

API[®]

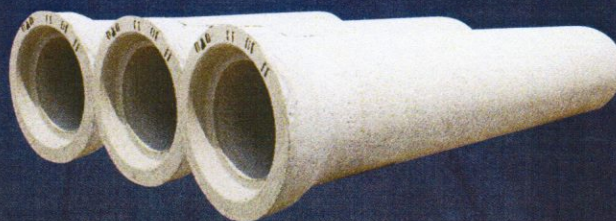
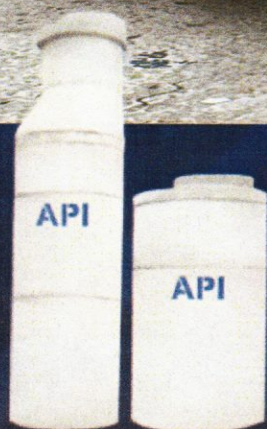
*Partners Gether From
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PIPEPLUS VERTICAL CAST REINFORCED CONCRETE PIPE



API - PRODUCT CATALOGUE

VERTICAL CAST PIPE & MANHOLE



www.api.com.my

FACTORY:

SUNGAI PETANI

RASA

RAWANG

ULU YAM

BESUT

KULAI

In moving forward to an ecofriendly 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.

PIPEPLUS VERTICAL CAST REINFORCED CONCRETE PIPES

Vertical Cast Reinforced Concrete Pipes

PIPEPLUS vertical cast reinforced concrete pipes are manufactured using patented vertical cast technology from the USA, a method that employs specialized high-tech machinery to produce superior strength pipes to precise dimensions and with consistency of quality.

Vertical casting is the distinguishing feature of the machinery that allows us to produce more pipes than by conventional methods within a given plant area, with patented modular equipment enabling up to four pipes to be manufactured by the same procedure.

Our automated plant also means reduced labour cost, resulting in savings that we pass on to our customers, thus offering competitive pricing. It also provides us with the capability and speed to meet large orders at short notice.

Specification

API PIPEPLUS vertical cast concrete pipes conform to:

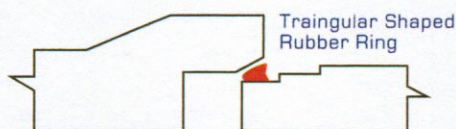
MS881:Part 1 & BS5911 : Part 100



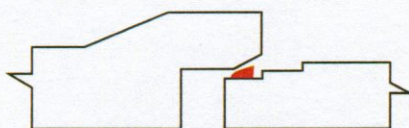
High Load And Hydrostatic Test

Quality control is important to us. We employ individualized computer design, the most advanced equipment and highly trained personnel to assure that our products meet customers' requirements with extensive laboratory tests being carried out.

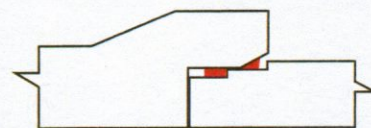
Innovative And Flexible Spigot & Socket Joint



1. Place gasket around spigot end of the pipe. The gasket should rest firmly against the spigot shoulder.



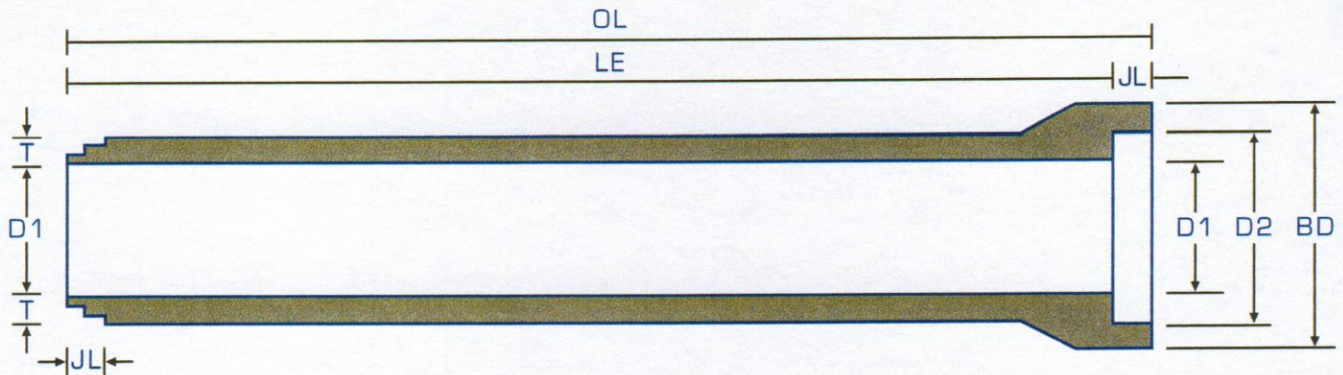
2. Centre the spigot in the bell and push pipe home.



