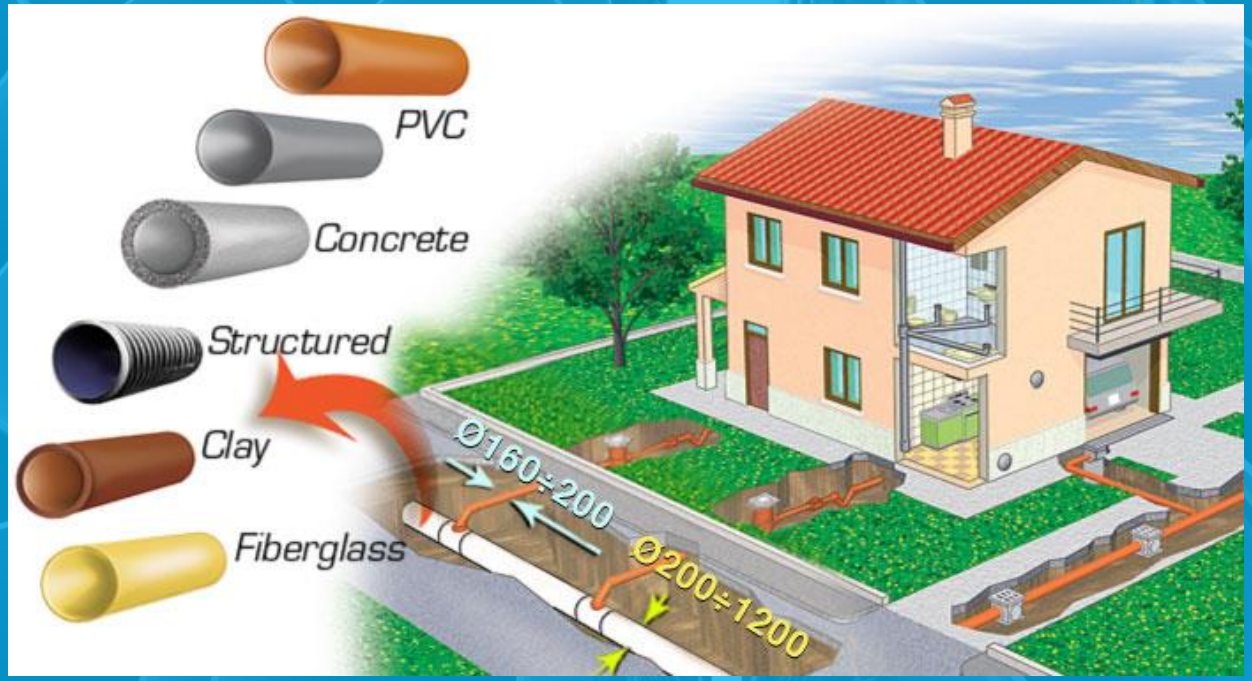
Technology from Redi, Italy

REDI

ashirvad
PIPES

What is underground drainage?

- Pipes and fittings for conduct of household sewage, rainwater or industrial affluent
- From end of house to municipal sewer
- Can be in many materials



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Main available options for piping

Plastic	Compact (mainly PVC)		
	Sandwich (mainly PVC)		
	Corrugated (mainly PE)		
Non - Plastic	Concrete		
	Clay		

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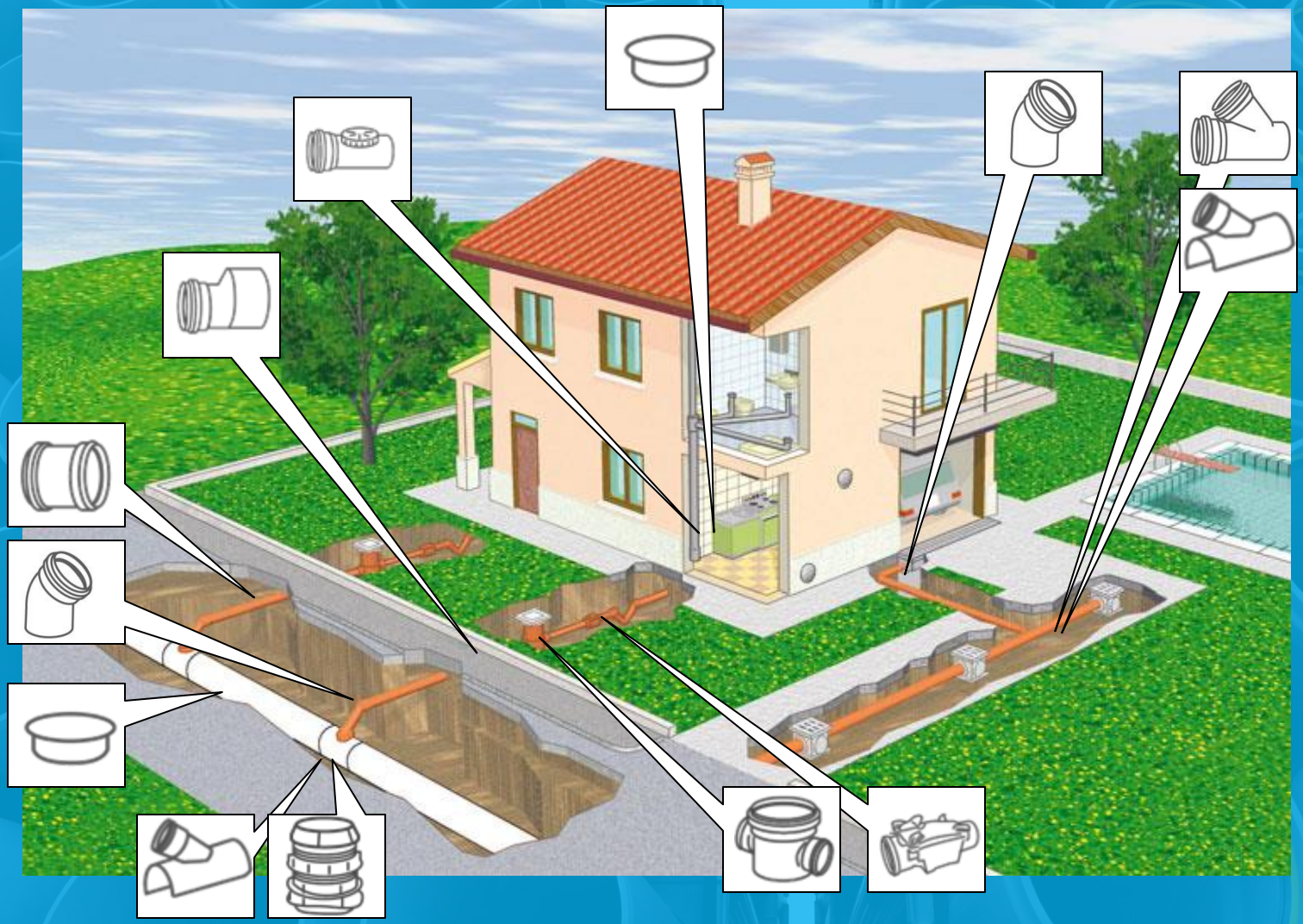
Typical installation of underground drainage



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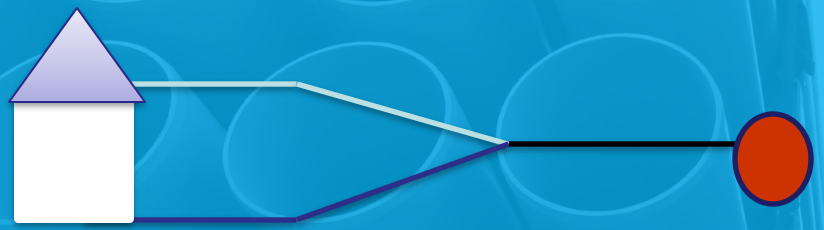
Variants of underground drainage

RAIN WATERS: rain gutters, squares, pedestrian areas, street*

WASTE WATERS: i.e. fecal, kitchens, bathrooms, industrial*



Combined sewage

Separated sewage

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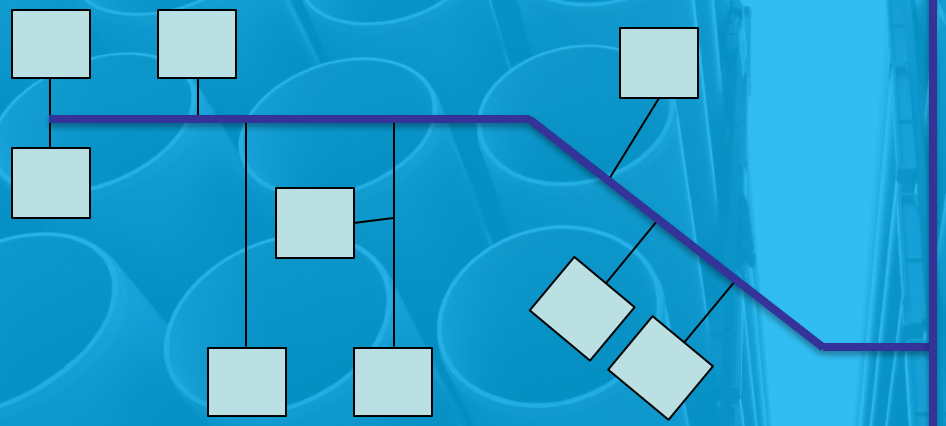
Design of underground drainage

Increasing diameters

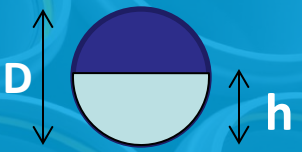


Ø110

Ø>400

Parameter influencing the flow capacity

- Diameter
- Slope
- Roughness
- Fill level (D/h)



Velocity: 0.6 m/s – 0.7 m/s

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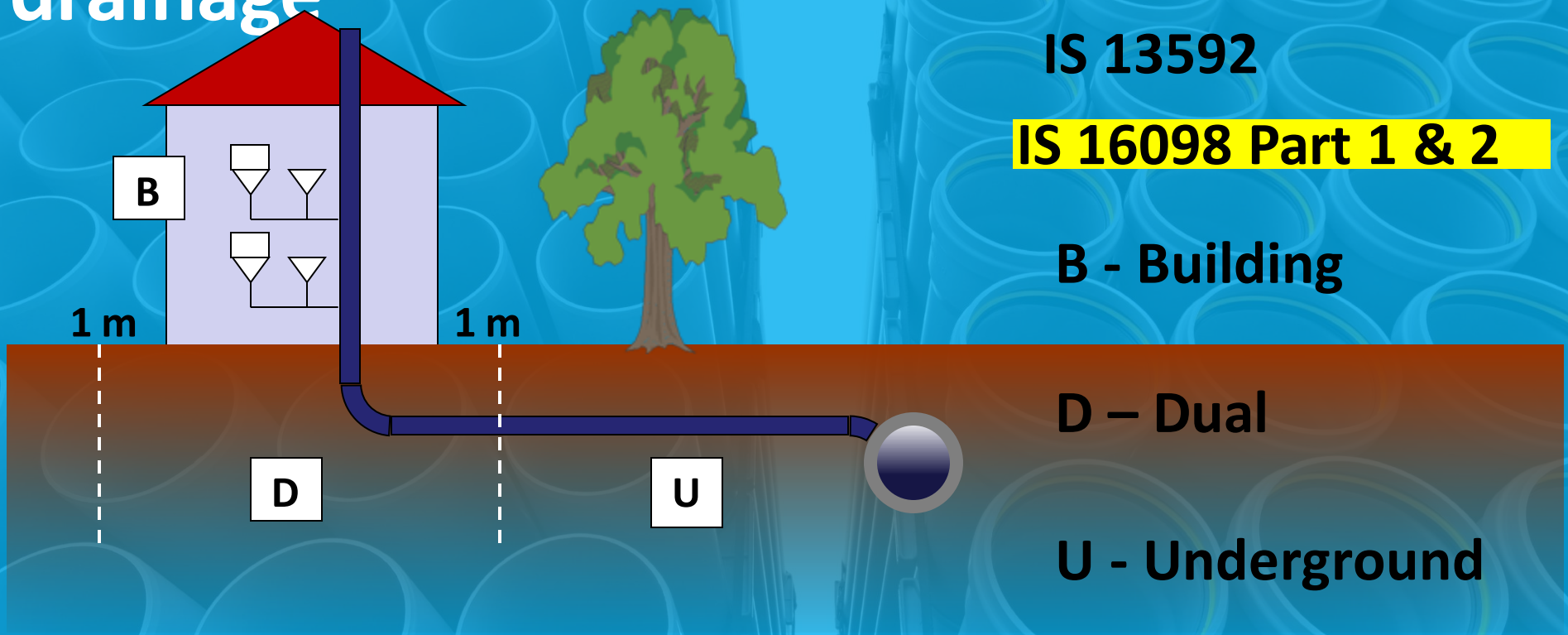
Standards applicable to underground drainage



