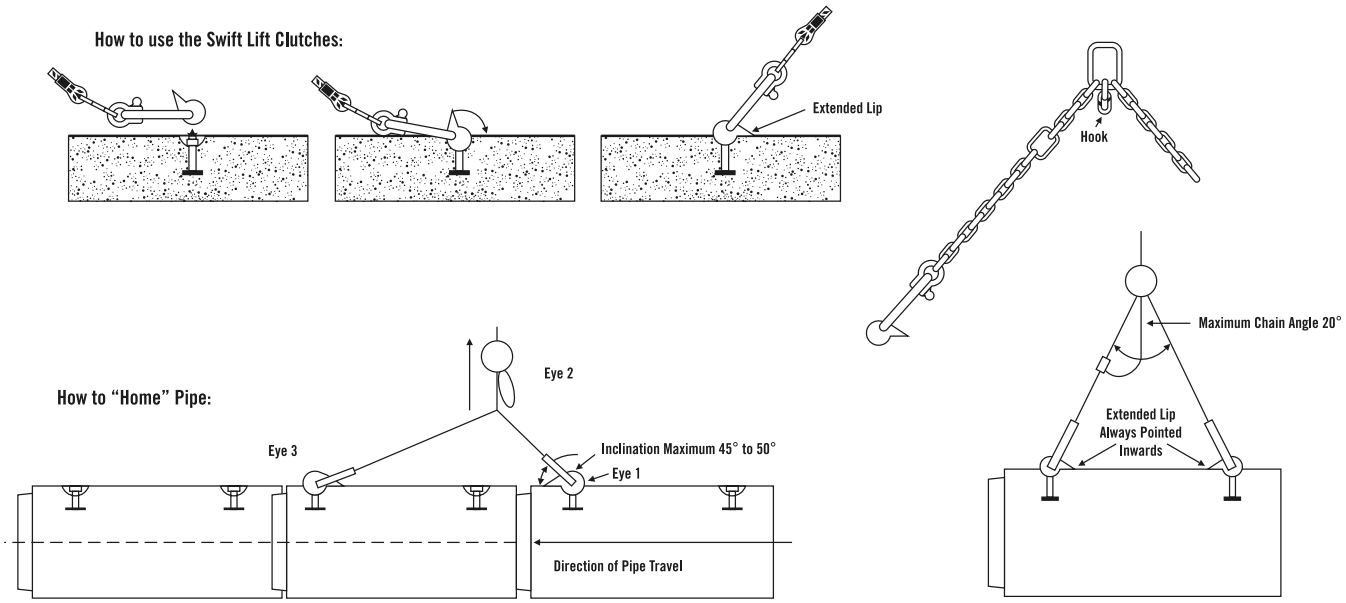
Conditions other than those listed above can be analyzed in PipePac, available at pipe.concretepipe.org/pipepac, or call Lafarge for assistance. The Pipe Class Estimation Table is provided for estimation purpose only and is not intended to replace engineering design.

For applications deeper than shown in the Pipe Class Estimation Table, contact Lafarge for assistance. We will design the pipe for the required depth using Standard Installation Bedding. Note that the use of Class A (concrete) bedding is not required, at any depth.

> "B" wall pipe thickness
> Backfill soil density of 2082 kg/m3
> HS32 (CL 800) highway live loading
> Fill height increments of 300mm
> Bedding Types 1, 2, 3 and 4 as defined in the ACPA publication Design Data 40. See above detail.
> Analysis based on minimum 600mm Cover.
> Positive projecting embankment conditions, based on:
  - Positive projection ratio of 0.9
  - Soil lateral pressure ratio of 0.33
  - Ku of 0.15
  - Settlement ratio of 0.70
  - Fluid load included.

LIFT SYSTEMS

> "SWIFT LIFT" PROCEDURES:



> SAFE WORKING PROCEDURES GUIDELINES:

Do not transport pipe over uneven ground using swift lift anchors. This dynamic loading may cause damage to the lift anchor and concrete.

Care must be taken not to tamper with lift pins. Tampering includes heating, hammering, welding, side loading (dragging material) or any other act that could damage the pin or concrete. All these actions deform the steel making the swift lift pin unsafe to work with.

Load must be applied simultaneously to all Swift Lift Anchors in order to safely lift product.


HOMING WITH SWIFT LIFT

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TSS Series

Tylox® SuperSeal™ Pre-lubricated Profile Gaskets for Single Offset Joints on Round, Elliptical or Arch Concrete Pipe.

Say good-bye to the lube bucket and brush. Say hello to fast, clean, simple installation.

The unique design of the Tylox® SuperSeal™ pipe gasket is bringing a cost-saving revolution to the field of concrete pipe gasketing and installation.

Requires no field lubrication. The Tylox® SuperSeal™ gasket has a layer of silicone lubricant installed on the inner surface of the tube, during the manufacturing process; saving you time, and money, on the job-site.

Self-Contained Lubricant. Sealed within the tube, the lubricant is impervious to mud, dirt and debris. If you drop it in the trench, simply wipe the gasket surface clean and you're ready to install. No special handling is required.

No equalization required. Due to the reduced gasket stretch requirement of the unique lamell/rolling-tube design, the Tylox® SuperSeal™ gasket requires no equalization after installation. A quick and easy installation means you save even more time, and money.

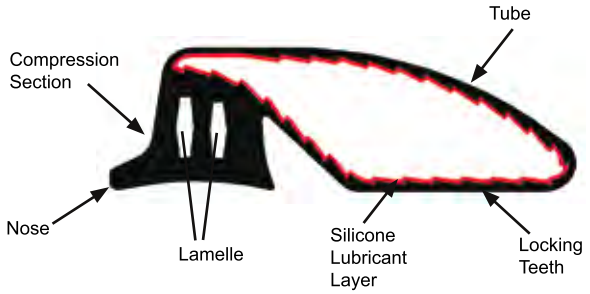
No gasket "roll" or "twist". Another benefit of the unique lamell/rolling-tube design is the drastic reduction in insertion forces, virtualy eliminating the gasket "roll" and "twist" associated with o-ring and standard profile gaskets. Manual coupling of up to 36" pipe is possible.

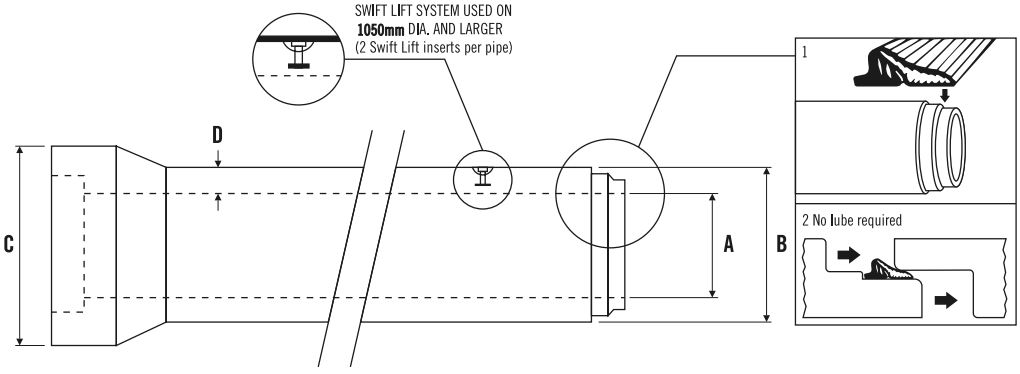
Self-Centering. The pipe spigot is self-centered, within the bell, due to the forces generated as the tube rolls into the annular space during the homing process.

No Joint Kick Back. The small teeth within the rolling tube "lock-up" under rearward motion, resisting pull-out forces, and maintaining the "homed" position.

Reduced deflection. The rolling tube acts as a "filler" within the annular space between spigot and bell; both reducing the amount of deflection under side-load, and acting as a buffer to eliminate spigot and bell spalling due to concrete-to-concrete contact.

Tylox® SuperSeal™ gaskets are available for all common combinations of annular and total annular spaces, and are available in a variety of rubber compounds, to meet, or exceed, the material requirements of ASTM C361, ASTM C425, ASTM C443, ASTM C1619, California Greenbook, and CSA A-257.





Self-Lubricated Gaskets are included with pipe material. If extra gaskets are required, an extra charge will apply.

For Nitrile Gasket substitution, please call for pricing and availability.

Available Models					
Model	Body Height	Body Width	Total Width	To Suit * Annular Space	
				Total	Small
115	0.490	0.600	1.185	0.281	0.094
135	0.610	0.712	1.582	0.326	0.126
165	0.682	0.795	1.750	0.446	0.146
166**	0.680	0.780	1.615	0.446	0.094
185	0.740	0.896	2.066	0.446	0.175
186**	0.758	0.850	1.631	0.450	0.094
200	0.798	0.950	1.793	0.500	0.175
200L	0.885	1.080	2.580	0.500	0.175
201**	0.807	0.925	1.940	0.500	0.080
225	0.914	1.085	2.787	0.525	0.175
245	0.965	1.120	2.010	0.590	0.190

* For informational purposes only. Consult your Hamilton Kent representative for sizing to suit your specific joint details.
** These models do not have locking teeth.

Materials and Identification

Tylox® SuperSeal™ gaskets are manufactured from a variety of synthetic rubber compounds, to meet the material requirements of ASTM C361, ASTM C443, ASTM C425, ASTM C1619, California Greenbook, and CSA A257.

The applicable specification(s) and useage mode for a particular gasket are identified by a colored stripe around the periphery of the gasket:

Standard

C443, A257, C1619	White Stripe
C361, A257, C1619	Blue Stripe
California Greenbook, C425	Green Stripe

Oil-Resistant

C361, C443, A257, C1619	Orange Stripe
California Greenbook	Yellow Stripe

The above listing covers the standard, North American, specifications. Gaskets materials are available to meet many other specifications. Please consult your Hamilton Kent representative regarding materials to meet your particular specifications.

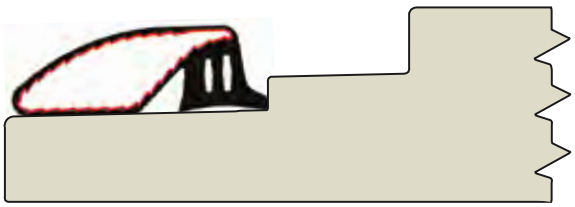
Pressure Rating

Tylox® SuperSeal™gaskets are suitable for use in systems with up to 13 psig (30 ft Head) pressure requirements.

Higher head pressures have been obtained with certain joint designs. Please consult your local Hamilton Kent Representative for gasket selection to meet your specific requirements.

Installation

1. Ensure that bell and spigot are free from cracks, chips, or other defects.
2. Brush loose dirt, debris and foreign material from the inside surface of the bell, the spigot and the gasket.
3. Stretch gasket around the spigot, with the nose against the step, and the tube laying flat against the spigot.



Do Not Lubricate.

4. Align the spigot with the bell, ensuring that the gasket is in contact with the bell around the complete periphery, then thrust pipe home using suitable manual or mechanical means. The homing process will cause the lubricated tube to roll over itself, above the compression section, allowing the pipe to slide forward.

Once fully homed, the compression section seals the total annular space; the rolling tube comes to rest within the small annular space - acting as a cushion against side loads; and the serrations act to resist pipe pull-out.

Hamilton Kent
Sealing Your Connection

EDMONTON PIPE PLANT
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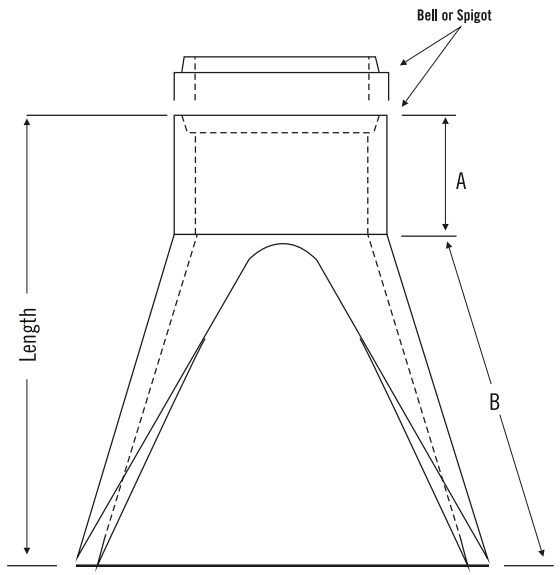
FLARED END SECTIONS

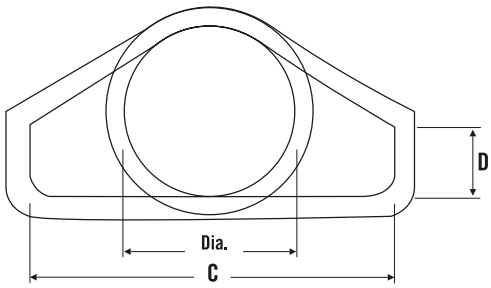
Diameter length (m)		Length (m)	Weight (kgs)	Price ($ each) Flared End	Price ($ each) Galvanized Bar Screen
(mm)	(in.)				
300	12”	1.85	570	$973	$278
375	15”	1.85	780	$1174	$283
450	18”	1.25	841	$1248	$304
525	21”	1.85	1120	$1753	$383
600	24”	1.85	725	$1833	$417
750	30”	1.85	2480	$2325	$508
900	36”	2.45	1865	$3291	$555
1050	42”	2.45	2760	$3597	$612
1200	48”	2.45	2975	$4486	$693
1350	54”	2.45	3665	$5875	$766
1500	60”	2.45	3980	$6622	$856

For flared ends 750mm and larger, four 4-ton lift clutches will be required. A lifting hole is provided for flared ends smaller than 750 mm (with the exception of 450 mm which has 2 - 4 ton lifting pins).

Diameter (mm)	ACTUAL DIMENSIONS (mm)			
	A	B	C	D
300	1244	610	610	186
375	1168	686	762	152
450	170	1108	914	305
525	965	890	1067	152
600	749	1168	1207	254
750	500	1378	1524	305
900	864	1600	1829	381
1050	889	1650	1950	533
1200	610	1829	2134	610
1350	895	1651	2250	700
1500	819	1525	2410	762



For larger sizes not listed above, box section beveled ends can be manufactured or pipe cut into ‘Flare’ as seen in the picture above. Please call for pricing.

