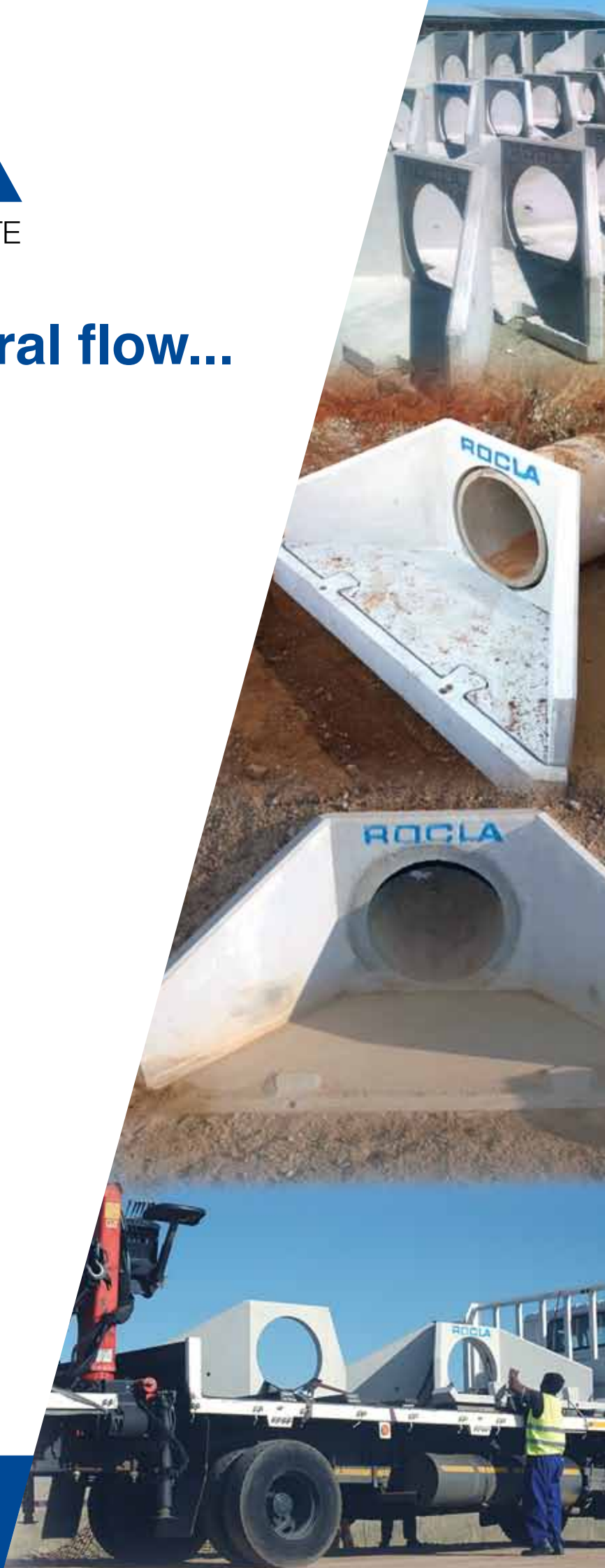


ROCLA

OUR DIFFERENCE IS CONCRETE

Go with the natural flow...

the leading supplier of
precast concrete wingwalls





With over 100 years of experience and engineering 'know how', Rocla is the clear leader in Precast Concrete Products in South Africa.

From custom made concrete products and accessories through to our full product range, we pride ourselves in absolute quality and above average service. Our technical team is always on the look-out for the latest technologies and innovations from all over the world.

