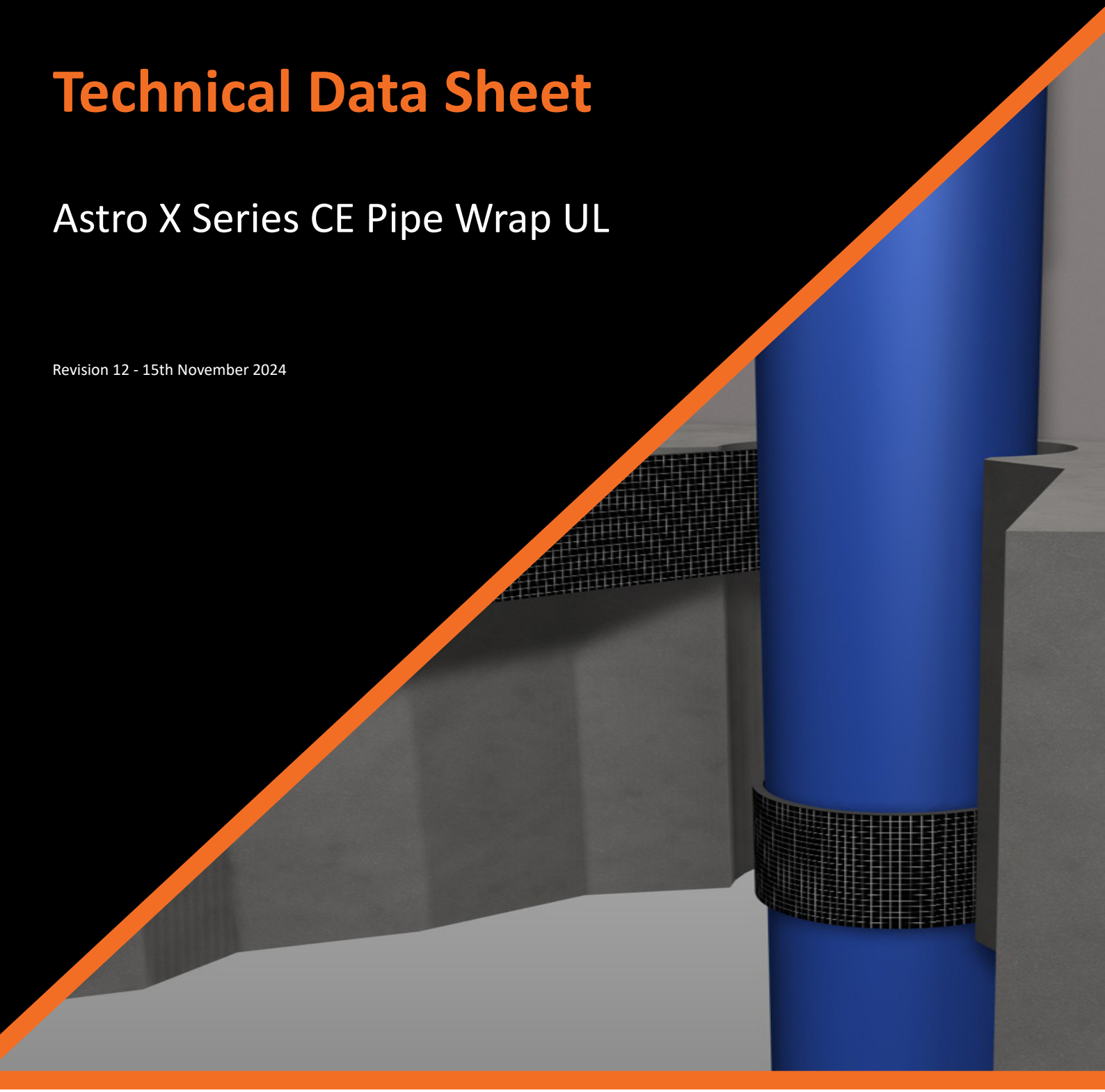
ASTROFLAME
PASSIVE FIRE STOP SYSTEMS

Technical Data Sheet

Astro X Series CE Pipe Wrap UL

Revision 12 - 15th November 2024



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CE-ETA - 20-1117
CE-2531-CPR-CXO10298

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Authorised and notified according to Article 29 of the Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011

MEMBER OF EOTA

European Technical Assessment ETA-20/1117 of 2023/11/23

I General Part

Technical Assessment Body issuing the ETA and designated according to Article 29 of the Regulation (EU) No 305/2011: ETA-Danmark A/S	
Trade name of the construction product:	Astro X-Series CE Pipe Wrap UL (Universal Length)
Product family to which the above construction product belongs:	Fire Stopping, Fire Sealing & Fire Protective Products. Fire Retardant Products
Manufacturer:	Astroflame Fireseals Limited Intumescent House Unit 8 The IO Centre Stephenson Road Segensworth Fareham Hampshire PO15 5RU
Manufacturing plant:	E/122
This European Technical Assessment contains:	31 pages including 1 annex which form an integral part of the document
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of:	EAD 350454-00-1104 Firestopping and fire sealing products, Penetration Seals
This version replaces:	The ETA with the same number issued on 2020-12-09

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1 Technical Description of the Product

1) Astro X-Series CE Pipe Wrap UL is installed around combustible pipes to form a penetration seal used to reinstate the fire resistance performance of wall and floor constructions, where they have been provided with apertures for the penetration of combustible pipe services.

2) Astro X-Series CE Pipe Wrap UL is installed around the pipe at the soffit and upper face of floors and both faces of walls, depending on application and by applying a number of passes to reach the required thickness. Fixing specifications and number of passes are detailed in Annex A.

3) Astro X-Series CE Pipe Wrap UL can be used with Astro Intu Mastic to seal the space between the combustible pipe and the aperture to close gap sizes as specified in Annex A.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The intended use of Astro X-Series CE Pipe Wrap UL is to reinstate the fire resistance performance of wall and floor constructions, where they are penetrated by various combustible pipe services.

The specific elements of construction that the Astro X-Series CE Pipe Wrap UL may be used is as follows:

Flexible walls:	The wall must have a minimum thickness of 100 mm and comprise timber or steel studs line on both faces with minimum 2 layers of 12.5 mm thick, 'Type F' Gypsum boards according to EN 520. In timber stud walls, no part of the penetration seal shall be closer than 100mm to a stud, and minimum 100 mm of insulation of class A1 or A2 according to EN 13501-1, is provided within the cavity between the penetration seal and the stud.
Rigid walls:	The wall must have a minimum thickness of 100 mm and comprise of concrete, aerated concrete or masonry, with a minimum density of 650 km/m^3.
Rigid floor:	The floor must have a minimum thickness of 100 mm and comprise of concrete, aerated concrete or masonry, with a minimum density of 650 km/m^3.

1) The supporting construction must be classified in accordance with EN 13501-2 for the required fire resistance period.

2) The system Astro X-Series CE Pipe Wrap UL may be used to provide a penetration seal with specific combustible pipes (for details see Annex A).

3) Apertures in the separating element shall be maximum oversize with respect to the pipe diameter according to the tables listed in Annex A. The remaining annular space/gap shall be infilled with Astro Intu Mastic. Apertures for the penetration of pipes shall be separated by a minimum of 200 mm.

4) The provisions made in this European Technical Assessment are based on an assumed working life of the Astro X-Series CE Pipe Wrap UL of 10 years, The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

5) Services in walls shall be supported at maximum 400mm from the face of the separating element for walls, and 400mm above the surface of the floor.

Use Category
Type X: Intended for use in conditions exposed to weathering.

3 Performance of The Product And References To The Methods Used For Its Assessment

Characteristic	Assessment of characteristic
BWR 1 Mechanical resistance and stability	
BWR 2 Safety in case of fire	
Reaction to fire	See clause 3.1.1
Resistance to fire	See Clause 3.1.2
BWR 3 Hygiene, Health and the Environment	
Release of dangerous substances	See Clause 3.2.1
BWR 4 Safety in use	
Durability and serviceability	See Clause 3.3.1
BWR 5 Protection against noise	
BWR 6 Energy, Economy and Heat Retention	

3.1 Safety in case of fire

3.1.1 Reaction to fire

Astro X-Series CE Pipe Wrap UL is classified **E** in accordance with EN 13501-1

3.1.2 Resistance to fire

See Annex A.

3.2 Hygiene, Health and the Environment.

3.2.1 Content and release of Dangerous Substances

The applicant has presented a declaration that Astro X-Series CE Pipe Wrap UL releases no dangerous substances in compliance with Council Directive 67/548/EEC of 1st June 2015 on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations (incl. All amendments and adaptations).

The manufacturer declares that the product contains no dangerous substances according to current European and National regulations.

The applicant has submitted a written declaration that the product and/or constituents of the product contains no substances which have been classified as dangerous according to Directive 67/548/EEC and Regulation (EC) No. 1272/2008 and listed in the 'indicative list on dangerous substances' of the EGDS – taking into account the installation conditions of the construction product and the release scenarios resulting from there.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

The use catagory of Astro X-Series CE Pipe Wrap UL in relation to BWR 3 (Hygiene, health and environment) is IA1, S/W3.

