ROCLA

OUR DIFFERENCE IS CONCRETE

Go with the natural flow...

the leading supplier of

precast concrete wingwalls

ROCLA

OUR DIFFERENCE IS CONCRETE

With over 97 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.

With the local requirements for industrial and commercial security solutions as well as grain storage, both on farms and in warehouse environments, we decided to investigate how and where we could add value to these industries.

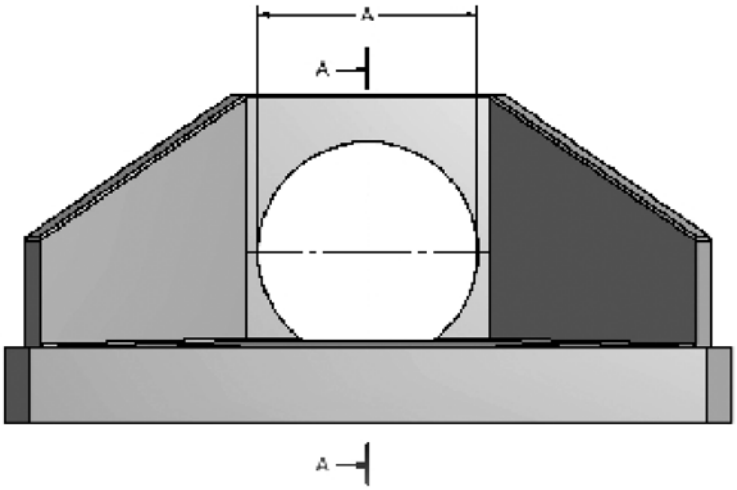
precast concrete wingwall units

Advantages of using Rocla wingwalls:

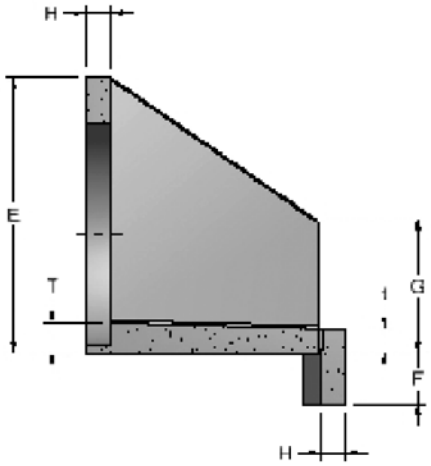
- Fast and efficient installation
- Reduced quantity of materials required
- No site-mix concrete or reinforcing required on site No waste and no clean up required
- No formwork
- Remote sites become simple to manage Concrete strength guaranteed
- Quantity and positioning of designed reinforcing is guaranteed
  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.

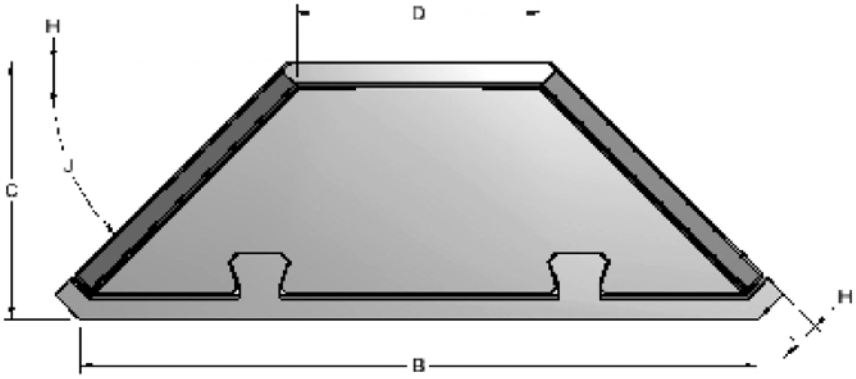
Revised & reprinted in February, 2015.



FRONT VIEW



SECTION A-A



PLAN VIEW

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°

Doule 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.

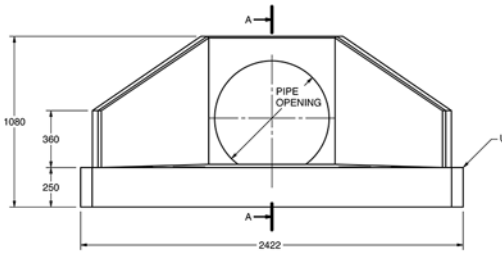
Carefully excavate a groove for the precast toe, remove all loose dirt and compact the sidewalls. If possible, cast a flowable grout to the bottom of this groove, marking the lowest point for the toe and ensuring a level surface. Allow to set then lower toe unit into position. Please note that the key 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.

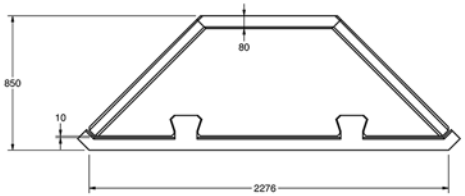
Once the culvert / pipe has been positioned, the gap between the pipe and the headwall must be sealed with & an epoxy mortar.

