



شركة الصناعات الوطنية

NATIONAL INDUSTRIES COMPANY

www.nicbm.com 1 844 555

@national_industries

HDPE Corrugated



NIC Catalogues

PIPES & FITTINGS



NIC Products



Interlock &
Yard Tiles



Limestone



Plastics



LED Lights



Dry Mortar



Cement
Cladding
Bricks



Ready Mix



Ceramics



White
Blocks



Benches &
Flower
Pots



Paints



Cladding



Concrete
Pipes



HDPE



NI Panels

INTRODUCTION

“NIC HDPE” factory was established in 2002 in response to the ever increasing demand in Kuwait and neighboring countries for sewerage and rain water pipes. This factory is considered one of the largest in the Middle East, with an annual production capacity reaching 16,000 metric tones of HDPE corrugated pipes and fittings. HDPE pipes with profiled corrugation ranges from 300 to 4000 mm. (12,000 MT/Yr), and HDPE pipes with circular corrugation ranges from 100 to 500mm (4,000 MT/Yr).

“NIC HDPE” corrugated pipes are produced as per various international standards. Special pipes are also produced meeting special requirements of clients.



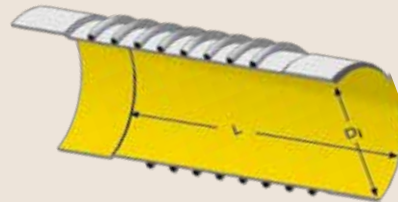
Production of NIC HDPE corrugated pipes with integrated socket



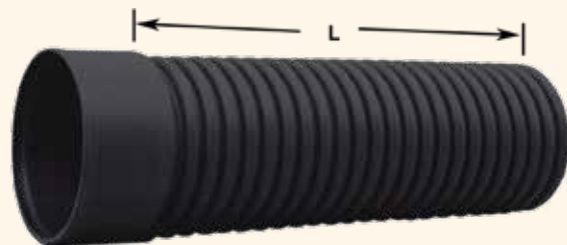
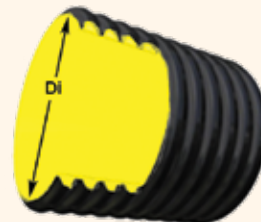
NIC HDPE corrugated pipes with circular corrugation 100 to 500mm



NIC HDPE corrugated pipes with spiral corrugation 300 to 4000mm



Pipes with profiled corrugation
 $D_i = 300\text{mm}$ to 4000mm , Standard $L = 6\text{m}$



Pipes with circular corrugation
 $D_i = 100\text{mm}$ to 500mm , Standard $L = 6\text{m}$

“NIC HDPE” Corrugated pipes Used Standards and recommendations

Pipe:	DIN 16961, EN 13476, On request ASTM F894, NBR 7373, JS K 6780
MPW standard pipe:	EN 13476-1, EN 13476-3, ASTM D3350, Sanitary Engineering MPW Section 2632
Static Calculations:	ISO 9969, ATV A 127
Hydraulic Calculations	ATV A 110
Laying of pipes	EN 1610, ASTM D 2321, ASTM D 2774, ASTM F 1668
Welding / Electrofusion of pipes	DVS 2207, ASTM D 2657, ASTM F 1055
Flexible rubber joints for pipes	ASTM D 3212, EN 13476
Testing of installation	ASTM 1417
internal Standard	KWS

Standards for Raw Material used in NIC HDPE Corrugated Pipes

No	Characteristic	Test Method	Specification	Limits
1	Density (min.)	ASTM D1505 / ISO 1183-1	ASTM D3350 Table 1	≥ 0.940 g/cm ³
2	Modulus of elasticity @ 25°C	EN/ISO 527-2	BS EN 13476-1 Annex A	≥800 MPa
3	Modulus of elasticity @ 40°C	EN/ISO 527-2	MPW	≥650 MPa
4	Tensile strength @ yield	ASTM D638	ASTM D3350 Table 1	≥21 MPa
5	Elongation at break	ASTM D638	ASTM D3350 Clause 6.7	≥400%
6	Thermal stability @ 200°C (OIT)	BS EN728	BS EN 13476-3 Table 3	≥20 minutes
7	Vicat softening point	ASTM D1525	MPW	≥120°C
8	Shore hardness Type D	ASTM D2240 / ISO 868	MPW	≥60
9	MFR @190°C, 5kg	ISO 1133-1	BS EN 13476-3 Table 3	≤1.6 g/10 min
10	Av. Coefficient of thermal expansion	ASTM D1204	BS EN 12666-1 Annex A	0.18–0.20 mm/mK
11	Thermal conductivity	ASTM C518	BS EN 13476-1 Annex A	<0.6 W/mK
12	Flexural modulus	ASTM D790 / ISO 527-1	ASTM D3350 Table 1	≥758 MPa
13	Resistance to liquid chemicals	ISO 4433-1	MPW	As per standards
14	Internal pressure 3.9 Mpa, 800C, 165 hrs	ISO 1167-1	BS EN 13476-3	No failure
15	Internal pressure 2.8 Mpa, 800C, 1000 hrs	ISO 1167-1	BS EN 13476-3	No failure
16	ESCR	ASTM D1693	MPW	>600 hrs
17	UV stabilizer (Carbon %)	ISO 6964	MPW Section 2632-4	2–3%
18	Resistance to Rapid crack propagation	ISO 13477	MPW	No crack growth
19	Long chemical resistance 10,000 hrs	ASTM D3262	MPW	As per standards