3.3 Safety and accessibility in use

3.3.1 Durability

Astro X-Series CE Pipe Wrap UL has been tested in accordance with EOTA Technical Report - TR024 – Edition November 2006, EAD 350454-00-1104, Fire Stopping and Fire Sealing Products-Penetration Seals for type X, environmental conditions: Products for penetration seals intended for outdoor use exposed to weathering – rain, UV, high temperatures, frost and frost-thaw in winter.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 1999/454/EC of the European Commission the system of assessment and verification of constancy of performance (see Annex V to the Regulation (EU) No 305/2011) given in the following table apply:

Products	Intended use(s)	AVCP System
Fire stopping and fire sealing products	For fire compartmentation and / or fire protection or fire performance	System 1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ETA-Danmark A/S prior to CE marking

Issued in Copenhagen on 2023-11-23 by



Thomas Bruun

Managing Director, ETA-Danmark

Annex A
Resistance to Fire Classification of Astro X-Series CE Pipe Wrap UL

Intumescent Thickness

The required number of layers of Astro X-Series CE Pipe Wrap UL for various ranges of pipe diameters:

Astro X-Series CE Pipe Wrap UL Applied both sides of wall/floor	
For use with plastic pipes	
Pipe Ø (mm)	Layers of Astro X-Series CE Pipe Wrap UL
40	2
55	2
63	2
75	2
82	2
90	3
110	3
125	4
140	4
160	4
200	5

Single Astro X-Series CE Pipe Wrap UL Applied in floor	
For use with plastic pipes	
Pipe Ø (mm)	Layers of Astro X-Series CE Pipe Wrap UL
40	4
55	4
63	4
75	4
82	4
90	6
110	6
125	8
140	8
160	8
200	10

Astro X-Series CE Pipe Wrap UL Applied both sides of wall/floor	
For use with insulated metallic pipes	
Insulation type	2
Phenolic Insulation	2
Elastomeric Insulation	2
Glass wool	2
Stone wool	2

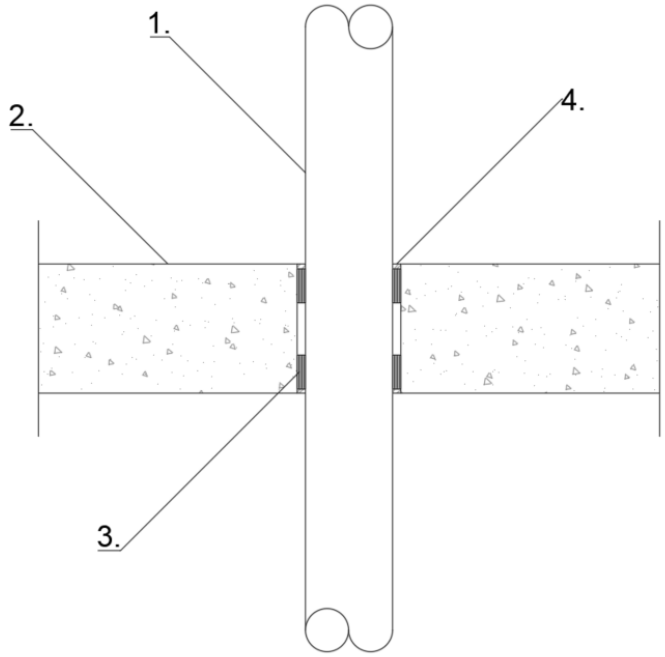
Astro X-Series CE Pipe Wrap UL Applied both sides of wall/floor	
For use with other services	
Penetration	Layers of Astro X-Series CE Pipe Wrap UL
PVC Duct	3

A.1. Floors

A.1.1 Rigid floors Minimum Thickness 150 mm

A.1.1.1 Plastic pipes

Rigid Floors ≥150 mm



Key

1. Plastic Pipe
2. Rigid floor
3. Astro X-Series CE Pipe Wrap UL
4. Astro Intu Mastic

Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.1.1, Graph 1 for scope	≤ 10 depending on product size	Edge – 10 Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into topside and underside of the floor recessed by 5mm. Astro Intu Mastic applied to topside and underside of the floor sealing in the wrap	**EI 120 U/C, C/C**
PVC-U, PVC-C(1) – See 3.1.2, Graph 2 for scope				**EI 60 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.1.5, Graph 5 for scope				**EI 120 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.1.6, Graph 6 for scope				**EI 120 U/C, C/C**
PP(3) – See 3.1.3, Graph 3 for scope				**EI 120 U/C, C/C**
PP(3) – See 3.1.4, Graph 4 for scope				**EI 15 – U/C, C/C**

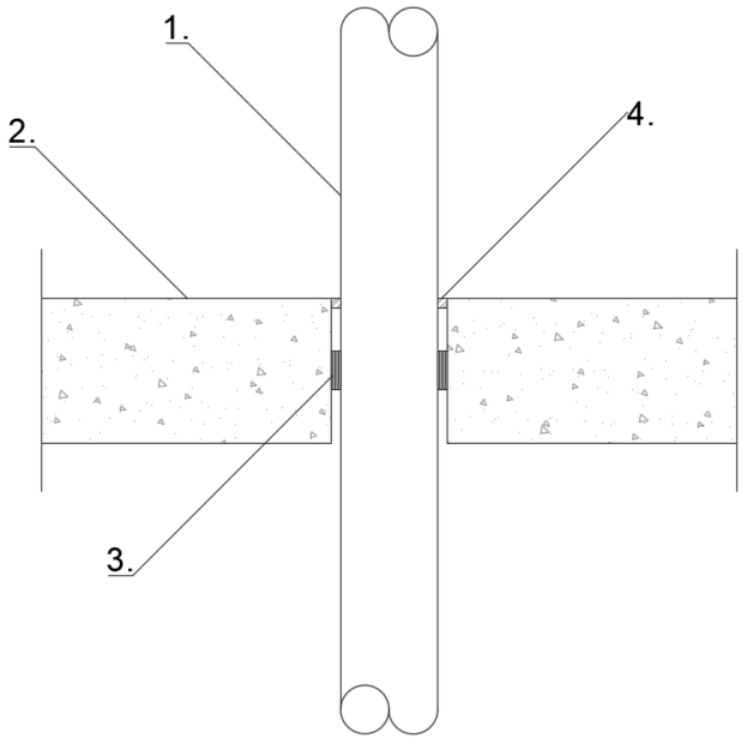
All services supported with pipe supports at 400 mm from the upper face of the floor.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1

(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1

(3) PP pipe according to EN 1852-1: 2009

Rigid Floors ≥150 mm



Key

1. Plastic Pipe
2. Rigid floor
3. Astro X-Series CE Pipe Wrap UL
4. Astro Intu Mastic

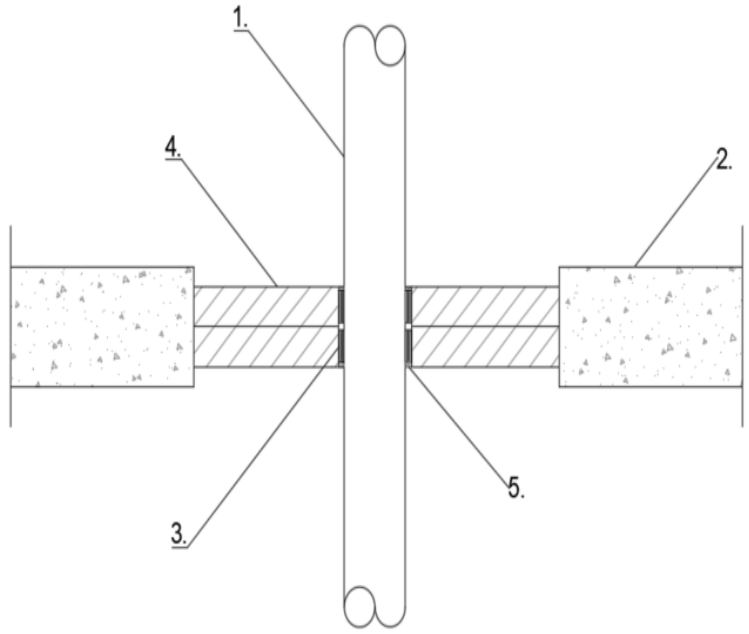
Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.1.7, Graph 7 for scope	As required by dimensions of Astro X-Series CE Pipe Wrap UL	Edge – 10 Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into middle or topside of the floor recessed by at least 5mm. Astro Intu Mastic applied to topside and underside of the floor sealing in the wrap	**EI 60 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.1.8, Graph 8 for scope				**EI 240 U/C, C/C**
PP(3) – See 3.1.9, Graph 9 for scope				**EI 120 – U/C, C/C**

All services supported with pipe supports at 400 mm from the upper face of the floor.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

A.1.1.2 Plastic pipes in Astro Batt and Coating

Rigid Floors ≥150 mm



Key

1. Plastic Pipe
2. Rigid floor
3. Astro X-Series CE Pipe Wrap UL
4. Astro Batt and Coating
5. Astro Intu Mastic

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.1.1, Graph 1 for scope	≤ 1500 x 1100	Edge – ≥ 0 Penetration Service ≥ 0	Astro X-Series CE Pipe Wrap UL fit into topside and underside of the floor recessed by 5mm. Friction fit Astro Batt and Coating into aperture around Astro X-Series CE Pipe Wrap UL. Astro Intu Mastic applied to topside and underside of the floor sealing in the wrap	**EI 60 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.1.5, Graph 5 for scope				
PP(3) – See 3.1.3, Graph 3 for scope				