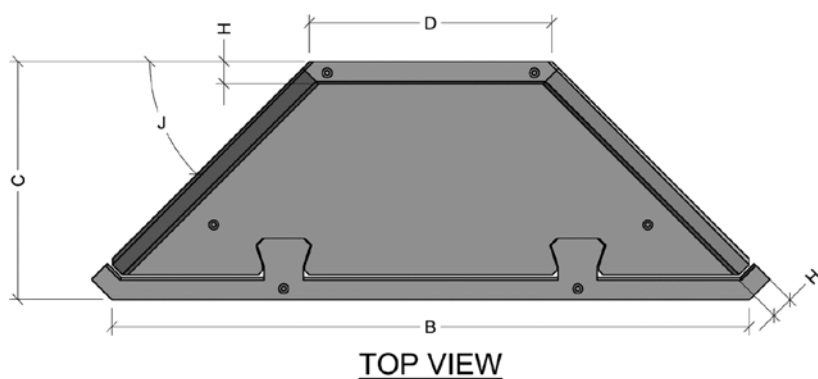
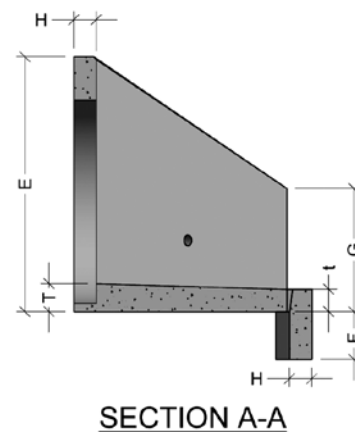
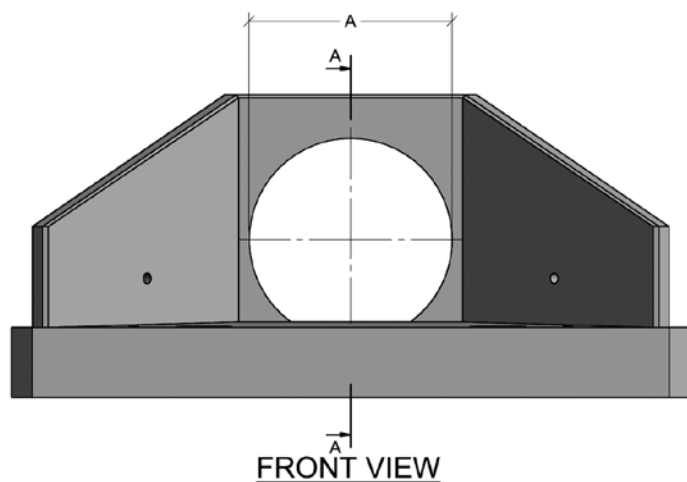
Making us your preferred partner for all things precast, ensures that you always benefit from the Rocla difference, which is indeed, concrete.

precast concrete wingwall units

Advantages of using Rocla wingwalls:

- Fast and efficient installation
- Reduced quantity of materials required
- No site-mix concrete or reinforcing required on site
- No waste and no clean up required
- No formwork
- Remote sites become simple to manage
- Concrete strength guaranteed
- Quantity and positioning of designed reinforcing is guaranteed
- No delays waiting for concrete to cure and stripping of formwork
- Units capable of fitting a wide range of pipe diameters and culvert sections
- Lifting anchors cast into the structure
- Energy dissipaters available on special request

Rocla manufactures a range of standard precast concrete wingwall units to conform to international standards and requirements. These units may be customised to accommodate multiple conduit applications for both pipe and portal culverts.



Standard hole openings to fit
standard interlocking joint concrete
pipes

All dimensions in 'mm' unless
otherwise shown

Dimensions may vary slightly
between regions

Single Barrel

Series	Normal Pipe Diameter	Approximate Mass (Kg)	A	B	C	D	E	F	G	T	t	H	J
Type S1	300-600	760	390-725	2 226	850	800	910	170	440	100	80	80	45°
Type S2	675-900	2 100	820-1 070	3 253	1 120	1 350	1 595	250	700	120	100	100	45°
Type S3	1 050-1 350	5 070	1 225-1 555	4 007	2 200	1 700	1 875	300	705	165	125	125	60°

Double Barrel

Series	Normal Pipe Diameter	Approximate Mass (Kg)	A	B	C	D	E	F	G	T	t	H	J
Type D1	300-600	1 130	390-725	3 226	850	1 800	910	170	440	100	80	80	45°
Type D2	675-900	3 000	820-1 070	4 598	1 120	2 700	1 595	250	700	120	100	100	45°
Type D3	1 050-1 350	7 100	1 225-1 555	5 847	2 200	3 540	1 875	300	705	165	125	125	60°

Triple Barrel

Series	Normal Pipe Diameter	Approximate Mass (Kg)	A	B	C	D	E	F	G	T	t	H	J
Type T1	300-600	1 500	390-725	4 226	850	2 800	910	170	440	100	80	80	45°
Type T2	675-900	3 900	820-1 070	5 953	1 120	4 050	1 595	250	700	120	100	100	45°



Rocla design

Applications

Wingwall units are used at both the inlet and outlet of a pipe system in both culvert and stormwater applications.

The natural flow path of water upstream of a constriction is wider than the culvert / pipe structure. Transition sections are therefore required in order to receive and direct the flow of this upstream water through the culvert / pipe. Similarly, these transition elements are also required at the downstream end of the culvert / pipe in order to return the flow of water to the natural width of the stream.