Labour Component

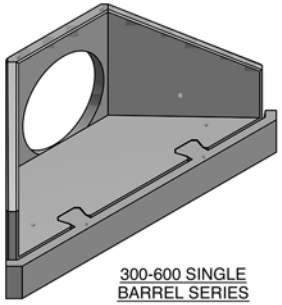
Rocla wingwalls create permanent jobs in a nearby ISO accredited factory environment where workers are trained in, amongst other things, Health and Safety; Concrete Mixing, Placing and Vibration; Reinforcement Bending and Fixing; Mould Preparation, Demoulding and Maintenance; Quality Control; and General 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.



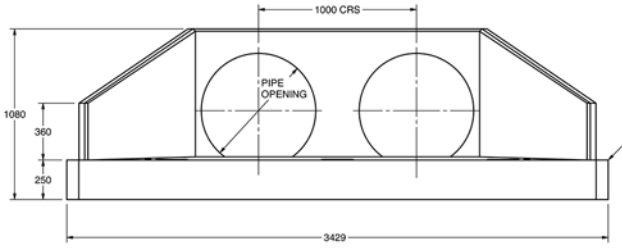
FRONT VIEW



PLAN VIEW



300-600 SINGLE BARREL SERIES



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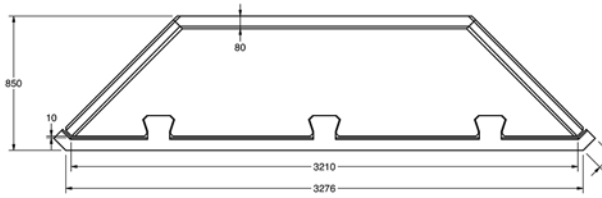
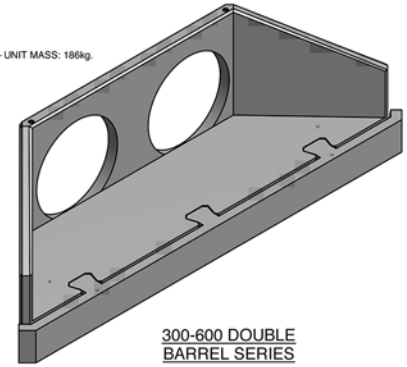
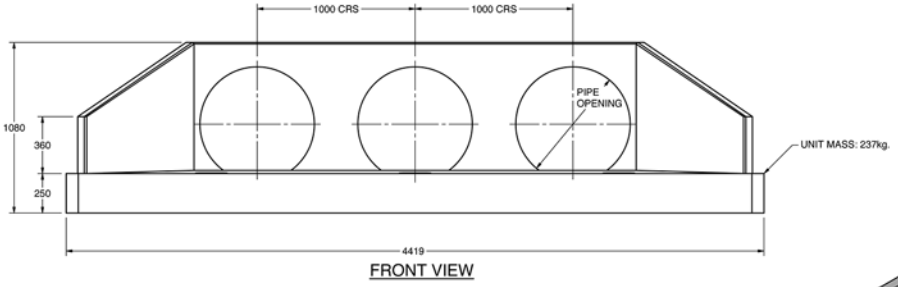


PLAN VIEW



300-600 DOUBLE BARREL SERIES

PIPE Ø	OPEINING "Ø"	"A"
300	390	250
375	470	284
450	560	323
525	640	357
600	725	393



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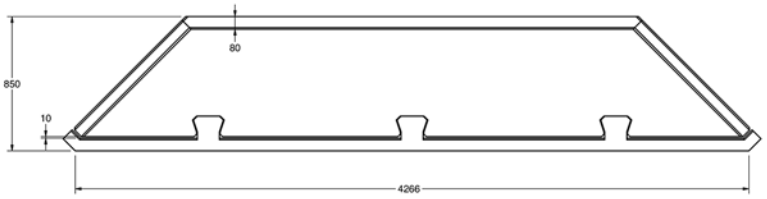
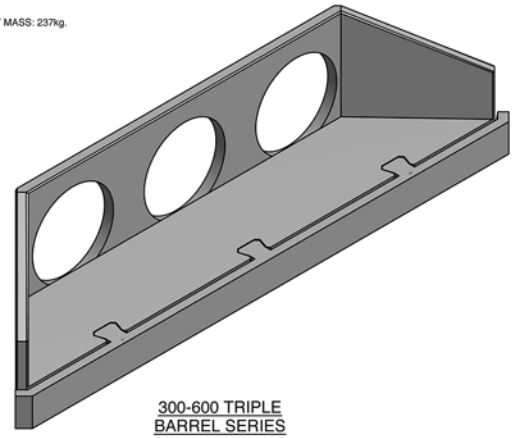
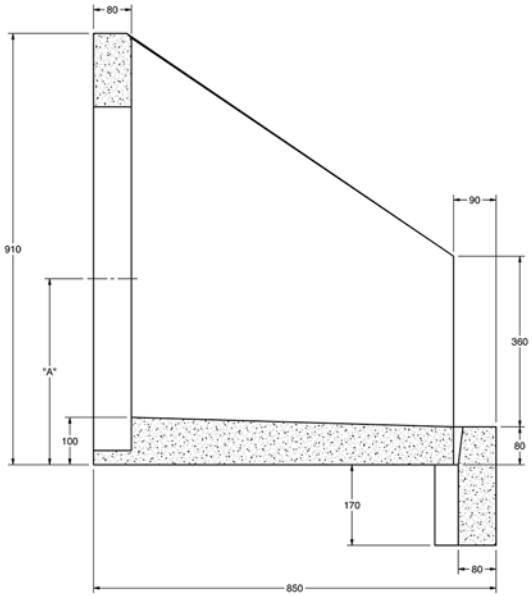