IS 13592

IS 16098 Part 1 & 2

B - Building

D – Dual

U - Underground

IS 13592	– Ø 32 -> 200	– B
IS 13592 & IS 16098	– Ø 110 -> 200	– UD
IS 16098	– Ø 250 -> 400	– U

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Indian standards for underground drainage

IS 16098 (Part 1) : 2013

Indian Standard

STRUCTURED-WALL PLASTICS PIPING SYSTEMS FOR NON-PRESSURE DRAINAGE AND SEWERAGE — SPECIFICATION

PART 1 PIPES AND FITTINGS WITH SMOOTH EXTERNAL SURFACE, TYPE A

IS 15328 : 2003

Indian Standard

UNPLASTICIZED NON-PRESSURE POLYVINYL CHLORIDE (PVC-U) PIPES FOR USE IN UNDERGROUND DRAINAGE AND SEWERAGE SYSTEMS — SPECIFICATION

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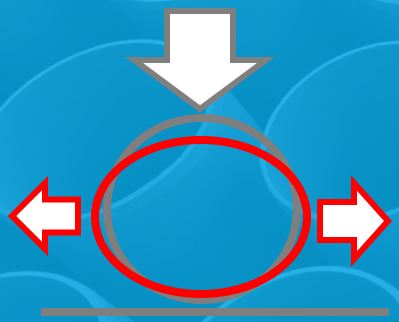
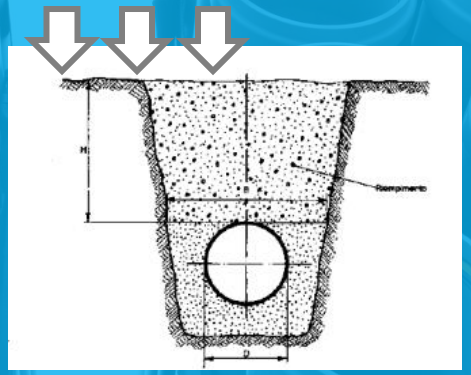
SN: Mechanical property for pipes

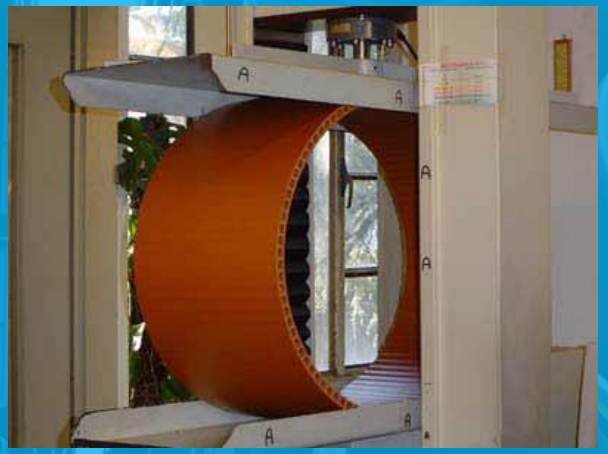
SN [KN/m2]

IT IS A TECHNICAL PARAMETER USED FOR THE STATIC RESISTANCE DESIGN OF A BURIED PIPE APPLICATION.





FITTINGS PRODUCED TO EN1401.



F at 3% lateral deformation of the pipe.

But the pipe can undergo greater deformations.

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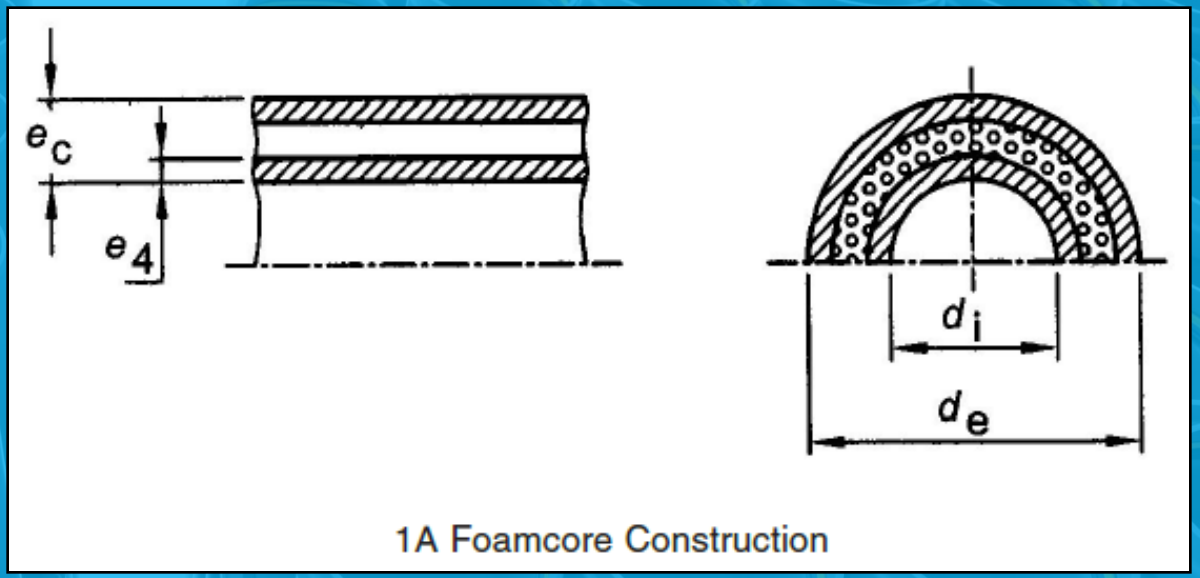
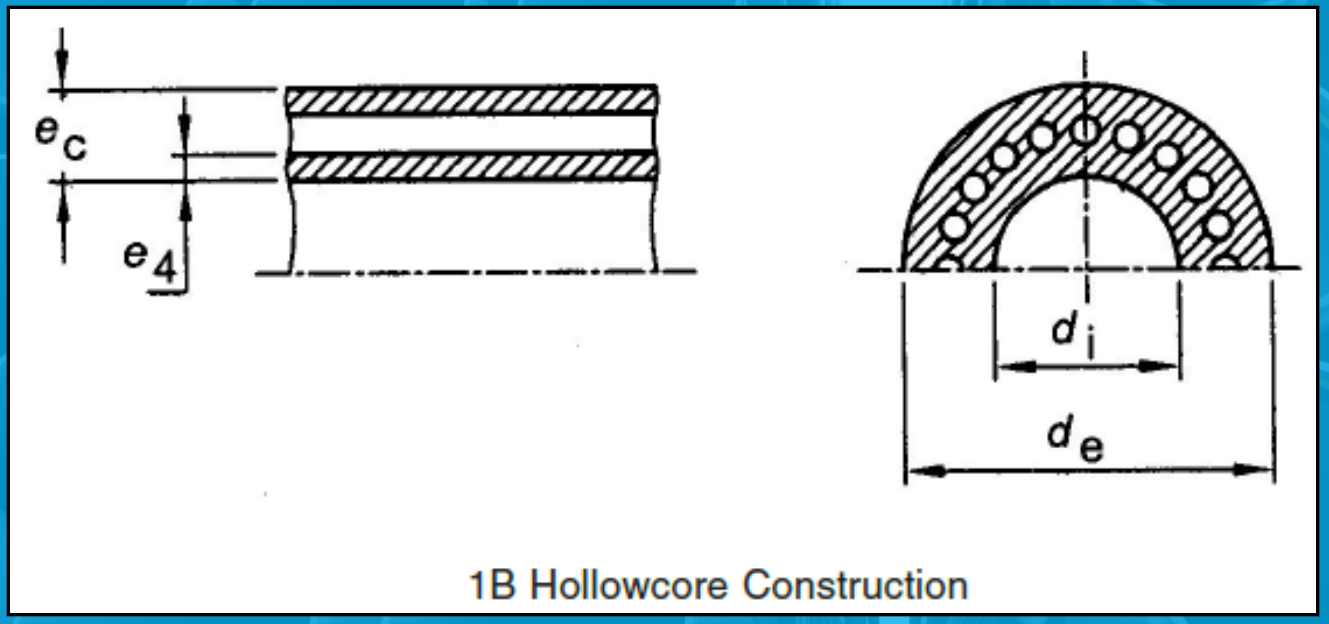
IS 16098 (Part 1): 2013

- Materials: PVC
- Construction



1A Foamcore Construction



1B Hollowcore Construction

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IS 16098 (Part 1): 2013

- Materials: PVC
- Construction

IS 16098 (Part 1) : 2013

Table 6 Ring Stiffness of Pipes
(*Clause* 9.1)

Sl No.	Stiffness Class	Ring Stiffness kN/m^2
(1)	(2)	(3)
i)	SN 2	≥ 2
ii)	SN 4	≥ 4
iii)	SN 8	≥ 8
iv)	SN 16	≥ 16