Where water velocities are expected to reach up to 4m/s or more, the wingwall unit is the most common structure used for effective transfer of this water. For stormwater applications, the primary focus is to direct the water into a flow path that will result in the least amount of turbulence, thereby optimising the hydraulic capacity of the conduit.

The wingwall portion directs the water, whilst the wingwall, floor slab and toe provide protection for the embankment and surrounds against scouring and potential collapse of the entire area.

If the exit velocities are predicted to be high, energy dissipaters are available (on request), cast into the floor slab at the exit of the transition element.

Rocla precast wingwall units have been developed in order to provide a quality assured product, suitable for most situations, that makes culvert systems faster and more cost effective to install and maintain.

Our efficient design ensures maximum hydraulic flow performance at both the inlet and outlet of culvert / pipe structures. The angle of wingwalls to headwalls, coupled with the sloping base, ensures that the incoming water flows effortlessly through the structure, limiting debris build up in the corners. Wingwall units of the 300-600 Single Barrel Series are available with 'Skew Walls' with angles of 30 and 60 degrees.

The separate precast concrete toe allows for effortless installation of both the unit and the toe and once installed, keys the unit to the ground preventing movement. This key also provides the unit with additional stability against impact loads and reduces the risk of scouring of the soil below or to the side of the toe. The precast toe is available in standard depth as shown on the technical drawings and also as double this standard depth. The toe for the 300-600 series is therefore available at the standard 250mm depth but also at 500mm deep. On request, Rocla can cast two threaded sockets into the front face of the toe for fixing of gabions.



Installation

Surface area to be suitably levelled and compacted. Making use of the cast-in lifting sockets, lower the wingwall unit into position.

Carefully excavate a groove for the precast toe, remove all loose dirt and compact the sidewalls. If possible, cast a flowable grout to the bottom of this groove, marking the lowest point for the toe and ensuring a level surface. Allow to set then lower toe unit into position. Please note that the key is tapered and acts like a wedge ensuring that the toe cannot slide further down than flush with apron slab.

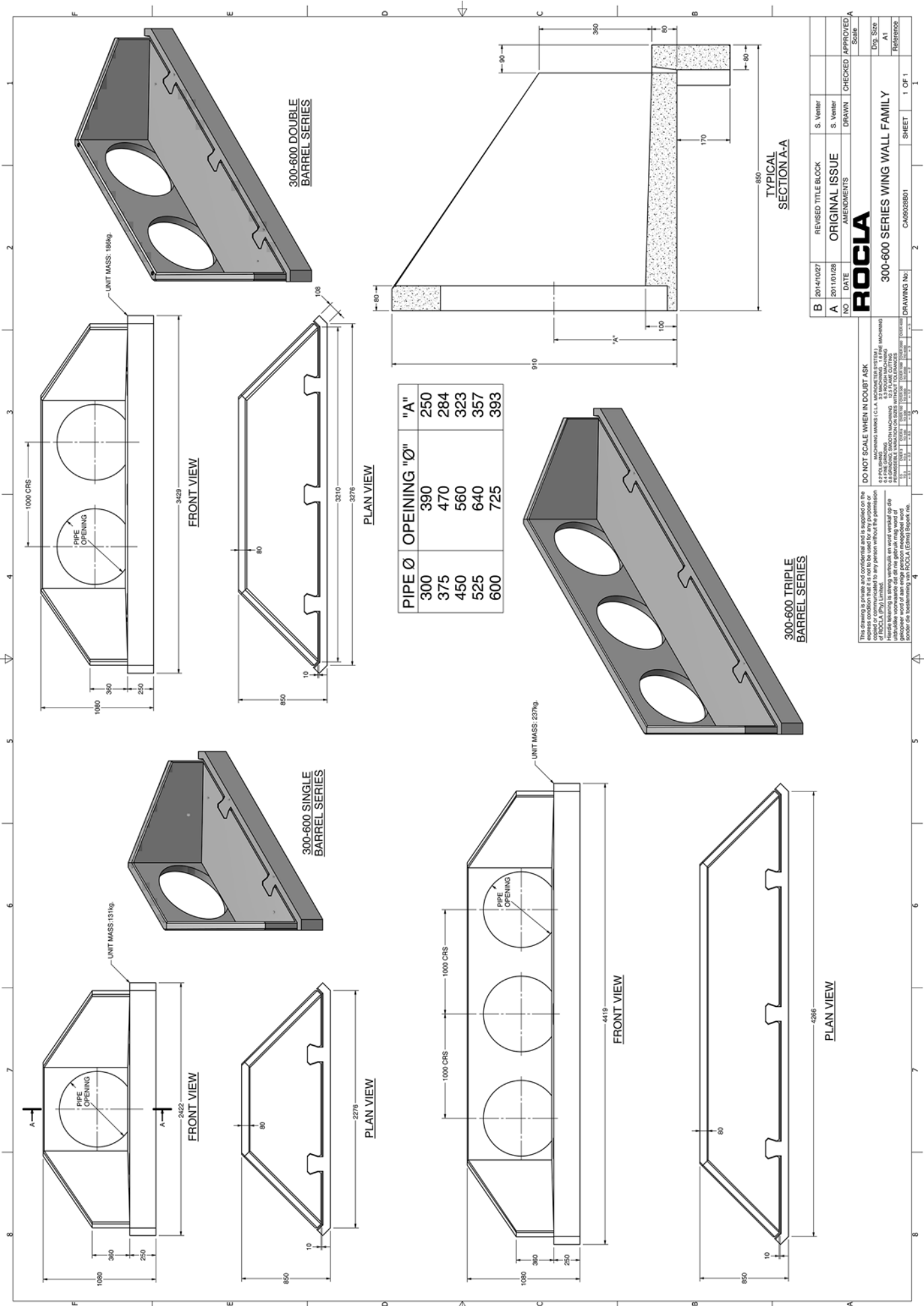
Pour a flowable grout into the specially designed groove between the apron slab and toe - this will pass through the groove and fill any voids below and behind the unit. Fill and compact the area in front of the toe.