Standards used for NIC HDPE Corrugated pipes

No	Characteristic	Test Method	Specification	Limits
1	Heat reversion	EN ISO 2505	MPW	≤3%
2	Pipe stiffness	ASTM D2412	MPW	-
3	Ring stiffness ≤DN900	EN ISO 9969	MPW	≥8 kN/m ²
4	Ring stiffness >DN900	EN ISO 9969	MPW	≥4 kN/m ²
5	Impact resistance	EN ISO 3127	MPW	No cracks
6	Oven test	ISO 12091	BS EN 13476-3	No cracks
7	Ring flexibility	EN ISO 13968	BS EN 13476-3	No cracks
8	Longitudinal bending	WIS 4-35-01	MPW	Sag ≤5%
9	Internal puncture resistance	WIS 4-35-01	MPW	No leakage
10	Water jetting resistance	WIS 4-35-01	MPW	180 bar
11	Joint tightness (gasket)	EN ISO 13259	BS EN 13476-3	No leak
12	Joint tightness (welded)	EN ISO 13259	MPW	No leak
13	Welded joint tensile	EN ISO 13262	BS EN 13476-3	No break
14	Creep ratio	EN ISO 9967	MPW	≤4
15	Combined loading resistance	EN ISO 13260	BS EN 13476-3	≤9% deflection

Note: Corrugated pipes with customised ring stiffness are available.

Note: Length 6 meter. Corrugated pipes with short lengths are available.

NIC HDPE Corrugated pipes (Circular corrugation) Stiffness as per ISO 9969

Nominal Dia. DN mm	Outside Dia. mm	Type SN 2 SR=2kN	Type SN 4 SR=4kN	Type SN 8 SR=8kN	Type SN 16 SR=16kN
100	116	**	**	DWCC 100	**
150	174	**	**	DWCC 150	**
200	232	**	**	DWCC 200	**
250	290	**	**	DWCC 250	**
300	348	**	**	DWCC 300	**
350	406	**	**	DWCC 350	**
400	463	**	**	DWCC 400	**
500	580	**	**	DWCC 500	**

** stands for special profile shapes on request

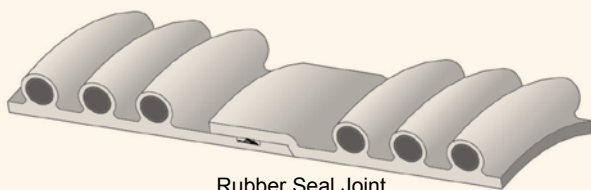
NIC HDPE Corrugated pipes (Spiral corrugation) Stiffness as per ISO 9969

Nominal Dia. DN mm	Outside Dia. mm	Type SN 2 SR=2kN	Type SN 4 SR=4kN	Type SN 8 SR=8kN	Type SN 16 SR=16kN
300	356	PR 21-0.4	PR 21-0.4	PR 21-0.4	PR 34-0.99
400	482	PR 21-0.4	PR 21-0.4	PR 34-0.99	PR 42-1.9
500	598	PR 21-0.4	PR 34-0.99	PR 42-1.9	PR 54-4.5
600	702	PR 34-0.99	PR 34-1.2	PR 42-2.3	PR 54-4.7
700	826	PR 34-0.99	PR 42-1.9	PR 54-4.5	PR 54-8.0
800	930	PR 42-1.9	PR 42-2.6	PR 54-5.5	PR 54-11.39
900	1038	PR 42-2.28	PR 54-4.5	PR 65-7.22	PR 54-16.3
1000	1140	PR 42-2.6	PR 65-6.46	PR 75-11.95	**
1200	1342	PR 54-4.5	PR 65-8.25	PR 75-16.25	**
1400	1564	PR 54-7.0	PR 75-14.61	PR 75-23.51	**
1500	1660	PR 54-8.0	PR 75-16.25	OP 75-32.93	**
1600	1772	PR 54-11.36	PR 75-20.38	OP 75-42.77	**
1800	1980	PR 54-16.3	PR 75-29.65	OP 75-62.06	**
2000	2270	PR 54-24.25	OP 75-42.77	OP 75-76.5	**
2200	2470	PR 75-26.03	OP 75-52.41	OP 75-96.95	**
2500	2800	OP 75-40.4	OP 75-76.5	OP 100-160.8	**
2300 to 4000	**	**	**	**	**