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IS 16098 (Part 1): 2013

CORRESPONDENCE OF CLASS

	SDR 51	SDR 41	SDR 34
CLASS EN 1401	**SN 2**	**SN 4**	**SN 8**
ISO 9969 KN/m2	2 3	4 5 6 7	8 10 12 14 16

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IS 16098 (Part 1): 2013

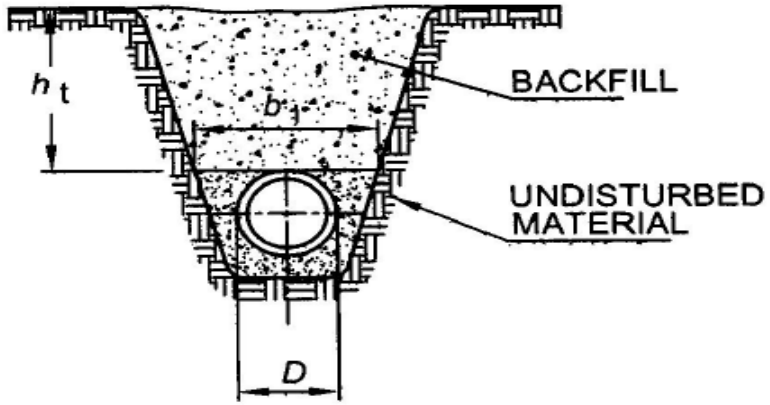

FIG. 7 NARROW TRENCH

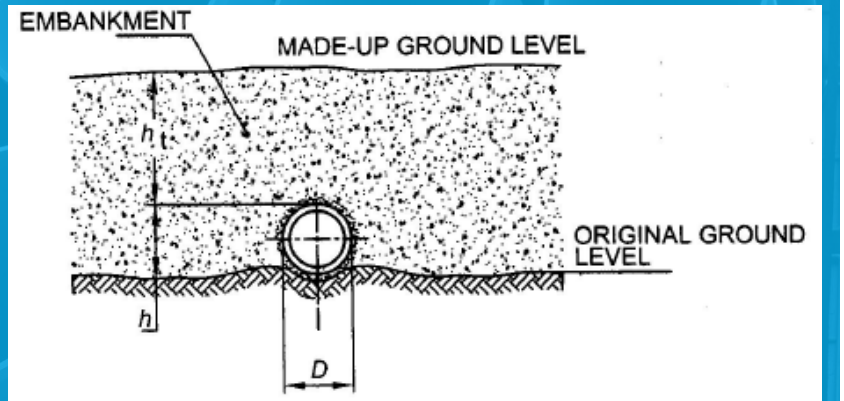

FIG. 8 EMBANKMENT — POSITIVE PROJECTION

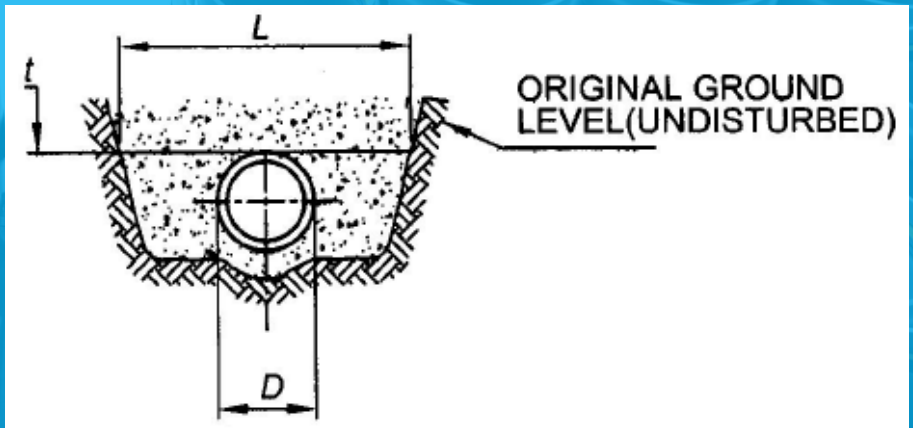

FIG. 9 EMBANKMENT — NEGATIVE PROJECTION

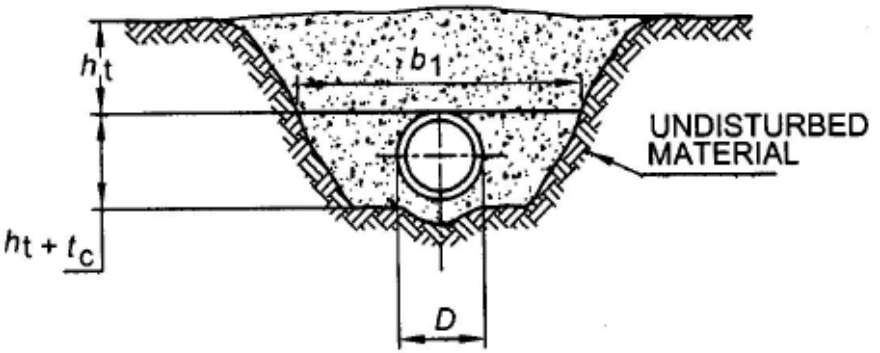

FIG. 10 WIDE TRENCH

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Laying of UG Pipes

STEPS INSTALLATION OF Underground Pipes

1. Trench Excavation
2. Compaction
3. Sand bedding and pipe laying
4. Sand filling upto crown of the pipe
5. Sidefilling
6. Backfilling
7. Compaction

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STEPS INSTALLATION OF Underground Pipes

1.Trench Excavation

2. Compaction

3.Sand bedding & pipe laying

4.Sand filling upto crown of the pipe

5.Side filling

6.Back filling & Compaction

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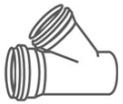
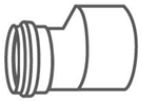
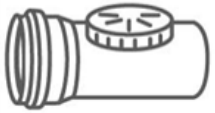
Ashirvad range Ø 110 mm – Ø 315 mm

- Pipes (Plain ended, Single socket and double socket)
- Fittings and speciality items

	BENDS		INSPECTION CHAMBERS
	BRANCHES		CLIPS
	INVERT REDUCER		CLEANOUTS
	COUPLERS		MECHANICAL SADDLES
	PLUGS		NON RETURN VALVE

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Inspection chambers: the need

Allows access to the sewage for cleaning

When is it used:

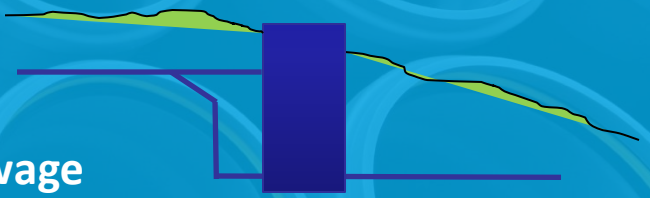
Too much long sewage segments

Change of direction

To disconnect public and private

Converging inlets

New connections



fall of sewage

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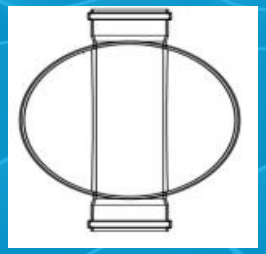
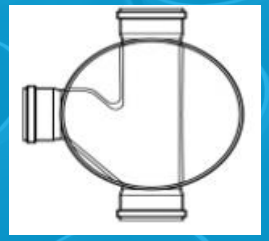
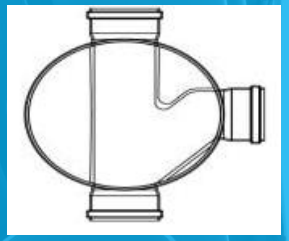
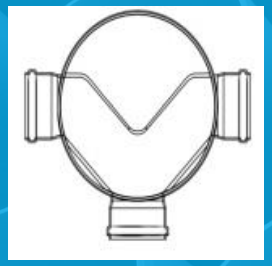
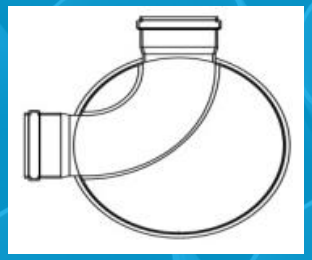
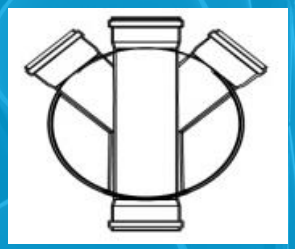
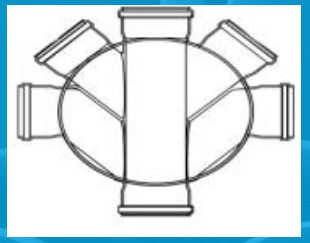
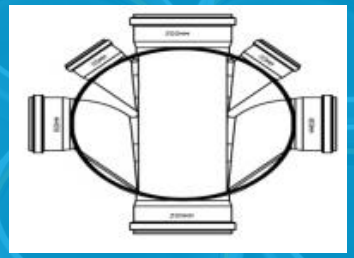
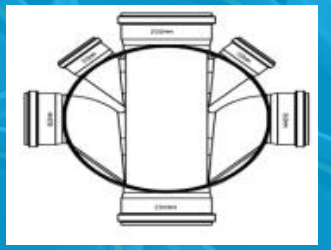
Inspection chambers – range 315mm-600mm

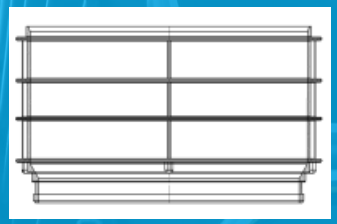
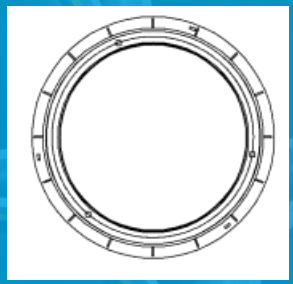
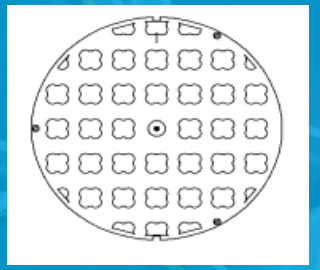
315 mm diameter

450 mm diameter

Riser, frame and top cover

With impact modifier

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Features of Ashirvad uPVC inspection chambers

Ø315 Inspection Chamber

- Top lid can take load of 35 KN (non-vehicular traffic and for pedestrians and light traffic only)
- In-built slope from inlet to outlet
- Made in PP with high quality impact modifier
- Easy to add additional connections, inlets not used can be blocked off with dummy plugs
- Ring fit type connections for jointing
- Connection possibility with different pipe materials (ex. Clay, cast iron or PVC)
- System is provided, i.e., it comes with Riser, Lid, frame as well
- Single piece moulding for the chamber
- Has stability legs for quick and easy installation
- Riser can take an additional 110 mm connection at different height too for the 450 mm chambers

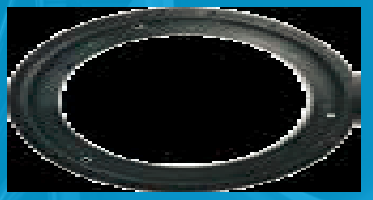
ashirvad PIPES

Advantages of uPVC Inspection chambers

Ø315 Inspection Chamber

- High flow capacity
- High hydraulic tightness
- Self cleaning
- Very low cleaning frequency
- Long lasting system
- Quick and easy installation
- Lower costs
- Easy to add additional connections

ashirvad PIPES

Part No	Description	Images	Height in mm
All 315 chambers	All 315 chambers – Base Body		220
2299201	6-450,4-160,2-110 – Base Body		325
2299202	6-450,2-200,2-160,2-110-Base Body		375
2299302	Riser for 315mm		160
2299303	Riser for 450mm		270.2
2299402	chamber cover 315mm		51.7
2299403	chamber cover 450mm		70.4
2299502	chamber cover frame 315mm		25
2299503	chamber cover frame 450mm		25

Heights of inspection chambers

ASHIRVAD 315mm chamber	
315mm Chamber	**Height in mm**
Only Base	220
Base Body With One Riser, Frame & Cover	432
Base Body With Two Riser , Frame & Cover	592
Base Body With Three Riser, Frame & Cover	752

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Heights of inspection chambers

ASHIRVAD 450mm chamber	
450mm Chamber	**Height in mm**
Only Base	325
Base Body With One Riser, Frame & Cover	666
Base Body With Two Riser , Frame & Cover	936
Base Body With Three Riser, Frame & Cover	1206