Once the culvert / pipe has been positioned, the gap between the pipe and the headwall must be sealed with & an epoxy mortar.

Labour Component

Rocla wingwalls create permanent jobs in a nearby ISO accredited factory environment where workers are trained in, amongst other things, Health and Safety; Concrete Mixing, Placing and Vibration; Reinforcement Bending and Fixing; Mould Preparation, Demoulding and Maintenance; Quality Control; and General Corporate Governance. Also note that an onsite team is still required to prepare the area and place a leveling screed, position the precast elements, mix and place the grout, backfill and general tidy-up. Clearly, local labour will still be required but this team can be more effective and efficient by installing a quality product of which they can be proud.

300 – 600 Series



B	2014/02/27	REVISED TITLE BLOCK	S. Veiter	
A	2011/01/28	ORIGINAL ISSUE	S. Veiter	
NO		DATE	AMENDMENTS	CHECKED APPROVED
				Scale

ROCLIA

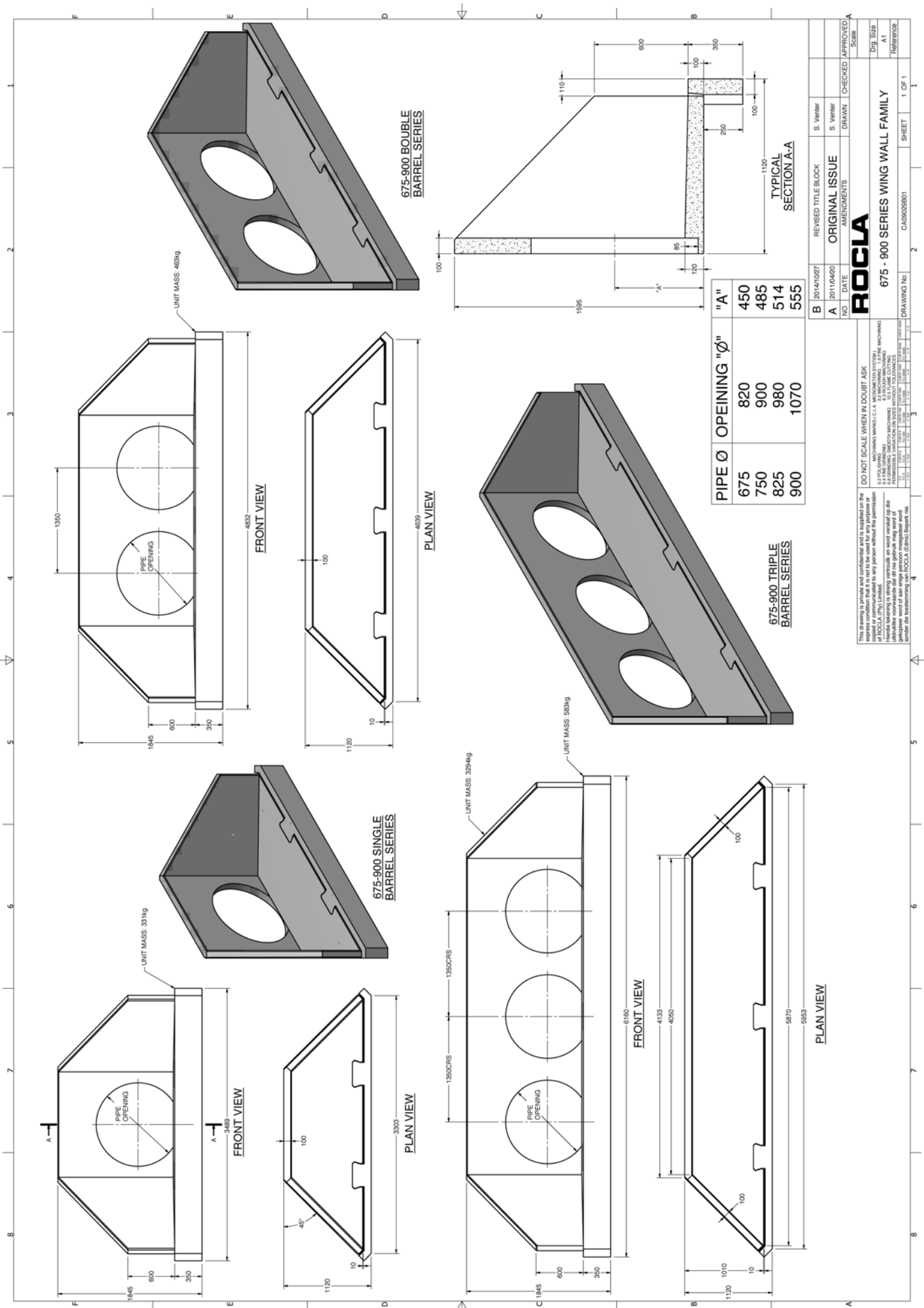
DRAWING No.		2	C40002801	SHEET	1 OF 1
300-600 SERIES WING WALL FAMILY					
Dwg. Size		A1			
Reference					