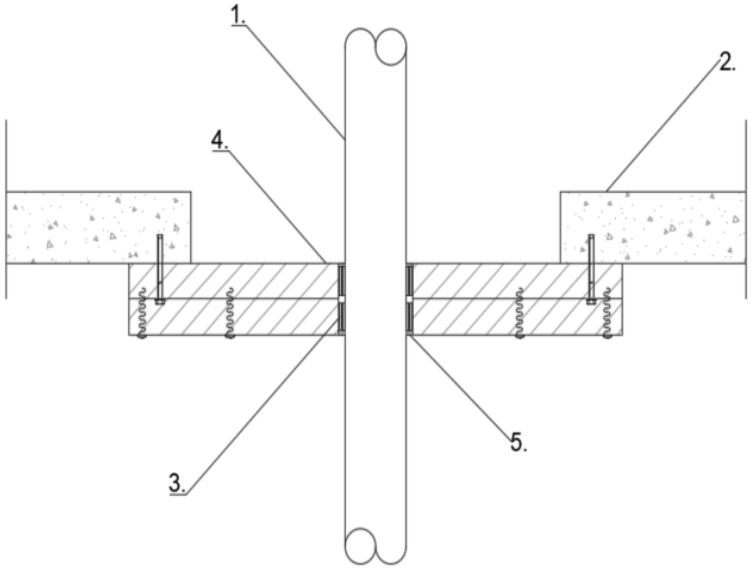
All services supported with pipe supports at 400 mm from the upper face of the floor.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

A.1.2 Rigid floors Minimum Thickness 100 mm

A.1.2.1 Plastic pipes in Astro Batt and Coating

Rigid Floors ≥100 mm



Key

1. Plastic Pipe
2. Rigid floor
3. Astro X-Series CE Pipe Wrap UL
4. Astro Batt and Coating
5. Astro Intu Mastic

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.1.1, Graph 1 for scope	≤ 1300 x 1000	Edge – ≥ 0 Penetration Service ≥ 0	Astro X-Series CE Pipe Wrap UL fit into topside and underside of the floor recessed by 5mm. Pattress fit Astro Batt and Coating on to aperture around Astro X-Series CE Pipe Wrap UL. Astro Intu Mastic applied to topside and underside of the floor sealing in the wrap	**EI 60 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.1.5, Graph 5 for scope				
PP(3) – See 3.1.3, Graph 3 for scope				

All services supported with pipe supports at 400 mm from the upper face of the floor.

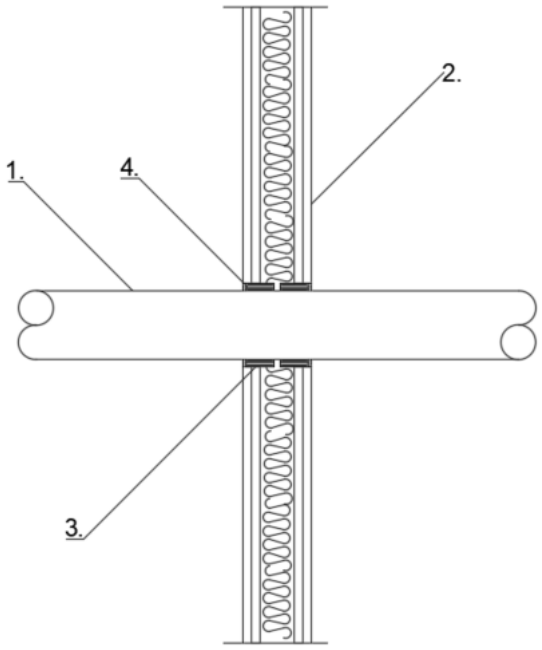
(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

A.2. Walls

A.2.1 Flexible or Rigid Walls Minimum Thickness 100 mm

A.2.1.1 Plastic pipes

Flexible or Rigid Walls ≥100 mm



Key

1. Plastic Pipe
2. Flexible Wall
3. Astro X-Series CE Pipe Wrap UL
4. Astro Intu Mastic

Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.2.1, Graph 10 for scope	As required by dimensions of Astro X-Series CE Pipe Wrap UL	Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5 mm. Astro Intu Mastic applied to each face of the wall sealing in the wrap.	**EI 90 U/C, C/C**
PP(3) – See 3.2.2, Graph 11 for scope				**EI 120 U/C, C/C**
PP(3) – See 3.2.3, Graph 12 for scope				**EI 90 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.2.4, Graph 13 for scope				**E 120, EI 90 – U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.2.5, Graph 14 for scope				**EI 90 – U/C, C/C**

All services supported with pipe supports at at 400 mm from both faces of the wall.

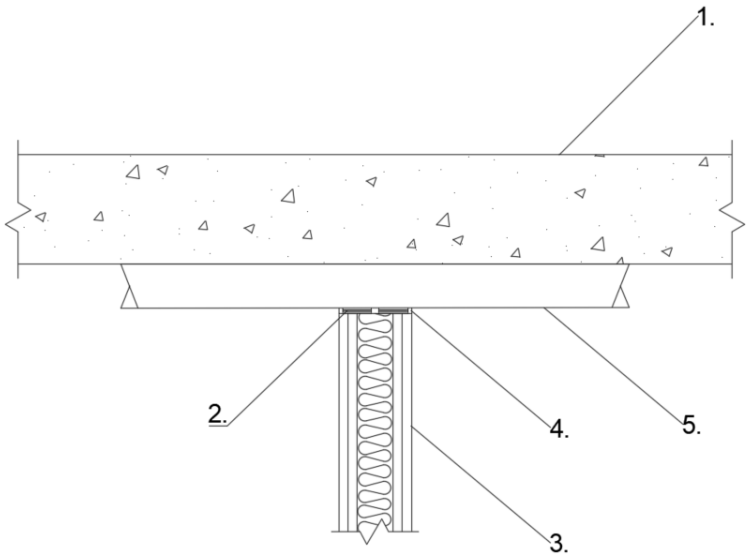
(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1

(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1

(3) PP pipe according to EN 1852-1: 2009

A.2.1.2 Plastic duct against soffit

Flexible or Rigid Walls ≥100 mm



Key

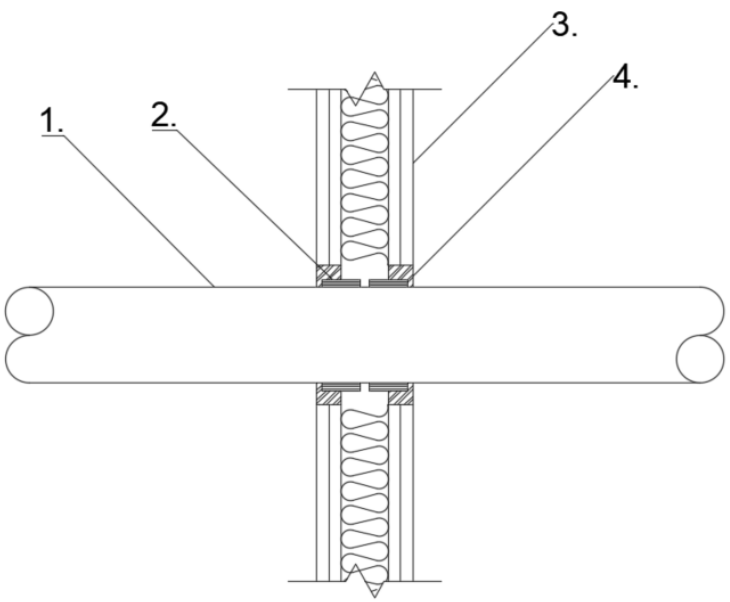
1. Concrete Soffit
2. Astro X-Series CE Pipe Wrap UL
3. Flexible Wall
4. Astro Intu Mastic
5. Plastic Duct

Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
220 mm x 90 mm, 2 mm wall thickness PVC duct	As required by dimensions of Astro X-Series CE Pipe Wrap UL	Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fitted around the sides and bottom of the duct within the partition (3 sides in total) recessed by 5 mm. Astro Intu Mastic applied to both sides of the wall sealing in the wrap	**EI 60 U/C, C/C**

All services supported with pipe supports at 400 mm from both faces of the wall.

A.2.1.3 Plastic pipes in Astro Intu Mastic

Flexible or Rigid Walls ≥100 mm



Key

1. Plastic Pipe
2. Astro X-Series CE Pipe Wrap UL
3. Flexible Wall
4. Astro Intu Mastic

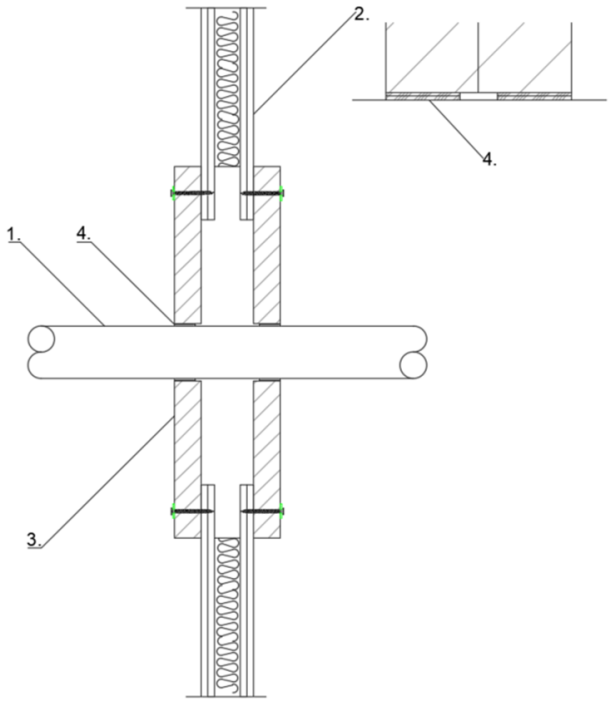
Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.2.6, Graph 15 for scope	As required by dimensions of Astro X-Series CE Pipe Wrap UL + ≥ 22.5 mm	Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5 mm. Astro Intu Mastic applied to both sides of the wall sealing in the wrap 25 mm depth above Astro X-Series CE Pipe Wrap UL	**EI 90 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.2.4, Graph 13 for scope				
PP(3) – See 3.2.2, Graph 11 for scope				