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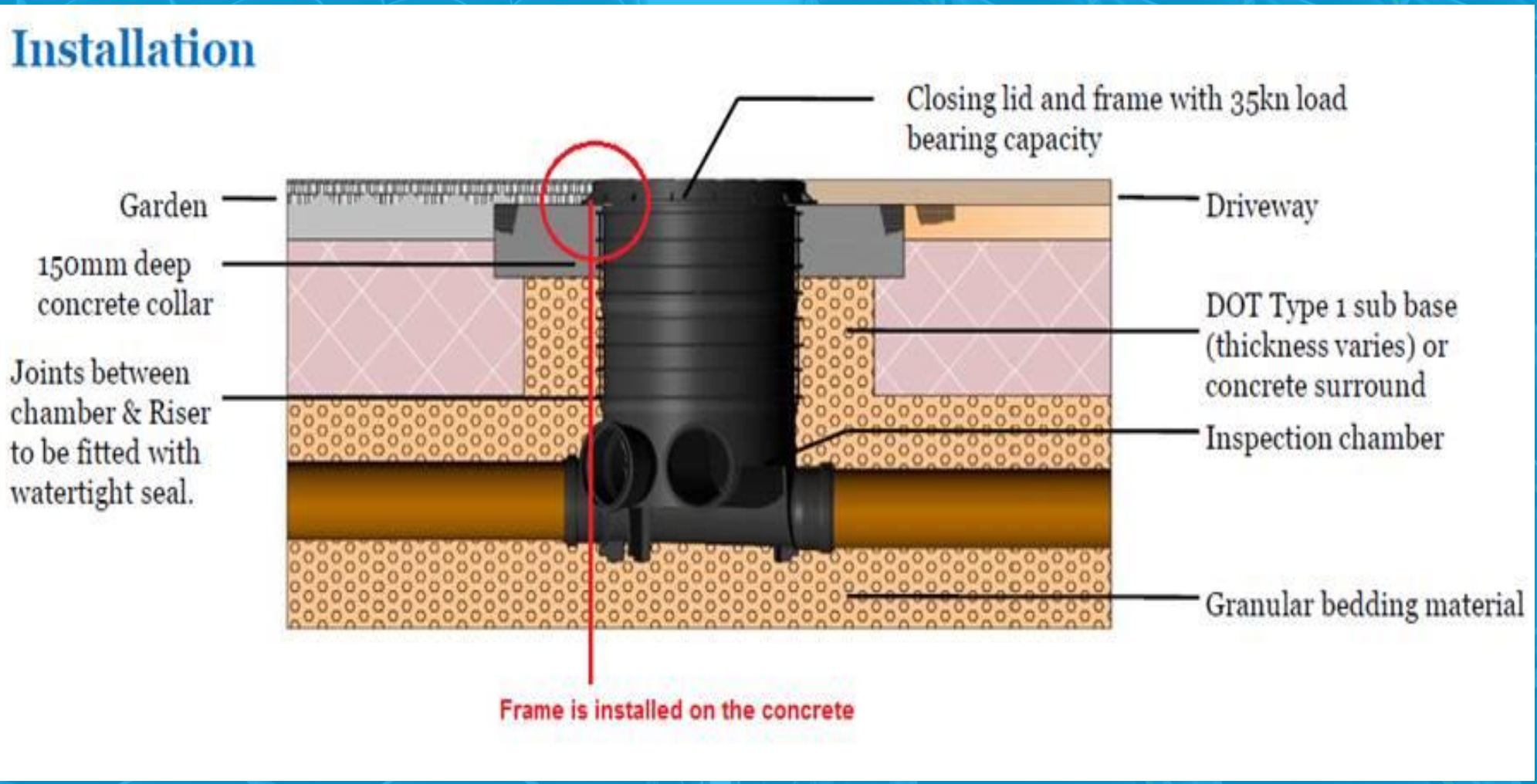
INSTALLATION OF INSPECTION CHAMBER



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INSTALLATION OF INSPECTION CHAMBER

1. Excavation : 10-15cm deeper than the required depth, and 20cm wider than the chamber daimeter
2. Compaction & PCC
3. Installation of Inspection chamber base
4. Add risers as per height requirment
5. Inlet/outlet connection
6. Backfill and compaction
7. Installation of load bearing ring / 150mm Concrete bed
8. Frame should be fixed in load bearing ring / on concrete bed
9. Road/paving to be prepared upto th height of frame

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Manholes

- Roto-moulded manholes in UV stabilized PE
- Made to BS EN 13598-2: 2009
- A wide range of products are available

Inspection/Manhole chamber dimensions

Diameter mm	Height Range mm	Inlet DN mm	Outlet DN mm	Cover DN mm	Personal Entry
500	350-1500	110/160	110/160	500	No
600	350-1500	110/160	110/160	600	No
800*	1050-1750	110/160	110/160	600	Yes
1000**	1100-6000	110/160/200	110/160/200	600	Yes
		160/200/250	160/200/250	600	Yes

*Steps are available on demand

** DN1000 Manhole available with additional base configurations for inlet/outlet of 315/400/500

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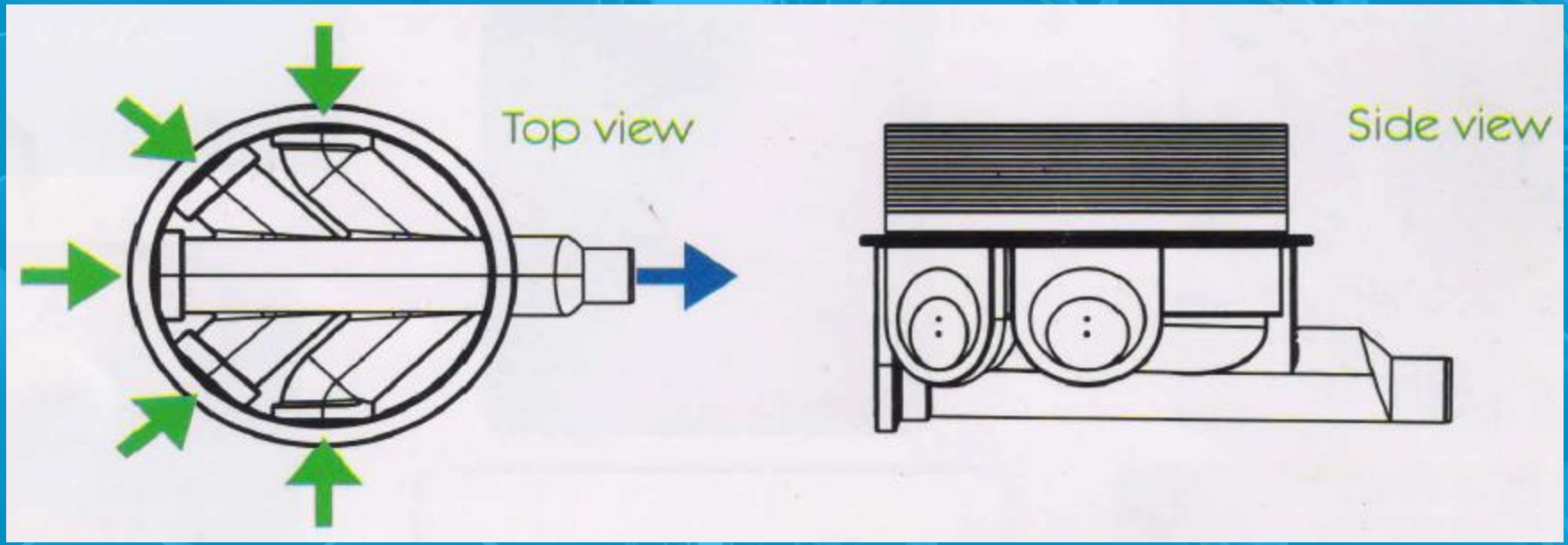
Manholes

- All chambers have 5 inlets and a larger outlet
- All inlets are closed and can be opened for easy installation
- An in-built slope is given between the inlet and outlet
- The ribs are well designed to prevent any buoyancy effects



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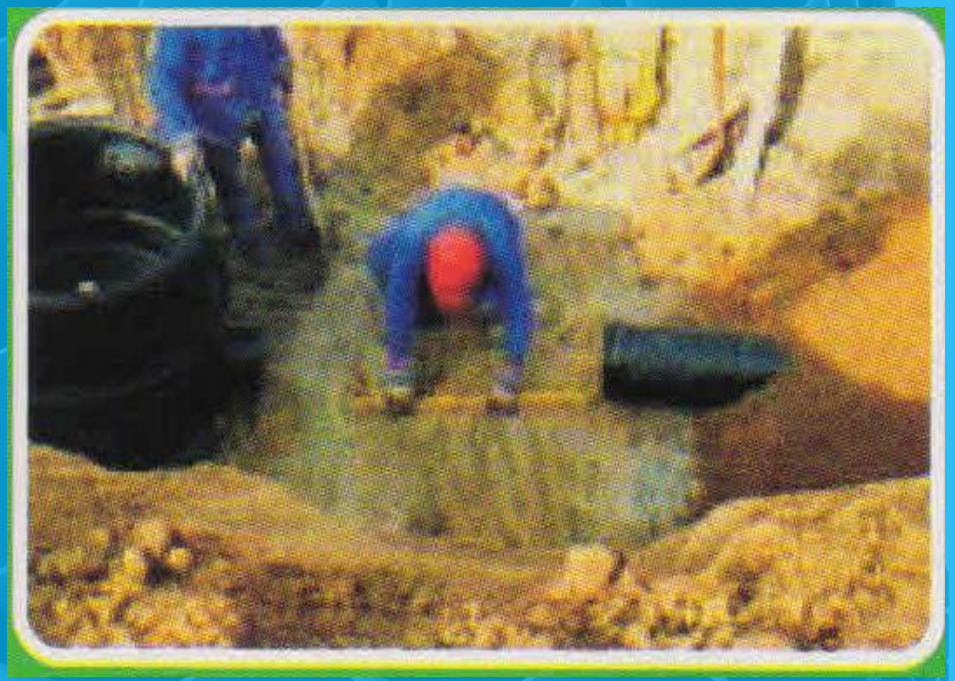
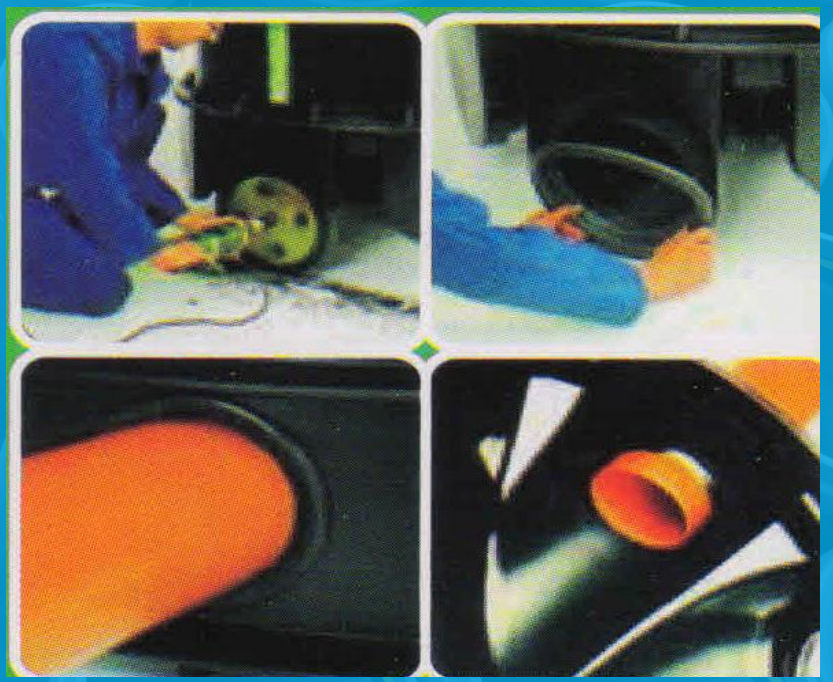
Installation of Manhole