DO NOT SCALE WHEN IN DOUBT ASK

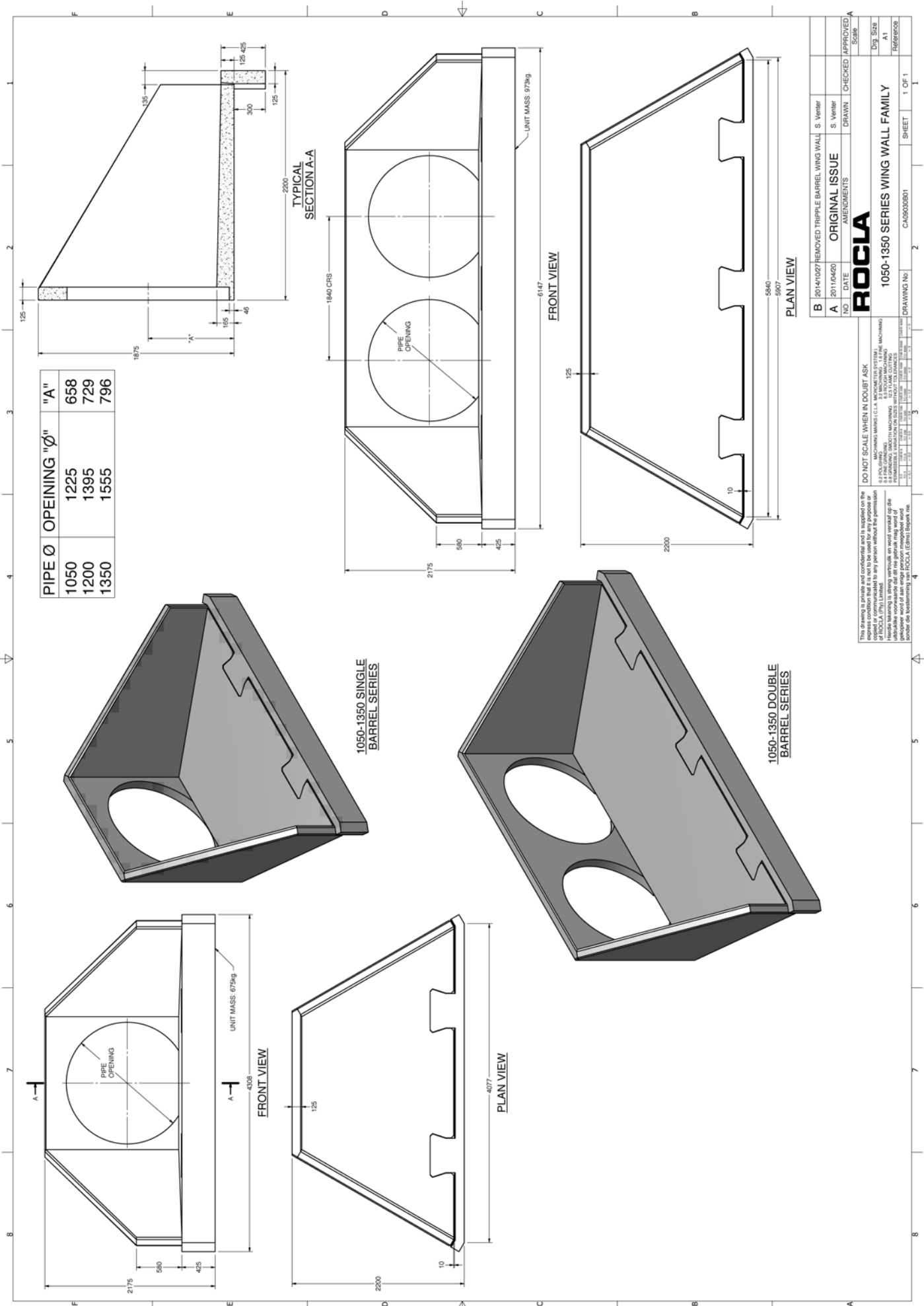
This drawing is a technical drawing and is not to be used for any purpose other than the specific condition that it is not to be used for any purpose or copied or communicated to any person without the permission of the author. The author is not responsible for any errors or omissions in this drawing. The author is not responsible for any errors or omissions in this drawing. The author is not responsible for any errors or omissions in this drawing.