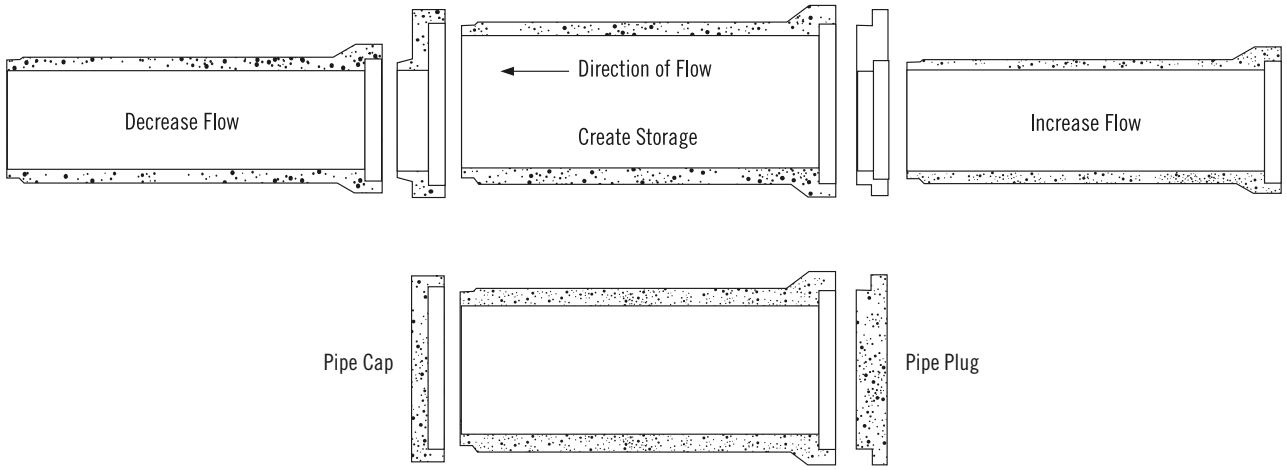


PLUGS AND ADAPTORS

Plugs and Adaptors	Weight (kg) See note (1)	Price ($ each)
300mm Diameter Plug and Adaptor	125	$119
375mm Diameter Plug and Adaptor	175	$133
450mm Diameter Plug and Adaptor	250	$157
525mm Diameter Plug and Adaptor	325	$183
600mm Diameter Plug and Adaptor	425	$215
675mm Diameter Plug and Adaptor	525	$245
750mm Diameter Plug and Adaptor	625	$306
900mm Diameter Plug and Adaptor	1075	$440
1050mm Diameter Plug and Adaptor	1400	$622
1200mm Diameter Plug and Adaptor	1650	$703
1350mm Diameter Plug and Adaptor	2058	$1249
1500mm Diameter Plug and Adaptor	2657	$1637
1650mm Diameter Plug and Adaptor	3191	$2083
1800mm Diameter Plug and Adaptor	3771	$2496
1950mm Diameter Plug and Adaptor	4423	$3018
2100mm Diameter Plug and Adaptor	4956	$3380
2400mm Diameter Plug and Adaptor	6592	$4494
2700mm Diameter Plug and Adaptor	8000	$5224
3000mm Diameter Plug and Adaptor	10278	$5955

Notes:

1. The weight of the adaptor units vary with the opening size. For adaptor pricing, use the larger of the two sizes to be adapted.



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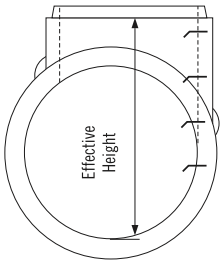
T-RISER MANHOLES & PIPE BENDS

Component	Weight	Price	Actual Dimensions (mm)	
	(kgs each)	($ each)	Effective Height	Length
300mm x 1.20 Bend	288	$964	-	1200
375mm x 1.20 Bend	374	$1126	-	1200
450mm x 1.50 Bend	518	$1379	-	1500
525mm x 1.50 Bend	633	$1671	-	1500
600mm x 1.50 Bend	834	$2055	-	1500
675mm x 1.80 Bend	1380	$2538	-	1800
750mm x 1.80 Bend	1725	$2982	-	1800
900mm x 2.45m Tee Riser / 900mm x 2.40m Bend	2979 / 2530	$4250	1415	2450 / 2400
1050mm x 2.45m Tee Riser / 1050mm x 2.40m Bend	4226 / 3508	$5555	1416	2450 / 2400
1200mm x 2.45m Tee Riser / 1200mm x 2.40m Bend	4300 / 4562	$6937	1562	2450 / 2400
1350mm x 2.45m Tee Riser / 1350mm x 2.40m Bend	5635 / 5060	$8344	1746	2450 / 2400
1500mm x 2.45m Tee Riser / 1500mm x 2.40m Bend	6785 / 6210	$9932	2076	2450 / 2400
1650mm x 2.45m Tee Riser / 1650mm x 2.40m Bend	7820 / 7245	$12606	2235	2450 / 2400
1800mm x 2.45m Tee Riser / 1800mm x 2.40m Bend	9028 / 8453	$13299	2406	2450 / 2400
1950mm x 2.45m Tee Riser / 1950mm x 2.40m Bend	9390 / 9856	$15703	2565	2450 / 2400
2100mm x 2.45m Tee Riser / 2100mm x 2.40m Bend	10954 / 11196	$17371	2735	2450 / 2400
2400mm x 2.45m Tee Riser / 2400mm x 2.40m Bend	13564 / 14625	$19329	3060	2450 / 2400

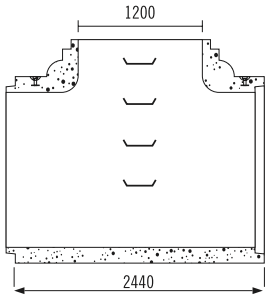
Notes:

1. Reinforced concrete pipe components manufactured to CSA A-257.2 / ASTM C-76 specifications, as required for specific depth, soil conditions and bedding detail.
2. Precast manhole riser components manufactured to CSA A257.4 / ASTM C478 specification.
3. 900mm Tee Risers are not permitted in City of Edmonton.
4. Please contact Lafarge for information on achievable bend angles.

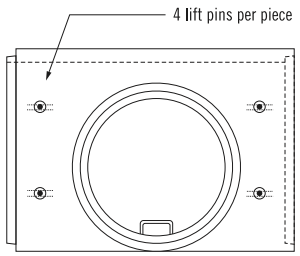
> TEE RISER MANHOLE (TYPICAL)



END VIEW



SECTION VIEW



TOP VIEW

MICROTUNNELING PIPE
Trenchless Technology

What is Microtunneling?

Microtunneling (MT) is a trenchless technology method for installing pipe from a drive shaft to a receiving shaft employing hydraulic jacks to force pipe through the ground via pipe-to-pipe interaction as the jacking face is excavated mechanically with a microtunnel boring machine (MTBM). The MTMB is a remotely-controlled steerable rotating cutting head that excavates material at the face of the pipe jack. The spoil is removed at the face of excavation via the slurry method, which is mixed in the slurry chamber behind the head and pumped to the surface into a separation system and then recycled to be used again.

A laser is used to determine a fixed point of reference for line and grade and transmitted to a monitor. All operator controls are located at the surface in a control box with visible access to the drive shaft for contact with all workers. Using this method, utilities can be installed with very high accuracy or long distances and in challenging soil conditions where other systems would have difficulty performing.

Typical Areas of Installation

Deep installations, unsuitable soil conditions, installations where space is limited. Trenchless installation of pipe is often used to minimize surface disruption, often under existing infrastructure such as railways and roadways.

Did you know? *Based on the pipe size and wall designation, Lafarge can calculate the maximum jacking force permissible for a given project upon request. This is accomplished following ASCE 27-00 "Standard Practice for Direct Design of Precast Concrete Pipe for Jacking in Trenchless Construction." Here, a concentrically loaded condition is compared against an eccentrically loaded condition, with the more conservative force governing.*

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LAFARGE

Installation Method

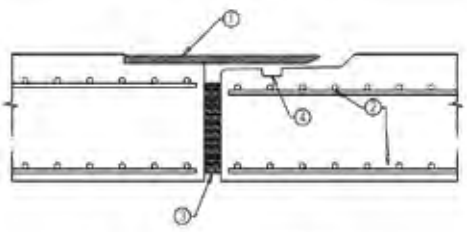
The usual construction sequence for tunneling and jacking concrete pipe is:

- Excavate jacking pits or shafts, construct jacking abutments or thrust blocks, and install jacks, jacking frame and guide rails.
- Begin tunnel excavation by machine, or hand, depending on conditions.
- Lower first section of pipe, position jacks and jacking frame, and jack pipe forward.
- Continue excavation, remove soil through pipe, insert succeeding sections of pipe between the lead pipe and jacks and jack forward.
- Repeat sequence, excavation, soil removal, pipe insertion and jacking, until the operation is complete.
- Consistency of material facilitates easier grading and even compaction.

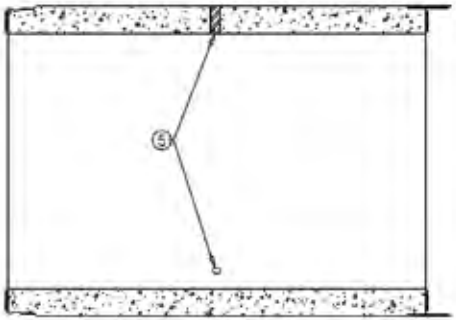
Occasionally a lubricant, such as bentonite slurry, is pumped into the space between the tunnel bore and the outside of the pipe to reduce frictional resistance. After the jacked pipe have reached their final position, grout is frequently pumped into this same space to insure continuous bearing with the surrounding soil.

When increased resistance develops due to soil conditions or length of run, intermediate jacking stations may be inserted at periodic intervals. The intermediate jacking station pushes only the several lengths ahead while bearing on the pipe behind. The use of intermediate jacking stations reduces axial loads on the pipe and required jacking capacity.

The number and capacity of the jacks primarily depends upon the size and length of the pipe to be jacked and the type of soil encountered. Abutments for the jacks must be strong enough and large enough to distribute the maximum capacity of the jacks to the soil behind the backstops.



1. Steel Bell
2. Reinforcing
3. Jacking Cushion
4. Confined Groove Joint
5. Lube or Grout Port



Lafarge can produce concrete pipe in a variety of sizes for trenchless installation with the jacking or tunneling methods. The pipe sections are designed for the additional axial force encountered in these operations and can be produced with ports for grout or lubrication.

MICRO TUNNELING PIPE

> STRAIGHT-WALL PIPE

Price Per Metre				Actual Dimensions (mm)	
Diameter (mm)	Diameter (in.)	Length (m)	Weight (kgs/m)	A	B
300	12”	1.22	200	445	70
375	15”	1.22	254	500	98
450	18”	1.22	337	623	83
525	21”	1.22	509	713	90
600	24”	1.22	616	799	95
750	30”	2.45	715	979	109
900	36”	2.45	943	1160	123

> MICROTUNNELING WITH STEEL BANDS

Contact your Lafarge Representative for more information on Microtunneling pipes and available sizes.

We can also offer technical assistance on selecting trenchless method and designing pipes.

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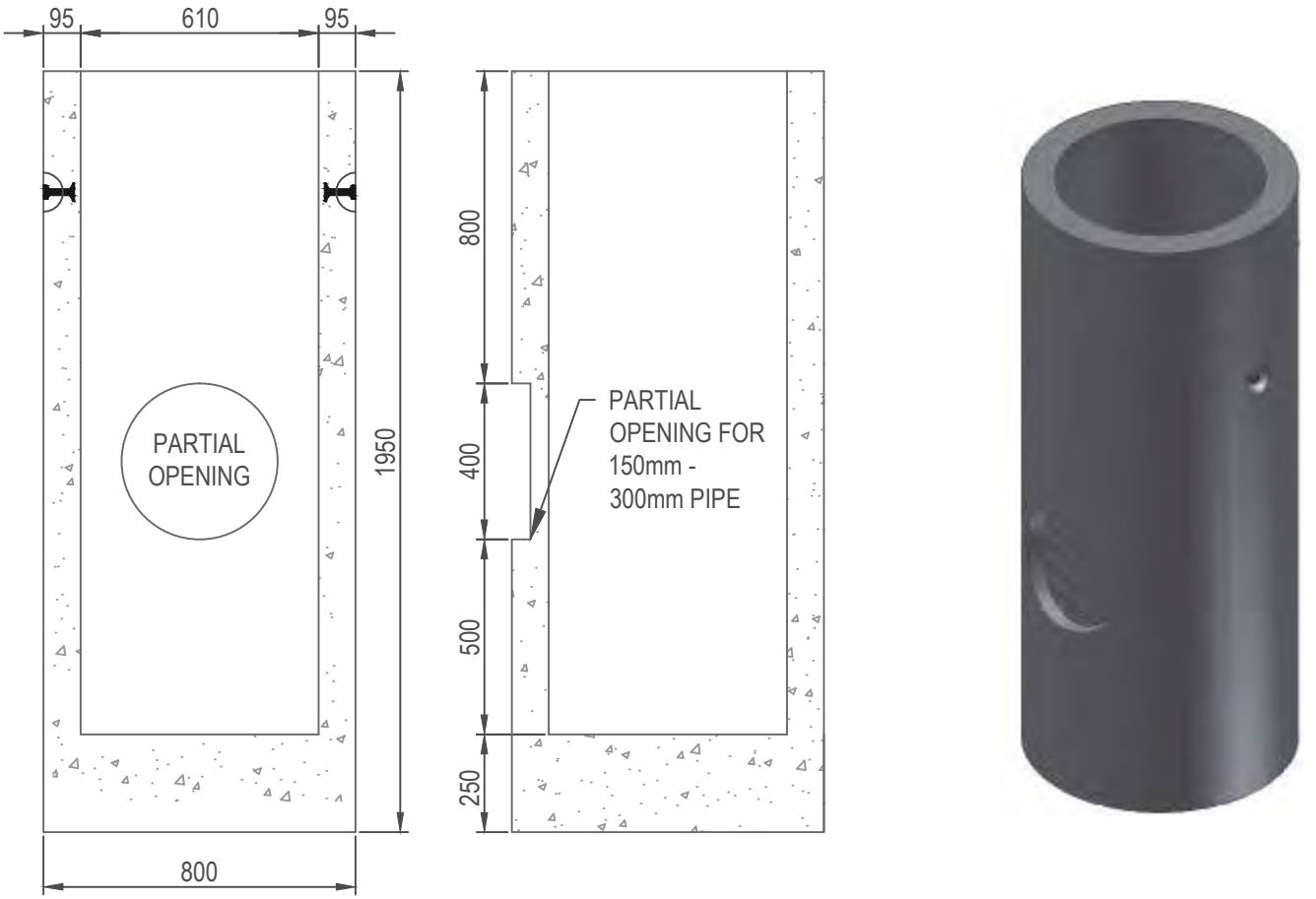
CATCH BASIN MATERIAL - 600MM

