

Solution Provider For **GREEN** Precast Concrete With Cutting Edge Technology

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REVISION 2022

API[®]

Partners Gether From
αΩ



PIPE & MANHOLE

Your Trusted **GREEN** Precast
Manufacturer In Malaysia

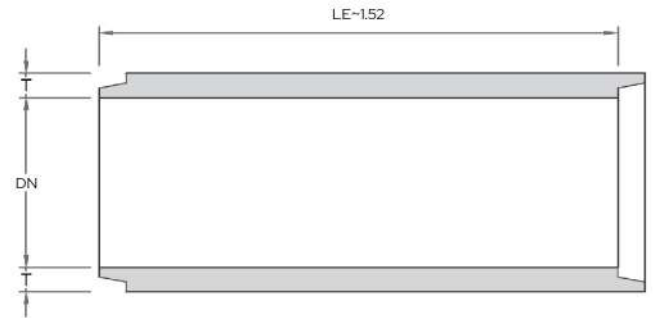
REBATED JOINT PIPE

(For Drainage Application)



In moving forward to an eco-friendly carbon emission footprint, API uses **GREEN** cements in our concrete products. Products with blended cements have enhanced workability, long term strength gain and durability in marine conditions, sewerage applications and other aggressive environments.

The use of **OPC-PFA Blended (combination)** cement in the concrete has made API Reinforced Concrete Rebated Joint (RJ) Pipe durable for **DRAINAGE** application



API VERTICAL CAST REINFORCED CONCRETE REBATED JOINT (RJ) PIPES

API **VERTICAL CAST** RJ PIPES are manufactured using vertical cast technology, a method to produce **precise dimensions** pipes at **higher productivity** comparing to the conventional methods. **Zero Slump** concrete is used in the vertical cast production, enabling the concrete to achieve design strength at a faster rate and subsequently contribute to higher ultimate strength. An unique multi amplitude, frequency and directional state-of-art vibration design assures the zero slump concrete are fully compacted and directly improving the permeability of the concrete.

The Production of API Vertical Cast RJ Pipes **conform** to **MS 881 : Part 3** and certified by **SIRIM**

Nominal Diameter (DN)	Wall Thickness (T)	Approximate Weight Per Pipe
mm	mm	Metric Ton
450	50	0.30
600	63	0.45
750	63	0.60
900	77	0.88
1050	90	1.20
1200	100	1.50
1350	110	1.85
1500	125	2.35

API REINFORCED CONCRETE REBATED JOINT (RJ) SPUN PIPES

API RJ SPUN Pipe is manufactured by the centrifugal spinning process where the pipes are spun at high speed by centrifugal force to achieve dense concrete pipe with superior quality. All RJ SPUN Pipe need to be installed following the LOAD LINE as per indication on the product

The Production of API RJ Pipes **conform** to **MS 881 : Part 3** and certified by **IKRAM**

Nominal Diameter (DN)	Wall Thickness (T)	Approximate Weight Per Pipe
mm	mm	Metric Ton
450	40	0.24
600	50	0.39
750	55	0.53
900	65	0.75
1050	75	1.11
1200	85	1.28
1500	100	1.83
1800	130	2.84

Concrete grade 40 is used for both Vertical Cast RJ Pipes and RJ Spun Pipes

Crushing Test Load MS 881 : PART 3

Nominal Diameter (DN)	Crushing Test Load (kN/meter of effective length)					
	Class L		Class M		Class H	
mm	Proof load	Max Load	Proof Load	Max Load	Proof Load	Max Load
450	20	25	35	44	41	52
600	20	25	46	58	54	68
750	38	48	53	67	65	82
900	46	58	67	84	85	107
1050	51	64	76	95	96	120
1200	57	72	87	109	110	138
1350	63	79	95	120	122	153
1500	69	87	104	130	132	165
1800	82	103	124	155	158	198

Note : Pipes Strength higher than Class H is also available upon request.