All services supported with pipe supports at at 400 mm from both faces of the wall.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

A.2.1.4 Plastic pipes in Astro Batt and Coating

Flexible or Rigid Walls ≥100 mm Insulated or uninsulated, lined, or unlined



Key

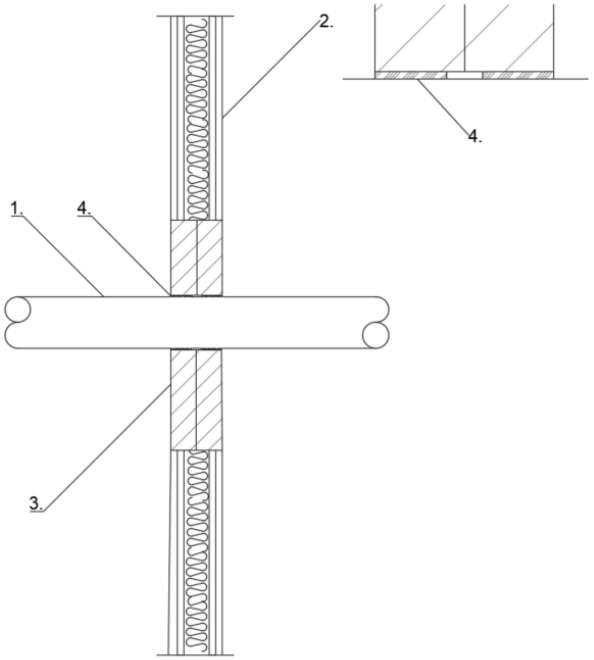
1. Plastic Pipe
2. Flexible Wall
3. Astro Batt and Coating
4. Astro X-Series CE Pipe Wrap UL

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C(1) – See 3.2.1, Graph 10 for scope	≤ 1200 x 750	Edge – 50 Penetration Service ≥ 0	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5mm. Astro Batt and Coating pattress fit using Astro Intu Mastic between joints. Fixed to the substrate using 6 x 80 steel screws and steel washers, 100 mm overlap onto substrate.	**EI 60 U/C, C/C**
PE, ABS, SAN-PVC(2) – See 3.2.5, Graph 14 for scope				
PP(3) – See 3.2.3, Graph 12 for scope				

All services supported with pipe supports at at 400 mm from both faces of the wall.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

Flexible or Rigid Walls ≥100 mm Insulated, unlined, or lined



Key

1. Plastic Pipe
2. Flexible Wall
3. Astro Batt and Coating
4. Astro X-Series CE Pipe Wrap UL

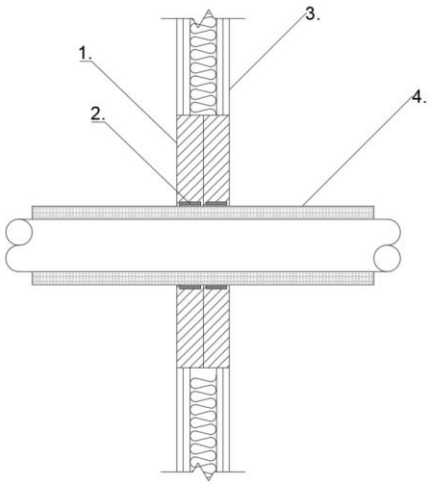
Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C[1] – See 3.2.6, Graph 15 for scope	≤ 1200 x 730	Edge – 100 Penetration Service ≥ 0	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5mm. Two 50 mm back-to-back Astro Batt and Coating friction fit using Astro Intu Mastic between joints.	**EI 90 U/C, C/C**
PE, ABS, SAN-PVC[2] – See 3.2.4, Graph 13 for scope				
PP[3] – See 3.2.2, Graph 11 for scope				
PVC-U, PVC-C[1] – See 3.2.6, Graph 15 for scope	≤ 2600 x 2600			**EI 60 U/C, C/C**
PE, ABS, SAN-PVC[2] – See 3.2.4, Graph 13 for scope				
PP[3] – See 3.2.2, Graph 11 for scope				

All services supported with pipe supports at at 400 mm from both faces of the wall.

[1] PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
[2] PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
[3] PP pipe according to EN 1852-1: 2009

A.2.1.5 Insulated pipes in Astro Batt and Coating

Flexible or Rigid Walls ≥100 mm Insulated, lined, or unlined



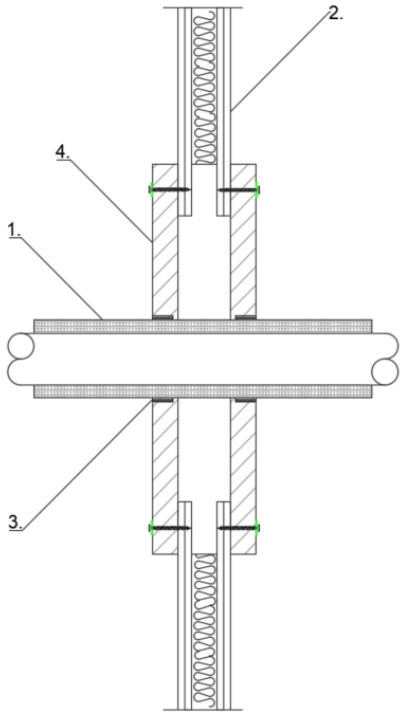
Key

1. Astro Batt and Coating
2. Astro X-Series CE Pipe Wrap UL
3. Flexible Wall
4. Insulated Metallic Pipe

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
Single copper or steel pipe 42 - 159 mm diameter and 1.2 - 14.2 mm wall with Continuous Sustained Elastomeric insulation 13 – 25 mm thick – See 3.2.7, Graph 16 for scope	≤ 2600 x 2600	Edge – ≥ 50 Penetration Service ≥ 50	2 Layers of 40 mm wide Astro X-Series CE Pipe Wrap UL around the penetration service within two 50 mm back-to-back Astro Batt and Coating friction fit using Astro Intu Mastic between joints.	**EI 60 - C/U, C/C**
Single copper or steel pipe 42 mm diameter and and 1.2 mm wall with Continuous Sustained Elastomeric insulation 13 – 25 mm thick	≤ 750 x 1200			**E 120, EI 90 - C/U, C/C**
Single copper or steel pipe 42 – 108 mm diameter and 1.2 - 14.2 mm wall with sustained/continuous Phenolic Foam insulation 25 – 40 mm thick	≤ 2600 x 2600			**EI 60 - C/U, C/C**
	≤ 750 x 1200			**E 120, EI 60 - C/U, C/C**
Single copper or steel pipe 42 mm diameter and 1.2 mm wall with with Continuous Sustained Phenolic Foam insulation 25 – 40 mm thick	≤ 750 x 1200			**E 120, EI 90 - C/U, C/C**

All services supported with pipe supports at at 400 mm from both faces of the wall.

Flexible or Rigid Walls ≥100 mm Insulated or uninsulated, unlined or lined



Key

1. Insulated Metallic Pipe
2. Flexible Wall
3. Astro X-Series CE Pipe Wrap UL
4. Astro Batt and Coating

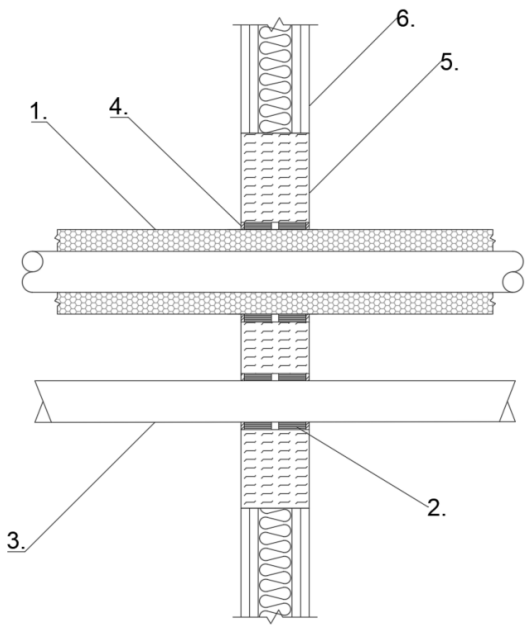
Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
Single copper or steel pipe 42 - 159 mm diameter and 1.2 - 14.2 mm wall with Continuous Sustained Elastomeric foam insulation 13 – 25 mm thick – See 3.2.7, Graph 16 for scope	≤ 750 x 1200	Edge – ≥ 50 Penetration Service ≥ 50	2 Layers of 40 mm wide Astro X-Series CE Pipe Wrap UL around the penetration service within two pattress fit (surface mount) Astro Batt and Coating using Astro Intu Mastic between joints.	**E 120, EI 60 - C/U, C/C**
Single copper or steel pipe 42 mm diameter and 1.2 mm wall with Continuous Sustained Elastomeric foam insulation 13 – 25 mm thick				**EI 120 - C/U, C/C**
Single copper or steel pipe 42 – 159 mm diameter and 1.2 - 14.2 mm wall with Continuous Sustained Elastomeric foam insulation 25 mm thick – See 3.2.7, Graph 16 for scope				**EI 90 - C/U, C/C**

All services supported with pipe supports at at 400 mm from both faces of the wall.