** stands for special profile shapes on request

Outside diameter of sizes 300 to 900 are for Type SN8 and above size 900 are Type SN4

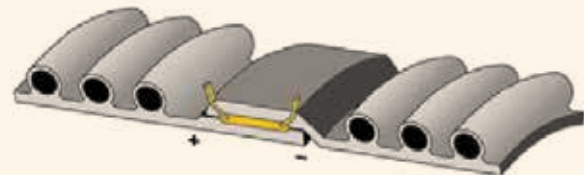
JOINTING TECHNIQUES



Rubber Seal Joint

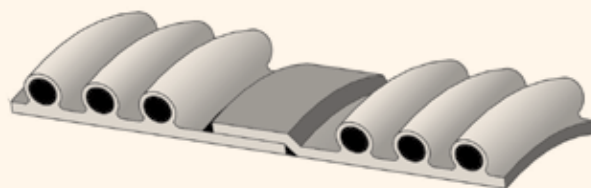
“NIC HDPE” corrugated pipes having spiral corrugation can be supplied with four type of joints.

Pipes with rubber seal joint are most easy to install.



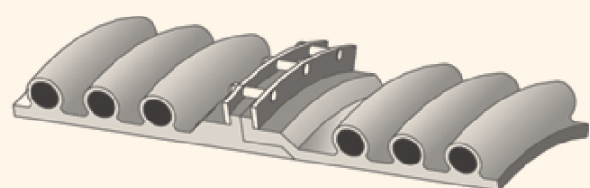
Electro-fusion Joint

Pipes with Electro-fusion joint are recommended because whole pipe becomes homogeneous after welding.



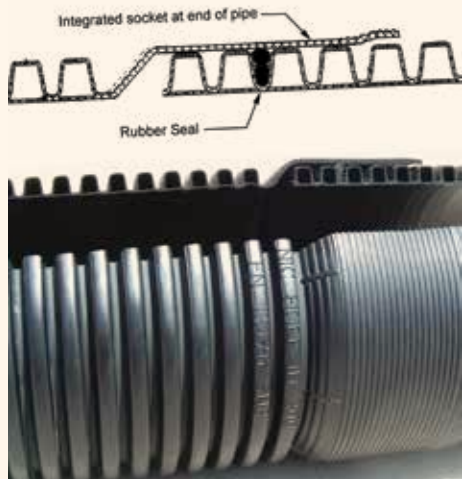
Extrusion Welding Joint

Extrusion welding are carried out as additional measure with electro-fusion joint while using ppipes under vacuum.



Flange Joint

Flange joints are resourceful when we wish to connect HDPE pipes with shut off valves or butter fly valves.

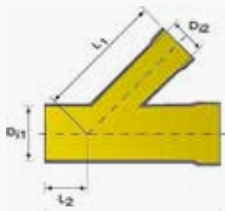


Rubber Seal Joint for circular corrugated pipes

“NIC HDPE” corrugated pipes with circular corrugation have integral built-in bell for pipe sizes 200mm & above. For pipe size 100 to 150mm, a special coupler is fixed on one end of pipe. Pipes are supplied with factory installed rubber gasket at spigot end. Installation of pipes is facilitated just by applying lubricant of gasket and then pushing spigot into bell end or coupler. Due to push fit jointing technique, these pipes have faster installation and low labor costs.

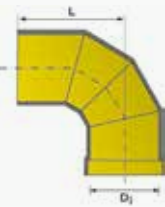
FITTINGS FOR “NIC HDPE” CORRUGATED PIPES

1. Branches:



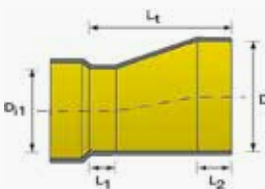
Branches can be manufactured and delivered in every type and form. The angle can be adapted individually from 30° to 90° as well as the ends and the respective segment lengths. Branches can be all socket or socket - spigot as per customers requirement.

2. Bends:



Bends can be manufactured and segmented in different angles (150, 300, 450, 600, 750, 900) and the related radius of the bend to pipe diameter can be selected independently. Bends can be all socket or socket - spigot as per customers requirement.

3. Reductions:

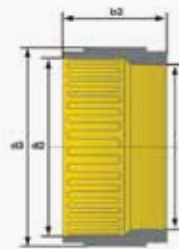


Reduction can be made both centric and eccentric so that the reduction will always meet the requirements. Reductions can be all socket or socket - spigot as per customers requirement.

