PRECAST CONCRETE PIPES

DESCRIPTION

VOHUP LEE manufactures high quality precast concrete pipes and maintains a consistent stockpile in sizes ranging from diameter DN 300mm to DN 1,800mm (DN 12in to DN 72in). VOHUP LEE's precast concrete pipes are coupled with ogee (rebated) joint and can be manufactured with or without reinforcements. Additional sizes can be designed upon request to suit the conditions and the needs of the customers.

Depending on the loading conditions, precast concrete pipes for both "Land Drainage" and "Sewerage" can be classified according to their strength. Here in VOHUP LEE, the pipes are classified to three classes of L, M and H.

"Land drainage" units are intended primarily for on-land based drainage and the construction of culverts.

"Sewerage" units are meant to be used in conditions whereby stringent requirements are needed. The advantages of using VOHUP LEE's precast reinforced concrete pipes are: -

- Cost efficient
- Assured product quality

VOHUP LEE's precast concrete pipes are recommended to be used in culvert, storm sewer and sanitary sewer applications.

DESIGN

VOHUP LEE's concrete pipes are manufactured according to the compliance of MS 881 : Part 3 : 1991 (specification for precast concrete pipes and fitting for drainage and sewerage with ogee joints).

Each of the precast concrete pipes manufactured in VOHUP LEE undergoes stringent quality inspection to ensure the highest quality products are delivered to our customers at all times. Water absorption test, hydrostatic test, crushing test, straightness test, and surface irregularity tests are conducted regularly.

Crushing Test requirements

"Land Drainage" pipes of all diameters have a proof load of not less than 20kN and maximum load of 25kN per meter of effective length.

"Sewerage" pipes crushing load is as tabulated below: -

	Class L		Class M		Class H	
DN (mm)	Proof Load (kN)	Max Load (kN)	Proof Load (kN)	Max Load (kN)	Proof Load (kN)	Max Load (kN)
150	20	25				
225	20	25				
300	20	25	23	29		
375	20	25	31	39	36	45
450	20	25	35	44	41	52
525	20	25	38	48	46	58
600	20	25	46	58	54	68
675	20	25	50	63	60	75
750	38	48	53	67	65	81
825	41	52	58	72	69	86
900	46	58	67	84	85	106
975	48	60	72	90	91	114
1050	51	64	76	95	96	120
1125	53	67	82	103	106	133
1200	58	72	87	109	110	138
1350	63	79	96	120	122	153
1500	69	87	104	130	132	165
1650	75	94	116	145	146	183
1800	82	103	124	155	158	198