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
Single copper or steel pipe 42 – 108 mm diameter and 1.2 – 14.2 mm wall with Continuous Sustained Phenolic Foam insulation 25 – 40 mm thick	≤ 750 x 1200	Edge – ≥ 50 Penetration Service ≥ 50	2 Layers of 40 mm wide Astro X-Series CE Pipe Wrap UL around the penetration service within two pattress fit (surface mount) Astro Batt and Coating using Astro Intu Mastic between joints.	**EI 90 - C/U, C/C**
Single copper or steel pipe 42 mm diameter and 1.2 mm wall with Continuous Sustained Phenolic Foam insulation 25 – 40 mm thick				**EI 120 - C/U, C/C**
Single copper or steel pipe 42 – 108 mm diameter and 1.2 - 14.2 mm wall with Continuous Sustained Phenolic Foam insulation 40 mm thick				**E 120, EI 90 - C/U, C/C**

A.2.1.6 Plastic pipes, insulated metallic pipes and duct in Flexi Coat System

Flexible or Rigid Walls ≥100 mm Insulated, unlined or lined



Key

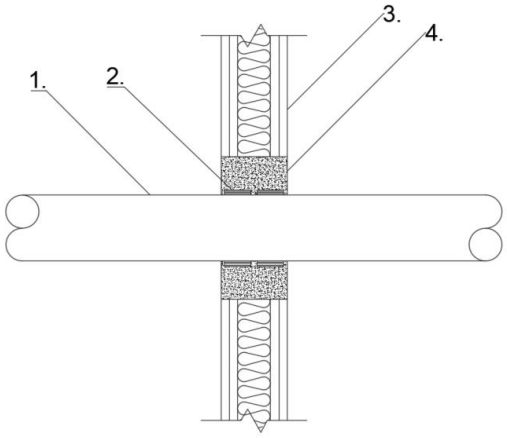
1. Insulated Metallic Pipe
2. Astro X-Series CE Pipe Wrap UL
3. Plastic Duct or Pipe
4. Astro Intu Mastic
5. Flexi Coat
6. Flexible Wall

Penetration Service	Opening Size (mm)	Distances (mm)	Installation	Classification
54 mm diameter by 1.2 mm wall thickness Copper pipe with Continuous Sustained Kooltherm insulation 35 mm thick	≤ 1200 x 730	Edge – ≥ 50 Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5 mm. Flexi Coat board system, made up of horizontally laid strips dry but jointed together to form a barrier, friction fitted within the aperture around the services and coated on both faces using Flexi Coat.	**E 120, EI 90 - C/U, C/C**
76 mm diameter by 1.5 mm wall thickness Copper pipe, with Continuous Sustained elastomeric insulation 40 mm thick		Edge – ≥ 100 Penetration Service ≥ 100		**E 120, EI 90 - C/C**
220 mm by 90 mm PVC plastic vent duct		Edge – ≥ 0 Penetration Service ≥ 100		**E 120, EI 90 - C/C**
PVC-U, PVC-C – See 3.2.6, Graph 15 for scope PE, ABS, SAN-PVC – See 3.2.4, Graph 13 for scope PP – See 3.2.2, Graph 11 for scope		Edge – ≥ 70 Penetration Service ≥ 0		**EI 120 - C/U, C/C**

All services supported with pipe supports at at 400 mm from both faces of the wall.

A.2.1.7 Plastic pipes in Astro HS Compound

Flexible or Rigid Walls ≥100 mm



Key

1. Plastic Pipe
2. Astro X-Series CE Pipe Wrap UL
3. Flexible Wall
4. Astro HS Compound

Penetration Service	Annular Space (mm)	Distances (mm)	Installation	Classification
PVC-U, PVC-C[(1)] – See 3.2.6, Graph 15 for scope	As required by dimensions of Astro X-Series CE Pipe Wrap UL + ≥ 57.5 mm	Penetration Service ≥ 100	Astro X-Series CE Pipe Wrap UL fit into both sides of the wall recessed by 5 mm. Astro HS Compound applied to both sides of the wall sealing in the wrap, full depth of wall	**EI 90 U/C, C/C**
PE, ABS, SAN-PVC[(2)] – See 3.2.4, Graph 13 for scope				
PP[(3)] – See 3.2.2, Graph 11 for scope				
125 mm diameter by 3.1 mm wall thickness PE pipe	295 x 215	Edge – 10 Penetration Service ≥ 0		
125 mm diameter by 7.4 mm wall thickness PVC pipe				
50 mm diameter by 2 mm wall thickness PP pipe				

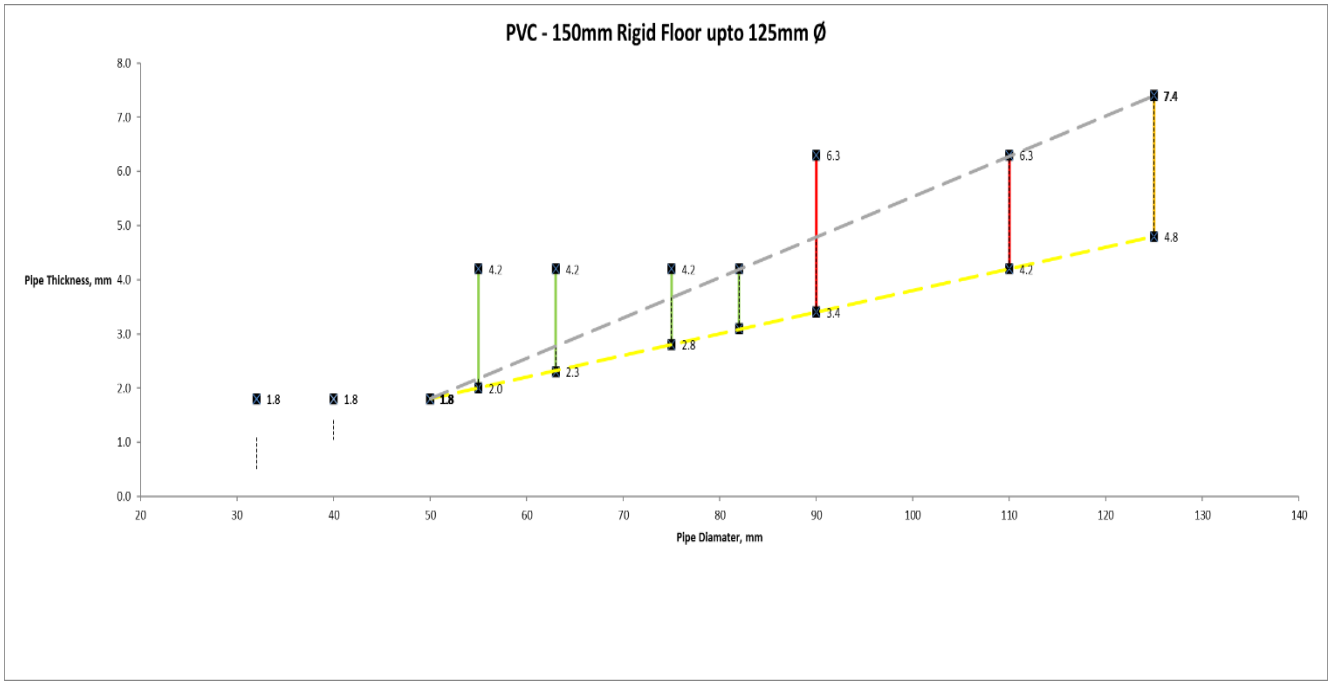
All services supported with pipe supports at at 400 mm from both faces of the wall.

(1) PVC-U pipe according to EN 1329-1, EN 1452-1 and EN 1453-1 and PVC-C according to EN 1566-1
(2) PE pipe according to EN 1519-1, EN 12201-2 and EN 12006-1, ABS according to EN 1455-1 and pipes made from SAN+PVC according to EN 1565-1
(3) PP pipe according to EN 1852-1: 2009