ROCLIA (Edm) Report no.

675 – 900 Series



1050 – 1350 Series



DO NOT SCALE WHEN IN DOUBT ASK
MACHINING MARKS (C.L.A. MACHINING SYSTEM)
1.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
1.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
2.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
3.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
4.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
5.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
6.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
7.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
8.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.1 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.2 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.3 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.4 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.5 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.6 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.7 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.8 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
9.9 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)
10.0 PIV. GRINDING MARKS (C.L.A. MACHINING SYSTEM)

B 2014/0027 REMOVED TRIPPLE BARREL WING WALL		S. Verter	Scale
A 2011/0420 ORIGINAL ISSUE		S. Verter	Scale
AMENDMENTS		DRAWN	CHECKED APPROVED
NO DATE			
DRAWING No		2	1 OF 1
SHEET			
1050-1350 SERIES WING WALL FAMILY			
Dwg. S2B			
A1			
R666608			



Wingwall Units for Portal Culverts Sections

Nominal Size		Dimensions		Code	Series / Size	Wingwall Dimensions		Mass [Kg]	
S [mm]	x H [mm]	W [mm]	D [mm]			D [mm]	W [mm]		
450	x	300	600	390	S1	300 - 600	910	800	760
		375	600	465	S1	300 - 600	910	800	760
		450	600	540	S1	300 - 600	910	800	760
600	x	300	760	390	S1	300 - 600	910	800	760
		450	760	540	S1	300 - 600	910	800	760
		600	760	690	S2	675 - 900	1 595	1 350	2 100
750	x	300	920	390	D1	300 - 600	910	1 800	1 130
		450	920	540	D1	300 - 600	910	1 800	1 130
		600	920	690	D1	300 - 600	910	1 800	1 130
		750	920	840	S2	675 - 900	1 595	1 350	2 100
900	x	300	1 100	400	D1	300 - 600	910	1 800	1 130
		450	1 100	550	D1	300 - 600	910	1 800	1 130
		600	1 100	700	D1	300 - 600	910	1 800	1 130
		750	1 100	850	S2	675 - 900	1 595	1 350	2 100
		900	1 100	1 000	S2	675 - 900	1 595	1 350	2 100
1 200	x	300	1 440	420	D1	300 - 600	910	1 800	1 130
		450	1 440	570	D1	300 - 600	910	1 800	1 130
		600	1 440	720	D2	675 - 900	1 595	2 700	3 000
		900	1 440	1 020	D2	675 - 900	1 595	2 700	3 000
		1 200	1 440	1 320	D2	675 - 900	1 595	2 700	3 000
1 500	x	300	1 750	425	D1	300 - 600	910	1 800	1 130
		450	1 750	575	D1	300 - 600	910	1 800	1 130
		600	1 750	725	D2	675 - 900	1 595	2 700	3 000
		900	1 750	1 025	D2	675 - 900	1 595	2 700	3 000
		1 200	1 750	1 325	D2	675 - 900	1 595	2 700	3 000
1 800	x	600	2 100	750	D2	675 - 900	1 595	2 700	3 000
		900	2 100	1 050	D2	675 - 900	1 595	2 700	3 000
		1 200	2 100	1 350	D3	1 050 - 1 350	1 875	3 540	7 100
2 100	x	600	2 400	750	D2	675 - 900	1 595	2 700	3 000
		900	2 400	1 050	D2	675 - 900	1 595	2 700	3 000
		1 200	2 100	1 350	D3	1 050 - 1 350	1 875	3 540	7 100
2 400	x	600	2 720	760	T2	675 - 900	1 595	4 050	3 900
		900	2 720	1 060	T2	675 - 900	1 595	4 050	3 900
		1 200	2 720	1 360	D3	1 050 - 1 350	1 875	3 540	7 100
3 000	x	600	3 480	790	T2	675 - 900	1 595	4 050	3 900
		900	3 480	1 090	T2	675 - 900	1 595	4 050	3 900
		1 200	3 480	1 390	D3	1 050 - 1 350	1 875	3 540	7 100