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

PIPEPLUS VERTICAL CAST REINFORCED CONCRETE PIPES

Drainage And Sewerage (Spigot Socket Rubber Ring Joint)



DIMENSION

Nominal Diameter (D1)	Overall Length (OL)	Effective Length (LE)	Wall Thickness (T)	Socket External Diameter (BD)	Barrel External Diameter (D2)	Joint Length (JL)	Approximate Weight Per Pipe
mm	mm	mm	mm	mm	mm	mm	metric ton
300	3140	3050	50	510	400	90	0.52
375	3140	3050	57	600	489	90	0.64
450	3140	3050	65	690	580	90	0.86
600	3150	3050	75	880	750	100	1.27
600TW	3150	3050	63	850	726	100	0.98
750	3150	3050	88	1070	926	100	1.83
750TW	3150	3050	63	1030	876	100	1.48
900	3150	3050	100	1250	1100	100	2.50
1050	3158	3050	113	1325	1276	108	3.08
1200	3158	3050	125	1500	1450	108	3.86
1350	3158	3050	138	1675	1626	108	4.79
1500	3177	3050	150	1850	1800	127	5.80
1650	3177	3050	163	2025	1976	127	6.80
1800	3177	3050	175	2200	2150	127	8.04

CRUSHING TEST LOAD TO MS 881:PART 1 (Kilo Newtons Per Meter Of Effective Length)

Nominal Size	Class L (kN/m)		Class M (kN/m)		Class H (kN/m)	
	Works Proof Load	Maximum Load	Works Proof Load	Maximum Load	Works Proof Load	Maximum Load
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

* All Classes = L, M, H, 1.5H, 2H, 2.5H & 3H available

API also manufactures Precast Concrete Pipe of Class Strength of AS 4058.

VERTICAL CASTING PROCESS

Salient Features Of Vertical Casting Process

Features	Vertical Casting
Wire Reinforcement	Computerized machine welding
Concrete Mix Design	Lower water cement ratio contributes higher concrete strength. Zero Slump
Compaction	Multi amplitude vibration assures even and maximum concrete density
Concrete Strength	Achieve the required concrete strength of 40mpa in 7 days
Precise Geometrical Dimension	Higher accuracy of internal diameter
Installation / No Load Line	Uniform pipe strength at all points. No need for point loading
Jointing	Innovative triangular shaped rubber ring forms a perfect seal
Production Speed	Up to 4 pipes per module every 20 minutes

DRAINAGE & SEWERAGE

Superior Strength

Unique multi-amplitude and directional vibration technique assures aggregate particles are fully coated with cement paste.

The application of compacting pressure during the act of vibration assures even and maximum concrete density at all parts of the pipe.

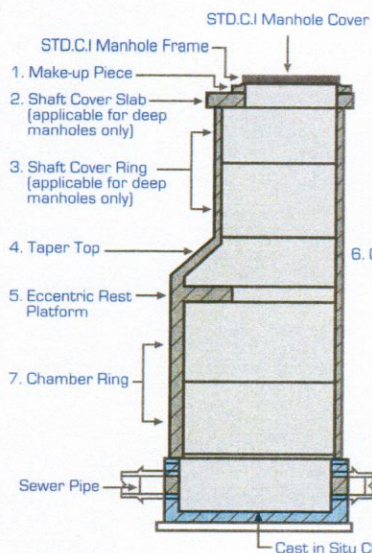
Unique Features

- Spigot socket joints utilize innovative gasket in the joint seals. The special triangular shaped rubber compound joint offers just the right amount of flexibility and resiliency to compensate for normal pipe angularity and correction without compromising on the effectiveness of its sealing quality.
- The pressure heading process utilizes machined tongue formers to ensure precise joints. Positive pressurehead stops result in exact pipe lengths and finished products are secured offborne from the machine in the form jacket to prevent disturbing the fresh concrete.

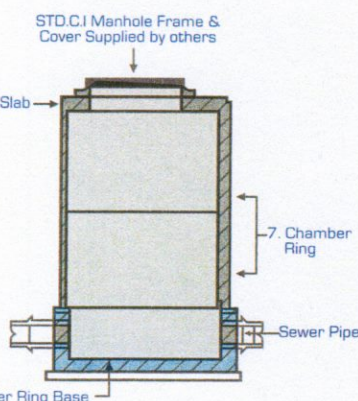
API CONCRETE MANHOLES

PipesPlus concrete manhole 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 "Mascrete" has made the PipePlus manhole system even more durable for sewerage application.