4. Couplers & Repair Couplers:

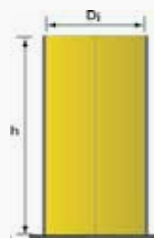
Couplers with stop at center & couplers without stop (for repair work) are available for all pipe sizes 100mm to 2,000mm.

5. Puddle Flanges:



In order to lead “NIC HDPE” corrugated pipes through wall, e.g. in sewage plants or concrete shafts of manholes, we recommend our puddle flanges which can be mounted in concrete. The tightness is secured by a ring made of EPDM. Special projections on outer surface can be provided if more tightness is required.

6. Septic Tanks



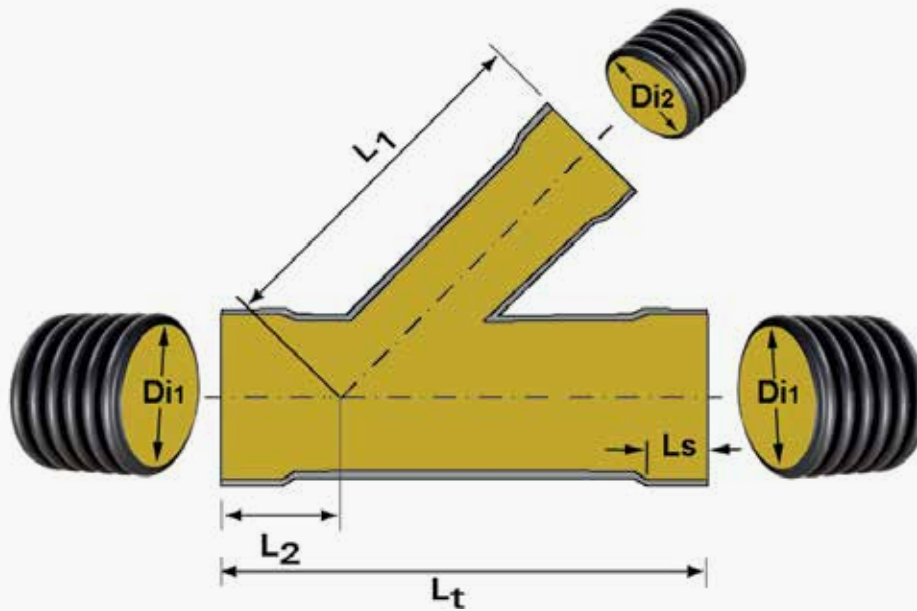
HDPE septic tanks are a key part of household and commercial septic systems. Naturally occurring bacteria completely treats the septic waste in environmentally responsible way. HDPE septic tanks are long life, light weight and are easy to install on sites with difficult access.

Please contact us for detailed information on NIC HDPE Manholes.

FITTINGS FOR NIC HDPE CORRUGATED PIPES

Branches

Branches can be manufactured and delivered in every type and form. The angle can be adapted individually from 30° to 90° as well as the ends and the respective segment lengths.



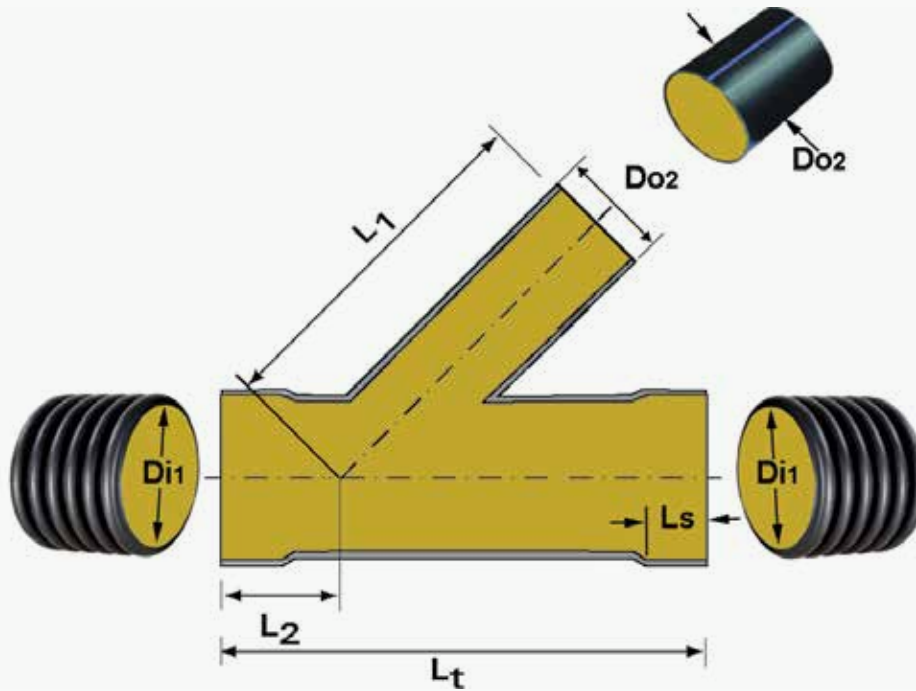
Branches dimensions

D_{i1} [mm]	L_s [mm]	D_{i2} [mm]	L_t [mm]	L_1 [mm]	L_2 [mm]
100	80	100	500	430	180
150	90	100/150	500	440	200
200	130	100/150/200	550	450	240
250	150	100/150/200/250	580	460	300
300	170	100/150/200/250/300	670	470	320
350	190	100/150/200/250/300/350	850	550	400
400	220	100/150/200/250/300/350/400	1000	650	500
500	250	100/150/200/250/300/350/400/500	1200	760	590