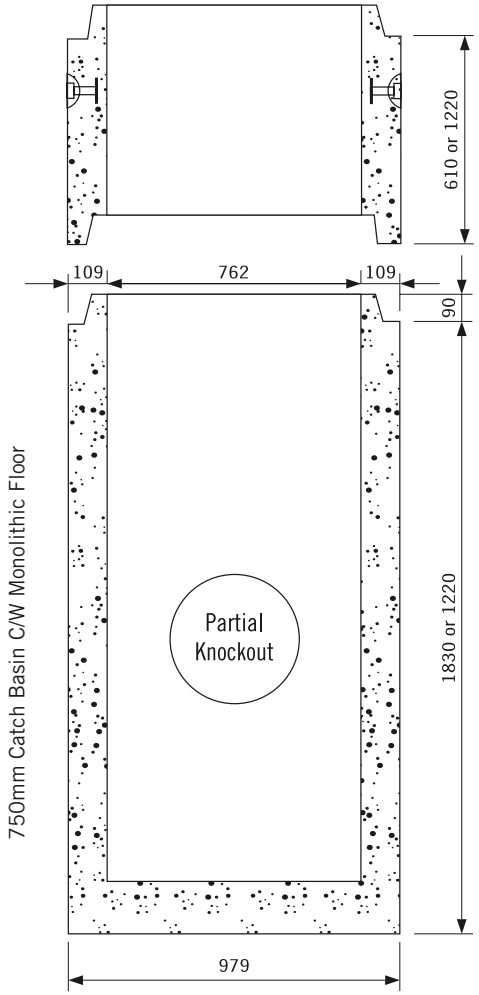


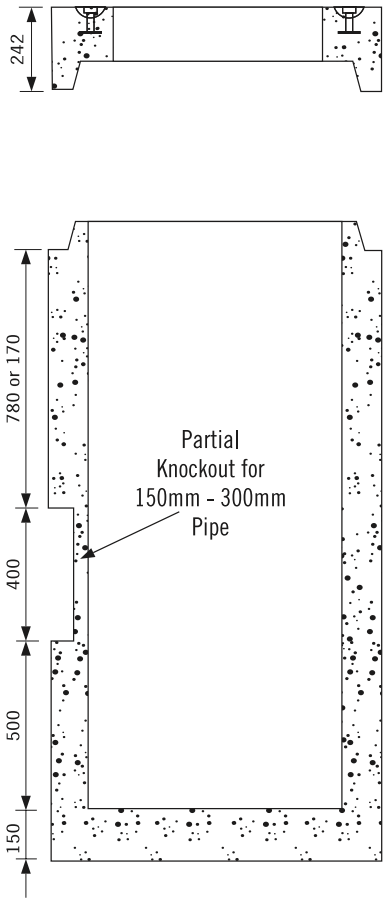
Product	Weight (kgs/pc)	Price ($ each)
600mm x 1.95m catch basin c/w monolithic floor	1005	$679
0.150m x 635mm Grade Ring	120	$113
0.100m x 635mm Grade Ring	80	$100
0.075m x 635mm Grade Ring	60	$95
0.050m x 635mm Grade Ring	40	$90

Notes:

1. 600mm catch basins do not come with steps.
2. For 600mm diameter catch basins, 1.95m is the only available height. Barrels are not available for this size.
3. Catch basins come with 2 lift pins. 4-ton lifting clutches are required. Please inquire.
4. Please see page 23 for additional catch basin material.
5. Gaskets do not come with catch basins. Please inquire if required.
6. If pipe to manhole connector is needed (for smooth wall flexible pipe only) please call for additional price.

CATCH BASIN MATERIAL - 750MM





Product	Weight (kgs/pc)	Price ($ each)
750mm x 1.83m CB c/w Monolithic Base	1460	$863
750mm x 1.22m CB c/w Monolithic Base	1030	$658
750mm x 1.22m CB Barrel (No Steps)	820	$390
750mm x 0.61m CB Barrel (No Steps)	400	$233
750mm Slab Top with 635mm Opening	220	$265

Notes:

1. Catch basins and riser barrels do not come with steps for this diameter.
2. Catch basins come with 2 lift-pins, 4-ton lifting clutches are required. Please inquire.
3. Please see page 23 for additional Catch Basin material.
4. Gaskets do not come with monolithic catch basins. Please inquire if required.
5. If pipe to manhole connector is needed (for smooth wall flexible pipe only) please call for additional price.

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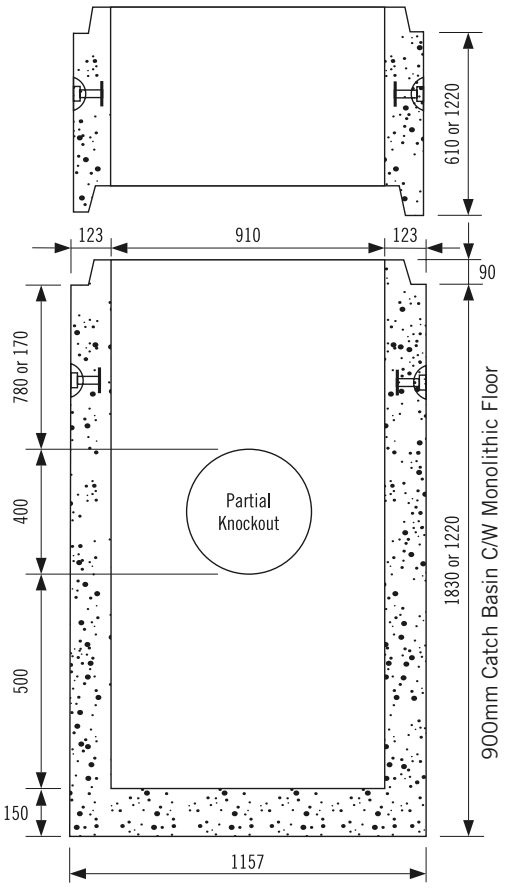
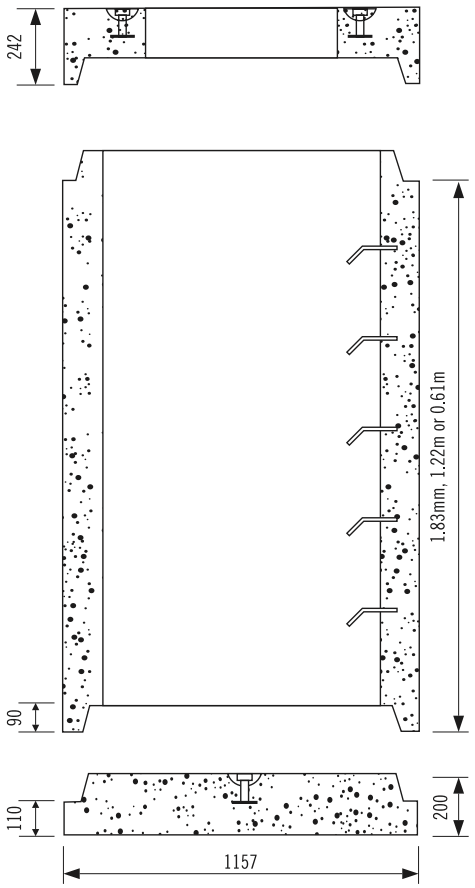
CATCH BASIN MATERIAL - 900MM



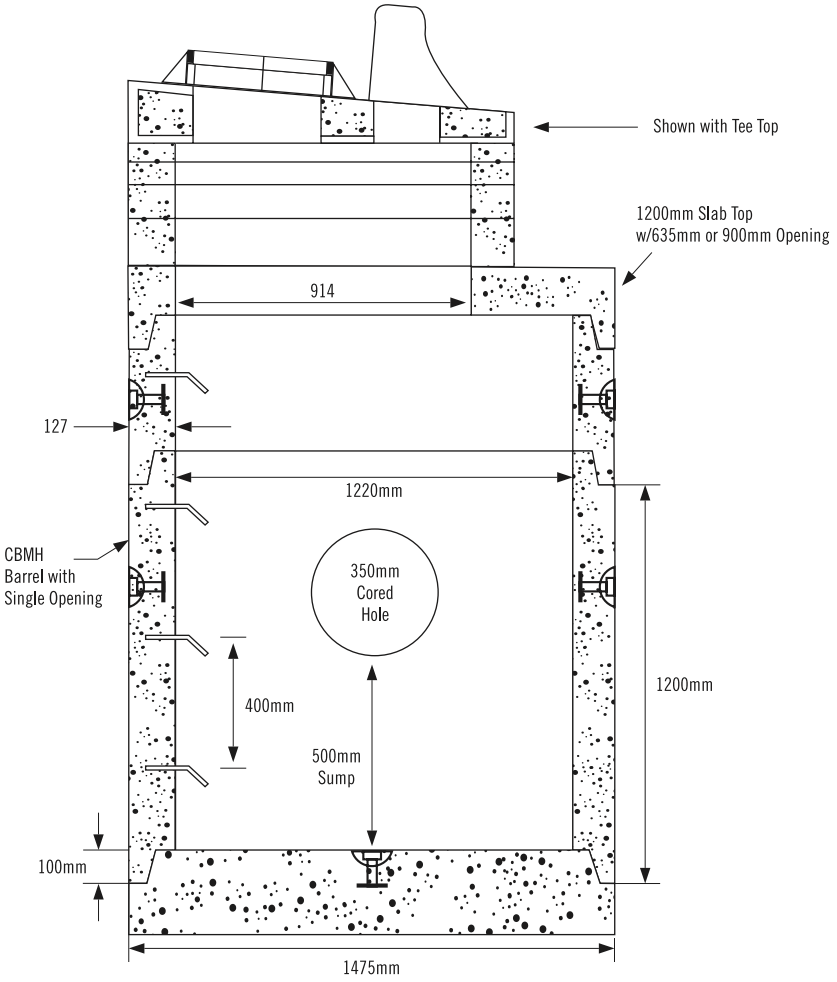


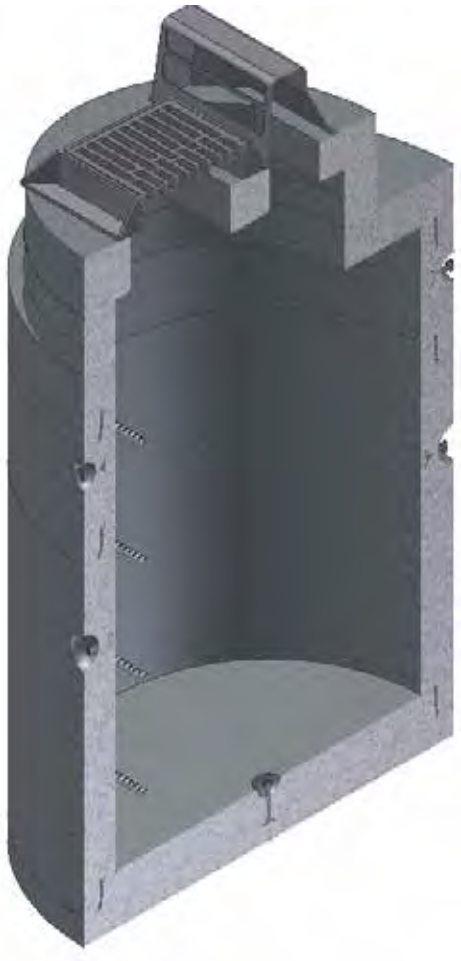
Product	Weight (kgs/pc)	Price ($ each)
900mm x 1.83m catch basin c/w monolithic base	1975	$1284
900mm x 1.22m catch basin c/w monolithic base	1440	$1002
900mm base	420	$413
900mm slab top c/w 910mm opening	195	$385
900mm slab top c/w 635mm opening	315	$387
0.150m x 900mm grade ring w/910mm opening	220	$198
0.100m x 900mm grade ring w/910mm opening	180	$149

Notes:

1. Monolithic catch basins in 900mm size do not come with steps.
2. For 900mm CB's with steps, use separate base and barrels as shown above. (This method is required for Strathcona County)
3. Please see page 23 for manhole barrel riser pricing.
4. Catch basins come with 2 lift pins cast in. 4-ton lifting clutches are required. Please inquire if required.
5. Gaskets do not come supplied with monolithic catch basin material. They do come included with separate base and barrel configuration.
6. If pipe to manhole connector is needed (for smooth wall flexible pipe only) please call for additional price.

CATCH BASIN MANHOLE MATERIAL - 1200MM





Product	Weight (kgs/pc)	Price ($ each)
1200mm base	730	$592
1200mm slab top c/w 910mm opening	480	$587
1200 slab top w/ 635mm opening	580	$587
900mm tee-top	280	$483
1200mm x 1.22m high barrel w/ single opening	1580	$1143

Notes:

1. Please see page 24 for barrel pricing.
2. 1200mm available barrel heights (mm) 300, 410, 810, 1220
3. If pipe to manhole connector is needed (for smooth wall flexible pipe only) please call for additional price.

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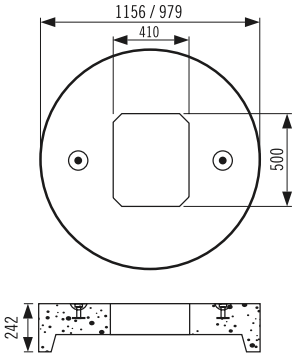
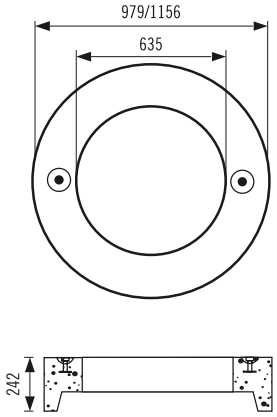
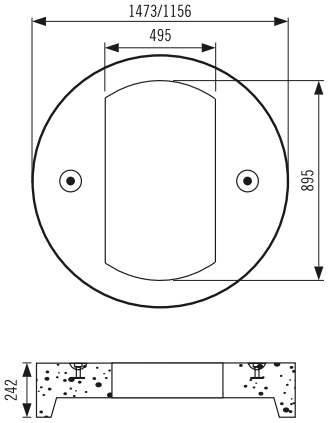
SLABTOP / FRAME & COVER INFORMATION