(Class L,M,H conforms to SPAN requirements Standard MS881:1991)

API also manufactures Precast Concrete Pipe of Class X,Y,Z accordance to Class strength of AS4058

RUBBER RING JOINT PIPE

(also known as SPIGOT & SOCKET WITH RUBBER RING JOINT PIPE For Drainage & Sewerage Application)

ALL API Reinforced Concrete Rubber Ring Joint (RRJ) Pipe can be used for **both DRAINAGE & SEWERAGE** application. The use of **OPC-PFA Blended (combination)** cement in the concrete has made API RRJ pipe **durable** for **sewerage application** and therefore can eliminate the additional Conventional 12mm Lining. The low heat concrete has superior durability comparing to the conventional 12mm Lining as it is a **homogenous** product and the problem of differential shrinkage, disintegration between layer or crack of lining under load does not occur in API RRJ Pipe



API VERTICAL CAST REINFORCED CONCRETE RUBBER RING JOINT (RRJ) PIPES

API **VERTICAL CAST** RRJ PIPES are manufactured using vertical cast technology, a method to produce **precise dimensions** pipes at **higher productivity** comparing to the conventional methods within a given plant area and time. **Zero Slump** concrete is used in the vertical cast production, enabling the concrete to achieve design strength at a faster rate and subsequently contribute to higher ultimate strength. An unique multi amplitude, frequency and directional state-of-art vibration design assures the zero slump concrete are fully compacted and directly improving the permeability of the concrete.

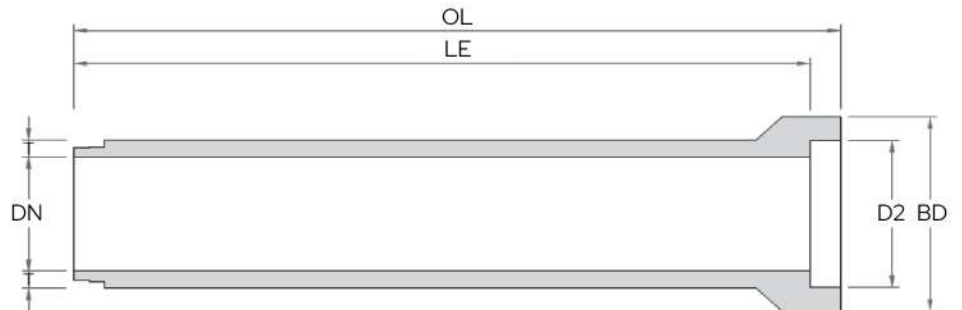
Specification & Certification :

Specification	Certification Body
MS 881 : Part 1 & Part 3 (BS5911 : Part 100)	SIRIM
MS 881 : Part 1 & Malaysia Sewerage Industry Guidelines 3rd Edition Volume III	SPAN
MS ISO 9001 : 2015	SIRIM

* API Vertical Cast Reinforced RRJ Pipes are certified by SPAN for sewerage application

Installation:

API STANDARD Vertical Cast RRJ Pipes has uniform loading at all point, hence installation can be done easily without following "LOAD-LINE", except for class 1.5H AND higher for size 1050 AND above.



RRJ Vertical Cast (with Concrete Grade 40)

Nominal Diameter (DN)	Overall Length (OL)	Effective Length (LE)	Wall Thickness (T)	Socket External Diameter (BD)	Barrel External Diameter (D2)	Approximate Weight Per Pipe
mm	mm	mm	mm	mm	mm	Metric Ton
300	3140	3050	50	510	400	0.52
375	3140	3050	57	600	489	0.64
450	3140	3050	65	690	580	0.86
600	3150	3050	75	880	750	1.27
600 TW	3150	3050	63	850	726	0.98
750	3150	3050	88	1070	926	1.83
750 TW	3150	3050	63	1030	876	1.48
900	3150	3050	100	1250	1100	2.50
1050	3158	3050	113	1325	1276	3.08
1200	3158	3050	125	1500	1450	3.86
1350	3158	3050	138	1675	1626	4.79
1500	3177	3050	150	1850	1800	5.80
1650	3177	3050	163	2025	1976	6.80
1800	3177	3050	175	2200	2150	8.04