Fast,easy and safe installation in 5 simple steps:

1.Exacavate



2.Connect Inlet



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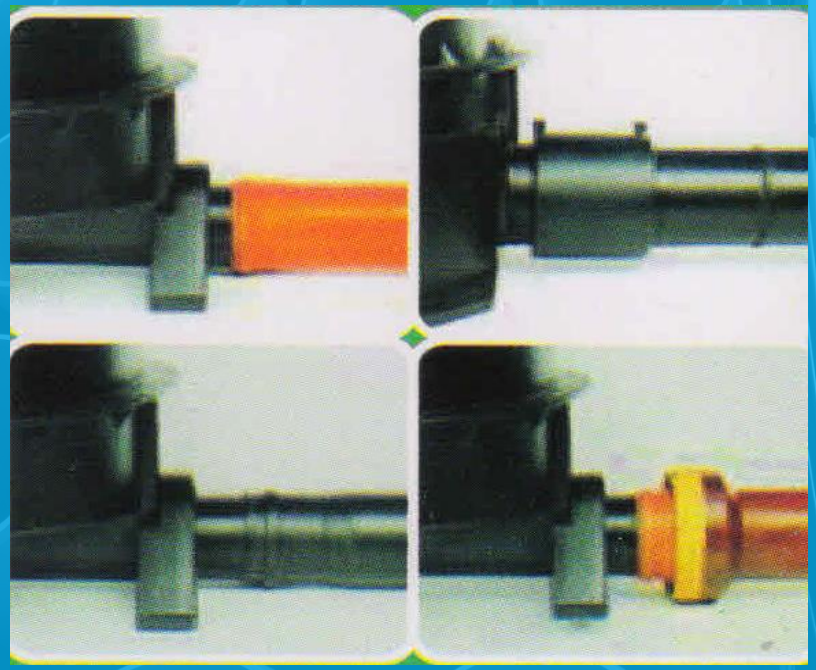
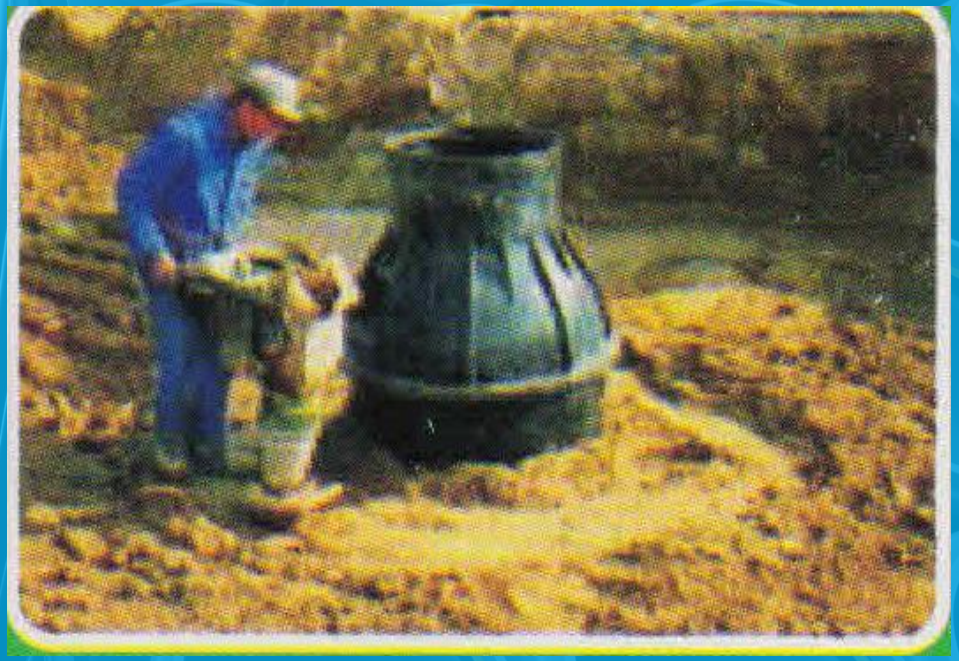
Installation of Manhole

Fast,easy and safe installation in 5 simple steps:

3.Connect Outlet



4.Backfill and Compact



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Installation of Manhole

Fast,easy and safe installation in 5 simple steps:

5.Adjust Height and Install Cover

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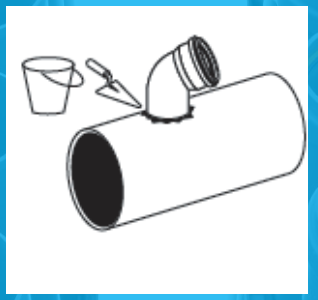
Many ways of creating a new sewer connection

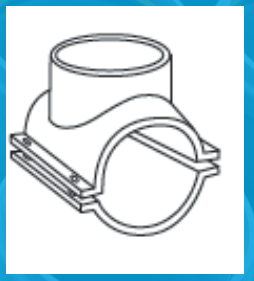
CONCRETE CEMENT SEALING

It consists in a seal with cement, this method obviously can not be a long lasting solution. A long time for the cement curing is needed. Often this method is not accepted by Water Companies.



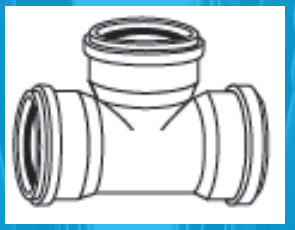
COLLARS

This method needs to excavate below the pipe with consequent technical difficulty.
In order to install the fitting is needed to fix the collar around the tube. This system does not protect the tube from infiltration because the seal is made on the outer surface to the tube.



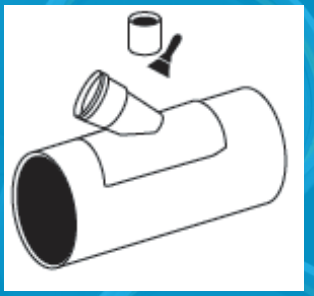
TEE FITTING

This method needs to excavate below the pipe with consequent technical difficulty. It is needed cut the existing pipe, working from the inside of the trench with the obvious difficulty of working. Then install the branch using two sleeves, or through special couplers.



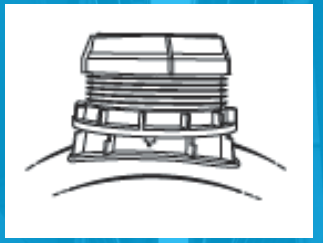
SOLVENT CEMENT SADDLES

It is important to clean the contact surfaces. Once the hole on the main line is carried out, the saddle application is made with PVC glue. A long time for the glue curing is needed, this involves a considerable increase in the working time.



MECHANICAL SADDLE

Very low volumes of ground excavation, working method directly on the top of the main pipe, no curing time is required, complying with the prescriptions of Water Companies, warranty of seal.



- Excavation time
- Easiness
- Installation time
- Water tightness
- Reliability

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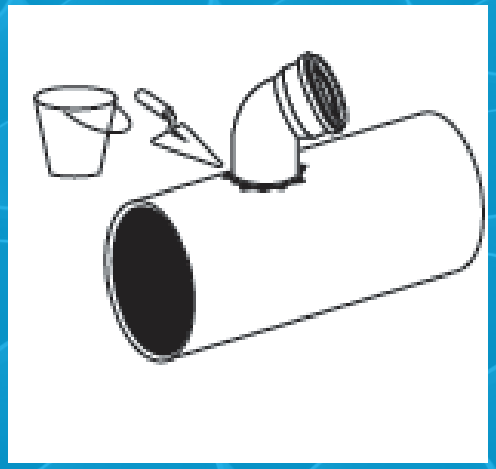
Example of video inspections reports



Obstructions / Leakages

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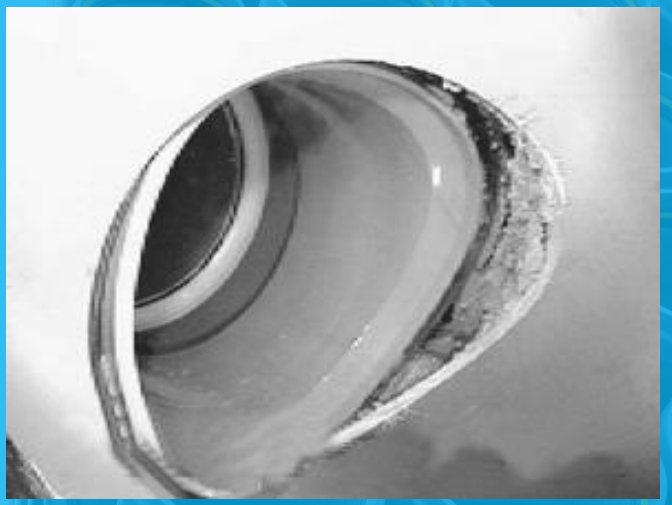
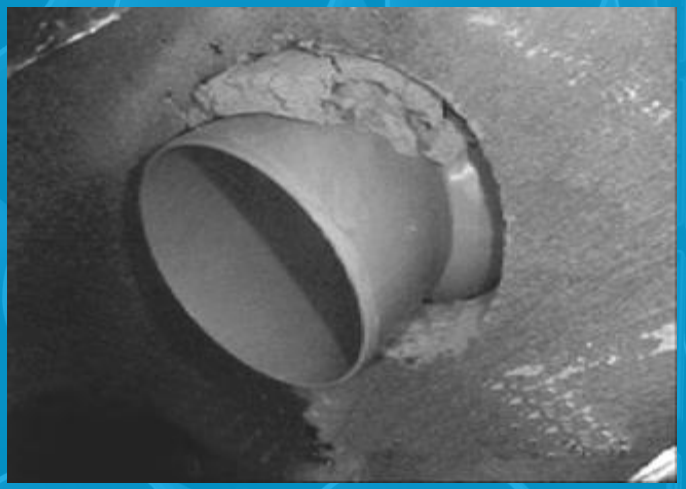
More examples of bad connections

Negative slope obstruction

Not centred hole infiltrations



Invert reducer used



Cut by blade infiltrations

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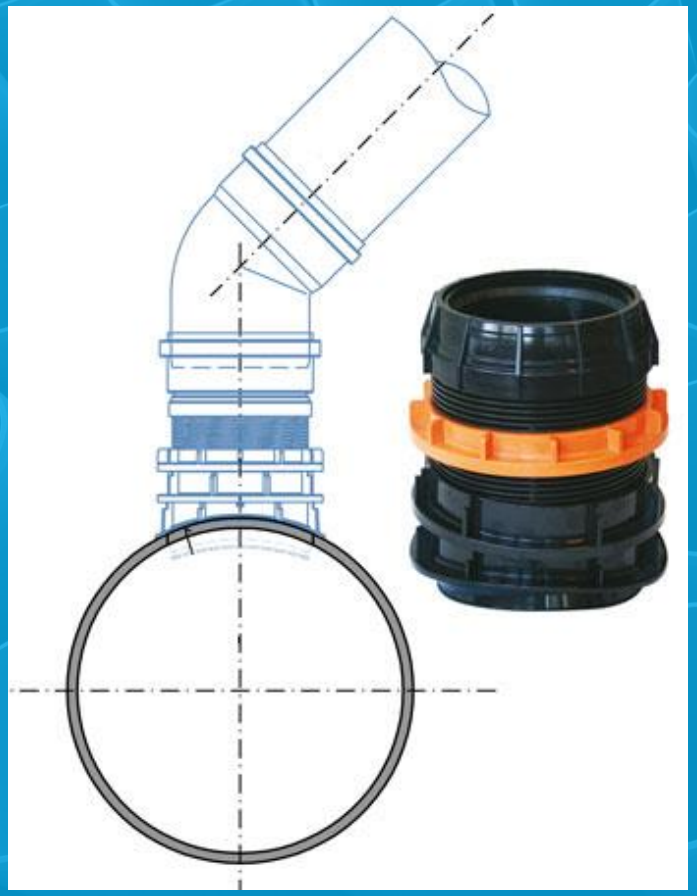
EASYCLIP

Mechanical saddle for Clay pipe



CSTB

MPA Darmstadt

EN 1401

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Swivel – allows ground movement

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Swivel – allows ground movement

Pre-lubricated and ready-to-install
Rotation up to 10° to ease house connections and balance ground settlement.