PLAN VIEW



300-600 TRIPLE BARREL SERIES



TYPICAL SECTION A-A

NO	DATE	AMENDMENTS	DRAWN	CHECKED	APPROVED
B	2014/10/27	REVISED TITLE BLOCK	S. Venter		
A	2011/01/28	ORIGINAL ISSUE	S. Venter		

DO NOT SCALE WHEN IN DOUBT ASK

MACHINING MARKS (C.L.A. MICROMETER SYSTEM)
0.2 POLISHING 3.2 MACHINING 1.6 FINE MACHINING
0.4 FINE GRINDING 6.3 ROUGH MACHINING
0.8 GRINDING, SMOOTH MACHINING 12.5 FLAME CUTTING
PERMISSIBLE VARIATION ON SIZES WITHOUT TOLERANCES

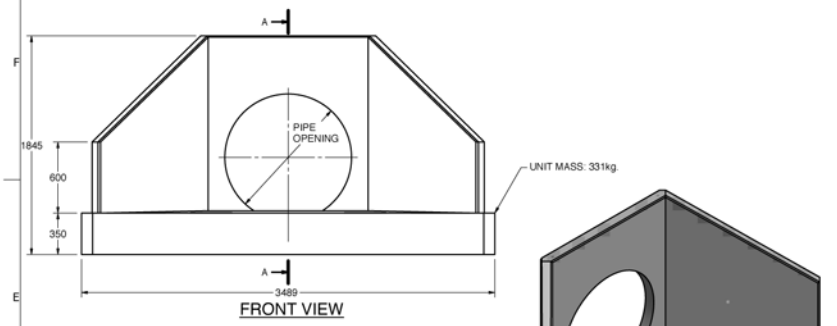
0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000	OVER 1000 TO 2000	OVER 2000 TO 4000	OVER 4000
± 0.1	± 0.2	± 0.3	± 0.5	± 0.8	± 1.2	± 2	± 3	± 5

ROCLA

300-600 SERIES WING WALL FAMILY

Scale	
Drg. Size	A1
Reference	

DRAWING No: CA09028B01 SHEET 1 OF 1



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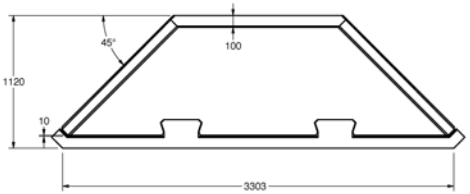

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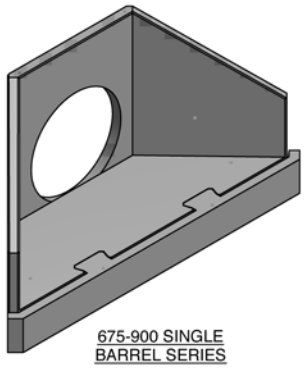
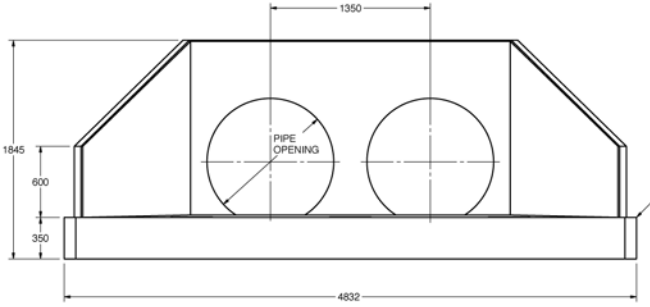


675-900 SINGLE BARREL SERIES



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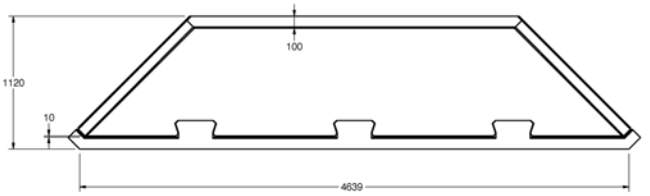