API REINFORCED CONCRETE RUBBER RING JOINT (RRJ) SPUN PIPES

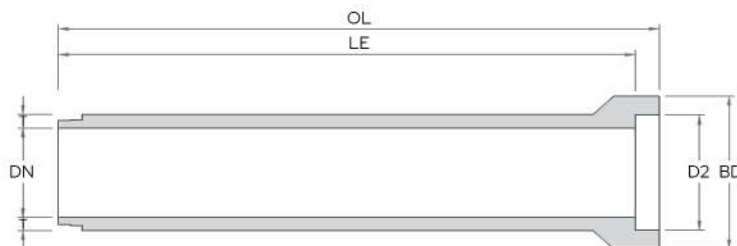
API RRJ SPUN Pipe is manufactured by the centrifugal spinning process where the pipes are spun at high speed by centrifugal force to achieve dense concrete pipe with superior quality.

Installation:

API RRJ SPUN Pipes need to be installed following the LOAD LINE as per indication on the product.

Specification & Certification :

Specification	Certification Body
MS 881 : Part 1 (BS5911 : Part 100)	IKRAM
MS ISO 9001 : 2015	SIRIM



RRJ SPUN (with concrete grade 40)

Nominal Diameter (DN)	Overall Length (OL)	Effective Length (LE)	Wall Thickness (T)	Socket External Diameter (BD)	Barrel External Diameter (D2)	Approximate Weight Per Pipe
mm	mm	mm	mm	mm	mm	Metric Ton
450	3150	3050	40	625	560	0.56
600	3150	3050	50	805	710	0.87
750	3150	3050	55	1010	875	1.18
900	3180	3050	65	1180	1025	1.71
1050	3180	3050	75	1365	1205	2.60
1200	3180	3050	85	1545	1370	2.98
1500	3210	3050	100	1895	1700	4.28
1800	3210	3050	130	2285	2045	6.72

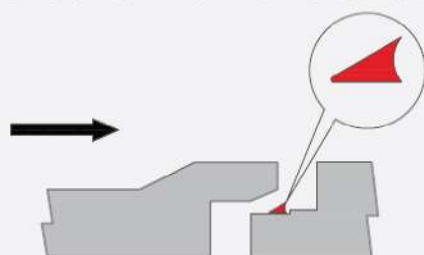
Crushing Test Load MS 881: PART 1

Crushing Test Load (kN/meter of effective length)						
Nominal Diameter (DN)	L		M		H	
	Proof Load	Max Load	Proof Load	Max Load	Proof Load	Max Load
mm						
300	20	25	23	29	-	-
375	20	25	31	39	36	45
450	20	25	35	44	41	52
600	20	25	46	58	54	68
750	38	48	53	67	65	82
900	46	58	67	84	85	107
1050	51	64	76	95	96	120
1200	57	72	87	109	110	138
1350	63	79	95	120	122	153
1500	69	87	104	130	132	165
1650	75	94	116	145	146	183
1800	82	103	124	155	158	198

Note : Other higher Classes i.e. 1.5H, 2H, 2.5H & 3H are also available

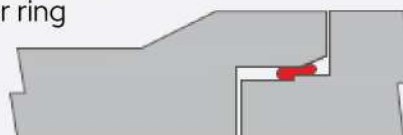
API also manufacturers Precast Concrete Pipe of Class X, Y, Z accordance to Class Strength of AS4058

Innovative And Flexible Rubber Ring Joint (Triangular Shape Rubber Ring)



1. Place gasket around the spigot and against the shoulder

Triangular shaped rubber ring



2. The top section of the gasket rolls over and comes to rest in the annular space and forms a perfect seal.



REINFORCED CONCRETE LARGE DIAMETER PIPES (LDP)

Why Large Diameter Pipe

- An alternative to multiple small pipe or box culverts construction that caters for large storm water discharge or large sewerage application.
- A viable small bridge crossing over waterway.
- A simple underpass for light vehicle and pedestrian movement.
- A storage tanks for water, grains, service utilities or others
- Worker's quarters / hostel/ budget accommodation.