Part No : 2559171

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What is a Back Flow Preventer used for?

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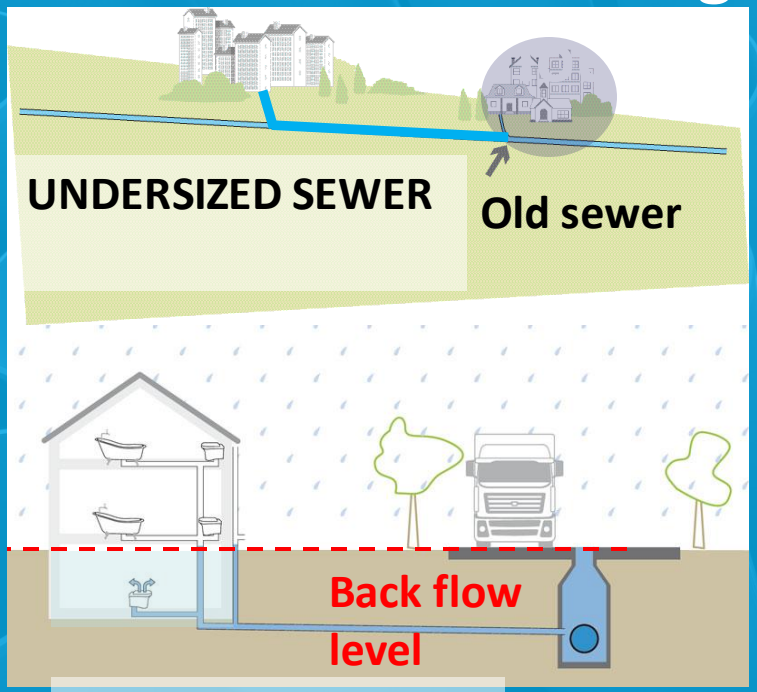
BACK FLOW PREVENTOR

Many causes

New Houses Existing



Economical losses!

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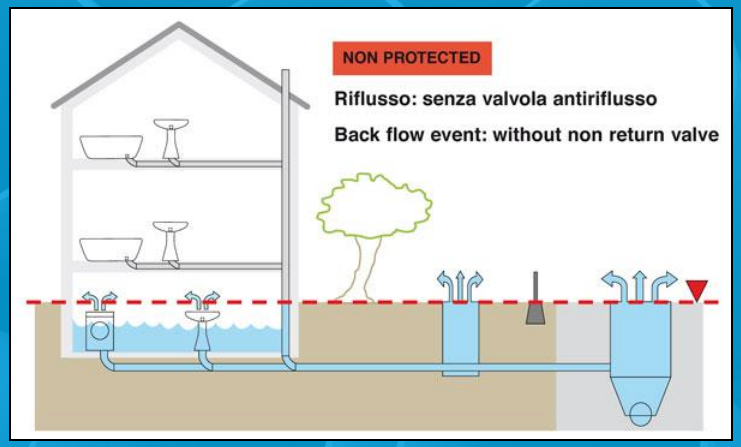
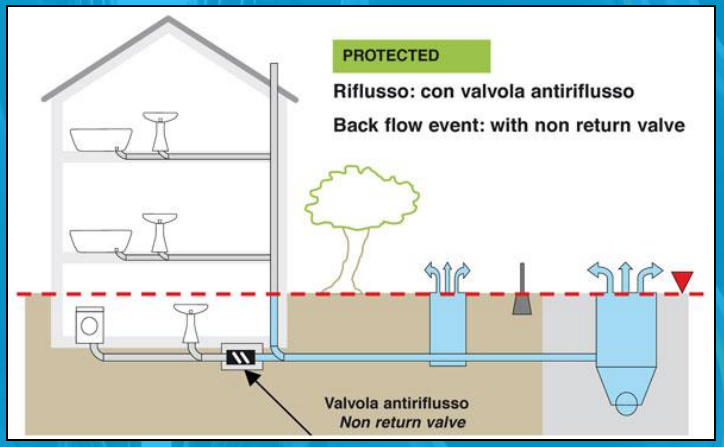
What is a Back Flow Preventer used for?

It is a device that prevents the reverse flow of water coming back from the main sewage.

The main causes of back flow are:

- **Overall under-sizing of the Public Sewage**
- **High peak of flow (example in case of intense rainfalls)**
- **Growing urbanization areas means greater sewage volume to be evacuated.**
- **Malfunctioning or blockages downstream in the network.**





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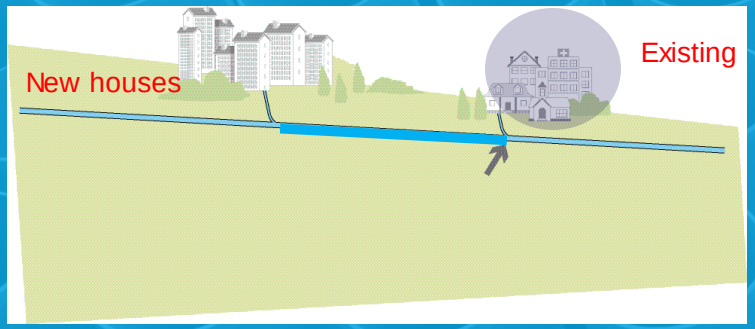
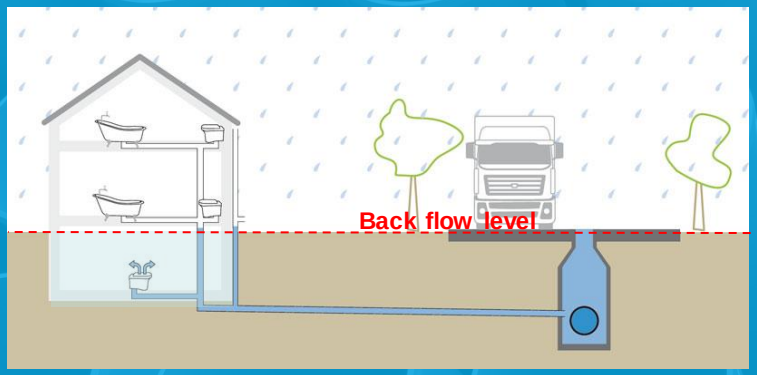
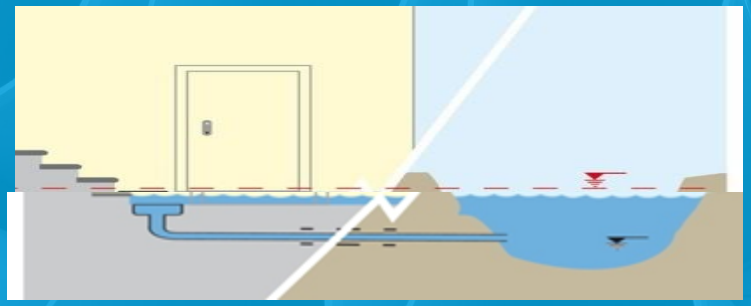
The main causes of back flow are:



NEW URBANIZATION AREA



HIGH PEAK FLOWS (EX. SHORT AND INTENSE RAINFALL)



RISING UP LEVEL OF A CHANNEL

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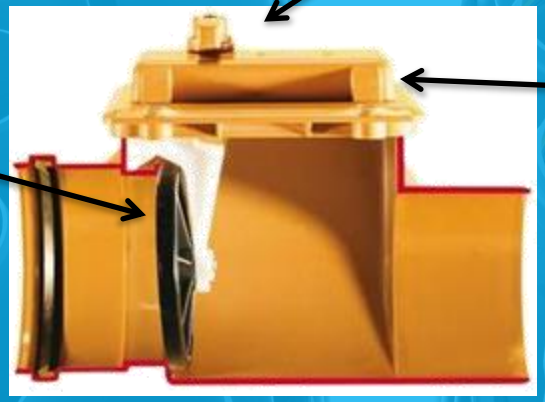
NRV: main functioning components

EMERGENCY CLOSING HANDLE

REMOVABLE COVER

CLOSING FLAP

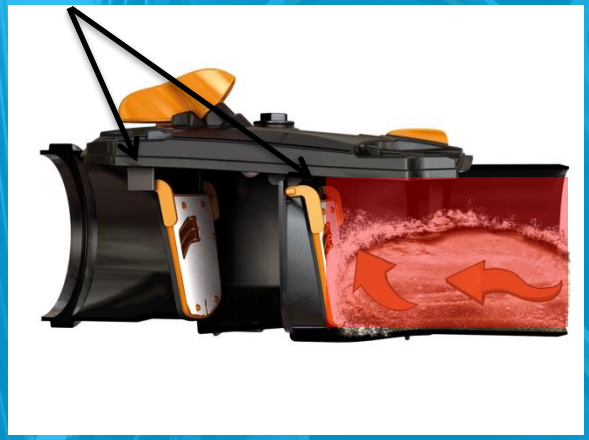


Principle

Open Flaps

Normal discharging flow

Closed



Back flow interception

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What are Ashirvad's underground drainage USPs?

- Being a solution provider
- Range
  - Pipes (BIS approval to IS 16098 Part 1: CM/L – 6200019083)
    110 mm to 315 mm – Push fit & Solfit
    plain end, single socket, double socket
    SN2, SN4 and SN8
  - Fittings (large range in SN4 equivalent)
  - Speciality items (easy clip, BFP, swivel, etc.)
  - Inspection chambers and manholes
- Very good and smooth finish
- Quality of product (high finish manufacturing)
- Logistics and supply-chain capabilities
- Training and specification
- Complimentary products from REDI, Italy

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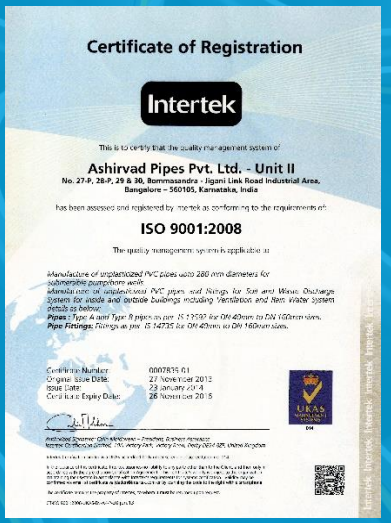
Ashirvad UGD System - Support

- Technical Support from Technical Team
- Installation Inspection from Technical Supervisors
- Plumbers Training on site
- Training to contractor, site Engineer and Maintenance Team
- Technical Catalogue, Single Page Leaflet, Price list , Test Certificates & Approvals



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Any Questions ?????