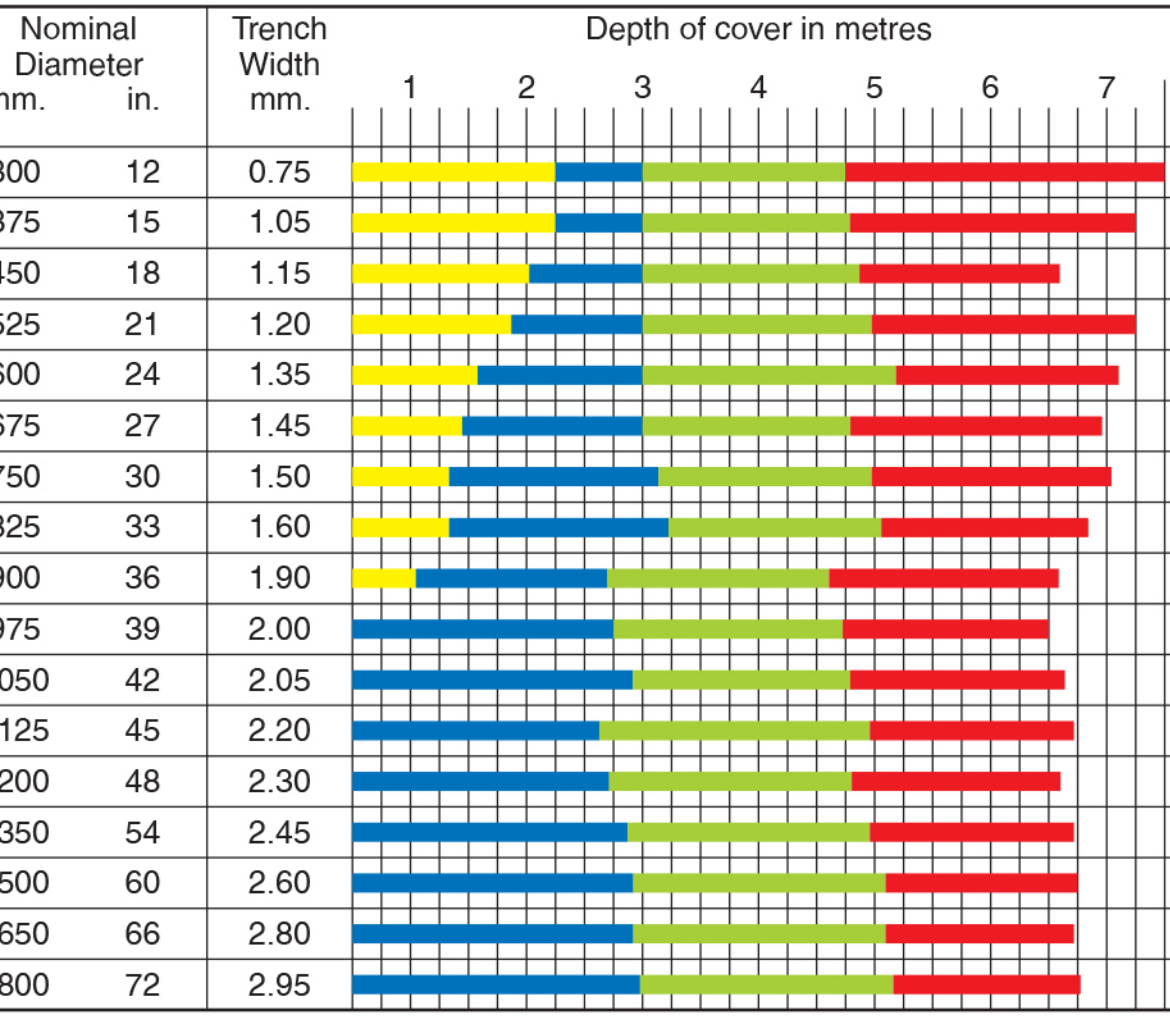
Crushing test machine

VOHUP LEE's reinforced concrete pipes will not buckle, split, warp, deteriorate, burn, pollute, or lose its hydraulic capacity. Customers can design projects in absolute confidence with VOHUP LEE's precast concrete pipes.

DEPTH OF COVER CHARTS FOR CONCRETE PIPES

Pipes under fields, gardens and light traffic loading roads

Nominal Diameter mm.	Nominal Diameter in.	Trench Width mm.	Depth of cover in metres	Nominal Diameter in.	Nominal Diameter mm.
300	12	0.75		12	300
375	15	1.05		15	375
450	18	1.15		18	450
525	21	1.20		21	525
600	24	1.35		24	600
675	27	1.45		27	675
750	30	1.50		30	750
825	33	1.60		33	825
900	36	1.90		36	900
975	39	2.00		39	975
1050	42	2.05		42	1050
1125	45	2.20		45	1125
1200	48	2.30		48	1200
1350	54	2.45		54	1350
1500	60	2.60		60	1500
1650	66	2.80		66	1650
1800	72	2.95		72	1800