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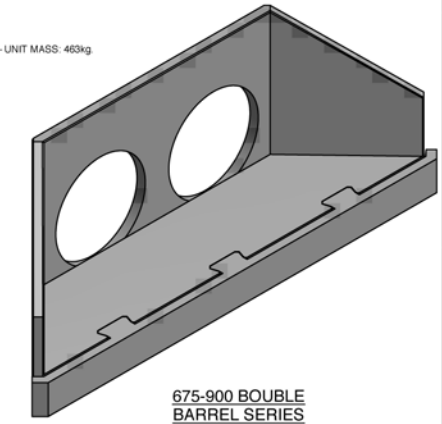
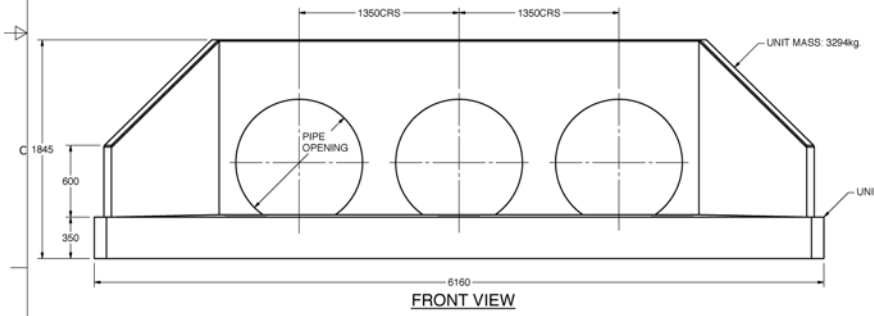


675-900 BOUBLE BARREL SERIES



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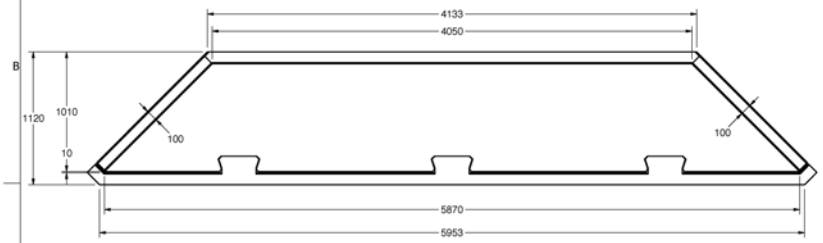

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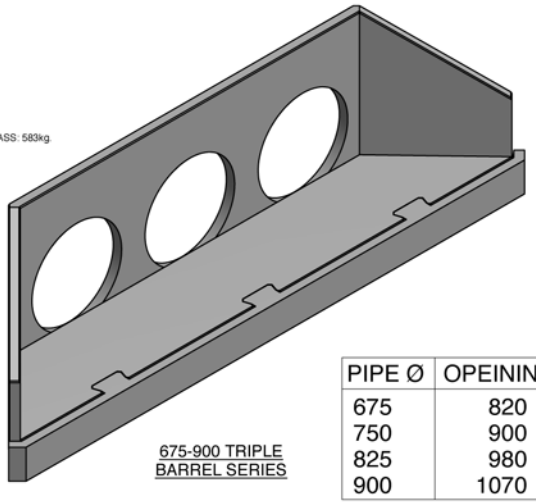
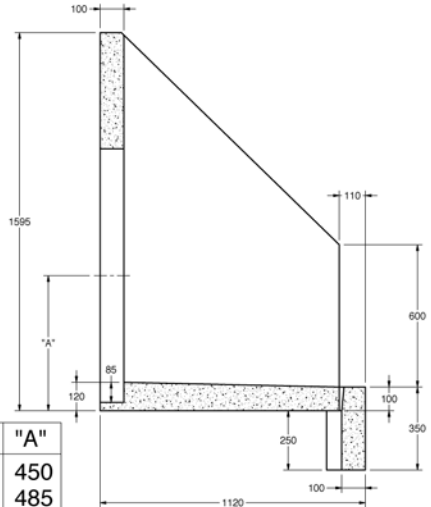


675-900 TRIPLE BARREL SERIES

PIPE Ø	OPEINING "Ø"	"A"
675	820	450
750	900	485
825	980	514
900	1070	555



TYPICAL SECTION A-A

NO	DATE	AMENDMENTS	DRAWN	CHECKED	APPROVED
B	2014/10/27	REVISED TITLE BLOCK	S. Venter		
A	2011/04/20	ORIGINAL ISSUE	S. Venter		

DO NOT SCALE WHEN IN DOUBT ASK

MACHINING MARKS (C.L.A. MICROMETER SYSTEM)
0.2 POLISHING 3.2 MACHINING 1.6 FINE MACHINING
0.4 FINE GRINDING 6.3 ROUGH MACHINING
0.8 GRINDING, SMOOTH MACHINING 12.5 FLAME CUTTING
PERMISSIBLE VARIATION ON SIZES WITHOUT TOLERANCES

0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 1000	OVER 1000 TO 2000	OVER 2000 TO 4000	OVER 4000
± 0.1	± 0.2	± 0.3	± 0.4	± 0.8	± 1.2	± 2	± 3