All Lengths L_s , L_t , L_1 & L_2 are for guidance. Actual length of fittings may be +/- 10%

Branches connecting Plain pipes.

Branches can be manufactured and delivered in every type and form. The angle can be adapted individually from 30° to 90° as well as the ends and the respective segment lengths.



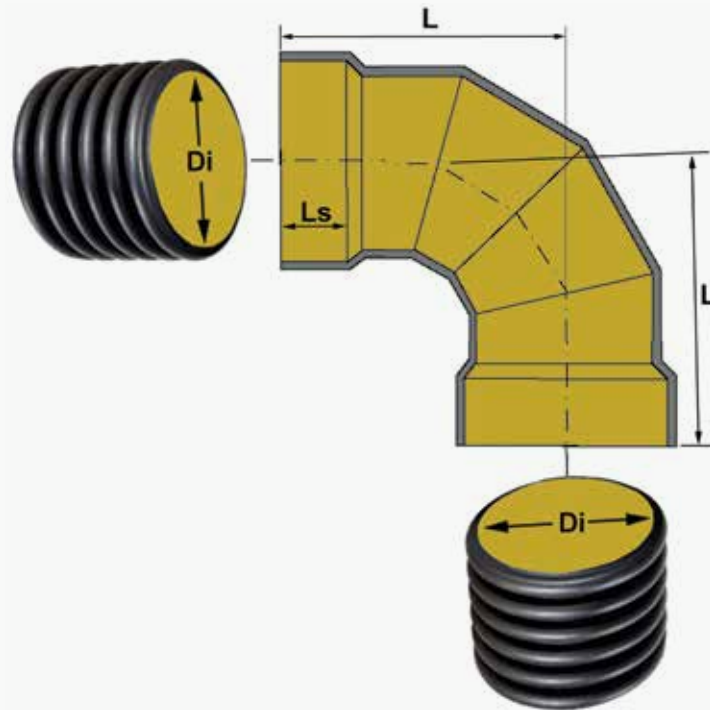
Branches connecting plain wall dimensions

D_{i1} [mm]	L_s [mm]	D_{i2} [mm]	L_t [mm]	L_1 [mm]	L_2 [mm]
100	80	100	500	430	180
150	90	100/150	500	440	200
200	130	100/150/200	550	450	240
250	150	100/150/200/250	580	460	300
300	170	100/150/200/250/300	670	470	320
350	190	100/150/200/250/300/350	850	550	400
400	220	100/150/200/250/300/350/400	1000	650	500
500	250	100/150/200/250/300/350/400/500	1200	760	590

All Lengths L_s , L_t , L_1 & L_2 are for guidance. Actual length of fittings may be +/- 10%

Bends

Bends can be manufactured and segmented in different angles and the related radius of the bend to pipe diameter can be selected independently.