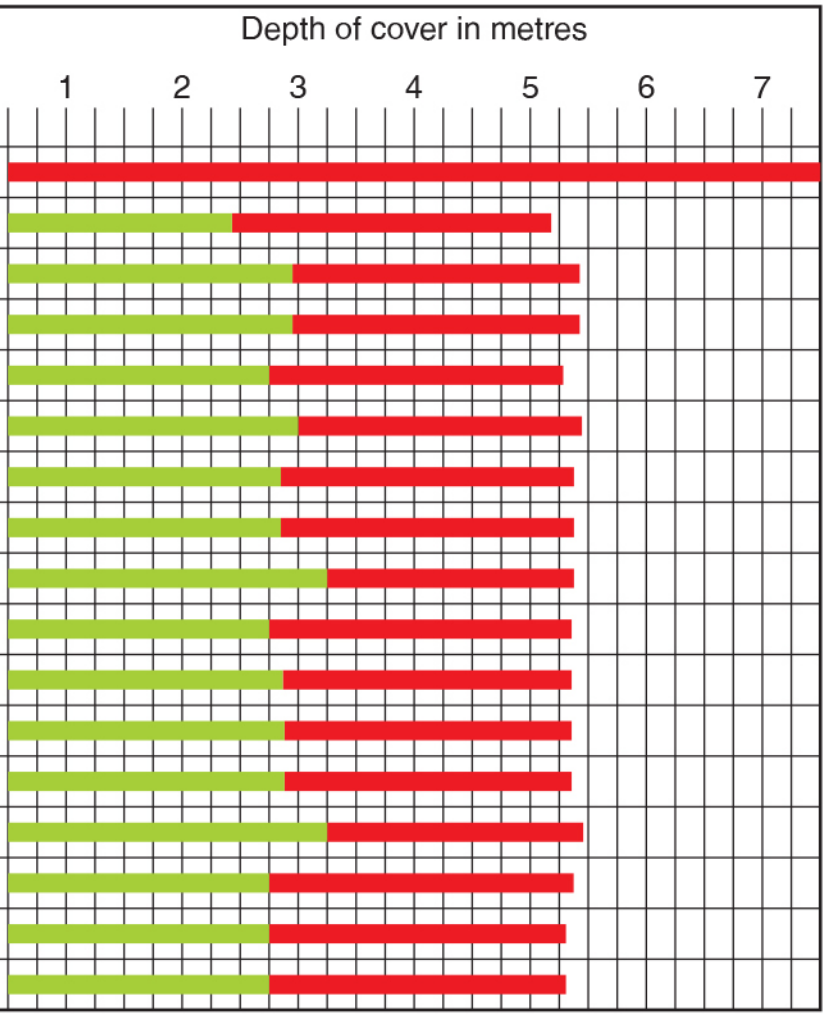


Class STD* Class L Class M Class H

DEPTH OF COVER CHARTS FOR CONCRETE PIPES

Pipes under main roads with heavy traffic loading

Nominal Diameter mm.	Nominal Diameter in.	Trench Width mm.
300	12	0.75
375	15	1.05
450	18	1.15
525	21	1.20
600	24	1.35
675	27	1.45
750	30	1.50
825	33	1.60
900	36	1.90
975	39	2.00
1050	42	2.05
1125	45	2.20
1200	48	2.30
1350	54	2.45
1500	60	2.60
1650	66	2.80
1800	72	2.95



Class STD* Class L Class M Class H

BEDDING FACTORS FOR CONCRETE PIPES

Fig. 3 Class B bedding -
Granular bedding material
Bedding Factor Fm = 1.9
For most conditions
In very wet, unstable soil conditions the possibility of some settlement occuring should be in mind
(See also Note 2)

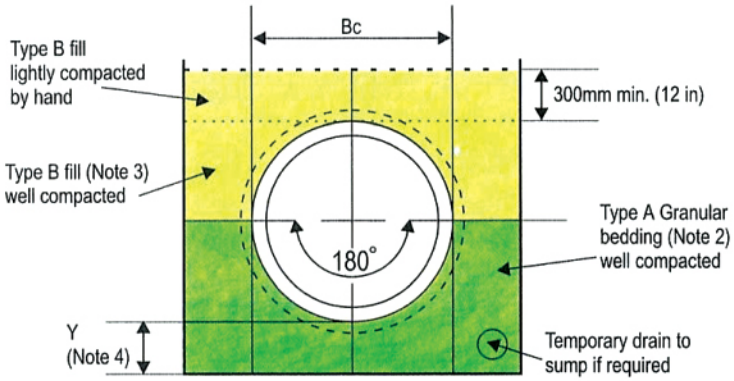


Fig. 4 Class C bedding -
Hand-shaped trench bottom
Bedding Factor Fm = 1.5
Generally only suitable for pipes up to 300mm (12 in.) diameter in uniform fine-grained soils where conditions are relatively dry.
(See Note 5 regarding "wide trench" loads)