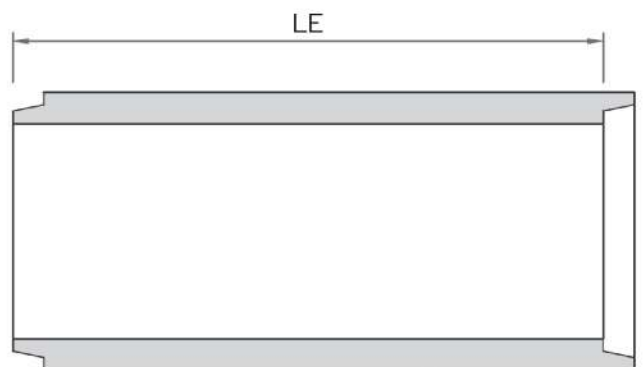
Application

Precast concrete pipe have many usages and applications. These applications include Culvert Crossing, Water Tank, Storage, Silo, Storm Water Drain, Service Tunnel, Hostel/Accommodation etc.

Specification

API manufactures vertical LDP to test loads of

- **MS881**
- **AS4058**



LDP (with concrete grade 40)

Nominal Diameter (DN)	Nominal Length (LE)	Approximate Weight Per Pipe
mm	mm	Metric Ton
2100	3.00	8.00
2400	3.00	9.80
2700	2.50	10.50
3000	2.50	13.25
3300	2.25	14.80
3600	2.00	15.00

Crushing Test Load MS 881

Nominal Diameter (DN)	Crushing Test Load (kN/meter of effective length)					
	L		M		H	
mm	Proof load	Max Load	Proof Load	Max Load	Proof Load	Max Load
2100	96	120	146	183	184	230
2400	108	135	165	207	210	263
2700	124	155	186	233	235	294
3000	135	169	207	259	260	326

MANHOLES

The formulation of **GREEN** cements in our concrete have enhanced better workability, long term strength gain and durability in marine conditions, sewerage applications and others aggressive environment

API Reinforced Concrete Manholes System is the most flexible system where it can be mixed and matched between various components to form a complete manhole system for any kind of project requirement. The concrete manhole system is suitable for both drainage and sewerage. The use of **OPC-PFA Blended (combination)** cement in the concrete has made API Manhole system Durable for **SEWERAGE** application.

Design & Specification

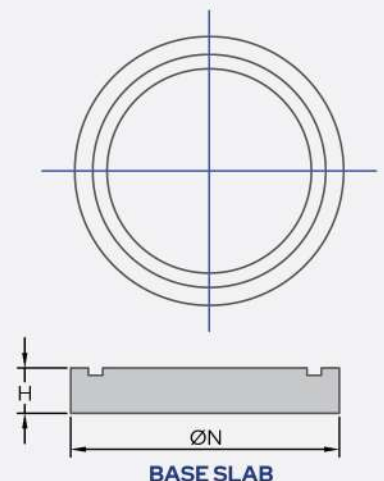
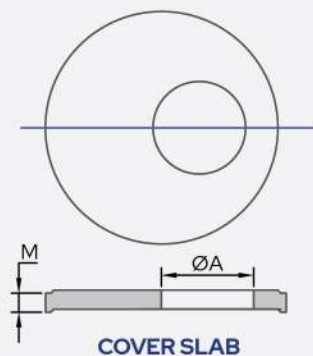
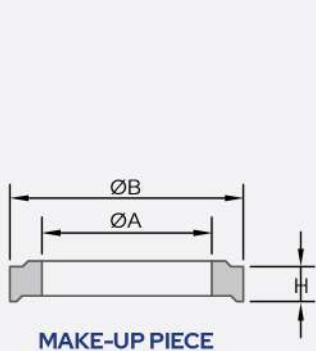
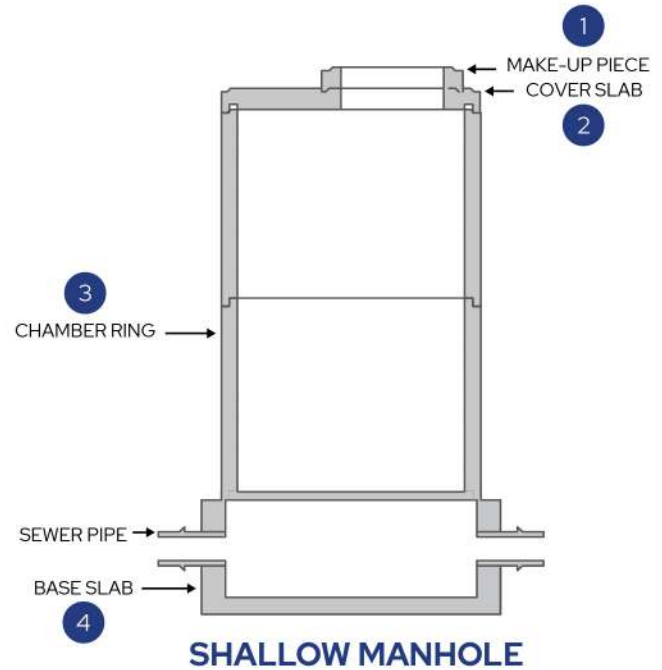
API Manholes are produced and tested in accordance to MS 881 : Part 1. Advantages of using API Manholes System :