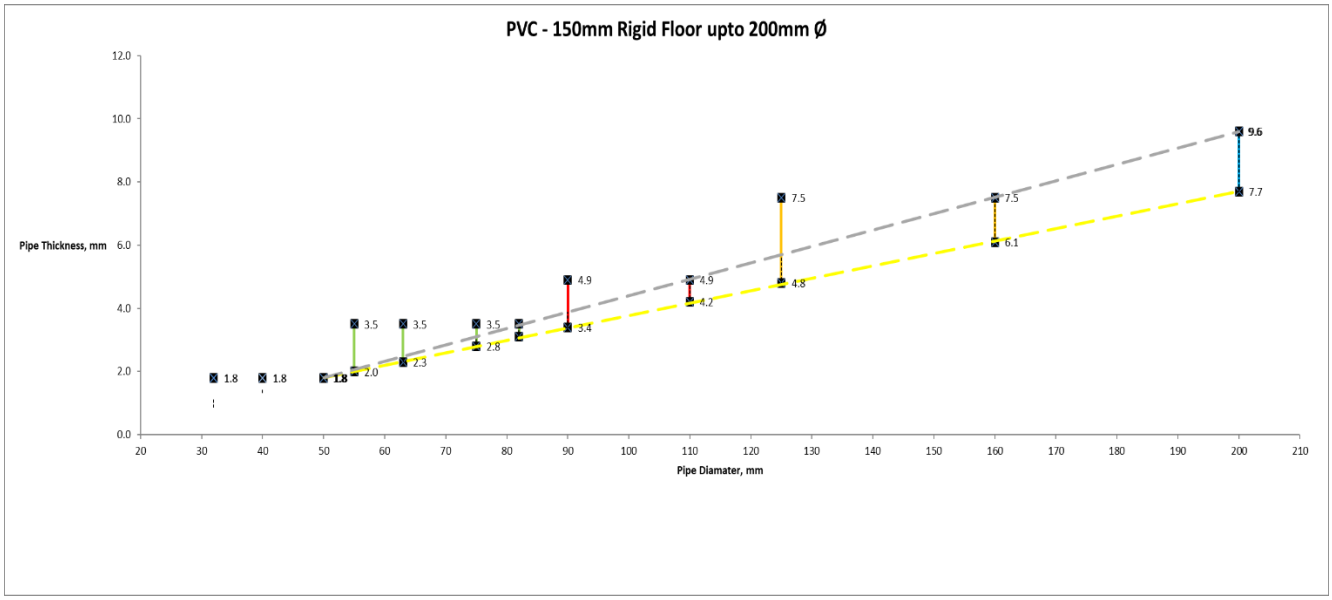
A.3. Scope and Usage

A.3.1 Floor

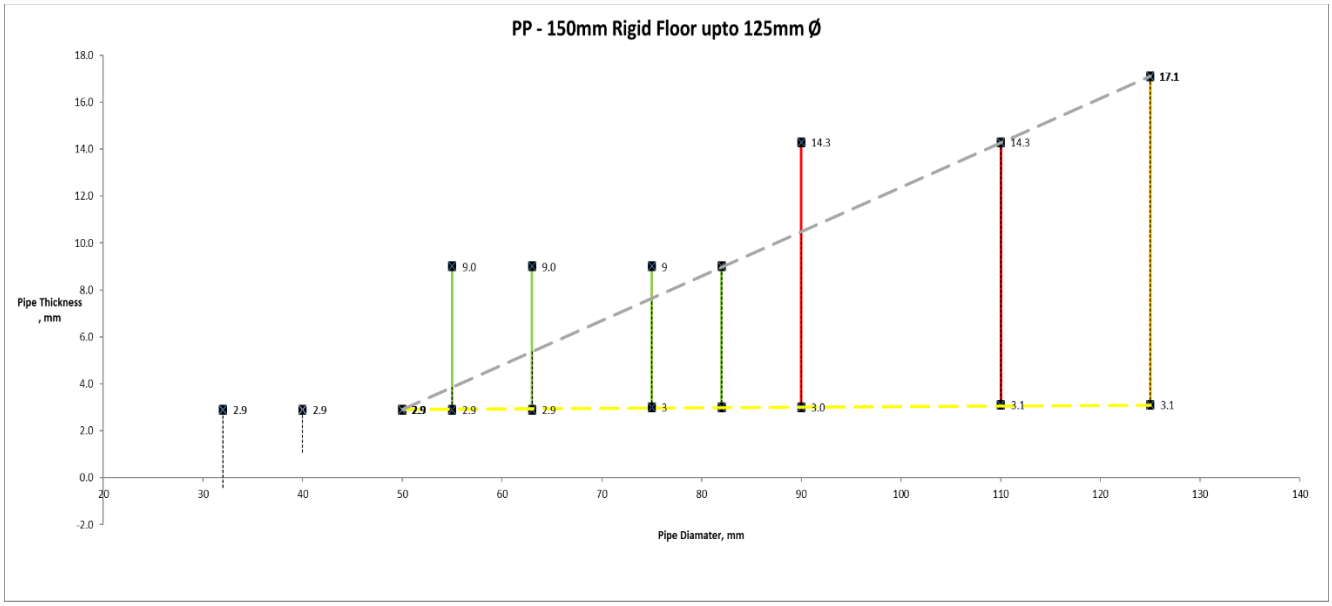
A.3.1.1 Graph 1



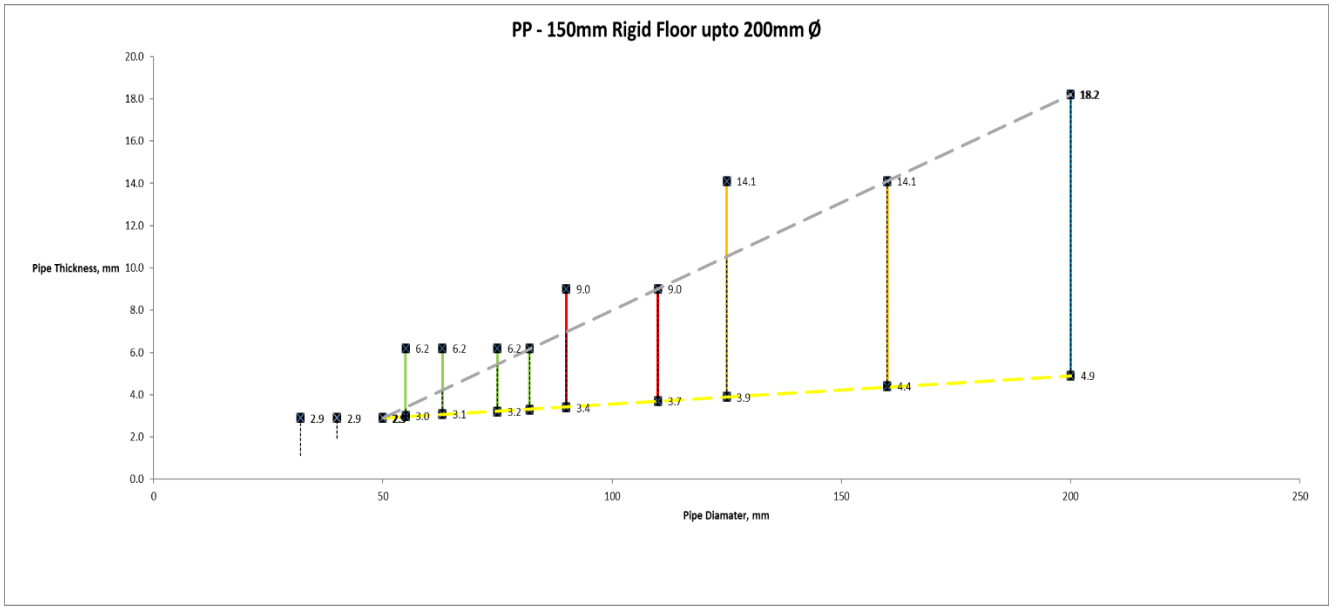
A.3.1.2 Graph 2



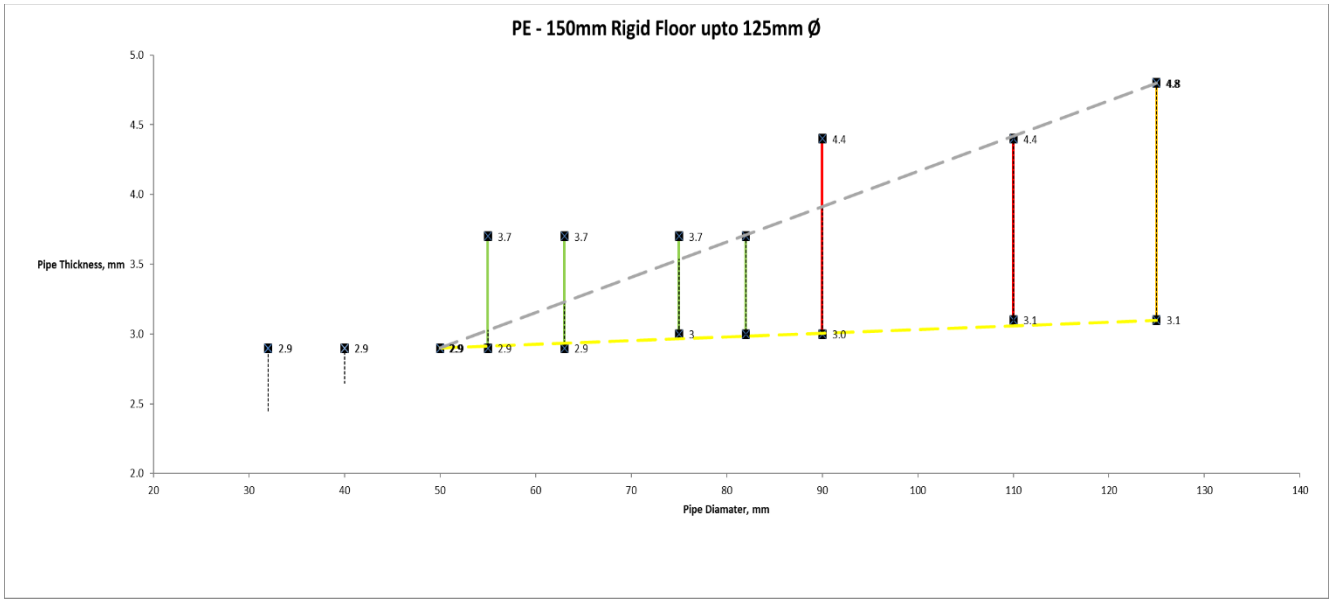
A.3.1.3 Graph 3



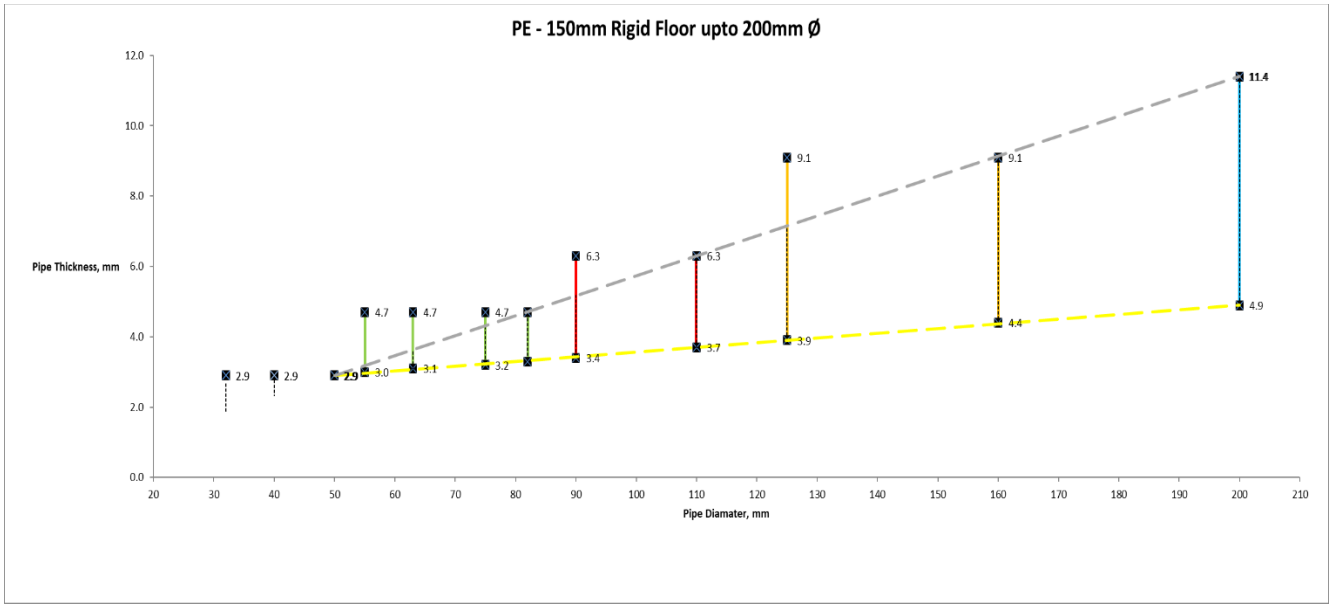
A.3.1.4 Graph 4