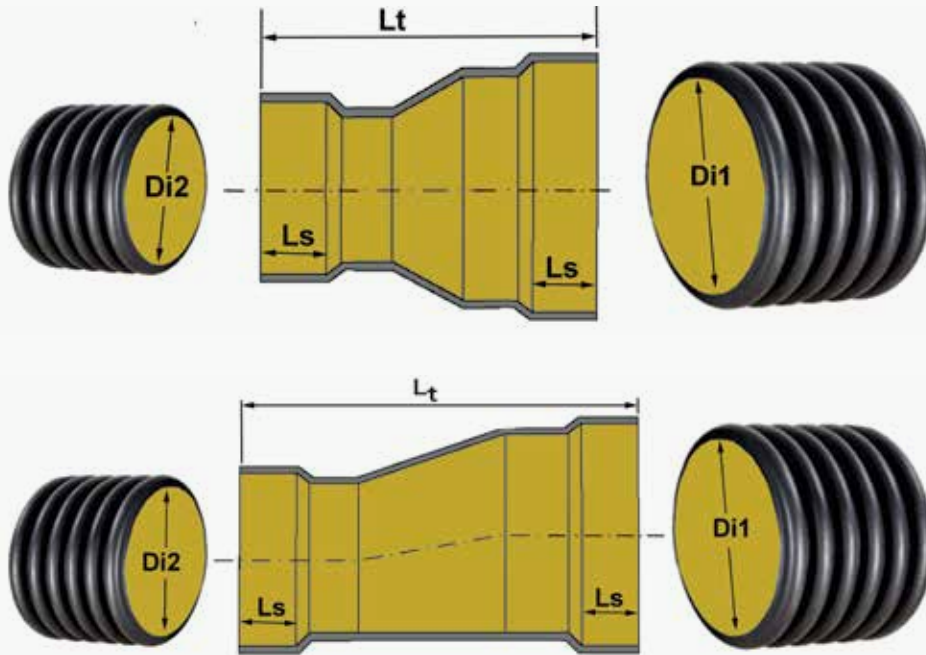
Bend dimensions

Angle	15°	30°	45°	60°	75°	90°	
No of Segments	2	2	3	3	4	4	
D_i [mm]	L_s [mm]	L [mm]	L [mm]	L [mm]	L [mm]	L [mm]	L [mm]
100	80	160	130	230	320	430	580
150	90	210	130	230	320	430	580
200	130	260	150	240	350	460	610
250	150	310	160	260	370	500	640
300	170	360	170	270	390	530	690
350	190	430	190	310	450	610	800
400	220	480	220	370	520	700	910
500	250	610	270	450	650	880	1140

All Lengths L_s & L are for guidance. Actual length of fittings may be +/- 10%

Reductions

Reduction can be made both centric and eccentric so that the reduction will always meet the requirements.



Reduction dimensions

D_{i1} [mm]	L_s [mm]	D_{i2} [mm]	L_s [mm]	L_t [mm]
150	90	100	80	640
200	130	100	80	870
200	130	150	90	740
250	150	150	90	970
250	150	200	130	840
300	170	200	130	1070
300	170	250	150	940
350	190	250	150	1170
350	190	300	170	1040
400	220	300	170	1270
400	220	350	190	1140
500	250	350	190	1610
500	250	400	220	1470

All Lengths L_s & L_t are for guidance. Actual length of fittings may be +/- 10%



NIC HDPE Corrugated Pipes for Storm Water, connecting to Concrete Manholes at project in Kuwait



NIC HDPE Corrugated Pipes for Sanitary / Sewerage water, connecting to HDPE Manholes, project in Oman



NIC HDPE Corrugated Pipes with flanged connection for sea water intake project in UAE



NIC HDPE Corrugated Pipes for sea water intake project in UAE



Bend for NIC HDPE Corrugated Pipe, with socket and spigot, for project in Iraq



NIC HDPE Corrugated Pipes for Storm Water with electro-fusion connection at project in Kuwait



Special Tank made from NIC HDPE Corrugated Pipes for water treatment



NIC HDPE Corrugated Pipe used as sewerage water bio treatment plant for project in Oman

QUALITY

“NIC HDPE” corrugated pipes are made from HDPE material which have service life of more than 100 years.

Before production control

The raw material HDPE is purchased from reputed supplier. This raw material is tested (Biyearly) for various requirements listed by local governmental bodies by third party testing facilities like KISR and Kuwait University. Every test is documented, analyzed and filed with local governmental bodies.



Testing of MeltFlow Rate

During production control

During the production the individual working steps are continuously supervised and documented. Moreover the most important dimensions are measured and if necessary, corrected. These measured dimensions are randomly verified by third party approved by local governmental bodies.



Dimension check by QC Department

After production control

After the production, the final product is tested and compared to the all requirements of the customer.

In order to guarantee that the static theoretic values are conforming to the reality, pipes are tested with the help of ring stiffness according to DIN 16961 or ISO 9969.

Pipe joint is also tested to ensure tightness of joint.

Pipe samples are also sent to third party like Kuwait University for quality test (Bi yearly). Every test is documented, analyzed and filed with local governmental bodies.



Ring stiffness testing as per ISO 9969

Quality certificates and external quality control

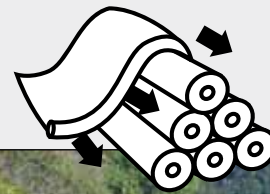
In general the whole production is constantly supervised by our QC department and by a third party inspection, like Kuwait University. All quality procedures and management confirms to requirement of ISO 9001 : 2008.



HANDLING, STORAGE AND INSTALLATION OF “NIC HDPE” CORRUGATED PIPES.

A. Storage at site

For safety and Pipes and fittings should be transported and stored in their packaging. The protective packaging on socket and spigot should be kept intact until material is required for use. All pipe stacks should be made on firm, flat ground to support the weight of the pipes and lifting equipment. Pipes or fittings must not rest on the socket. Pipes should be stacked with the sockets at alternate ends. the stacking height for pipes should be limited to 4 units, not more than 3 meters, and adequately wedged to prevent movement. Pipes must be stored from timber to timber. Pipes and fittings should be stored away from heat sources. Avoid contamination from medias such as diesel oil. When pipes are exposed to sunlight for prolonged time, pipes should be covered. Protect all materials from theft, vandalism, accidental damage or contamination.