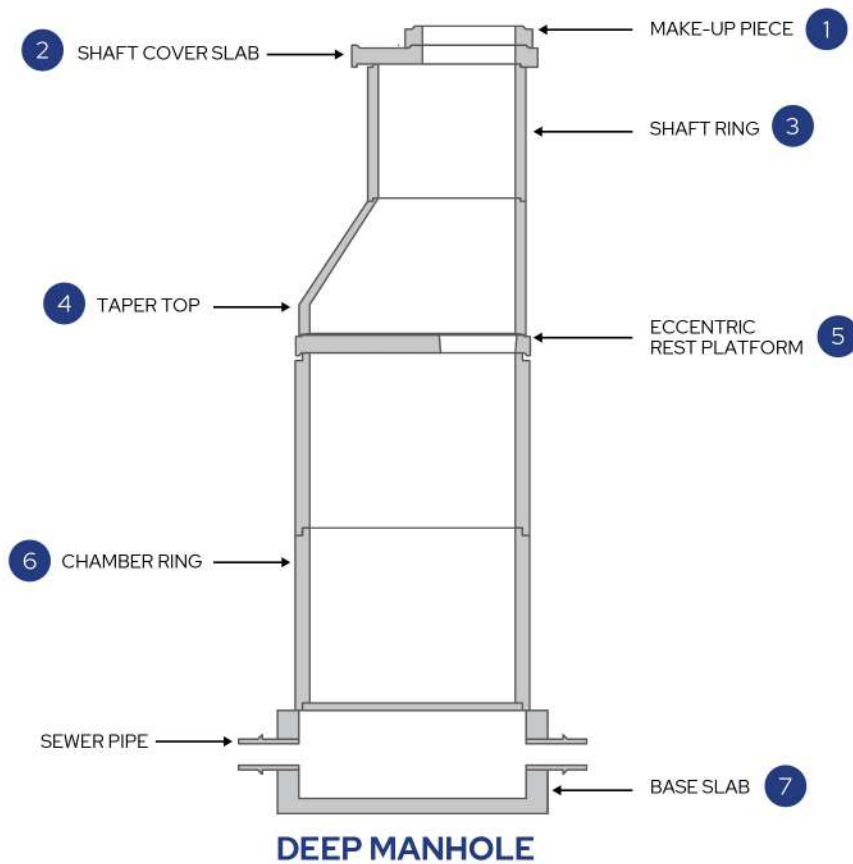
- Saving in construction cost
- High Quality control manhole system made under Stringent Quality control with SPAN approval and certified to MS ISO 9001 : 2015 by SIRIM
- Easy to install, thus saving the time and labour cost
- Manufactured to withstand heavy vehicle load