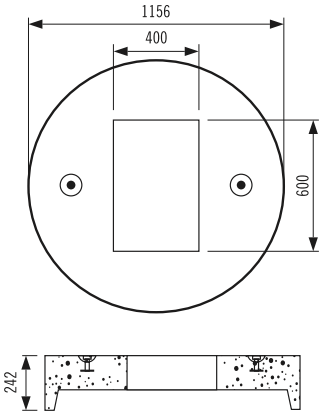
900mm or 750 mm K-7 TOP



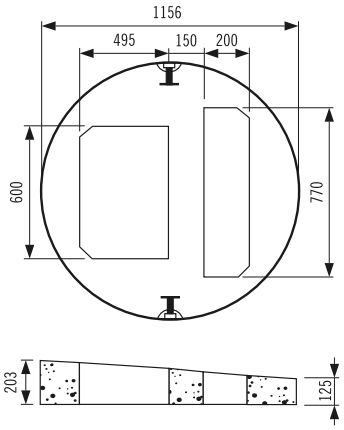
750mm or 900mm Slab TOP



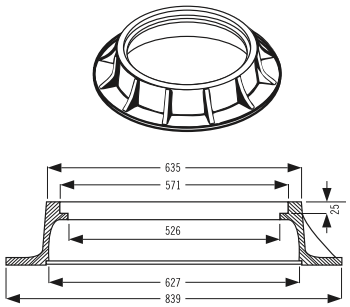
1200mm or 900mm DK-7 TOP



900mm K-3 TOP



TEE TOP for 900mm or 1200mm CB's only



F-39 FRAME

STEEL FOUNDRY
FRAME & COVER INFORMATION

SLAB TOP - F36, F39, F38, F-33
F-80, 2A, 4A, 6A, 8

K-3 TOP - F51 GRATE, T-K1

DK-7 TOP - DK-7, (K-7 DOUBLE), K-2

TEE TOP - F51 C/W SIDE INLET,
K-1 C/W SIDE INLET

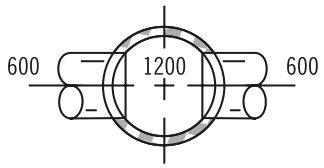
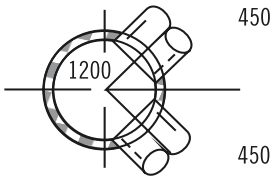
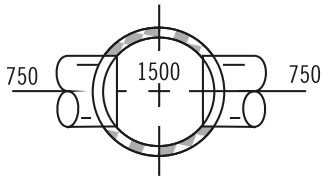
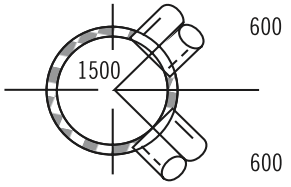
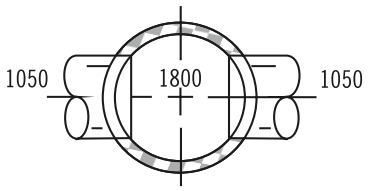
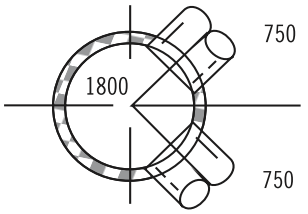
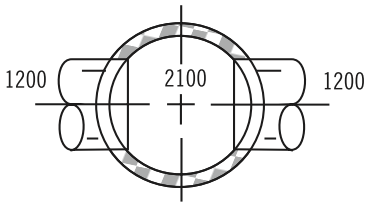
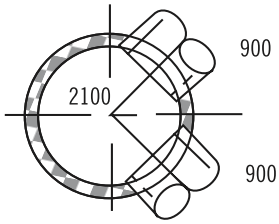
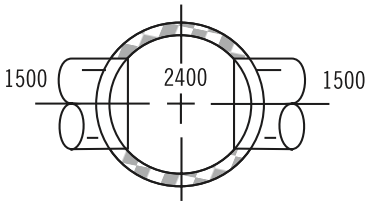
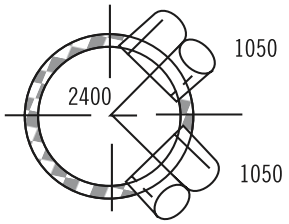
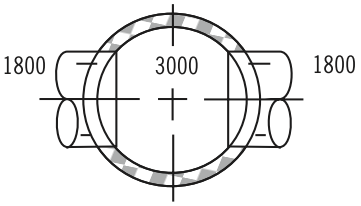
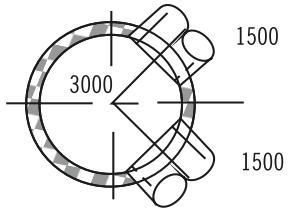
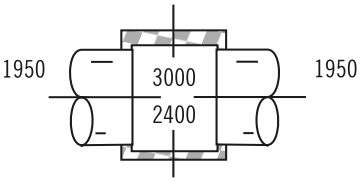
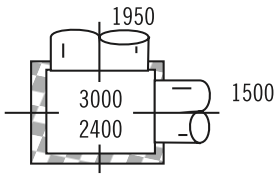
K-7 TOP - K-7 SINGLE

SLAB TOP W/900mm OPENING - F41

"900mm DK-7 Slab Top"

"900mm K-3 Slab Top"

MANHOLE SIZING CHART

Maintenance Hole Inside Diameter (mm)	Max. Pipe Size for Straight Through Installation (mm)	Max. Pipe Size for Right Angle Installation (mm)
1200		
1500		
1800		
2100		
2400		
3000		
3000 x 2400		

Note: Sizing shown is only for concrete pipes. All other pipe connections would need confirmation by Lafarge.

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CATCH BASIN SUMMARY PAGE

Product	Weight (kgs/pc)	Price ($ each)
600mm x 1.95m C.B. c/w monolithic floor	1005	$679
750mm x 1.83m C.B. c/w monolithic floor	1460	$863
750mm x 1.22m C.B. c/w monolithic floor	1030	$658
750mm x 1.22m C.B. barrel no steps	820	$390
750mm x 0.61m C.B. barrel no steps	400	$233
750mm slab top with 635mm opening	220	$265
750mm base	250	$298
750mm K-7 top	220	$379
900mm x 1.83m C.B. c/w monolithic floor	1975	$1284
900mm x 1.22m C.B. c/w monolithic floor	1440	$1002
900mm x 1.83m C.B. barrel no steps	1720	$912
900mm x 1.22m C.B. barrel no steps	1150	$617
900mm x 0.61m C.B. barrel no steps	560	$312
900mm base	420	$413
900mm x 1.83m M.H. barrel c/w steps	1720	$999
900mm x 1.22m M.H. barrel c/w steps	1150	$661
900mm x 0.61m M.H. barrel c/w steps	560	$342
900mm slab top c/w 635mm opening	315	$387
900mm slab top c/w 910mm opening	195	$385
900mm tee top, K-3, K-7, DK-7 top	280, 340, 360, 270	$483

> GRADE RINGS

Product	Weight (kgs/pc)	Price ($ each)
0.050m grade ring c/w 635mm opening for all cb's	40	$89
0.075m grade ring c/w 635mm opening for all cb's	60	$95
0.100m grade ring c/w 635mm opening for all cb's	80	$100
0.150m grade ring c/w 635mm opening for all cb's	120	$113
0.050m grade ring c/w 910mm opening for 900 cb's	100	$138
0.075m grade ring c/w 910mm opening for 900 cb's	140	$143
0.100m grade ring c/w 910mm opening for 900 cb's	180	$149
0.150m grade ring c/w 910mm opening for 900 cb's	220	$198
0.050m K-Type C.B. ring (K3 / Dk7) for 900 cb's	95/75	$180
0.075m K-Type C.B. ring (K3 / Dk7) for 900 cb's	140/110	$185
0.100m K-Type C.B. ring (K3 / Dk7) for 900 cb's	185/145	$190
0.150m K-Type C.B. ring (K3 / Dk7) for 900 cb's	275/220	$195
0.050m K-7 C.B. ring for all cb's	50	$150
0.075m K-7 C.B. ring for all cb's	70	$154
0.100m K-7 C.B. ring for all cb's	90	$159
0.150m K-7 C.B. ring for all cb's	140	$177

Notes:

1. CBs do not come with gaskets. Please call for pricing if required.
2. If pipe to manhole connector is needed (for smooth wall flexible pipe only) please call for additional price.

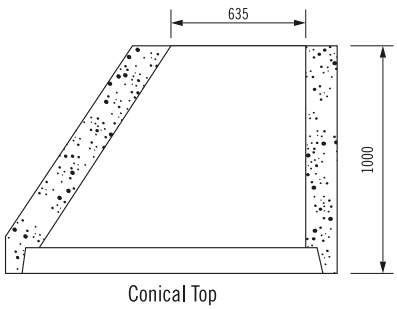
1200MM MANHOLE MATERIAL

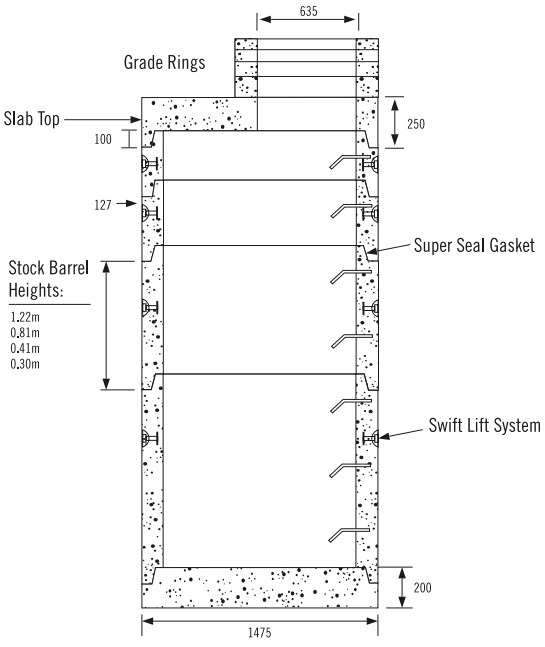
> CSA A-257.4 / A.S.T.M. C-478 DESIGN

Material Component Standards	Weight (kgs/pc)	Price ($ each)
1200mm base	730	$592
1200mm x 1.22m barrel	1580	$925
1200mm x 0.81m barrel	1049	$711
1200mm x 0.41m barrel	530	$455
1200mm x 0.30m barrel	380	$402
1200mm x 1.00m cone	1370	$960
1200mm slab top	580	$587
1200mm slab top c/w 910mm opening	480	$587
1200mm K-7 or DK-7 Top	590	$670
1200mm spigot to spigot transition or bell to bell adaptor	360	$698
0.150m grade ring c/w 635 opening (8 per pallet)	120	$113
0.100m grade ring c/w 635 opening (12 per pallet)	80	$100
0.075m grade ring c/w 635 opening (16 per pallet)	60	$95
0.050m grade ring c/w 635 opening (20 per pallet)	40	$89
0.150m grade ring c/w 910 opening (8 per pallet)	220	$198
0.100m grade ring c/w 910 opening (12 per pallet)	180	$149
0.075m grade ring c/w 910 opening (16 per pallet)	140	$143
0.050m grade ring c/w 910 opening (20 per pallet)	100	$138
Pallet (Non-Returnable)		

Notes:

1. All barrels, tops and bases include super seal gaskets.
2. 1200mm manhole material comes with two, 4-ton lift pins for handling.
3. Please inquire about lifting clutches.
4. For manhole openings see page 27.





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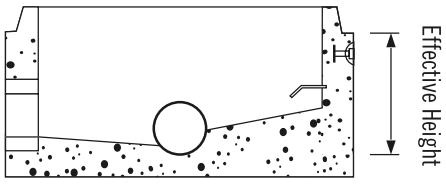
PREBENCHED MANHOLE BASES 1200MM

DR-35 or Ultra-Rib Pipe Size (mm)	Barrel Size (Dia. x Height)	Mass (kg)	Effective Height (mm)	Price Each
150/200	1200 x 0.81m	2200	610	$1627
250	1200 x 0.81m	2200	610	$1696
300	1200 x 0.81m	2200	610	$1768
375	1200 x 0.81m	2200	610	$1831
450	1200 x 0.81m	2200	610	$1946
150/200	1200 x 1.22m	3000	1016	$1830
250	1200 x 1.22m	3000	1016	$1899
300	1200 x 1.22m	3000	1016	$1971
375	1200 x 1.22m	3000	1016	$2036
450	1200 x 1.22m	3000	1016	$2265
525	1200 x 1.22m	3000	1016	$2387
600	1200 x 1.22m	3000	1016	$2482

Notes:

1. Channels matching the intended pipe diameters are cast into concrete benching and finished to ensure positive directional flow.
2. Prebenched bases requiring connectors for 675mm and larger pipe must be manufactured in 1500 and 1800mm material. Please inquire about details and pricing.
3. Prebench prices include for up to 4 openings.
4. Prebenched bases for PVC pipe come with 'PSX: Direct Drive' rubber connectors from Press-Seal Corporation that are mechanically torqued into cored barrel opening(s) at the plant.
5. The gaskets come with clamp(s) to be torqued in the field to compress the rubber gasket to the PVC pipe to a specific tension. Tee handled torque wrenches are available from Lafarge (upon request) for use with the Direct Drive gasketed connection.
6. For ultra-rib and concrete pipe a cored hole or rough opening will be provided for a grouted connection.



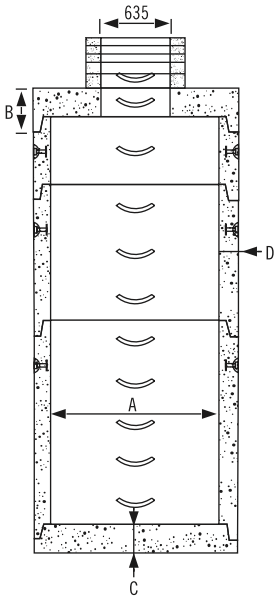
Pre-Benched Base

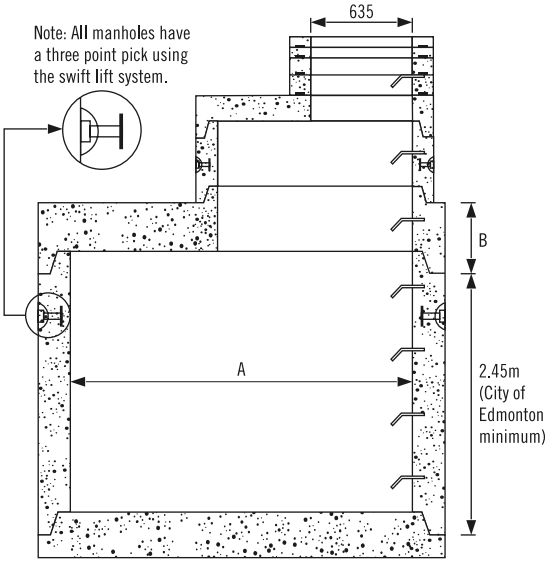
1500MM TO 3000MM DIAMETER MANHOLES

Material Component Standards	Weight (kg)	Price ($ each)	Actual dimensions (mm)			
			A	B	C	D
1500mm barrel	2015/m	$1396/m	1524	-	-	152
1500mm slab top / adaptor / base	1800/1350/1875ea	$1655/ea	-	427	300	-
1800mm barrel	2690/m	$2019/m	1829	-	-	178
1800mm slab top / adaptor / base	2800/2275/2600ea	$2521/ea	-	427	300	-
2100mm barrel	3590/m	$2941/m	2134	-	-	203
2100mm slab top / adaptor / base	4525/3900/3525ea	$3483/ea	-	493	300	-
2400mm barrel	4615/m	$3496/m	2438	-	-	229
2400mm slab top / adaptor / base	6500/5700/4525ea	$4630/ea	-	502	300	-
3000mm barrel	7220/m	$5000/m	3048	-	-	279
3000mm slab top / adaptor / base	10650/9900/8325ea	$6135/ea	-	552	350	-

Notes:

1. Barrel heights of 0.61m, 1.22m, 1.83m , 2.44m are available with permissable variations in height.
2. Please see page 27 for manhole openings.
3. Please inquire about price to cast custom hatches into slab tops.
4. Price includes SuperSeal gaskets for sealing between joints.
5. Please call for nitrite gasket pricing and availability.
6. 1500 & 1800 barrels come with three 4-ton lift pins.
7. 3000, 2400 & 2100 barrels come with three 8-ton lift pins.