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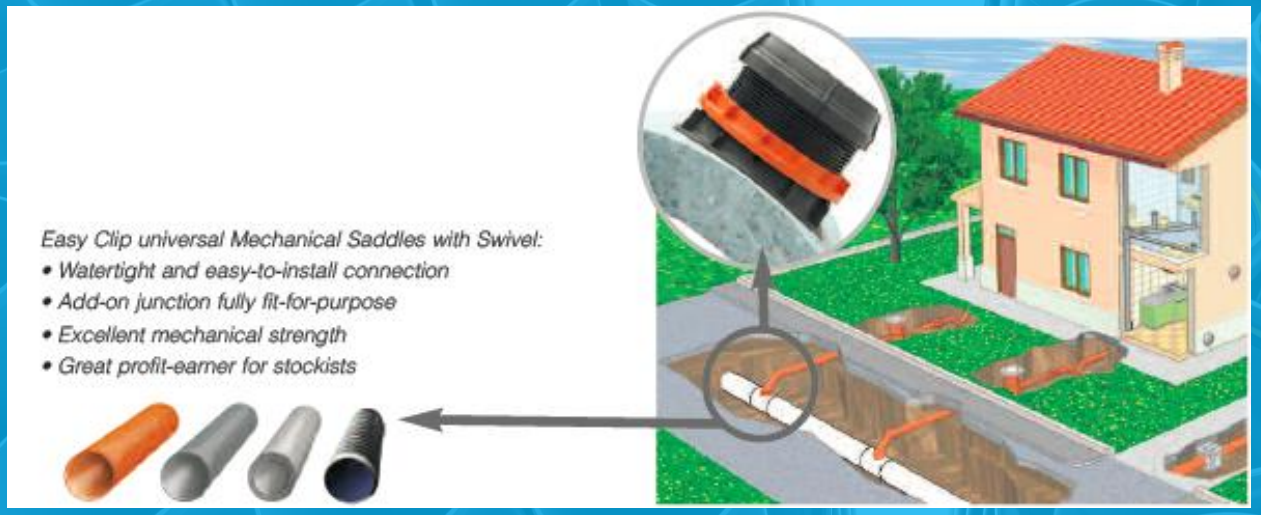
EASY CLIP



Easy Clip mechanical saddles connect smooth plastic sewer pipes (PVC, PP, PE) to mains made from reinforced concrete, concrete, plastic (smooth and corrugated) as vetrified clay pipe and GRP pipe.

Easy Clip saddles fit sewer mains from DN 300 mm up to DN 1000 mm with wall thickness up to 100 mm Inlet 160mm and 200mm

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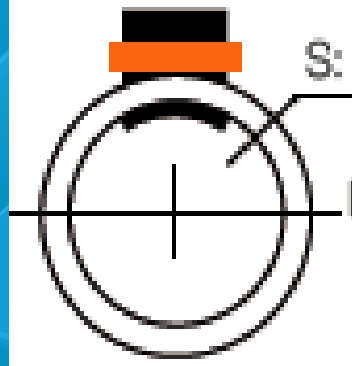
EASY CLIP

Easy Clip 160mm & 200mm

EASY CLIP Ø200 mm - Ø160 mm



S: 5 mm → 100 mm

D: Ø300 mm → Ø1200 mm →

Corrugato *Corrugated* (PE/PP/PVC)
Compatto *Compact smooth* (PP/PVC)
Gres *Clay*
Calcestruzzo *Concrete*
GRP *GRP*
Ghisa *Cast iron*

Easy Clip Ø 200 mm

Easy Clip Ø 160 mm

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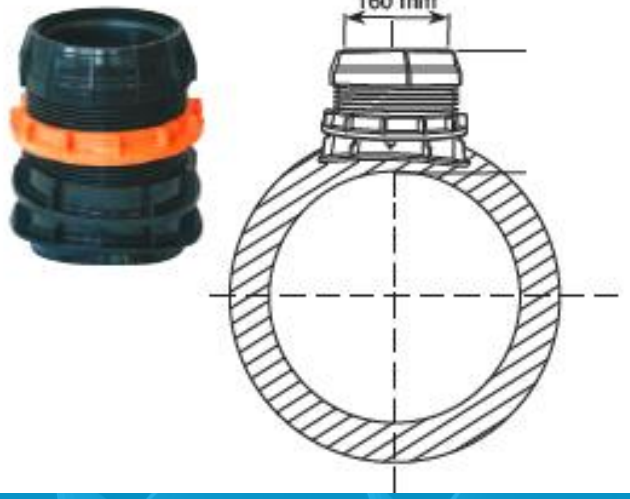
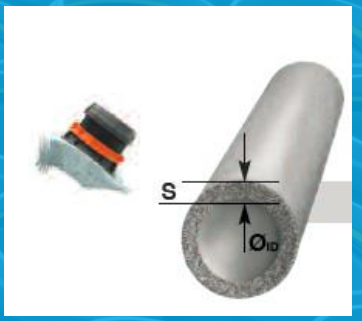
EASY CLIP

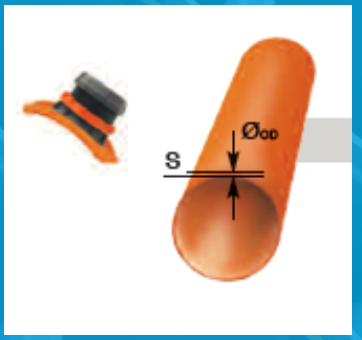
Easy Clip 160mm & 200mm

Type Ø160



Type Ø200





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Mechanical Saddle

MECHANICAL SADDLE Ø160 mm

S: 5 mm → 14 mm

D: Ø200 - Ø250 - Ø315 - Ø400 → Compact smooth (PP/PVC)
GRP

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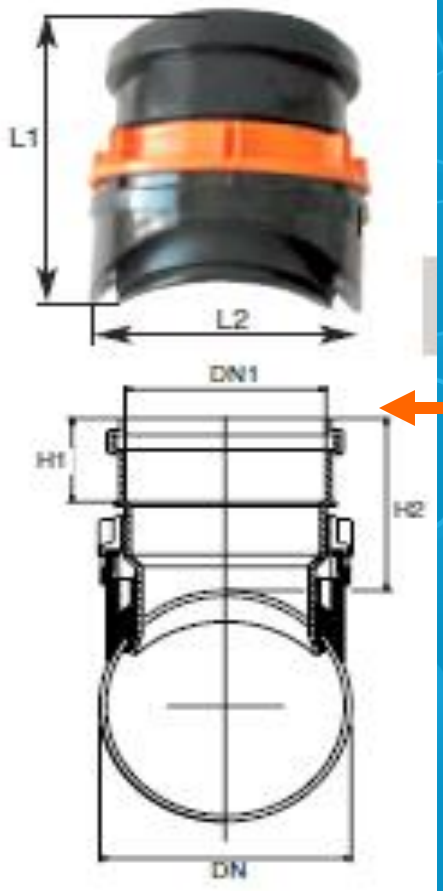
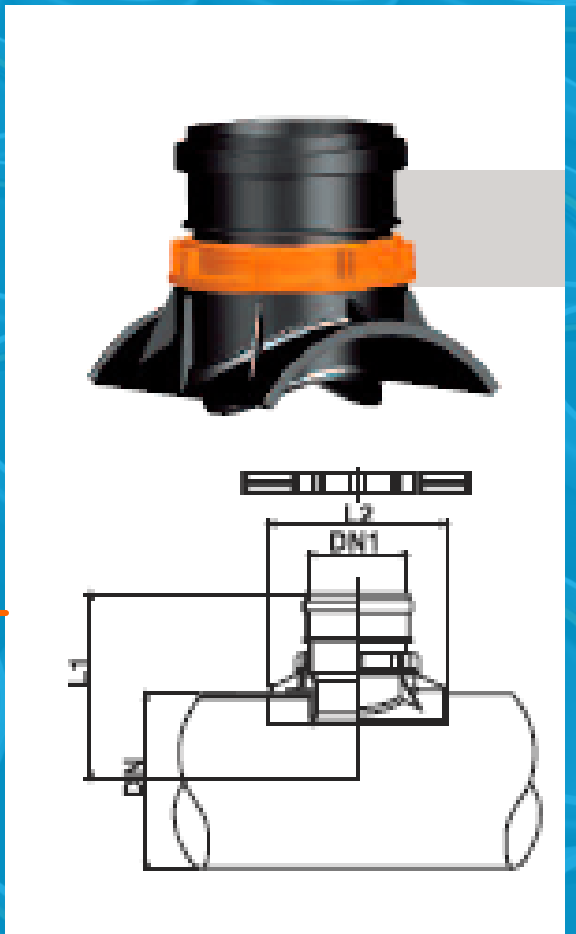
Mechanical Saddle – Smooth pipes – PVC-PP-PE



DN	DN1	L1	L2	Thickness Max.Pipe
200	160	188	202	6.6mm
250	160	285	290	8.3mm
315	160	315	290	10.4mm
400	160	360	290	13.1mm



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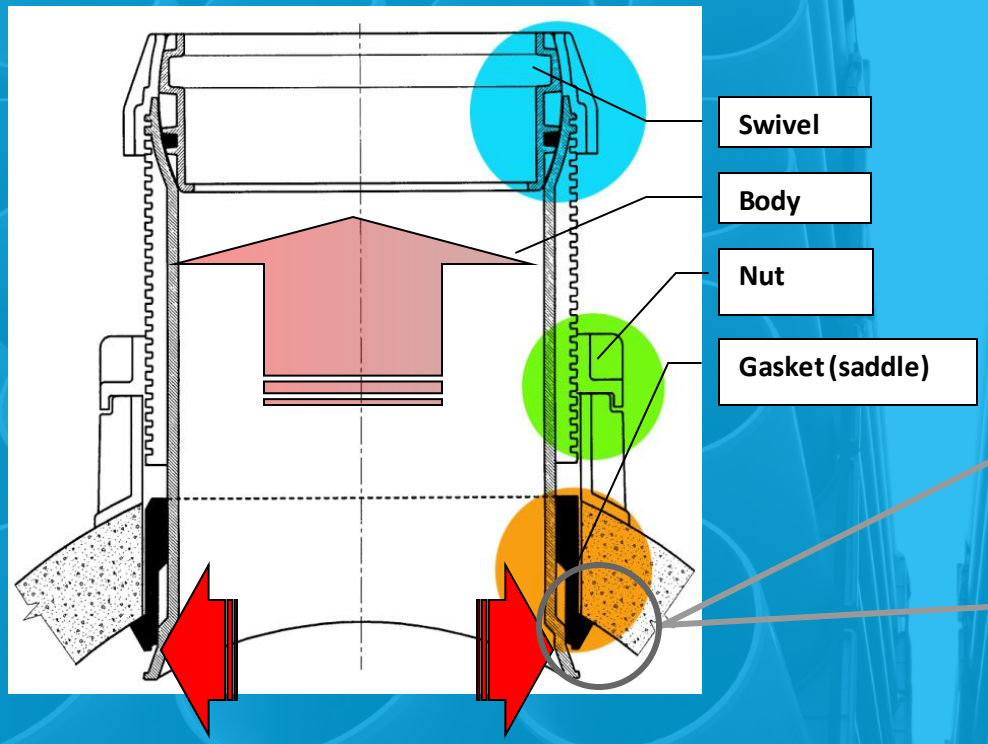
HOW IT WORKS