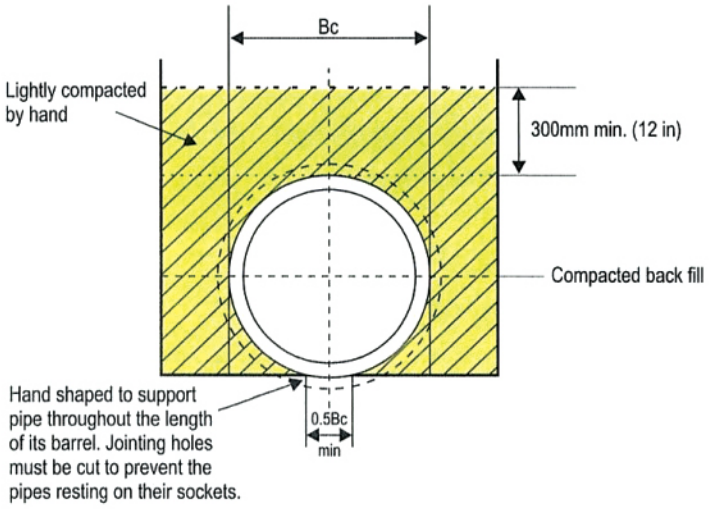
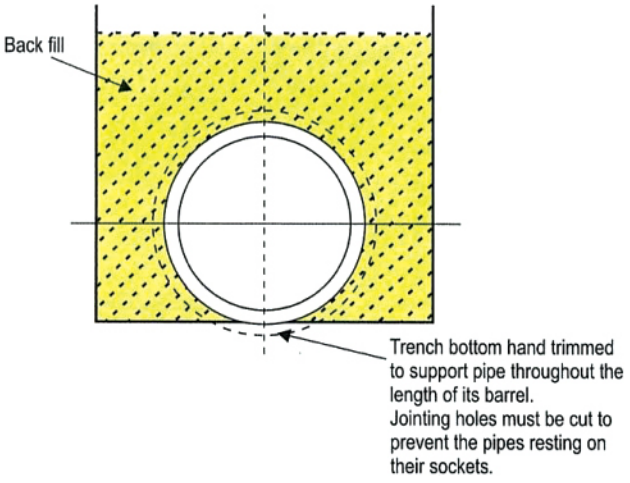
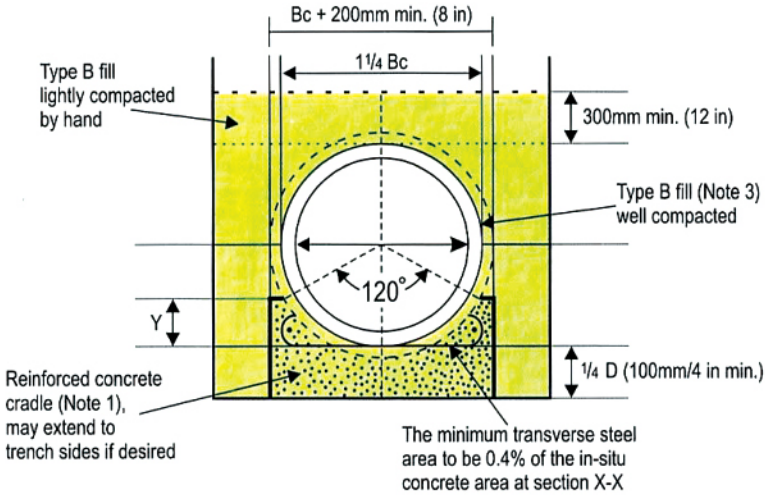


Fig. 5 Class D bedding -
Hand-trimmed flat-bottomed trench
Bedding Factor Fm = 1.1
Generally only suitable for pipes up to 300mm (12 in.) diameter in uniform fine-grained soils where conditions are relatively dry.
(See Note 5 regarding "wide trench" loads)



BEDDING FACTORS FOR CONCRETE PIPES

Fig. 1 Class A bedding - Reinforced concrete cradle Bedding Factor Fm = 3.4. (a) For normal conditions



(b) Granular base course for very wet conditions. Also suitable for use in rock in areas liable to mining subsidence.

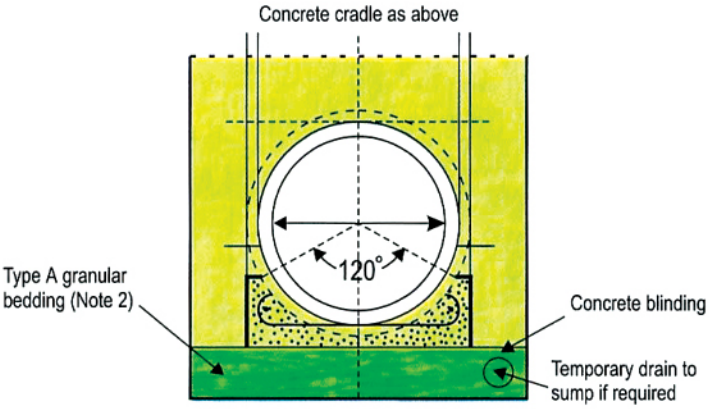
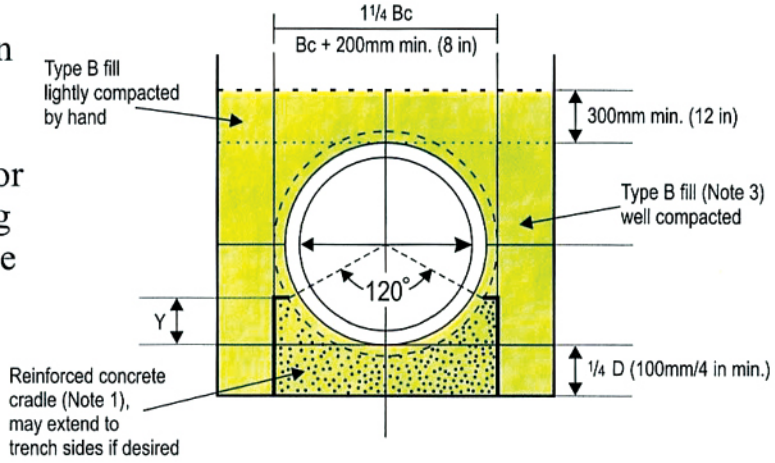