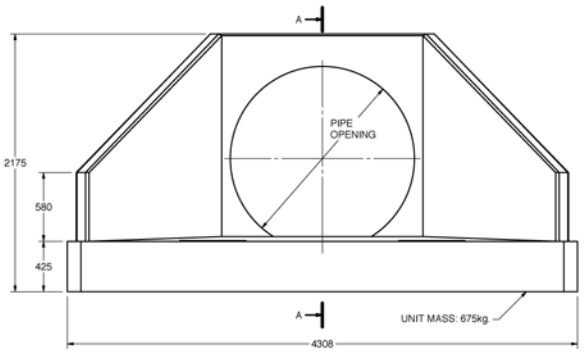
ROCLA

675 - 900 SERIES WING WALL FAMILY

DRAWING No: CA09029B01 SHEET 1 OF 1

Scale
Drg. Size A1
Reference

PIPE Ø	OPEINING "Ø"	"A"
1050	1225	658
1200	1395	729
1350	1555	796



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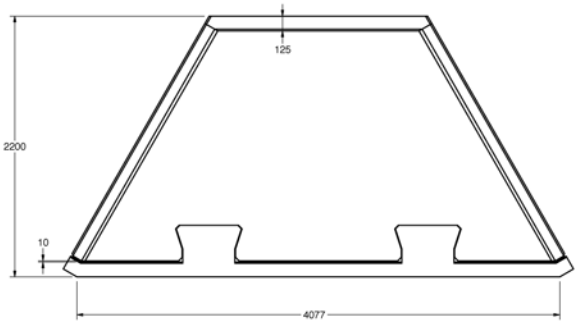

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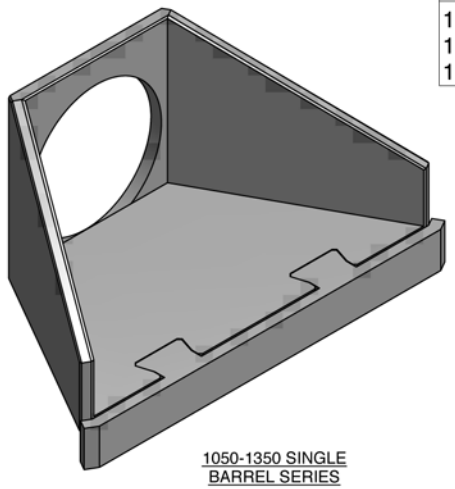
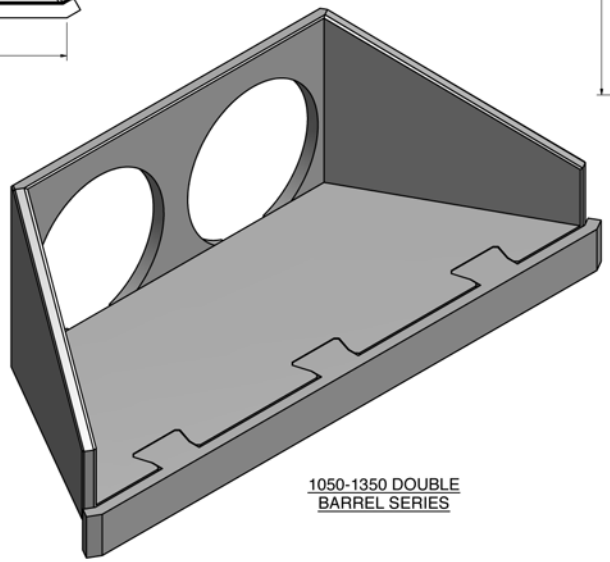
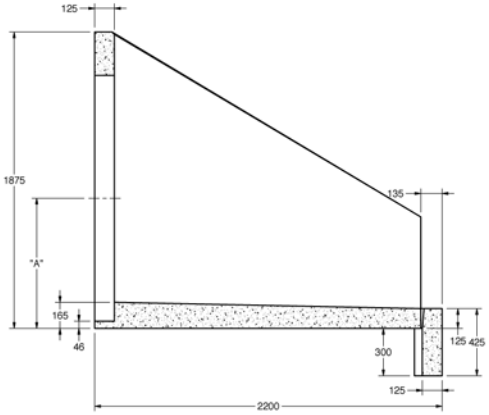