Conversion code explanation to standard wingwall unit

S = Single Barrel, D = Double Barrel, T = Triple Barrel
1 = 300 - 600 Series, 2 = 675 - 900 Series, 3 = 1 050 - 1 350 Series

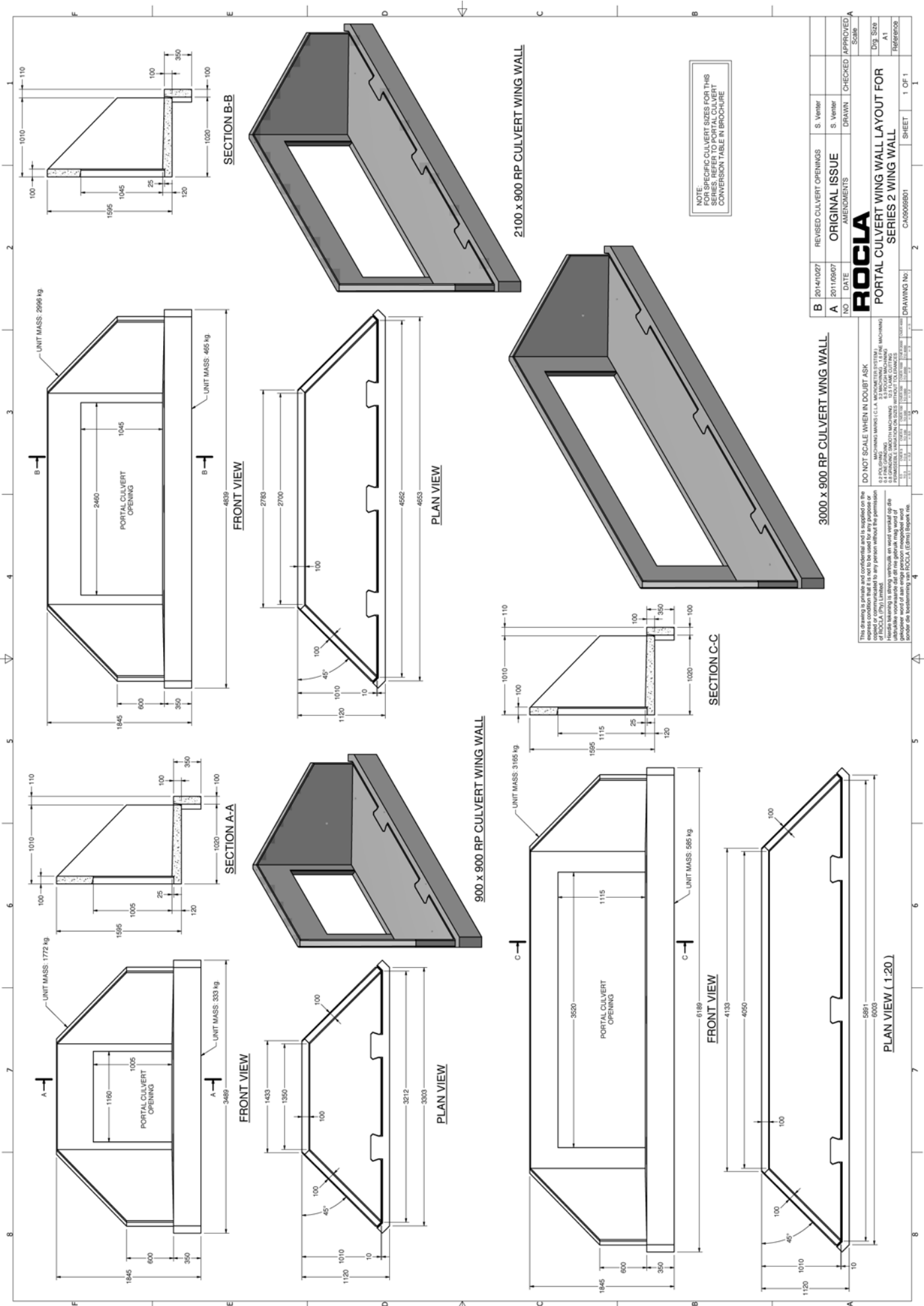
1500 x 450 RP CULVERT WING WALL

600 x 450 RP CULVERT WING WALL

1500 x 450 RP CULVERT WING WALL

B	2014/10/27	REVISED CULVERT OPENINGS	S. Venter	
A	2011/09/06	ORIGINAL ISSUE	S. Venter	
N	DATE	AMENDMENTS	DRAWN	CHECKED
NO.				APPROVED
				Scale
ROCLA PORTAL CULVERT WING WALL LAYOUT FOR SERIES 1 WING WALL				
DRAWING No.	CARG0006001		SHEET	1 OF 1
				Ung. Size
				Dwg. Size
				Reference

[illegible]



B	2014/0027	REVISED CULVERT OPENINGS	S. Venter	
A	2011/0007	ORIGINAL ISSUE	S. Venter	
NO		DATE	AMENDMENTS	CHECKED
			DRAWN	APPROVED
				Scale

ROCLA

PORTAL CULVERT WING WALL LAYOUT FOR SERIES 2 WING WALL

B	2014/0027	REVISED CULVERT OPENINGS	S. Venter	
A	2011/0007	ORIGINAL ISSUE	S. Venter	
NO		DATE	AMENDMENTS	CHECKED
			DRAWN	APPROVED
				Scale

ROCLA

PORTAL CULVERT WING WALL LAYOUT FOR SERIES 2 WING WALL

B	2014/0027	REVISED CULVERT OPENINGS	S. Venter	
A	2011/0007	ORIGINAL ISSUE	S. Venter	
NO		DATE	AMENDMENTS	CHECKED
			DRAWN	APPROVED
				Scale

B	2014/0027	REVISED CULVERT OPENINGS	S. Venter	
A	2011/0007	ORIGINAL ISSUE	S. Venter	
NO		DATE	AMENDMENTS	CHECKED
			DRAWN	APPROVED
				Scale

B	2014/0027	REVISED CULVERT OPENINGS	S. Venter	
A	2011/0007	ORIGINAL ISSUE	S. Venter	