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LAFARGE

MANHOLE OPENINGS

> PRICING FOR OPENINGS IN NON-BENCHED MANHOLES

Pipe Diameter	Rough Openings	Cored Holes	
	Each	Single	Additional
150	$212	$185	$106
200	$212	$185	$106
250	$212	$185	$106
300	$212	$185	$106
375	$318	$318	$212
450	$318	$318	$212
525	$530	$530	$424
600	$530	$530	$424
675	$530	$530	$424

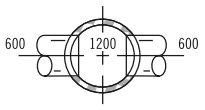
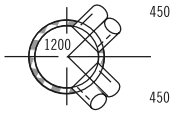
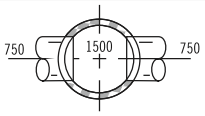
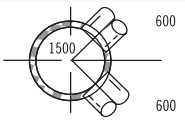
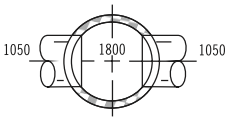
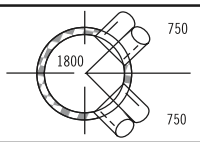
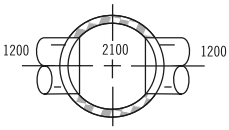
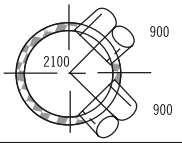
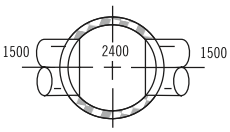
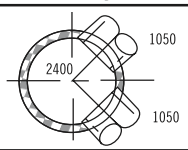
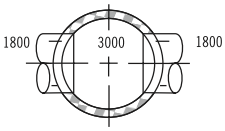
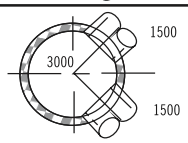
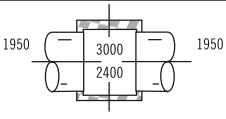
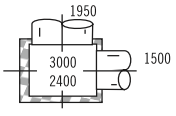
Notes:

1. For holes larger than 675mm please call for pricing.
2. Rough opening 'coupons' to be removed on site only when the barrel is in final position and on the base.

Rough Cut

Cored

PSX - Gasket

Maintenance Hole Inside Diameter (mm)	Max. Pipe Size for Straight Through Installation (mm)	Max. Pipe Size for Right Angle Installation (mm)
1200		
1500		
1800		
2100		
2400		
3000		
3000 x 2400		

Note: Sizing shown is only for concrete pipes. All other pipe connections wuld need confirmation by Lafarge.

CONCRETE BOX SECTIONS

> HORIZONTAL INSTALLATION

ASTM C-1433 Box Size		Cover Range A	Cover Range B	Cover Range C	Weight Per Unit (kg)	Length of Bevelled End (m) (Bell/Spigot)
Span x Rise	Unit	0.61-3.0m	3.1-7.0m	0.0-0.6m & 7.1m+		
1200 x 600	Meter	$980	$1154	$1303	1690/m	
Bevelled End	Ea	$2873	$3449	$3817	1960(B)/1510(S)	1.924/1.643
Bend	Ea	$4637	$5320	$5997	3380	
1200 x 900	Meter	$1322	$1500	$1662	1870/m	
Bevelled End	Ea	$3956	$4371	$4750	2120(B)/1640(S)	1.873/1.593
Bend	Ea	$6202	$6944	$7777	3740	
1800 x 1200	Meter	$2204	$2514	$2792	3240/m	
Bevelled End	Ea	$6612	$7267	$7912	3700(B)/2860(S)	1.850/1.570
Bend	Ea	$8839	$10008	$11130	6480	
2400 x 1200	Meter	$2645	$3035	$3947	4175/m	
Bevelled End	Ea	$7875	$8539	$9295	5950(B)/4760(S)	1.835/1.555
Bend	Ea	$9315	$10587	$11666	8350	
2400 x 1800	Meter	$3504	$3938	$4532	5000/m	
Bevelled End	Ea	$9143	$9812	$10676	5650(B)/4420(S)	1.850/1.570
Bend	Ea	$12050	$13576	$15883	10000	
2440 x 2440	Meter	$3806	$4187	$4848	5300/m	
Bevelled End	Ea	$10764	$11548	$12338	8870(B)/7470(S)	2.237/1.957
Bend	Ea	$13175	$14335	$16771	10600	
3000 x 2400	Meter	$4760	$5399	$5974	7500/m	
Bevelled End	Ea	$12439	$13473	$14140	10580(B)/10580(S)	2.000/2.000
Bend	Ea	$16569	$18828	$20609	15000	

Notes:

1. Boxes designed for CL-800 loading.
2. Boxes available with a maximum 2.0 meter length. Shorter lengths are available in all sizes and 2.45m lengths are available in the 2440 x 2440 size.
3. Additional charges for pipe and manhole openings; please contact Lafarge for pricing.
4. Minimum charge for box sections shall be rounded up to the nearest half meter.
5. 1.5" Kent seal is used to help seal box sections. Please see pricing under Miscellaneous Materials tab.
6. Custom bevelled end configurations are available.

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CONCRETE BOX SECTIONS

> VERTICAL INSTALLATION

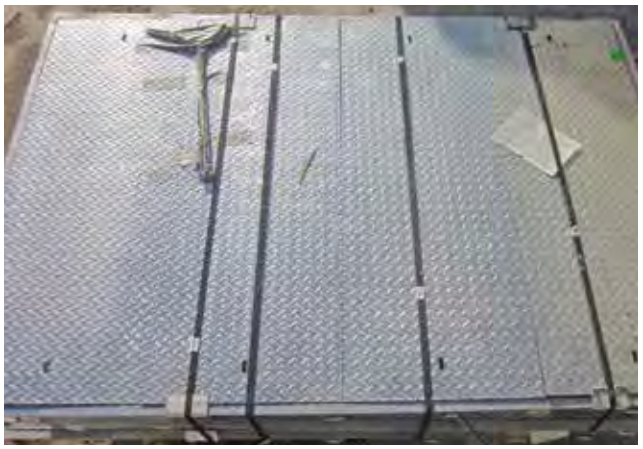
ASTM C-1433 Box Size		Depth from Rim to Underside of Base		Weight Per Unit (kg)
Span x Rise	Unit	1.0-5.0m	5.0-10.0m	
1200 x 600	Meter	$980	$1303	1690/m
1200 x 900	Meter	$1322	$1662	1870/m
1800 x 1200	Meter	$2204	$2792	3240/m
2400 x 1200	Meter	$2645	$3947	4175/m
2400 x 1800	Meter	$3504	$4532	5000/m
2440 x 2440	Meter	$3806	$4848	5300/m
3000 x 2400	Meter	$4760	$5974	7500/m

> BASES / SLAB TOPS

ASTM C-1433			Weight Per Unit Base/Slab (kg)
Span x Rise	Unit	Price	
1200 x 600	Ea	$1306	900/1100
1200 x 900	Ea	$1603	1200/1500
1800 x 1200	Ea	$2571	2300/2700
2400 x 1200	Ea	$2772	3000/3600
2400 x 1800	Ea	$4072	4200/4800
2440 x 2440	Ea	$6820	5500/6200
3000 x 2400	Ea	$8335	6800/7900

Notes:

1. Bases and tops designed for CL- 800 loading.
2. Cast-in hatches also available in tops.



CONCRETE BOX SECTIONS

Box Size (Span x Rise)	Maximum Length	Top Thickness	Bottom Thickness	Side Wall Thickness	Haunch	Base / Slab Top Thickness	Lift Anchor Required (4 Per Box)
1200 x 600	2000	190	150	125	125	300	4 - TONNES
1200 x 900	2000	190	150	125	125	300	8 - TONNES
1800 x 1200	2000	200	175	175	175	300	8 - TONNES
2400 x 1200	2000	215	215	225	205	300	8 - TONNES
2400 x 1800	2000	225	225	225	200	300	8 - TONNES
2440 x 2440	2440	210	210	210	200	300	8 - TONNES
3000 x 2400	2000	250	250	250	250	300	8 - TONNES

Dimensions subject to change. Please call for precise measurements.

> BOX CULVERT HANDLING:

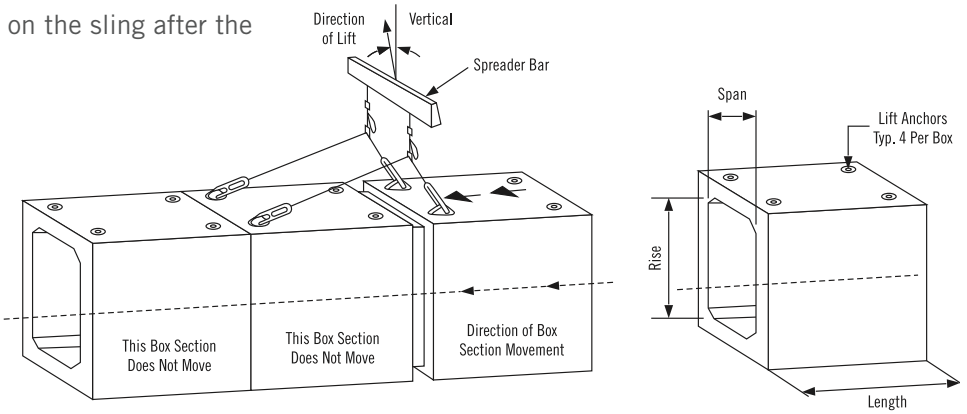
How to Handle and Set Concrete Box Sections: As with lifting any concrete element, special care should be taken by the driver of the placement vehicle to ensure that the impact or dynamic loads are reduced to a minimum. Impact of dynamic loads can greatly overload the anchors and cause failure.

Load must be applied to all anchors simultaneously.

Correct Method for Pulling Box Sections Together: To pull the box section into position, the long leg of the lift sling is coupled to the previously placed box section. The free short leg is hung into the hook provided for this purpose.

Ensure that the top guide of the crane is over the outer lifting anchor of the previously placed box section so that the direction of pull is slightly inclined towards the placed box section.

Warning: The anchors can be overloaded and fail if the crane continues to pull on the sling after the connection is complete.



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LAFARGE

CONCRETE BOX SECTIONS

> APPLICATIONS

Precast Reinforced Concrete Box Sections are a value-added and cost-effective product that can be used for the following applications to finish the job on time with less worries:

- > Highway Culverts
- > Storm Sewer
- > Pedestrian Under Passes
- > Animal Crossings
- > Retention System
- > Vertical Vaults
- > Lift Stations
- > Control Chambers
- > Overflow relief systems
- > Electrical cable tunnels

> DESIGN AND MANUFACTURING CRITERIA:

Precast Reinforced Concrete Box Sections are designed in accordance with ASTM C-1433 “Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains and Sewer.” Boxes are typically designed to the CL-800 live loading spec under the Canadian Highway Bridge Design Code (CHBDC). Design for other load specifications such as Cooper E-Series for Railway loading and for Box Jacking can be accommodated to meet the specific job requirements. BOXCAR, a computer program for structural design of reinforced concrete box culverts, is used to analyze and design the sections.

Precast Reinforced Concrete Box Sections are manufactured under high quality plant controlled conditions. The boxes are produced with bell and spigot joints/ends. A butyl, rubber-based flexible gasket type sealant is used to help seal the joints/ends.

> SPECIAL TREATMENTS AND END SECTIONS:

Precast Reinforced Concrete Sections can be produced for special end treatments such as Bevelled End Sections, Reducers and Increasers, Adaptors (Round to Square), Keyway Slot, Plain End Sections and sections with reinforcing steel exposed. Bends (5°-50°), Radius Box Sections up to 5° and Manhole Tees can also be produced depending upon job specific requirements.

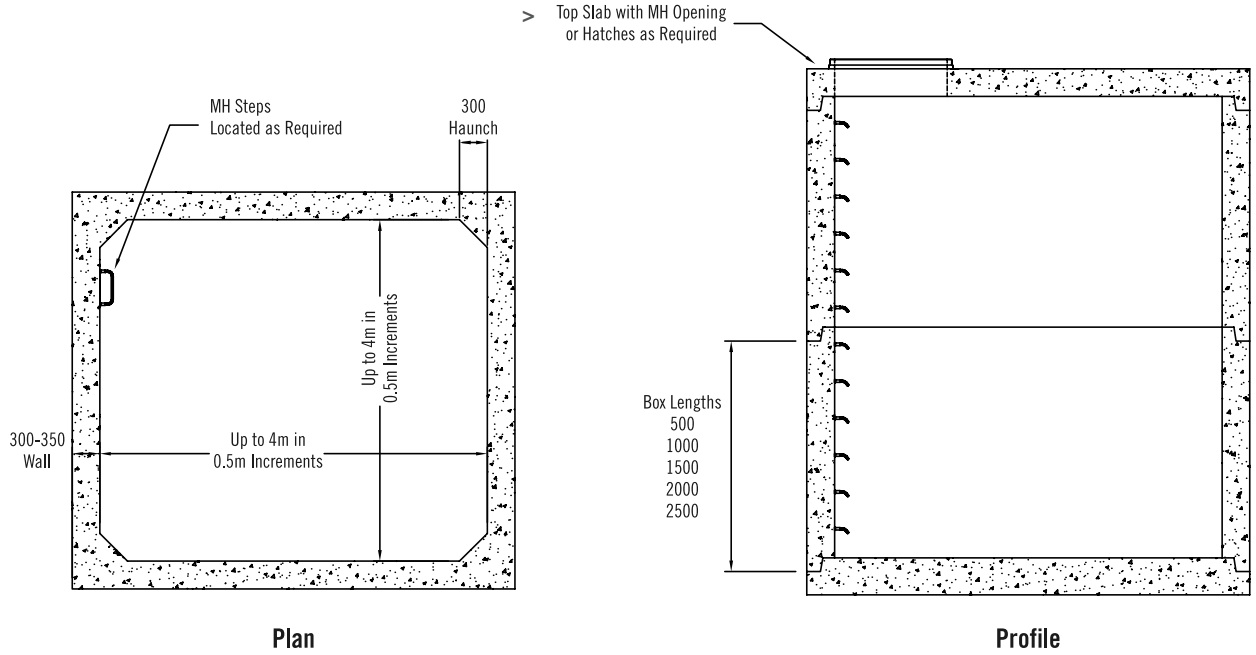
BIG BOX SECTIONS

> BIG BOX SIZING GUIDELINE

Box Size (Span x Rise)	300mm Wall Thickness				350mm Wall Thickness				Haunch Dimension
	Base Slab/Top Slab Weight (kg)		Weight of Section (kg)	Lifting Clutches (Tons)	Base Slab/Top Slab Weight (kg)		Weight of Section (kg)	Lifting Clutches (Tons)	
3.0m x 2.5m	10650	8000	24000	20	11325	8525	28250	20	300
3.0m x 3.0m	12300	9500	25875	20	13000	10075	30450	20	300
3.0m x 3.5m	14050	10900	27750	20	14700	11600	32625	20	300
3.0m x 4.0m	15725	12375	29625	20	16400	13150	34825	20	300
3.5m x 3.5m	15925	12600	29625	20	16625	13375	34825	20	300
3.5m x 4.0m	17800	14325	31500	20	18525	15150	37000	20	300
4.0m x 4.0m	19900	16250	33375	20	20650	17125	39200	20	300

Note:

1. All weights approximate and based on 2.5m section lengths. For shorter lengths, please scale appropriately or call.
2. For sizes not shown, consider using our standard box sections or call for additional information.
3. Call for pricing and construction schedules.