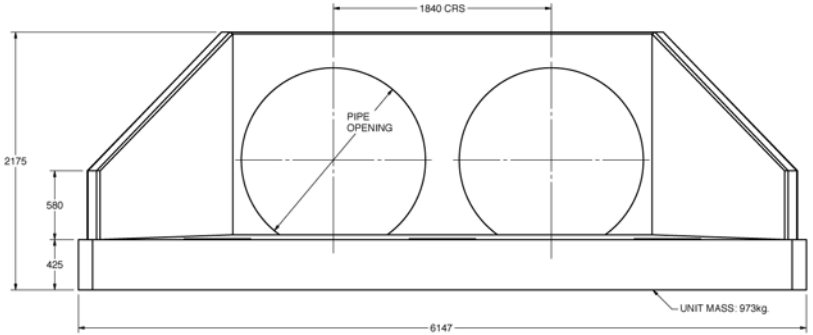
1050-1350 SINGLE BARREL SERIES



1050-1350 DOUBLE BARREL SERIES



TYPICAL SECTION A-A



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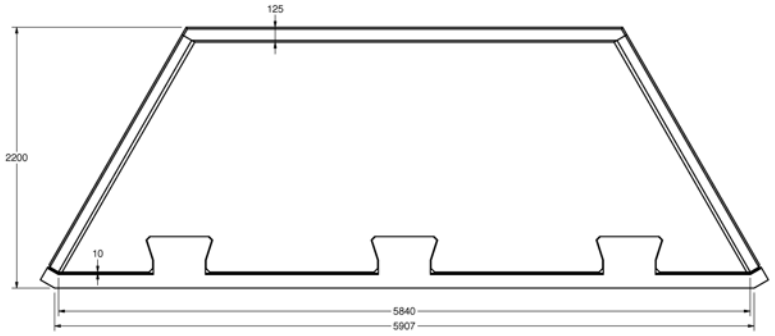


PLAN VIEW

NO	DATE	AMENDMENTS	DRAWN	CHECKED	APPROVED
B	2014/10/27	REMOVED TRIPPLE BARREL WING WALL	S. Venter		
A	2011/04/20	ORIGINAL ISSUE	S. Venter		

DO NOT SCALE WHEN IN DOUBT ASK

MACHINING MARKS (C.L.A. MICROMETER SYSTEM)
0.2 POLISHING 3.2 MACHINING 1.6 FINE MACHINING
0.4 FINE GRINDING 6.3 ROUGH MACHINING
0.8 GRINDING, SMOOTH MACHINING 12.5 FLAME CUTTING
PERMISSIBLE VARIATION ON SIZES WITHOUT TOLERANCES

0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000	OVER 1000 TO 2000	OVER 2000 TO 4000	OVER 4000
+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8	+/- 1.2	+/- 2	+/- 3	+/- 5

ROCLA

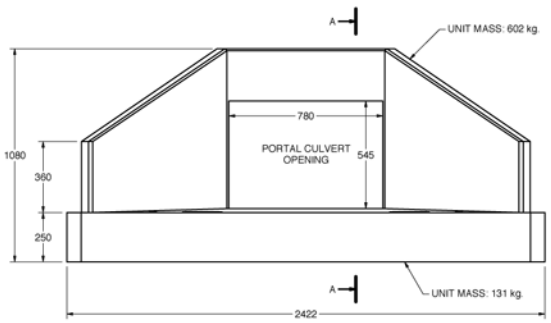
1050-1350 SERIES WING WALL FAMILY

DRAWING No:	CA09030B01	SHEET	1 OF 1

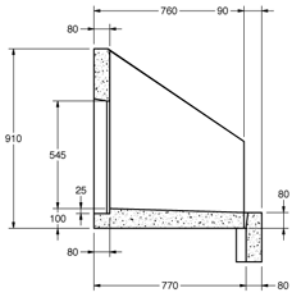
Scale
Drg. Size A1
Reference

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

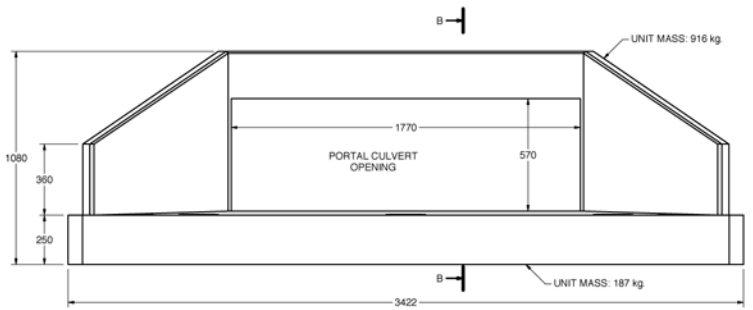
Conversion code explanation to standard wingwall unit	S = Single Barrel, D = Double Barrel, T = Triple Barrel 1 = 300 - 600 Series, 2 = 675 - 900 Series, 3 = 1 050 - 1 350 Series