Component Part	Part Dimension
Make-up-piece	
A	610
B	838
H	125/150 175/200 225/300

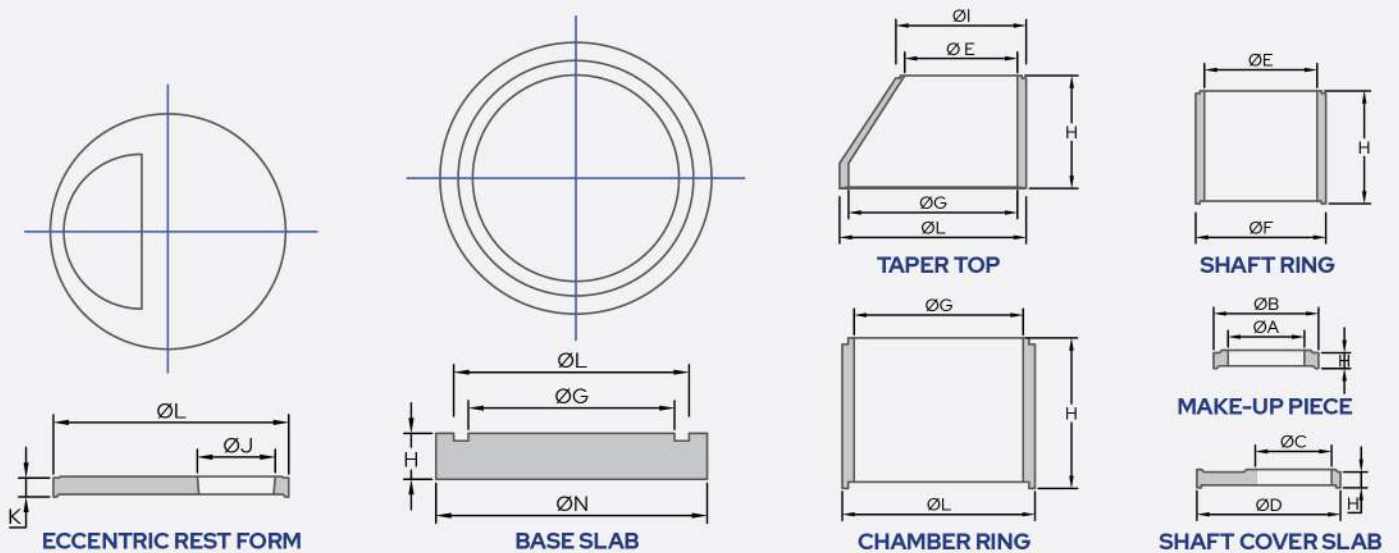
Nominal Diameter	1200mm	1350mm	1500mm	1800mm
Cover Slab M	125	150	150	150
Chamber Ring H	600/900 1200/1500	600/900 1200/1500	600/900 1200/1500	600/900 1200/1500
Base Slab H N	300 1650	300 1775	300 2000	300 2400





DEEP MANHOLE

Component Part	Part Dimension	Nominal Diameter	1200mm	1350mm	1500mm	1800mm
Make-up-piece		Taper Top				
A	610	G	1220	1350	1524	1830
B	838	L	1346	1540	1676	2032
H	125/150 175/200 225/300	I	640/1016	1040	1067	1067
		H	600	900	915	915
Shaft Cover Slab		Eccentric Rest Platform				
C	610	J	600	510	700	915
D	1145	K	125	125	125	125
H	125					
Shaft Ring		Chamber Ring				
E	915	H	600/900 1200/1500	600/900 1200/1500	600/900 1200/1500	600/900 1200/1500
F	1016					
H	600/900 1200/1500	Base Slab				
		H	300	300	300	300
		N	1650	1775	2000	2400



Solution Provider For **GREEN** Precast Concrete With **Cutting-Edge Technology**



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