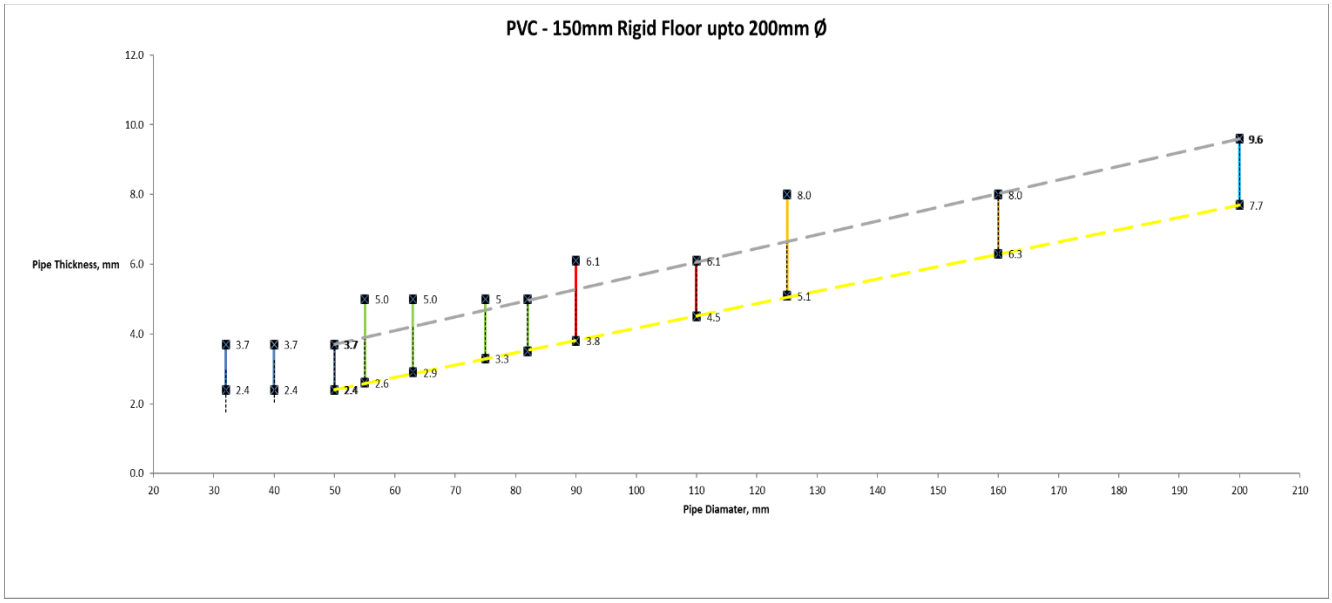
A.3.1.5 Graph 5



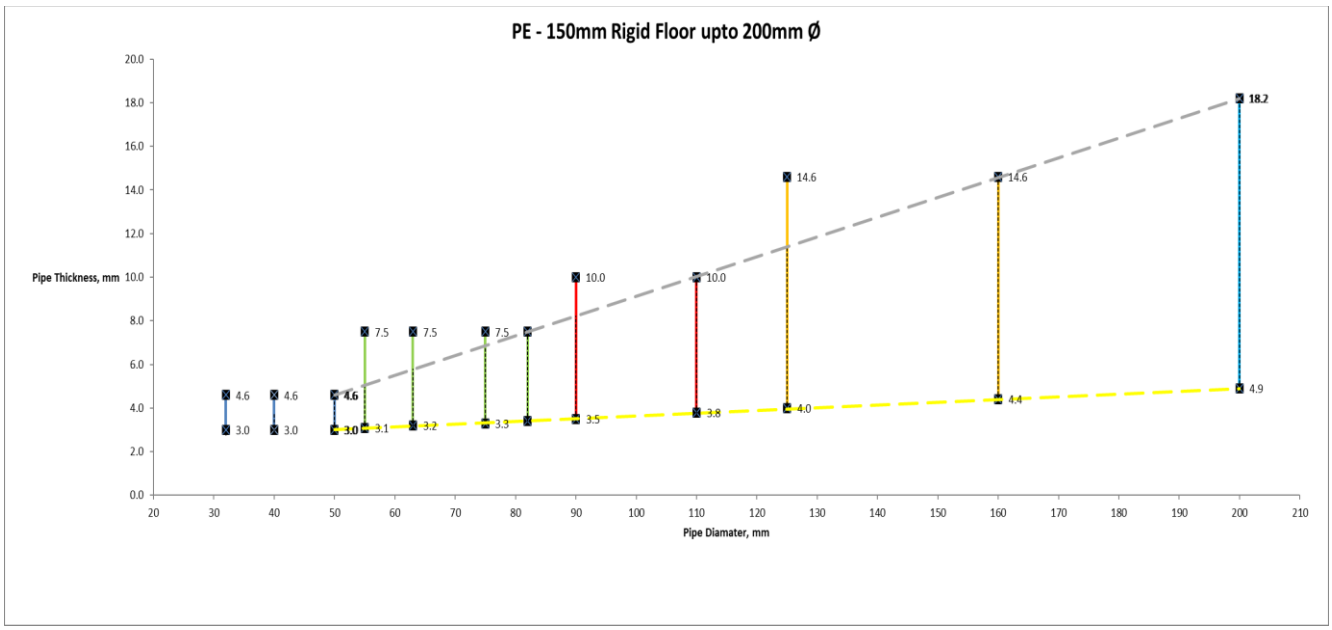
A.3.1.6 Graph 6



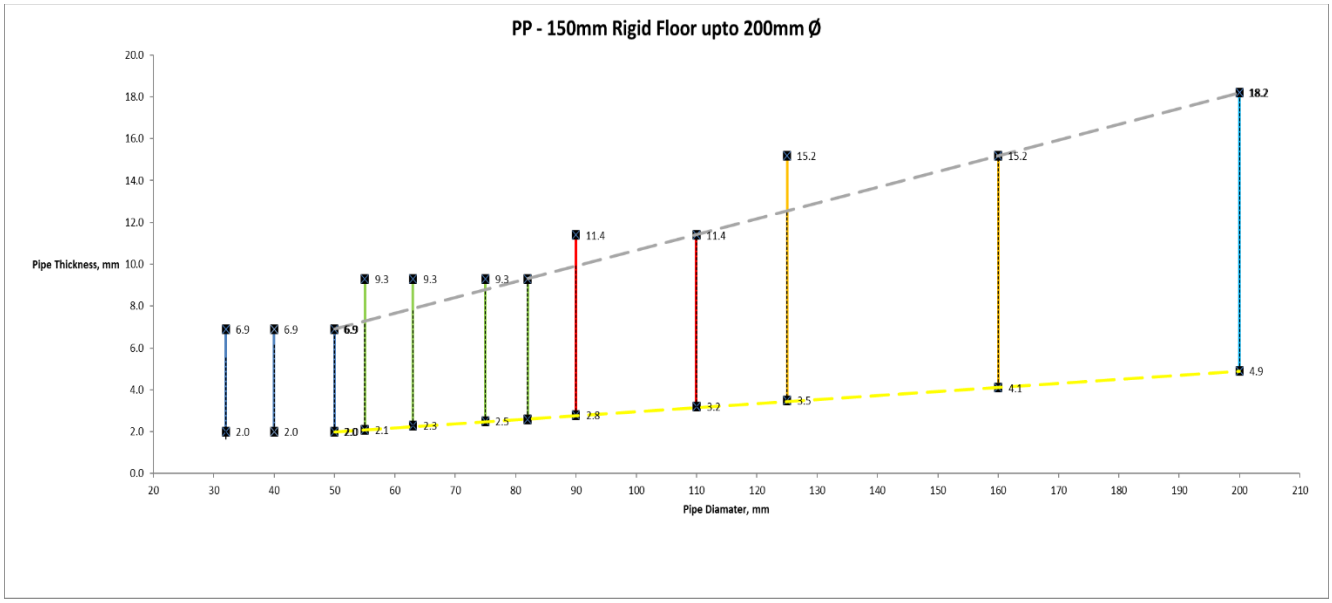
A.3.1.7 Graph 7



A.3.1.8 Graph 8

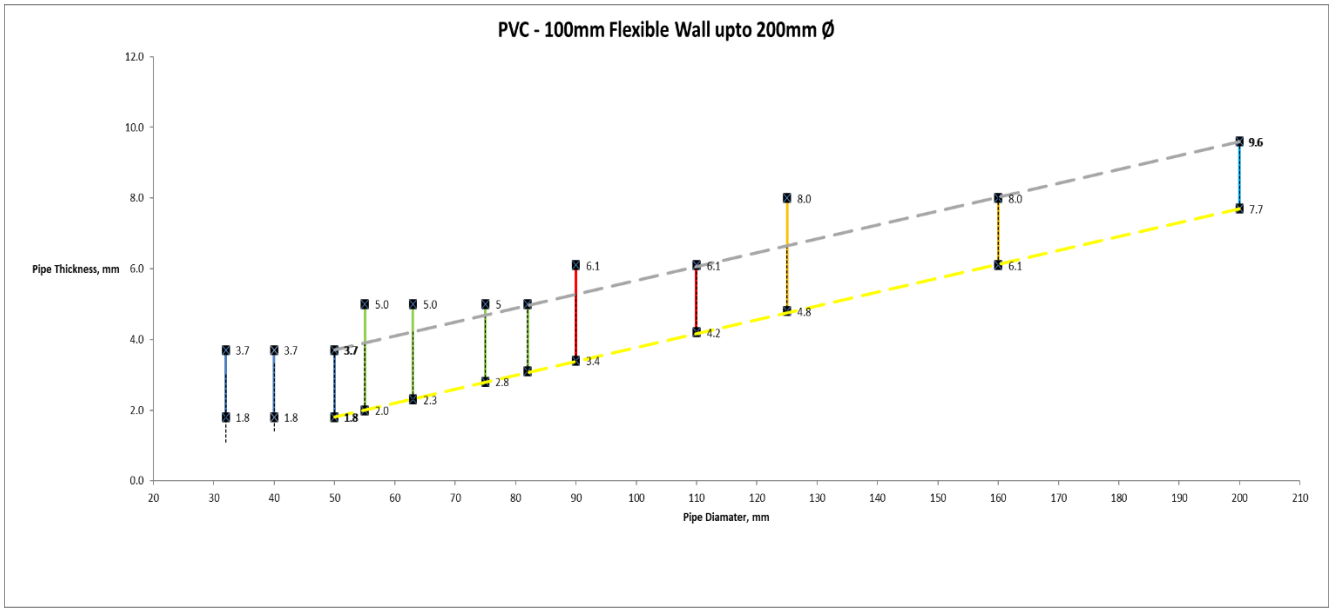


A.3.1.9 Graph 9

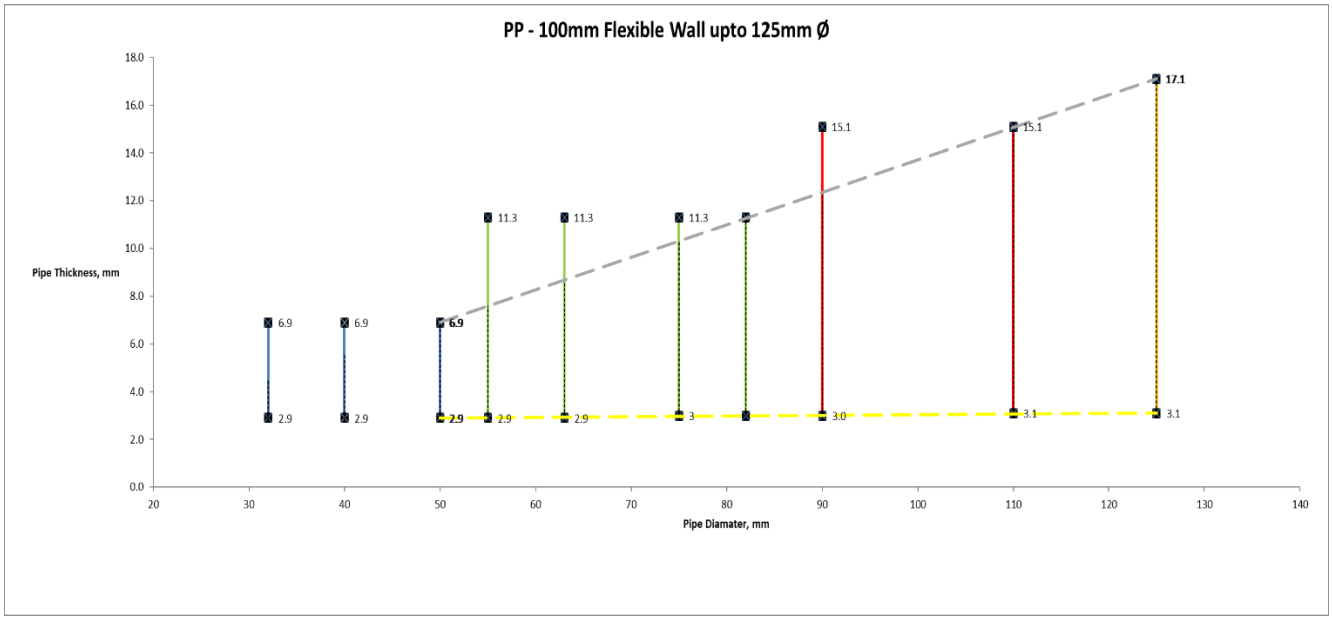