NO		DATE	AMENDMENTS	CHECKED
			DRAWN	APPROVED
				Scale



ROCLA NATIONWIDE

Positioned to serve your needs, Rocla's 11 factories are strategically located throughout South Africa's nine provinces and in Namibia and Botswana.

South Africa and offshore markets are cost effectively supplied by road, rail and sea.

Made by modern processes, supervised in accordance with the ISO 9001 Quality Management System, Rocla's factories make products that proudly carry the CMACS Mark of Approval.

HEAD OFFICE, PO Box 92, Roodepoort 1725, Tel: (011) 670 7600, Fax: (086) 677 1510

- **Blackheath:** Tel: (021) 905 1270, Fax: (021) 905 2913
- **De Aar:** Tel (053) 631 3601/2, Fax: (053) 631 3351
- **Gaborone, Kwena Rocla:** Tel: (00267) 390 4032, Fax: (00267) 390 7160
- **Nelspruit:** Tel: (087) 354 9202, Fax: (086) 675 9524
- **Newcastle:** Tel: (034) 375 7848/9, Fax: (034) 375 6941
- **Polokwane:** Tel: (015) 293 1857/8, Fax: (015) 293 2821
- **Port Elizabeth:** Tel: (041) 486 1462, Fax: (041) 486 2835
- **Roodepoort:** Tel: (011) 670 7600, Fax: (086) 677 1510
- **Stilfontein Depot:** Tel: (010) 005 1703, Fax: (086) 685 1148
- **Virginia:** Tel: (087) 354 8688, Fax: (086) 646 6291
- **Windhoek, Rocla Pipes:** Tel: (002646) 126 3126, Fax: (002646) 121 5149

Email: info@rocla.co.za

Web: www.rocla.co.za



**CMACS
APPROVED**



ROCLA
OUR DIFFERENCE IS CONCRETE

iSG
Infrastructure Specialist Group