Fig. 2. Class A bedding Plain concrete cradle Bedding Factor Fm = 2.6. For very wet conditions or for rock in areas liable to mining subsidence, use granular base course as in Fig. 1b.



Product Specification

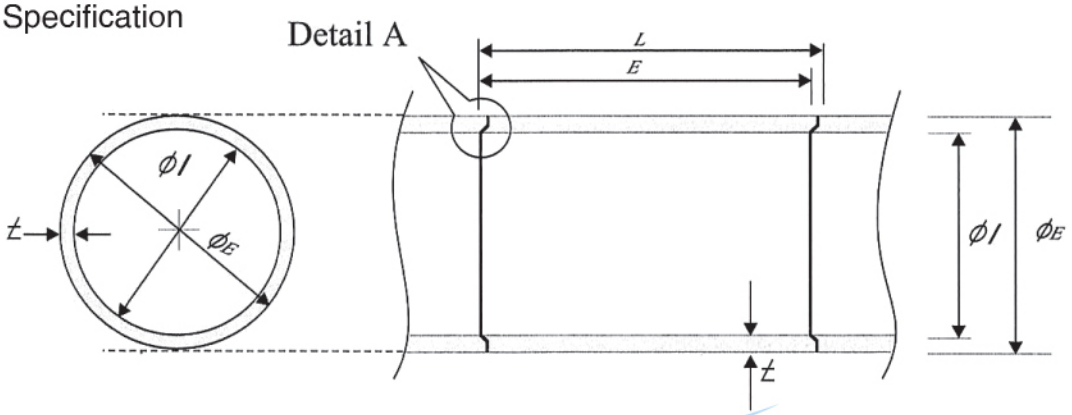
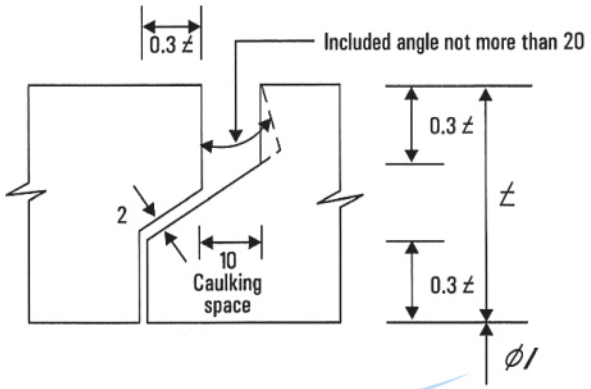


Figure 3 : Precast Concrete Pipes



Detail A: Ogee Joint For Pipe - External Flush Joints

*NOTE : * All dimensions are in millimeters.*

Nominal Diameter (DN)		External Diameter ΦE	Internal Diameter ΦE	Thickness T	Effective Length E	Overall Length L	Approx. Weight Per Unit
mm	in	mm	mm	mm	mm	mm	kg
300	12	370	300	35	1020	1030	98.4
375	15	455	375	40	1025	1045	128.2
450	18	545	455	45	1020	1030	171.0
600	24	720	610	55	1030	1050	274.6

Standard Length: 1,000 mm

Nominal Diameter (DN)		External Diameter ΦE	Internal Diameter ΦE	Thickness T	Effective Length E	Overall Length L	Approx. Weight Per Unit
mm	in	mm	mm	mm	mm	mm	ton
450	18	570	450	60	1505	1520	0.24
600	24	730	600	65	1500	1520	0.40
750	30	914	762	76	1495	1520	0.55
900	36	1092	912	90	1490	1520	0.78
1050	42	1226	1050	88	1490	1520	1.05
1200	48	1424	1220	102	1485	1520	1.35
1500	60	1720	1500	110	1480	1520	2.08
1800	72	2050	1800	125	1480	1520	2.98

Standard Length: 1,520 mm