FOR POROUS MATERIALS IT PROTECT THE EXPOSED PARTS AFTER THE DRIL

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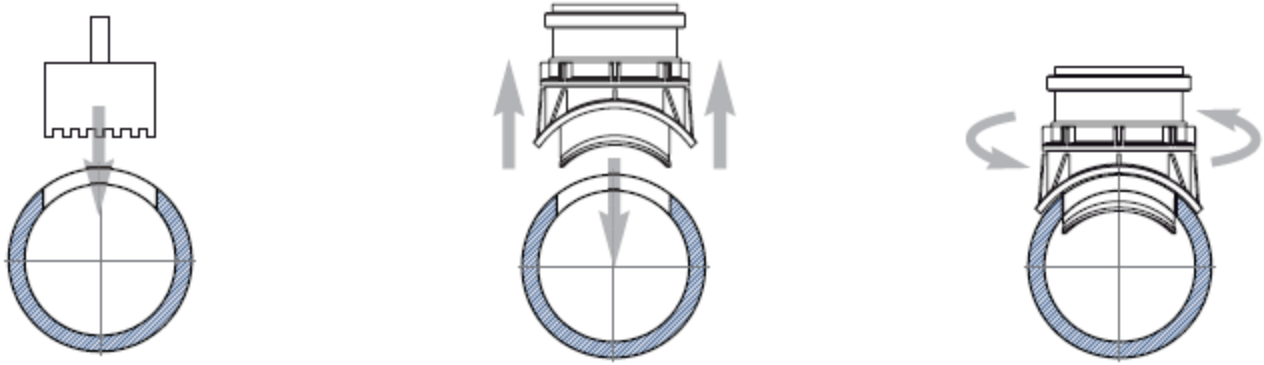
INSTALLATION

Installation Steps



Instruction

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INSTALLATION

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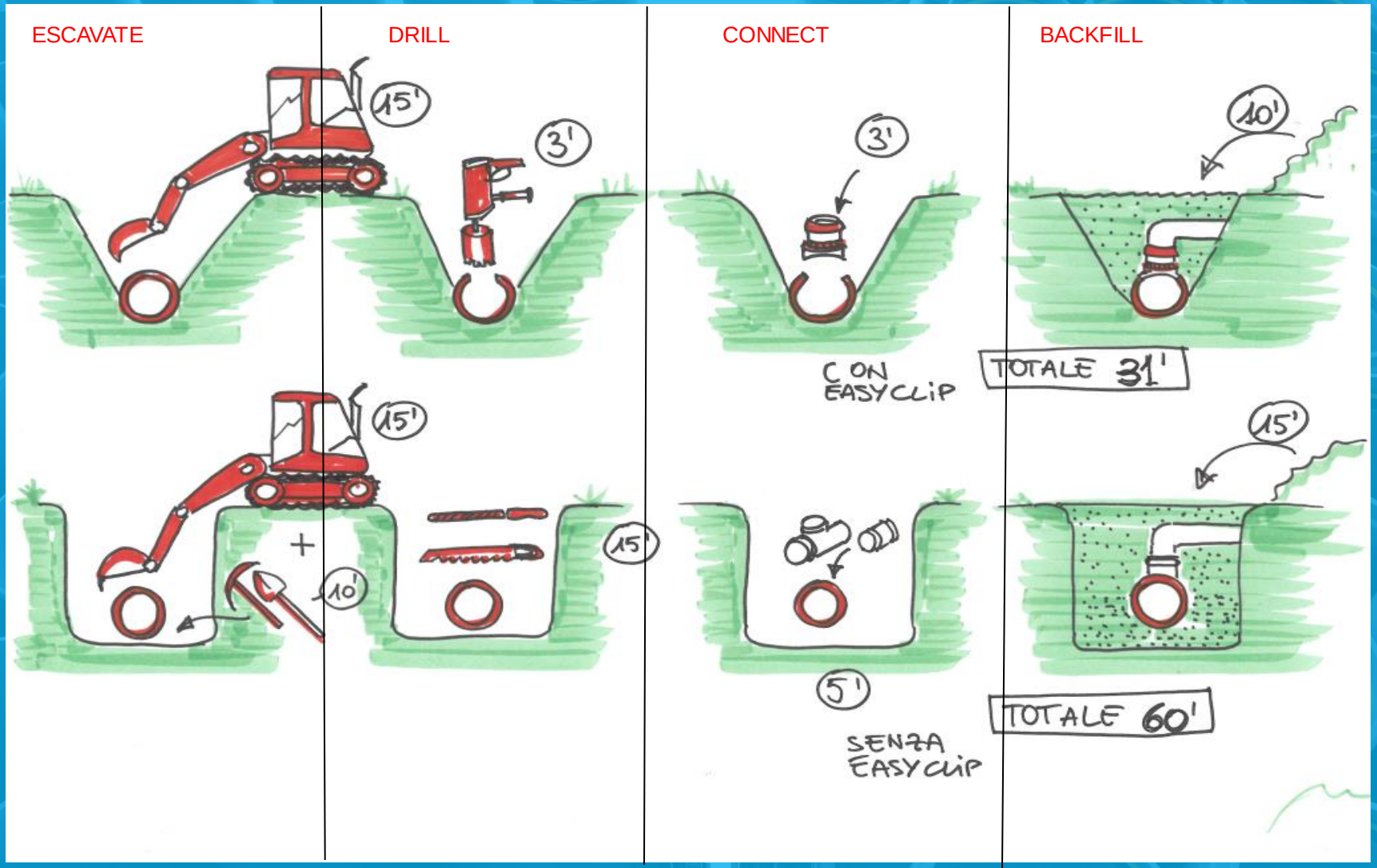
PIPES



COMPARISON

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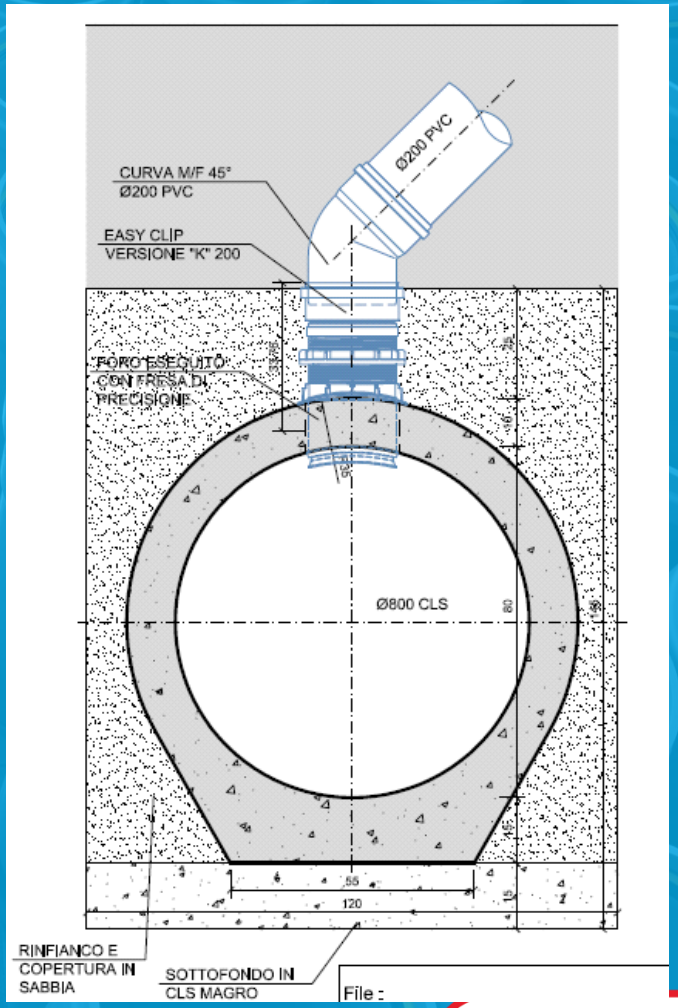
NEW SEWAGE LATERAL CONNECTION ON AN EXISTING CONCRETE PIPE Ø800
Easyclip Ø200


FASE 1: *Esecuzione della foratura su un tubo Ø800 di calcestruzzo*


FASE 2: *Inserimento di Easyclip*


FASE 3: *Serraggio della clip con chiave in dotazione*



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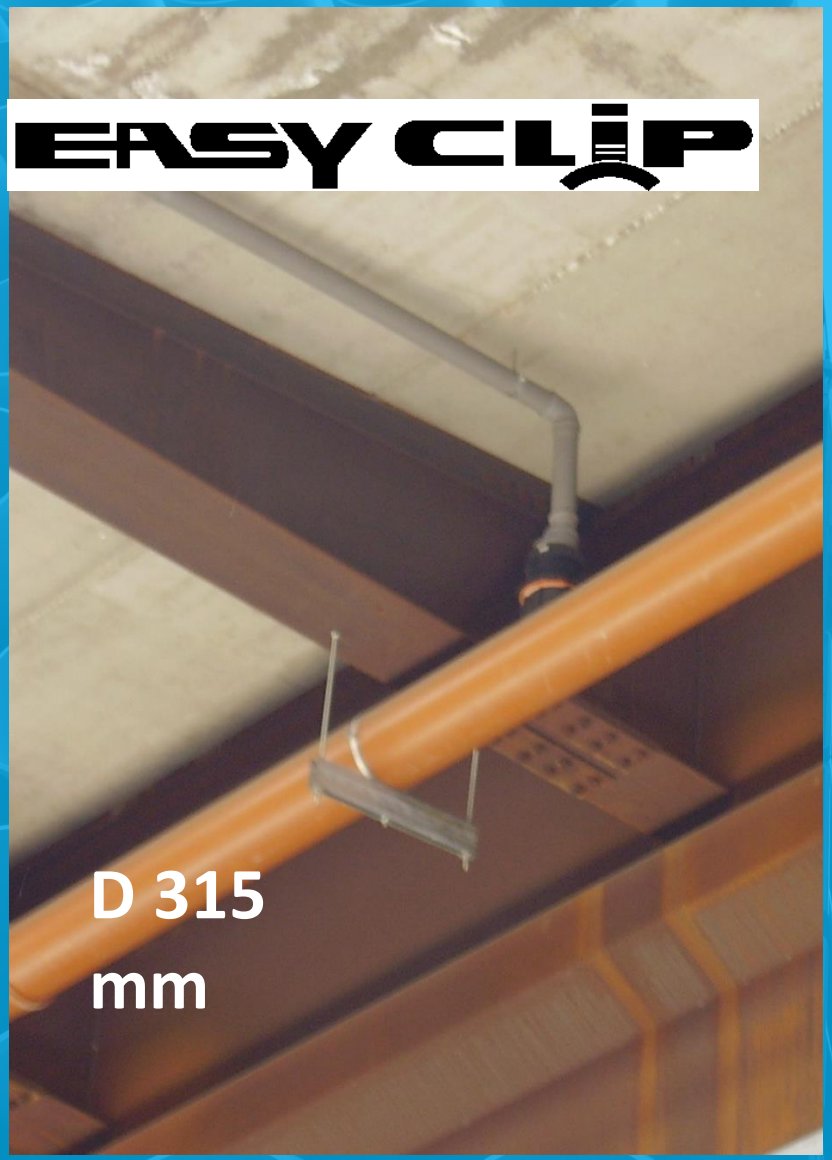
EASY CLIP



D 315
mm

D 630
mm

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PIPES