Storage at site

B. Trenching

References for trenching practice are in AASHTO Section 30 and ASTM D2321. Both of these specifications provide guidelines for trench widths applicable to a variety of installation conditions. Trench widths may be varied based on the competency of the in-situ soil, backfill materials, compaction levels and loads.



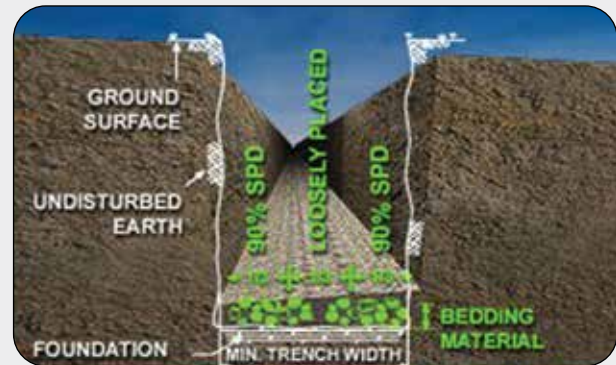
Trenching at Oman



Trenching at Kuwait

C. Foundation

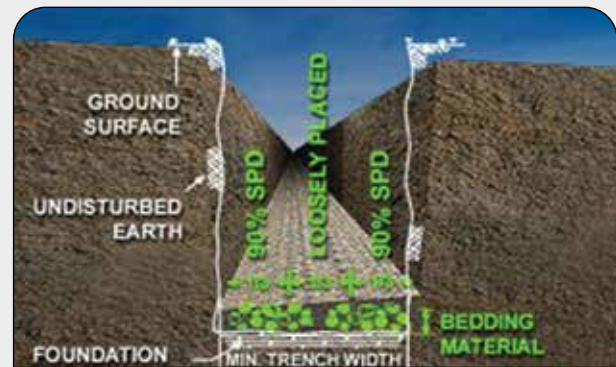
A stable foundation must be provided to ensure proper line and grade is maintained. Unsuitable foundations must be stabilized at the engineer's direction. Unsuitable or unstable foundations may be undercut and replaced with a suitable bedding material, placed in 6" lifts. Other methods of stabilization, such as geo fabrics may be appropriate based on the engineer's judgment.



Bedding of Trench

D. Bedding

A stable and uniform bedding shall be provided for the pipe and any protruding features of its joints and/or fittings. The middle of the bedding, equal to 1/3rd of the pipe OD, may be loosely placed, with the remainder compacted to a minimum of 90 percent standard proctor density. Class I, II and III materials are suitable for use as bedding.



Trench Foundation



Bedding at Oman

E. Loading

Never drop the pipes. Lifting points should always be well spread and evenly spaced. Care must be taken to prevent slippage or excessive bowing of the pipes. Tie the load well to prevent rubbing. Use nylon straps, not chains or ropes.



Loading at project in Kuwait

F. Cleaning & Rubber Lubrication

Make sure that spigot end, socket and sealing ring are clean from sand, moisture, dust etc. Install the rubber sealing into the groove. Apply lubricant evenly onto the spigot end and the rubber sealing.



Applying Lubrication to socket and spigot, after cleaning, at Kuwait

G. Assembly

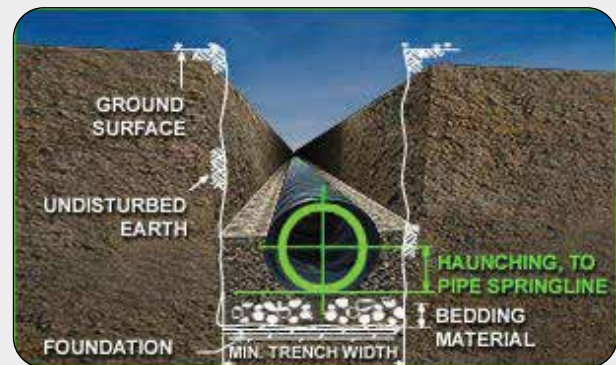
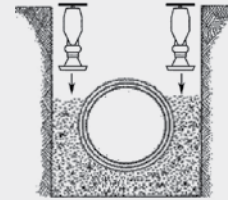
Align the pipes vertically and horizontally. Larger dimensions can be installed by using an excavator. Protect the socket opening with a sheet or plank. Observe that the sealing ring stays in position.