Plan

Profile

EDMONTON PIPE PLANT
PHONE: (780) 479-5232 | FAX: (780) 410-3699

INDUSTRIAL SOLUTIONS

Lafarge Pipe designs and manufactures a wide range of precast underground infrastructure components, including:

> Concrete Pipe (300 to 3000 mm diameter)

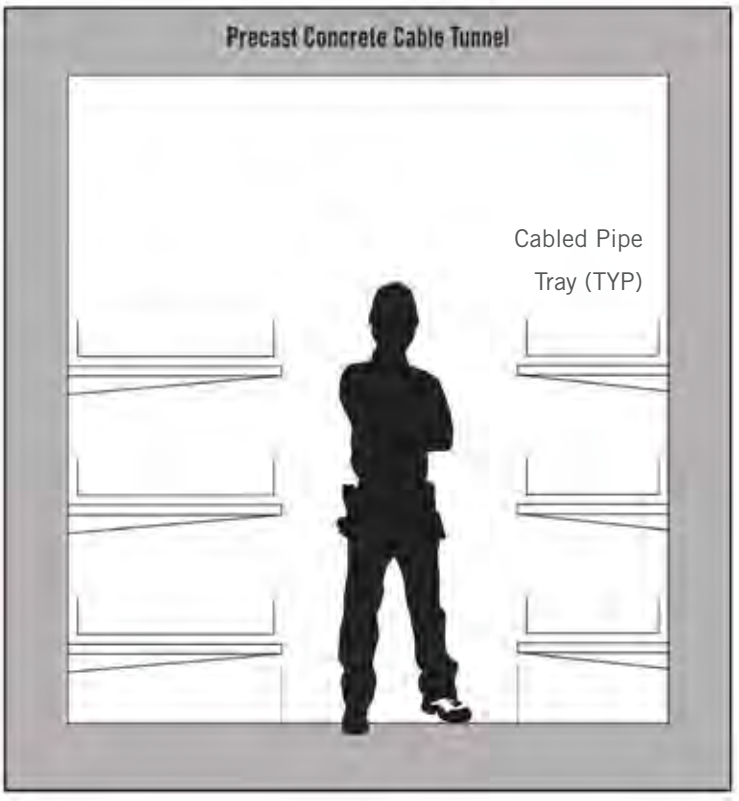
> Box Culverts (1200x600 mm to 4000x4000 mm)

> Manhole and Catch Basin Components

Precast concrete pipe and box sections are an engineered product that can be designed to suit nearly any installation condition, including deep fills, shallow fills, and heavy equipment loading.

> INDUSTRIAL SOLUTIONS

A Single Source Provider, Lafarge excels at intergrated design with project owners, designers, and other stakeholders, in addition to supplying our customers with the highest quality materials and products - on time and on budget.



Are you an engineer designing a large scale project?

Lafarge Industrial Solutions can be applied to a variety of oil and gas, power, and mining operations, including the construction or upgrading of:

> Oil and Gas Processing Plants
> In-Situ Heavy Oil/SAGD Facilities
> Gas Treatment Facilities
> Oil and Gas Batteries
> Compression Stations
> Renewable Energy Facilities

> THE PRECAST ADVANTAGE

Precast concrete is recognized for its performance on large, difficult, and fast-track projects. Lafarge's personnel offer new applications and benefits to resolve evolving challenges. With its experienced staff of estimators and in-house engineers, Lafarge custom solutions can eliminate the guesswork from the initial planning and design stages.

Precast concrete boasts the following advantages:

1. Designing precast systems is easier, thanks to assistance from Lafarge's engineering department.

2. Precast components can be installed in winter conditions, maintaining tight schedules all year-round.

3. Precast components will not burn because they are naturally fire protected. Precast's inherent fire resistance eliminates the messy time-consuming fireproofing required for a steel structure and the need to repair damage to fireproofing caused by other trades.

> SCHEDULE SOLUTIONS

From pre-construction engineering through design and installation, Lafarge provides innovative thinking in both design and scheduling, when budgets and/or time are critical.

Custom solutions by Lafarge evolve from discussion with the owner and designers to understand the challenges they are facing. Lafarge works with the team to develop concepts and products that address unique project requiements. Lafarge is one of the world's leading suppliers of construction materials. The Precast division of Lafarge has support from our global knowledge network and on-going research.

Owners and designers that use Lafarge's custom solutions can rely on a shortened project timetable and remove a significant amount of labour from the job site as compared to cast-in-place alternatives.

Fabrication of precast elements during permitting and/or site preparation saves time resulting in fast, efficient construction regardless of weather conditions.

Low Maintenance

Precast concrete construction solutions use high quality and durable materials that require less maintenance than structures constructed with other matrerials.

Cost Assurity

Because of precast concrete concrete's tightly controlled production process, costs can be more accurately estimated early in the design process, and are not subject to labour variability. Changes during design development can be quickly reassessed by Lafarge's engineering departments to verify that estimates remain stable. The contractor, owner, and design team are assured that project budgets remain sound.

> SUSTAINABLE DESIGN

Precast concrete offers a number of benefits that make it environmentally friendly, a growing need as the Leadership in Energy and Environmental Design (LEED) criteria becomes more popular. Precast concrete's energy effiency, recyclability, reusability along with minimal waste in the precast plant and on the jobsite are keys to meeting environmental standards that are gaining client interest.

> PROJECT CONTROLS

Documentation

Lafarge understands that record management and documentation is critical to project success. Our engineering and quality control teams are accustomed to document control and are able to issue stamped drawings and quality control reports as required to meet project specific needs.

Quality Assurance

Throughout our organization, quality is the PPP Program's paramount. Our quality professionals are involved throughout a product's life cycle to ensure components are produced with uniform consistency.

Lafarge's pipe products are certified by the PPP program, run by the Canadian Concrete Pipe and Precast Association, providing third-party quality assurance to the products produced at all of our facilities across Western Canada.

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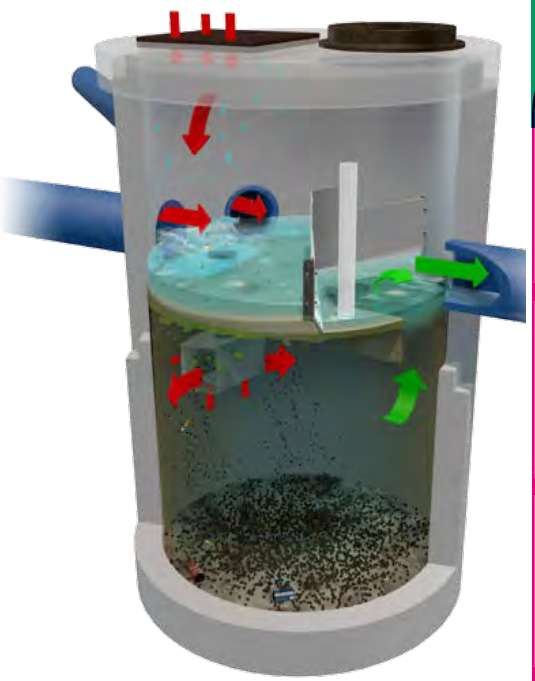
LAFARGE

Stormceptor® EF (Enhanced Flow)

The enhanced flow Stormceptor EF is a high performing oil grit separator that effectively removes and retains pollutants such as sediment (TSS), free oils, gross pollutants, nutrients and metals from stormwater and snowmelt runoff at much higher flow rates than other oil grit separators.

Stormceptor EF also offers design flexibility in one platform, accepting flow from a single inlet pipe, multiple inlet pipes, and from the surface through an inlet grate. Stormceptor EF can also accommodate a 90-degree inlet to outlet bend angle, and tailwater conditions.



Ideal Uses:

- Sediment (TSS) removal
- Spill capture for oil/fuel spill hotspots (Stormceptor EFO)
- Debris and small floatables capture
- Pretreatment for filtration, detention/ retention systems, ponds, wetlands, Low Impact Development (LID), green infrastructure, and water-sensitive urban design
- Retrofit and redevelopment projects

Design Flexibility:

- Single Inlet
- Multiple Inlets
- Grated Inlet
- Submerged

FEATURES	BENEFITS
Patent-pending enhanced flow, TSS treatment technology	Superior, verified third-party performance
Scour prevention with an internal bypass	Validated online installation and cost savings
Third-party verified light liquid capture (oil) and retention (Stormceptor EFO)	Proven performance for fuel/oil spill hotspot locations
Functions as bend, junction or inlet structure	Cost savings and design flexibility
Minimal drop between inlet and outlet	Site installation ease
Large diameter outlet riser for inspection and maintenance	Easy maintenance access from grade

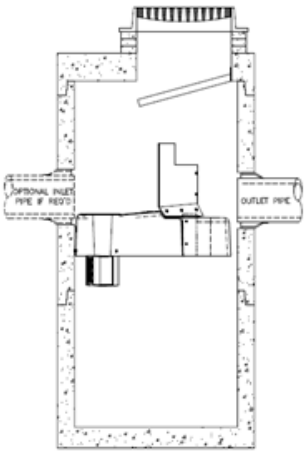
The design flexibility of Stormceptor EF makes this OGS ideal for redevelopment and retrofit projects.

For more information on the Stormceptor system, including pricing, site design, or sizing, or to arrange a lunch and learn session at your office, please contact your local Lafarge Pipe representative.

Stormceptor® EF (Enhanced Flow)

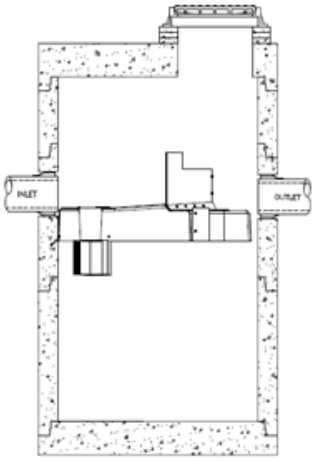
Our standard design for most stormwater treatment applications, the Inline Stormceptor is available in a variety of sizes, as outlined below. Standard drawings are available. Please contact your Lafarge Representative for full size drawings.

EF4/EFO4



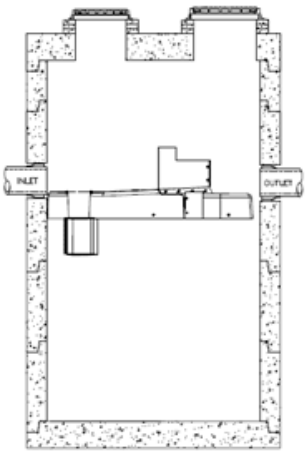
1200 dia. chamber

EF6/EFO6



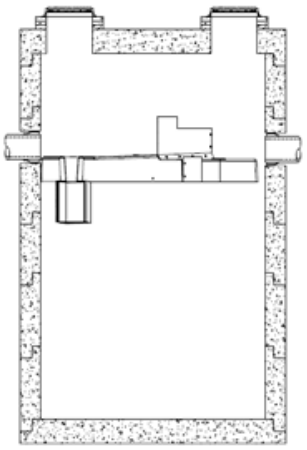
1800 dia. chamber

EF8/EFO8



2400 dia. chamber

EF10/EFO10



3000 dia. chamber

STORMCEPTOR EFO – HYDROCARBON SPILL PROTECTION

- The EFO configuration has been third-party performance tested for safe oil capture and retention.
- Creates a non-turbulent treatment environment, allowing free oil to rise and sediment to settle.
- Patent-pending oil and spills retention technology ensures captured oil and sediment remain in unit even during the largest rain events, for secure storage, environmental protection and easy removal.
- The EFO is ideal for gas stations, fuel depots, ports, garages, loading docks, industrial sites, fast food locations, convenience stores, high-collision intersections and other hotspots with spill-prone areas.
- The EFO can accommodate an optional oil alarm and additional storage to increase spill storage capacity.

Note:

1. Call for sizing assistance. The drainage area, imperviousness (or runoff coefficient), flow control and required treatment level need to be provided.
2. Call for pricing. In addition to the concrete material, the price will include a Stormceptor frame and cover as well as nitrile gaskets for all joints.
3. More hydrocarbon storage volume is available with the Extended Oil Storage (EFO) units. Please call for more information.
4. Heaviest component may be able to be reduced / adjusted. Please call for assistance.

For more information on the Stormceptor system, including pricing, site design, or sizing, or to arrange a lunch and learn session at your office, please contact your local Lafarge Pipe representative.

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LAFARGE

Jellyfish® Filter

The Jellyfish filtration system takes total suspended solid capture to the next level - far beyond that of an oil/grit separator. The Jellyfish Filter (patent pending) is an engineered stormwater quality treatment technology featuring unique membrane filtration in a compact stand-alone treatment system. The unit consists of a fiberglass disc that holds a series of sediment filters and is housed by concrete manhole components, similar to the Stormceptor system. Each lightweight Jellyfish Filter cartridge consists of multiple membrane-encased filter elements attached to a cartridge head plate.

Pollutant Removal

- TSS 85%
- Total Phosphorus 60%
- Total Nitrogen 50%
- Total Metals >50%
- Turbidity <15 NTU
- Trash 100%

LEED Credits

- Jellyfish filters can be used to achieve LEED credits
- NJDEP Certified for LEED credits

Pretreatment

- Traps oil, trash and debris outside the filtration zone.
- Coarse particles settle to the sump.
- Separator skirt protects the cartridge from floatables contamination.

Filtration

- Membrane filtration tentacles capture fine particles, as small as 2 microns.
- Removes a high percentage of particulate bound pollutants including nutrients, metals, hydrocarbons and bacteria.
- High surface area membranes ensure long lasting treatment.

Self-Cleaning Filters

- During filtration, vibrational pulses dislodge sediment from the membrane surfaces.
- After every storm peak, filtered water backwashes membrane filtration tentacles.
- Sediment is continuously removed from the tentacles by gravity.

Jellyfish filter installation in St. Albert, AB. A JF8-6-2 was installed to obtain LEED credits and treat up to 32.5 L/s

Features

1. High surface area, high flow rate membrane filtration.
2. Highest treatment flow rate per cartridge (up to 80 gpm (5 L/s)).
3. Low head loss (typically 18 inches or less (457mm)).
4. Removes particles as small as 2 microns.
5. Light weight, self-cleaning cartridges.

Benefits

1. Long lasting and effective stormwater treatment.
2. Fewer cartridges required than other filtration systems, leading to a lower cost & easier maintenance.
3. Design is compatible with all piping systems.
4. Superior pollutant capture.
5. Easy maintenance & low life-cycle cost.

For more information on the Jellyfish filtration system, including pricing, site design, or sizing, or to arrange a lunch and learn session at your office, please contact your local Lafarge Pipe representative.

STORMTRAP® DETENTION RETENTION SYSTEMS

Detention System

Retention System

StormTrap®
MODULAR CONCRETE
STORMWATER MANAGEMENT

Detention tanks are designed to collect stormwater run off for a period of time and slowly release the run off into the public stormwater system. Retention tanks retain the run off for on-site use, and the overflow is directed to the public stormwater system.