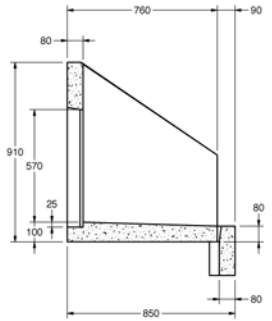
FRONT VIEW



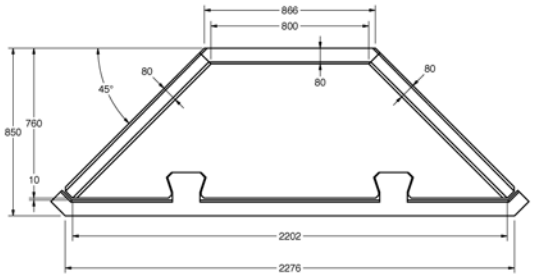
SECTION A-A



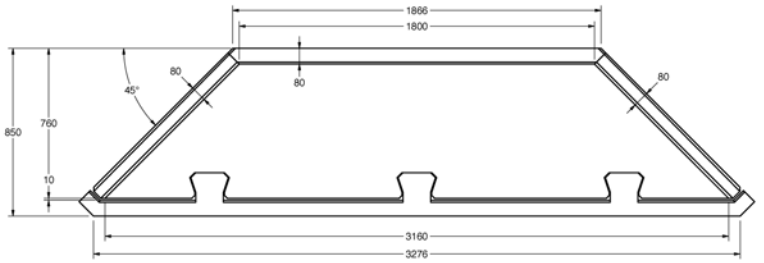
FRONT VIEW



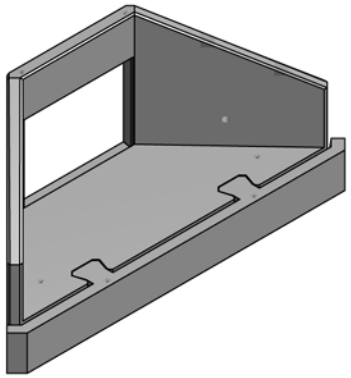
SECTION B-B



PLAN VIEW

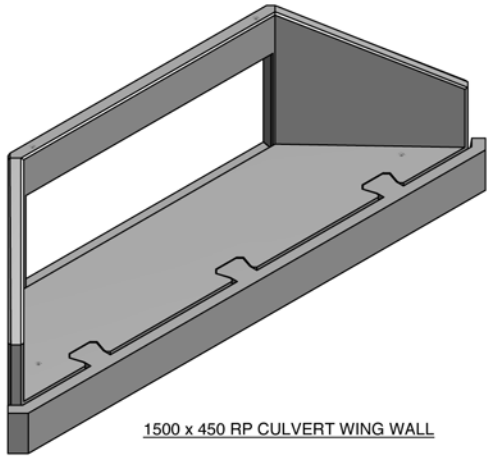


PLAN VIEW



600 x 450 RP CULVERT WING WALL

NOTE:
FOR SPECIFIC CULVERT SIZES FOR THIS SERIES, REFER TO PORTAL CULVERT CONVERSION TABLE IN BROCHURE



1500 x 450 RP CULVERT WING WALL

NO	DATE	AMENDMENTS	DRAWN	CHECKED	APPROVED
B	2014/10/27	REVISED CULVERT OPENINGS	S. Venter		
A	2011/09/06	ORIGINAL ISSUE	S. Venter		

DO NOT SCALE WHEN IN DOUBT ASK

MACHINING MARKS (C.L.A. MICROMETER SYSTEM):
0.2 POLISHING — 3.2 MACHINING — 1.6 FINE MACHINING
0.4 FINE GRINDING — 6.3 ROUGH MACHINING
0.8 GRINDING, SMOOTH MACHINING — 12.5 FLAME CUTTING
PERMISSIBLE VARIATION ON SIZES WITHOUT TOLERANCES

0.5 TO 3	OVER 3 TO 6	OVER 6 TO 30	OVER 30 TO 120	OVER 120 TO 400	OVER 400 TO 1000	OVER 1000 TO 2000	OVER 2000 TO 4000	OVER 4000
+/- 0.1	+/- 0.2	+/- 0.3	+/- 0.5	+/- 0.8	+/- 1.2	+/- 2	+/- 3	+/- 5