Assembly of pipes at project in Kuwait

H. Haunching

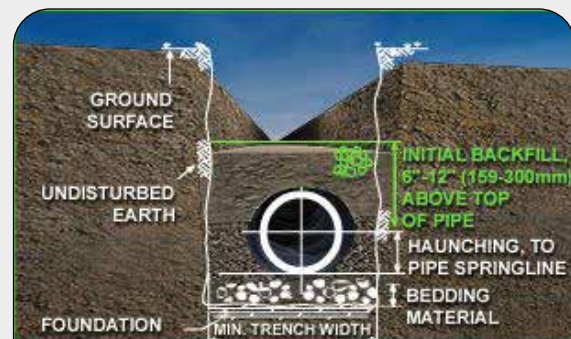
Proper haunching provides a major portion of the pipe's strength and stability. Care must be exercised to ensure placement and compaction of the embedment material in the haunches. For larger diameter pipes (>700mm), embedment materials should be worked under the haunches by hand. Haunching materials may be Class I, II or III and must be placed and compacted in 8 inch maximum lifts, compacted to 90 percent standard proctor density.



Haunching

I. Initial Backfill

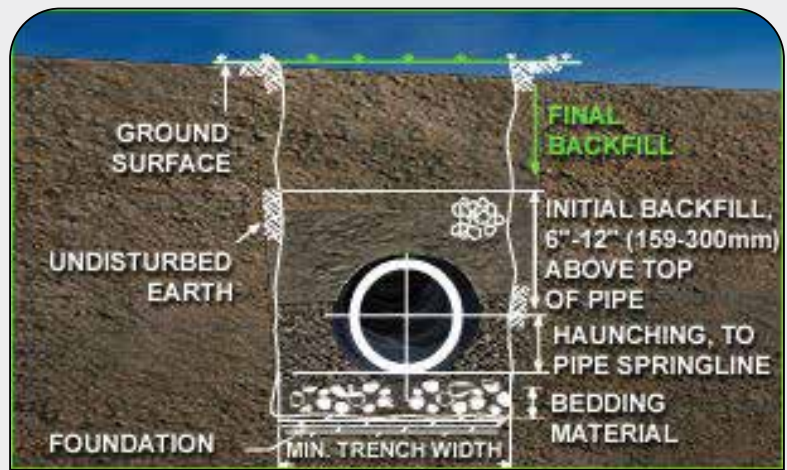
Initial backfill materials are required to 3/4 of the pipe diameter for proper structural performance of the pipe. The AASHTO and ASTM specifications extend the initial backfill from the springline 6 to 12 inches above the pipe to provide protection for the pipe from construction operations during placement of the final backfill and protect the pipe from stones or cobbles in the final backfill. For proper structural performance of the pipe, the initial backfill need only extend to 3/4 of the pipe diameter. Class I, II, III or low plasticity Class IV materials may be used for initial backfill.



Initial backfill



Initial backfill at project in Oman



Final Backfill



Final Backfill at project in Oman

J. Final Backfill

The final backfill should be the same material as the proposed embankment. Generally, the excavated material may be used as final backfill. Placement should be as specified for the embankment. In lieu of a specification, the final backfill should be placed in 12 inch maximum lifts and compacted to a minimum 85 percent standard proctor density. Compaction should be performed at optimum moisture content.

Sales Outlet

Our Division at Abyat Showroom

Shuwaikh Industrial Area
Canada Dry Street
Abyat Showroom
Contact: 1848000

Working Hours*:
Saturday - Friday
8:00am - 10:00pm



Headquarter Shuwaikh

South Shuwaikh
intersection of Jahra Road
and the Airport Road,
Next to the
Red Crescent Society.

Tel: 24642100
Kuwait Hotline: 1844555

Working Hours*:
Sunday - Thursday
7:30am - 3:00pm

Western Industrial Shuaiba

Tel: 24642300
Ceramics Factory:
23262714/10

Working Hours*:
Saturday - Thursday
7:30am - 3:00pm



Sulaiibiya

Tel: 24642200

Working Hours*:
Saturday - Thursday
7:30am - 3:00pm

Ceramics Showroom

Industrial Shuwaikh
Humaidhi Complex
Opposite to Bin Nisf Co.
Tel: 24950871/2
Factory: 23262714/10

Working Hours*:
Saturday - Thursday
9:00am - 9:00pm

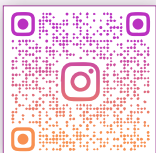


Industrial Shuwaikh Showroom

Industrial Shuwaikh2
Block1 - Area 92
Al-Zaben Complex
Shops : 12,13,14
Tel. : 24642101/2/3/4/9
Fax : 24642110

Working Hours*:
Saturday - Thursday
7:00am-9:00pm

For any sales inquiry: Fax: +965 24642063 - Email: sales@nicbm.com
* Working hours are subject to change according to holidays and occasions



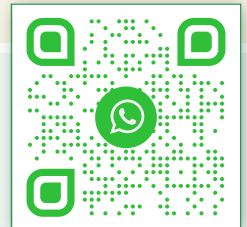
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