The StormTrap system is a purpose-built stormwater detention and retention solution. Its flexible design and simple installation makes it a cost effective solution for residential, commercial or industrial projects. The StormTrap system helps to address the requirements of sustainability, flood mitigation, public safety and ecological protection without sacrificing valuable land and compromising the bottom line of the project.

The StormTrap system connects individual precast concrete modules into a configuration that can be customized to meet project-specific requirements. It is an ideal solution for sites needing a safe, low risk structural system for below parking lots, sports fields and roadways.

Infiltration Stormtrap System

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STORMTRAP® OPERATION

StormTrap® systems are available in two configurations to provide conventional detention, high early discharge or infiltration to groundwater.

SingleTrap™ system

SingleTrap systems are made up of a single layer of modules. It can be founded on either a strip footing to create a large infiltrative surface area, or a conventional concrete slab for use as either a traditional detention basin, or a basin with high early discharge (refer to figure below). Water-tight options are available if required.

DoubleTrap™ system

DoubleTrap systems are made up of two layers of precast pieces which together form one StormTrap module. The DoubleTrap system is founded on a compacted aggregate base and can be configured to provide infiltration of detained runoff to groundwater or conventional detention, either with or without high early discharge. Water-tight options are available if required.

A standard SingleTrap module and system

A standard DoubleTrap module and system

A COMPLETE SOLUTION

Flexible footprint and design

The impressive flexibility of the StormTrap system enables Lafarge to design a system to best suit your project. We easily work around trees, building piles and existing services to minimize your project costs and maximize land use and detention volumes. The system is ideal for constrained sites and odd-shaped footprints, and modules can be varied to cope with sloping sites or other constraints.

Reduced design time

Using a custom StormTrap system design program, Lafarge is able to design your system and supply a full set of drawings as required for your project. Our experienced engineering team use our automated 3D CAD package to generate the ideal system design, a process which will save your project time and money.

Maximum detention volume for the smallest footprint

The relatively open structure of the StormTrap modules enables maximum storage volume for the system over the smallest possible footprint. This is of great benefit where existing services and site constraints prevent a large footprint.

High infiltration capacity

The unique design of the StormTrap system delivers a large available surface area in any given footprint and supports Low Impact Development objectives to manage frequent flows and overall runoff volumes. It also supports conventional fill and slow release detention. Watertight options are available in addition to infiltration/exfiltration designs.

LEED & LID

StormTrap can be used to gain credits towards LEED certification projects as it is a design for Low Impact Development (LID), limiting the disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, and managing storm water runoff. Up to 3 credits are available in LEED v4 under the "Rainwater Management" category.

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STORMTRAP® OPERATION

Full trafficability and reduced risk

The precast concrete system is trafficable to CL800 traffic loadings (heavier designs are also available). It can be used under pavements and parking lots, and can withstand the impact of heavy vehicles that may load the system during construction or operation. Lighter duties are also available for parks and other areas not regularly subject to traffic.

Cost savings

The system delivers significant time and cost savings with a fast and simplified design process, the delivery of maximum detention volume from the smallest possible footprint, and a fully accessible and maintainable system.

Quick installation

The modular design and simple installation process means that large volumes can be installed in minimal time. The system offers significant installation economies when compared with other detention or retention systems, and delivers large detention volumes with each module installed.

Full access and maintainability

The StormTrap system features unobstructed open void spaces, a design feature which is less likely to clog with litter, sediment and debris than other systems. The StormTrap system also integrates maintenance access points so that system is accessible and maintainable should it be necessary.

Treatment

As a best practice, StormTrap should be designed in conjunction with an Stormceptor® oil/grit separator or Jellyfish® Filtration System. These devices will help to filter sediments and oils entering the system, and reduce nutrient loading (Nitrogen and Phosphorus) and other pollutants in downstream waterways.

STORMTRAP SYSTEMS FOOTPRINT

Module Type	Dimensions	Comment
I, III and VI	2,085 mm wide x 4,270 mm long	Multiples of 2,085 mm wide and 4,270 mm long
II, IV, V and VII	2,085 mm wide x 2,135 mm long	are the most cost effective.

Module Type	Dimensions	Comment
I, III and VI	2,085 mm wide x 4,270 mm long	Multiples of 2,085 mm wide and 4,270 mm long
II, IV, V and VII	2,085 mm wide x 2,135 mm long	are the most cost effective.

Storage Capacity (m^3)		50	100	150	200	300	400	500
SingleTrap System Footprint (meters)	Span	4.2	8.4	12.6	8.4	12.6	16.8	16.8
	Length	8.0	8.0	8.0	16.0	16.0	16.0	20.0
	Depth	1.5	1.5	1.5	1.5	1.5	1.5	1.5
DoubleTrap System Footprint (meters)	Span	2.1	4.2	6.3	8.4	6.3	8.4	8.4
	Length	8.0	8.0	8.0	8.0	16.0	16.0	20.0
	Depth	3.0	3.0	3.0	3.0	3.0	3.0	3.0

NOTES: 1. Height of StormTrap can be customized for shorter height with decrease of 1 inch.

Sample Storm Trap
System layouts and standard module types

IV	III	III	V
II	I	I	II
II	I	I	II
V	III	III	IV

VII	VI	VI	VII

Standard Type I

Standard Type II

Standard Type III

Standard Type IV

Standard Type V

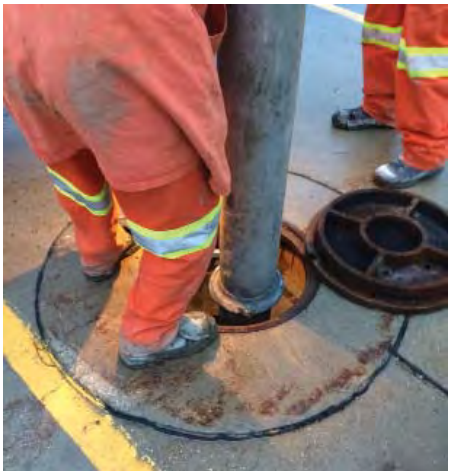
Standard Type VI

Standard Type VII

PERFORMANCE MONITORING PLAN

FROM SALE TO SERVICE

Lafarge offers a wide variety of stormwater solutions designed to meet your project needs, from StormTrap® detention and retention systems to our patented Stormceptor™ and Jellyfish™ technology. As part of our ongoing commitment to sustainability, Lafarge is now providing support services for ongoing operations and maintenance of our stormwater products.



All Stormceptor™, Jellyfish™, and StormTrap® systems offered by Lafarge now include a 5-year performance monitoring plan, including:

- Annual inspection for 5 years after installation
- Inspection reports, delivered to the owner and directly to the local municipality (if requested)
- Cleaning service, if required, at additional cost

BENEFITS FOR OWNERS:

- Annual inspections performed on a set schedule
- Effortless record management conforming to local regulations
- No cost for having the inspection performed
- Hassle-free service with no added coordination required
- No need to keep up with changing local regulations - Lafarge will address and inform owner of changes, as required

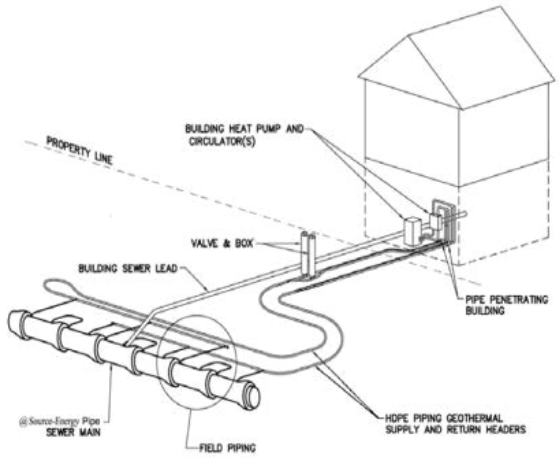
BENEFITS FOR MUNICIPALITIES:

- Inspection and cleaning reports are automatically filed - no need to remind owners to submit them
- No added inspection efforts or staffing requirements
- Lafarge has the expertise to ensure all units are installed correctly and are functioning properly

Lafarge's performance monitoring plan takes the worry and effort out of maintaining your devices and helps to ensure compliance with local regulations. Our stormwater solutions team maintains the highest level of safety when performing services.

@SOURCE-ENERGY PIPE

Geothermal Energy Capture Reinforced Concrete Pipe



Industry Leading Innovation!

Lafarge Pipe and Renewable Resource Recovery Corporation (R3Corp) offer @Source-Energy Pipe in Western Canada. The @Source-Energy pipe system represents a major innovation in the concrete pipe industry that is focused around the concept of geothermal energy capture.

The @Source-Energy Pipe System

The @Source-Energy pipe system functions as standard concrete pipe, with the added service of extracting heat energy from the effluent in the pipes and from the adjacent ground. Manufacture of @Source-Energy Pipe is similar to standard concrete pipe, except that a small diameter HDPE conduit, similar to a natural gas line, is wound throughout the core along with the steel reinforcement. This HDPE conduit is filled with a 30% ethanol/ water blend that acts as a heat transfer fluid throughout the pipe system once installed.

The schematic to the left outlines a typical @Source-Energy installation. Here, a series of concrete pipe located along the sewer main service a home that controls the energy system using a heat pump.The advantage of using @Source-Energy pipe is that as the storm and sanitary pipe needs to be installed as part of development, the incremental cost of the @Source-Energy component is relatively minimal.

R3Corp

R3Corp is a Canadian owned and operated company based in Sudbury, Ontario. The @Source-Energy technology was pioneered by R3Corp, with the initial installation taking place in a 19 home Ontario sub-division in 2009.

We want to hear from you!

Please contact your local Lafarge Pipe representative for more information, product brochures, or if interested in receiving a lunch and learn presentation on @Source-Energy. We are also available to discuss your sustainable projects needs.

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RECOMMENDED PROCEDURES

> HANDLING, INSTALLING & JOINING CONCRETE PIPE

Pipe delivered to a site has been plant tested to ensure that the pipe meets or exceeds the requirements established for your project.

Each shipment of pipe is loaded, blocked and tied down at the plant to avoid damage during transit. However, an overall inspection of each pipe shipment should be made on arrival, as well as quantities checked, before the pipe is unloaded.

If a pipe is damaged during delivery or unloading, it should be set aside. Damaged ends, chips or cracks that do not pass through the wall can usually be repaired before the pipe is used. Supplier must be notified so that Quality Control can go to the site and assess the situation with the site inspector.

When mechanical devices are used for off loading, the lifting device could chip or damage the pipe. Padding should be provided between the pipe and lifting device.

Pipe should always be picked up from the bell end if using a mechanical device to transport.

Stockpiles of pipe should be as near as possible to where the pipe will be installed. Each layer of bell and spigot pipe should be arranged so that male ends are free from pressure of the upper row (i.e. alternate bells and spigots from layer to layer).

All flexible gasket materials should be stored in a cool dry place to be distributed as needed. Rubber gaskets and preformed bulk mastics should be kept clean, away from oil, grease, excessive heat and out of the direct rays of the sun.

> TRENCH CONDITIONS

Conditions in a sewer trench should be such that pipe installation can be accomplished without mud, silt, gravel or other foreign materials entering the joint or the pipe. In general, this means that the trench should be adequately dewatered with a firm bottom, free of mud.

Pipe should be handled to avoid damage. After the gasket has been put on the pipe, the pipe should be carefully handled to avoid bumping the gasket and knocking it out of position or loading it with dirt and foreign material. Any gasket, so disturbed, should be removed, cleaned and replaced before joining is attempted.

Once gaskets are placed on the spigot, a smooth round object, such as a screwdriver shaft, should be inserted under the gasket and run around the spigot twice to equalize gasket stretch. Care must be taken not to damage the gasket.

Gaskets are made so that a precise and constant volume of rubber made to C.S.A./A.S.T.M. standards is used for each joint, thus giving a long-lasting, tight and flexible joint. Some gaskets require a lubricant for proper installation, while others do not.

Before the pipe is installed, a bell hole must be dug in the sub-base to accommodate the bell. Failure to do this can cause beam breaks or cracks in the barrel of the pipe.

Proper alignment is imperative during the homing process. Joint separation must NOT be used as an alignment guide as the allowable variation in pipe length from one side to the other side is 1/8” per foot of diameter to a maximum of 5/8”. For example, a 36” wide pipe with an allowable tolerance of 3/8” could, if joint spacing were used as an alignment guide, put the alignment of line or grade out by 1” per length of pipe.

During installation of the spigot into the bell, before the pipe is homed, the pipe should be partially supported by a sling to minimize lateral pressure on the gasket and to maintain concentricity until the gasket is properly positioned. Once the bell and spigot have been carefully aligned, the pipe must be homed with a direct thrust and not moved from side to side as it enters the bell. Proper homing can be achieved with blocks and lever bars or mechanical “come alongs” suitably braced to ensure even entry into the bell. Back hoes and tractors are NOT recommended for this purpose.

If the bell and spigot are not carefully aligned, the gasket will be displaced causing a leak or splitting of the bell.

MISCELLANEOUS MATERIALS

CEMENT PRODUCTS			
Cement - Type HS (72 bags per pallet)		20 kg Bag	$19
Grout (20 min. Set Approx.) - Sika MonoTop-623		22 kg Bag	$64
Water/Aqua Plug (Quick Set)		23 kg Pail	$175
Wooden Pallet 40" x 40" (non-returnable)		Each	$35
LIFTING CLUTCHES (non refundable)			
Swift Lift Clutch - 4 ton		Each	$322
Swift Lift Clutch - 8 ton		Each	$590
LADDER RUNGS			
Galvanized Steel	150/barrel	300mm x 225mm (12" x 9")	$23/ea
Galvanized Steel (for grade rings)	100/barrel	300mm x 300mm (12" x 12")	$25/ea
Aluminum (for manholes)	50/box	300mm x 225mm (12" x 9")	$27/ea
BITUMINOUS JOINT SEALANT			
0.5" Rub-R-Nek / Kent Seal (Grade rings)	12 Coils/box	21.75'/Coil	$44/coil
1" Rub-R-Nek / Kent Seal	6 Coils/box	14.5'/Coil	$74/coil
1.5" Rub-R-Nek / Kent Seal (Box sections)	4 Coils/box	10.5'/Coil	$94/coil
1" Con-Seal 440 (Nitrile sealant)	6 Coils/box	14.5'/Coil	$93/coil
1.5" Con-Seal 440 (Nitrile sealant)	4 Coils/box	10.5'/Coil	$164/coil
SAFETY PLATFORMS (Aluminum)			
1200mm Diameter			$1057
1500mm Diameter			$1556
1800mm Diameter			$1870
2400mm Diameter			$2625

Note: City of Edmonton specifications state that a platform is required every 6m.