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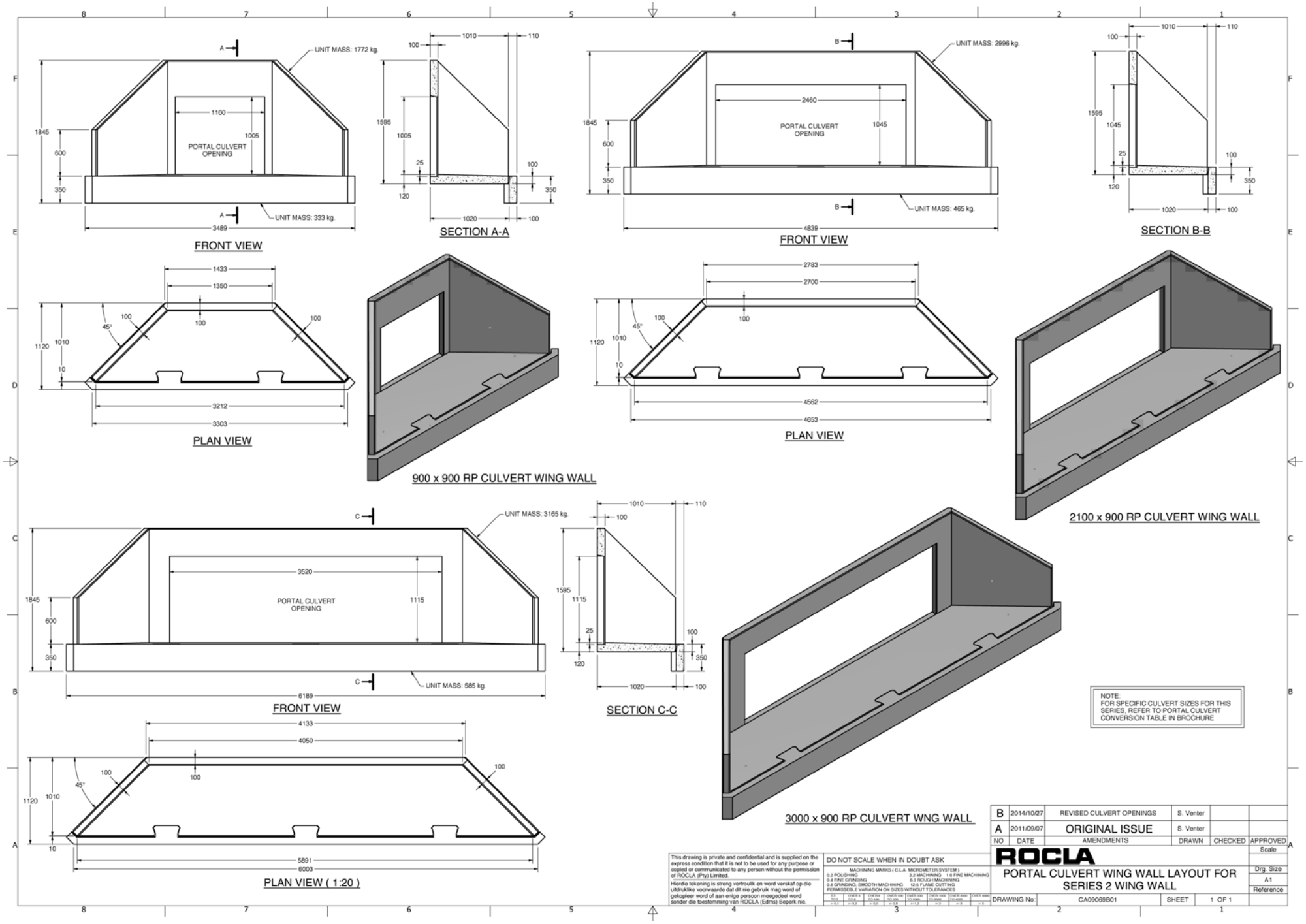
PORTAL CULVERT WING WALL LAYOUT FOR SERIES 1 WING WALL

DRAWING No: CA09060B01 | SHEET 1 OF 1

Scale
Drg. Size A1
Reference


A
UNIT MASS: 1772 kg.
1160
1005
PORTAL CULVERT OPENING
1845
600
350
A
UNIT MASS: 333 kg.
3489
FRONT VIEW
1010
110
100
1595
1005
25
100
350
120
1020
100
SECTION A-A
B
UNIT MASS: 2996 kg.
2460
1045
PORTAL CULVERT OPENING
1845
600
350
B
UNIT MASS: 465 kg.
4839
FRONT VIEW
1010
110
100
1595
1045
25
100
350
120
1020
100
SECTION B-B
1433
1350
100
100
100
45°
1120
1010
10
3212
3303
PLAN VIEW
900 x 900 RP CULVERT WING WALL
2783
2700
100
100
45°
1120
1010
10
4562
4653
PLAN VIEW
2100 x 900 RP CULVERT WING WALL
C
UNIT MASS: 3165 kg.
3520
1115
PORTAL CULVERT OPENING
1845
600
350
C
UNIT MASS: 585 kg.
6189
FRONT VIEW
1010
110
100
1595
1115
25
100
350
120
1020
100
SECTION C-C
4133
4050
100
100
100
45°
1120
1010
10
5891
6003
PLAN VIEW (1:20)
3000 x 900 RP CULVERT WNG WALL
NOTE:
FOR SPECIFIC CULVERT SIZES FOR THIS SERIES, REFER TO PORTAL CULVERT CONVERSION TABLE IN BROCHURE
B 2014/10/27 REVISED CULVERT OPENINGS S. Venter
A 2011/09/07 ORIGINAL ISSUE S. Venter
NO DATE AMENDMENTS DRAWN CHECKED APPROVED
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MACHINING MARKS (C.L.A. MICROMETER SYSTEM)
6.2 POLISHING
6.4 FINE GRINDING
6.8 GRINDING, SMOOTH MACHINING
3.2 MACHINING 1.6 FINE MACHINING
6.3 ROUGH MACHINING
12.5 FLAME CUTTING
PERMISSIBLE VARIATION ON SIZES WITHOUT TOLERANCES
ROCLA
PORTAL CULVERT WING WALL LAYOUT FOR SERIES 2 WING WALL
Scale
Drg. Size A1
Reference
DRAWING No: CA09069B01 SHEET 1 OF 1

ROCLA NATIONWIDE

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

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