Type 1 (Deep Manhole)



Type 2 (Shallow Manhole)

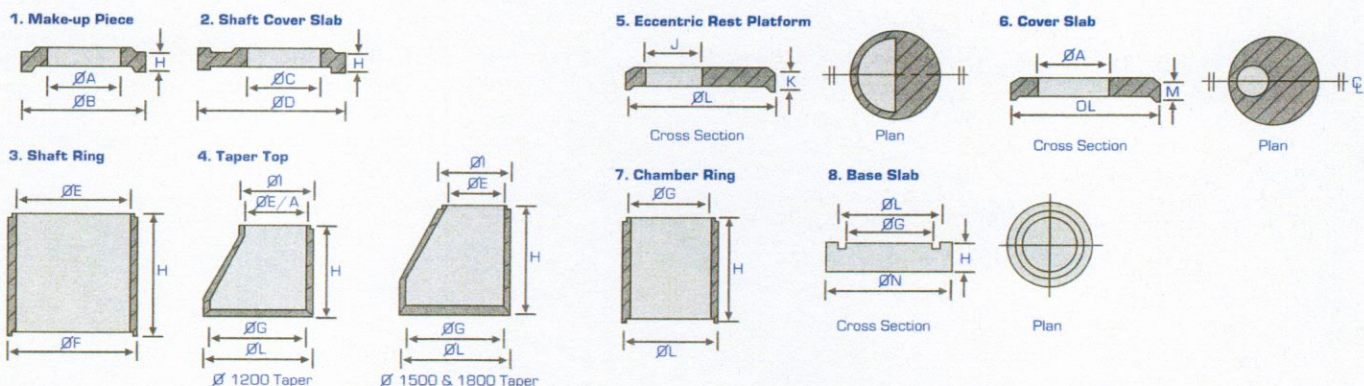


Design & Specification

PipesPlus "Mascrete" concrete manhole are produced and tested in accordance to MS881:Part 1.

Advantages of Using API PipePlus Manhole System

- Savings in construction costs
- High quality manhole system made under stringent Quality Control
- Easy to install, thus saving the time and labour cost
- Manufactured to withstand heavy vehicular load



MANHOLE COMPONENTS - DIMENSIONS

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

API CONCRETE PIPES FOR SEWERAGE

CHARACTERISTIC AND BENEFITS OF PIPEPLUS PIPES

Entire Wall Protection

GREEN cement is used throughout the pipe against the Conventional 12mm Lining Used By Others. It is a monolithic layer and the problem of differential shrinkage does not occur.

Corrosion Protection

"Mascrete" cement provides improved resistance to the ingress of chloride [from seawater, de-icing salts or other sources] penetrates into concrete structure of the pipes. Chloride is known to penetrate normal OPC cement and cause embedded reinforced steel to be corroded and cause premature deterioration of concrete structure of the pipe. The chemical binding of chlorides by PFA hydrates effectively "locking" the chlorides and prevents them from penetrating deeper into the concrete. This in turn reduces the coefficient and the risk of reinforcement corrosion.

Sulphates Resistance

Sulphate in soil and groundwater can cause expansion and disruption of concrete by formation of the minerals Ettringite and/or Thaumasite. Both RRE Special Disgest I and BS 8500 recognize that when PFA is combined with OPC enhanced sulphate resistance is produced.

Superior Quality

API concrete pipe is produce using state-of-the-art vertical casting technology from the United States to give higher compaction, accuracy and consistency in geometrical dimension.

It is certified by SIRIM:MS ISO 9001:2015 AR 1282 and approved for Sewerage System by Suruhanjaya Perkhidmatan Air Negara [SPAN].

DESIGN AND SPECIFICATION

Method of production:

- Vertical casting method for dimensional consistency
- Multi amplitude vibration for maximum concrete density
- Steel/plastic spacers ensure even reinforcement distribution

Technical specification:

- Produced and tested for performance in accordance to Malaysian Standard:MS 881:Part 1.
- Crushing Test Load to Malaysian Standard:MS 881:Part 1.
- "Mascrete" cement is used throughout the pipe.
- Dimensions are similar to our "Pipeplus" brand of pipes.
- Sizes available range from DN 300mm to DN 1800mm.
- Minimum concrete grade used is Grade 40.
- Spigot and socket joints use our innovative triangular shape rubber ring to form the perfect seal.

API Precast Marketing Sdn. Bhd. (770700-A)

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