FRAME & COVER		
F39 Frame & Cover (Solid or Grated)	Approx. Weight - 140kgs (HS-20 Rated)	$516
NC TEE'S (Service Connection for DR-35 PVR Pipe)		
100mm	5" Core Required	$67
150mm	7 1/4" Core Requied	$93
200mm	9 1/2" Core Required	$125
250mm	11 1/4" Core Required	$162
300mm	14" Core Required	$197

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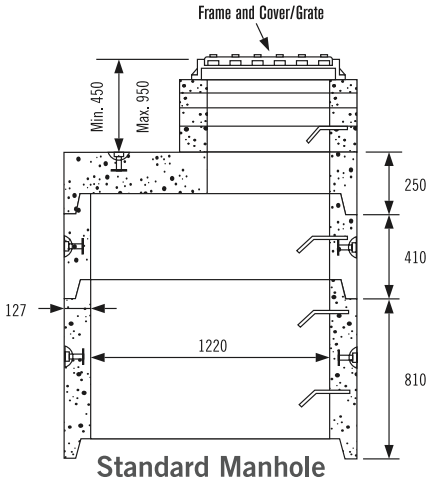
LAFARGE

ESTIMATING GUIDE

> STANDARD 1200MM DIA., MANHOLE MATERIAL

Design Depth (m)	Total Weight (ton)	F-39 F&C (0.15m)	Custom Barrel Height (m)	Barrels				Slabtop (0.25m)	Grade Rings		Total Price
				1.22m	0.81m	0.41m	0.30m		0.15m (6")	0.10m (4")	
2.0	4.06	1	1.22					1	4		$3807
2.1	4.14	1	1.22					1	4	1	$3908
2.2	4.36	1	1.22				1	1	2	2	$4183
2.3	4.51	1	1.22			1		1	2	2	$4236
2.4	4.55	1	1.22			1		1	3	1	$4249
2.5	4.74	1	1.22				2	1	2	2	$4586
2.6	4.89	1	1.22			1	1	1	2	2	$4639
2.7	5.03	1	1.22		1			1	2	2	$4690
2.8	5.11	1	1.22		1			1	4		$4729
2.9	5.15	1	1.22		1			1	3	2	$4857
3.0	5.41	1	1.22		1		1	1	2	2	$4895
3.1	5.52	1	1.22	1				1	3		$4936
3.2	5.60	1	1.22	1				1	3	1	$4971
3.3	5.68	1	1.22	1				1	3	2	$5008
3.4	5.90	1	1.22	1			1	1	3		$5022
3.5	5.98	1	1.22	1			1	1	3	1	$5122
3.6	6.13	1	1.22	1		1		1	3	1	$5174
3.7	6.28	1	1.22	1			2	1	3		$5425
3.8	6.43	1	1.22	1		1	1	1	3		$5478
3.9	6.57	1	1.22	1	1			1	3		$5496
4.0	6.65	1	1.22	1	1			1	3	1	$5515
4.1	6.73	1	1.22	1	1			1	3	2	$5633
4.2	6.95	1	1.22	1	1		1	1	3		$5733
4.3	7.10	1	1.22	2				1	3		$5803
4.4	7.18	1	1.22	2				1	3	1	$5856
4.5	7.26	1	1.22	2				1	3	2	$5930
4.6	7.48	1	1.22	2			1	1	3		$5948
4.7	7.56	1	1.22	2			1	1	3	1	$6048
4.8	7.71	1	1.22	2		1		1	3	1	$6101
4.9	7.86	1	1.22	2			2	1	3		$6351
5.0	7.94	1	1.22	2			2	1	3	1	$6452

*Includes concrete material, rubber gaskets, and F-39 Frame and cover. F.O.B. Edmonton Yard.



Standard Manhole

Assumptions:

1 Pipe size assumed to be 450mm diameter SDR 35/Ultra-rib

2 Design depth assumed to be the vertical distance from rim to outlet invert

3 Grade ring range assumed to be 450mm-900mm

4 F.O.B. Edmonton Yard

LAFARGE PIPE TERMS AND CONDITIONS OF SALE

For delivery or pick-up arrangements, please contact our shipping office at 780-410-3685

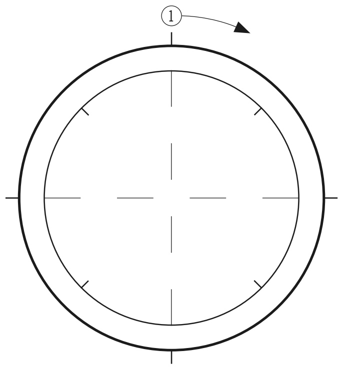
1. All unit prices listed on quotation are FOB our Edmonton yard.
2. Quote does not include manhole frames, covers, trash racks, etc.
3. Quoted prices are based on entire order and are not valid broken out. Freight prices are based on full loads, and on deliveries made during normal working hours.
4. Access hatches and other miscellaneous material is not included. We can however cast hatches into slab tops at our facility at an additional cost. Please inquire.
5. Quantities and elevations provided are estimates only.
6. The prices in our quotation are subject to modification to the extent of any change (either before or after acceptance) in freight rates, import duties, sales taxes, material cost increase, excise taxes, or foreign exchange rates.
7. A 20% re-stocking fee applies to all returned product deemed re-useable by Lafarge. Material damaged beyond use as well as custom material (i.e. material with rough cut holes, any pre-benched bases, etc.) will not be credited and disposal charges will apply. Any material older than 2 years will also not qualify for a refund. Returned Material must be accompanied with a copy of the Bill of Lading (BOL) pertaining to the returned items in order for a monetary credit to be issued.
8. Manufacturing and delivery schedule provided once approved shop drawings received.
9. Lifting clutches specific to our products are needed to handle all material and are available for purchase from Lafarge. They are non-returnable/ non-refundable. Please inquire.
10. Pallets that are sent out with deliveries for ease of unloading material will be charged. These pallets are non-returnable and non-refundable.
11. Lift pin cavities on all products are to be grouted in after installation (by others) to avoid potential water infiltration issues.
12. Manholes with gasketed connections for PVC-DR pipe will come with 'PSX Direct Drive' rubber gaskets in the manholes. A torque wrench is required for install of the gasket around the PVC pipe. This is available from Lafarge upon request.
13. Ultra-Rib/CSP (or any other rib style pipe) will come with cored/roughed-out holes in the manhole for grouted on-site connection.
14. Gaskets between manhole barrels and between concrete pipes are a self-lubricating style for a single offset joint. If nitrile material gaskets are required for hydrocarbon resistance, please notify us and inquire about stock and pricing as this item is not typically stocked due to life-span of material.
15. Waterproofing (e.g. Xypex, BASF, any coatings, etc.) for manholes is not typically included. Please inquire for pricing if you wish to add this as an additional item.
16. Invert elevations of catch basin leads will need to be provided to form the required openings in the corresponding manhole structure.
17. All pricing on this quote is valid for product picked up or delivered before December 31, 2020. Please carry a price increase for all products required or picked up in 2021 regardless of award date.
18. One hour unloading time is included in any product delivered by Lafarge. Additional time after the first hour will be charged out at the prevailing hourly rate. Please make sure you have adequate equipment on-site to off-load the material.
19. Trucker orientation time/training is not included in quote and will be charged accordingly if required.
20. Purchaser is responsible for providing suitable access and an escort on-site for deliveries made by Lafarge. The purchaser assumes all liability for damage incurred on-site and loss and expense incurred as a result of such damage.
21. The Purchaser shall assume responsibility for any dirt left on the streets by the Seller's trucks as a result of conditions at the place of delivery.
22. Please notify Lafarge of pipe requiring City of Edmonton testing. We will arrange for this with the City at no charge. A delay in schedule for testing is required.
23. All material produced by Lafarge Pipe adheres to the requirements of the Canadian Precast Concrete Qualification Assurance Certification Program (CPCQA).
24. Material offered in the above quotation shall be manufactured according to CSA-A257.2 / ASTM C-76 for Reinforced Concrete Pipe, CSA A257.4 / ASTM C478 for Manholes and Catch Basins.
25. For box section material, Lafarge manufactures according to ASTM C-1433 (please note, box section dimensional tolerances are within 5% according to this spec).
26. Lafarge shall not be responsible for any direct or indirect damages whatsoever caused to the purchaser or otherwise caused by delays.
27. Our products are designed and manufactured to meet the specifications required for use as storm water drainage systems. Lafarge does not represent or warrant that the products can be used for any other use whatsoever. Lafarge shall not be responsible for any other use made of the product unless Lafarge has agreed in writing to design and manufacture the product for the proposed use.
28. Quotation is subject to credit approval. Quotations of the Seller are subject to revisions if not accepted by the Purchaser in writing within 30 days from the date hereof, and are conditional upon arrangements satisfactory to the Seller being made with respect to Payment Terms net 30 days from date of shipping. Service charge of 1.5% per month on amounts outstanding over 30 days. All taxes are extra to this quote.
29. The quantity shown on the signed delivery tickets shall be considered conclusive evidence of the quantity delivered unless otherwise reported at the time of delivery.
30. The Purchaser will inspect the concrete products and other goods purchased at time of delivery and any claims in respect thereto must be made at that time. If any such concrete products or other goods are found to be defective, Lafarge will deliver new concrete products or other goods to the Purchaser at the site of the work in lieu thereof, but it is a condition of sale that this will be the limit of Lafarge's liability and it will not be liable for any labour costs or other consequential damages.
31. Shop drawings are available on request for all material.
32. A carbon levy will apply to all concrete products.
33. Waiver of any one or more of the terms and conditions hereby the Seller shall not constitute a general waiver of terms and conditions and the Seller reserves the right to enforce any and all conditions not so waived. Any such waiver must be in writing.
34. If Pre-Inspection by external consultants is required prior to production of any items, Lafarge must be informed prior to production.

EDMONTON PIPE PLANT
PHONE: (780) 479-5232 | FAX: (780) 410-3699

MANHOLE ORDER FORM

Project:		Contractor:	
Date:		Date Req.:	
Contact / Ph:		Job / Po No.:	
Job Address:		Signature:	

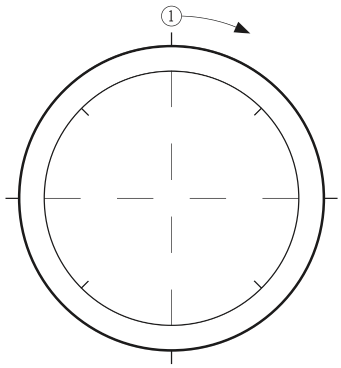
MH No.		DIA.		Base Type: PBB / FLAT / SUMP?	mm	Rim:	
				F & C Type:		Depth:	



Pipe I.D.	Invert	Diff.	Pipe Type	Pipe Opening
1.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
2.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
3.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
4.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
5.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other

Instructions:	

MH No.		DIA.		Base Type: PBB / FLAT / SUMP?	mm	Rim:	
				F & C Type:		Depth:	



Pipe I.D.	Invert	Diff.	Pipe Type	Pipe Opening
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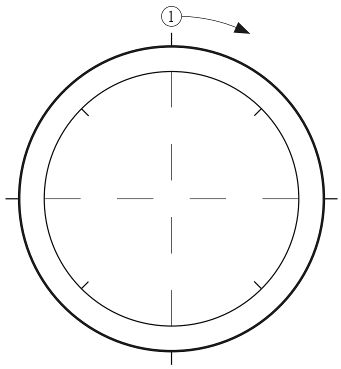
3.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
4.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
5.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other

Instructions:	

MH No.		DIA.		Base Type: PBB / FLAT / SUMP?	mm	Rim:	
				F & C Type:		Depth:	



Pipe I.D.	Invert	Diff.	Pipe Type	Pipe Opening
1.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
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4.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other
5.			Conc. / SDR / U-Rib	R.O. / GSKT. / Other

Instructions:	

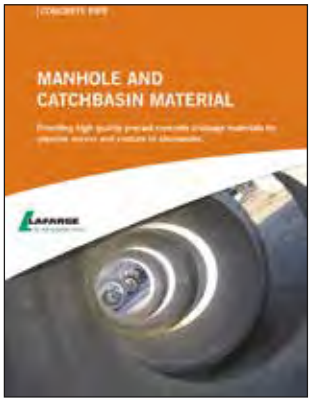
NOTES

EDMONTON PIPE PLANT
PHONE: (780) 479-5232 | FAX: (780) 410-3699

LAFARGE PIPE eManual

Launched in 2012, this online resource represents an innovative marketing tool designed to better communicate the key design considerations involved in specifying concrete pipe and precast concrete drainage materials.

The eManual can be found at **https://www.lafarge.ca/en/pipe**



The Lafarge Pipe eManual is a living document designed to be a one-stop shop for all concrete pipe and precast concrete drainage structures offered by Lafarge, both across Western Canada and in specific market areas.

Underground construction is an industry that involves a number of key stakeholders and a variety of alternatives that can change from project to project. It is especially important in light of federal, provincial, and municipal specifications and codes that our industry remain well informed and technically knowledgeable concerning underground infrastructure. The purpose of the eManual is to accomplish this goal. We hope you find this manual an asset in designing and constructing quality underground projects.

Lafarge Pipe designs and manufactures a wide range of precast underground infrastructure components, including:

> Concrete Pipe

> Box Culverts

> Manhole and Catch Basin Components

> Stormceptor (Oil/Grit Separators)

Lafarge Pipe is based in Western Canada with offices in Calgary, Edmonton and Winnipeg. For a list of complete product offerings, please download the most up to date Lafarge Pipe Catalogue for your market area through the links provided at **https://www.lafarge.ca/en/pipe**

LAFARGE
Building better cities™

Northern Alberta Drainage Team

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Kent Turner	Business Development Associate / Northern AB Sales	Phone: 780-410-3676	Cell: 780-233-6349

AGGREGATES (780) 423-6159

- > Road construction gravel, drain rock and bedding materials
- > Superpave high fracture
- > Washed aggregate
- > Recycled concrete and asphalt
- > Rip rap products
- > Custom crushing, washing and screening

CONSTRUCTION & PAVING (780) 488-9428

- > Asphalt Paving
- > Concrete Flat Work, Curb and Gutter, Barrier Walls
- > Placing of Aggregate Materials
- > General Contracting

CONCRETE READY-MIX (780) 732-5566

- > Artevia (Coloured and Architectural Concrete)
- > Agilia (Self Consolidating Concrete)
- > Chronolia (Rapid Strength Gain Concrete)
- > Extensia (Low Shrinkage Concrete)
- > Fiber Reinforced Concrete

PRECAST SOLUTIONS (780) 485-4500

- > Standard products (ie. electrical and communication vaults, jersey barriers)
- > Architectural and structural precast solutions for warehousing, infrastucture, residence, office, parking, transportation, retail, processing, fabrication, maintenance, education, industrial applications.

ASPHALT (780) 450-5984

- > DURAPAVE™ Series of Asphalt Products
- > Hot Mix (Duraphalt™, Duracycle™, Duratough™, Durawhisper™, Porous, Stone-Mastic, Superpave)
- > Warm Mix (Duraclime™)
- > High Performance Cold Mix (QPR)

2020

Northern Alberta Pipe Catalogue

www.lafarge.ca

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