PP - 150mm Rigid Floor upto 200mm Ø
Pipe Thickness, mm
Pipe Diamater, mm
20.0
18.0
16.0
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190
200
210
6.9
6.9
6.9
2.0
2.0
2.0
9.3
9.3
2.1
2.3
9.3
9.3
2.5
2.8
11.4
11.4
3.2
15.2
3.5
15.2
4.1
18.2
4.9

A.3.2 Wall

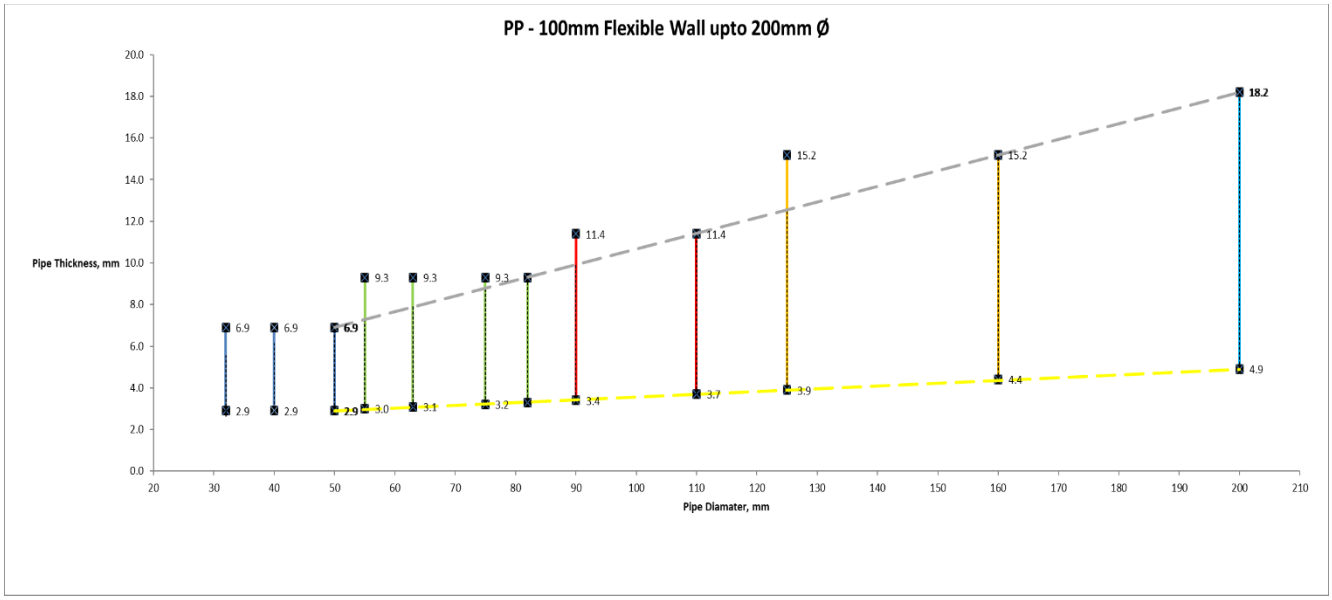
A.3.2.1 Graph 10



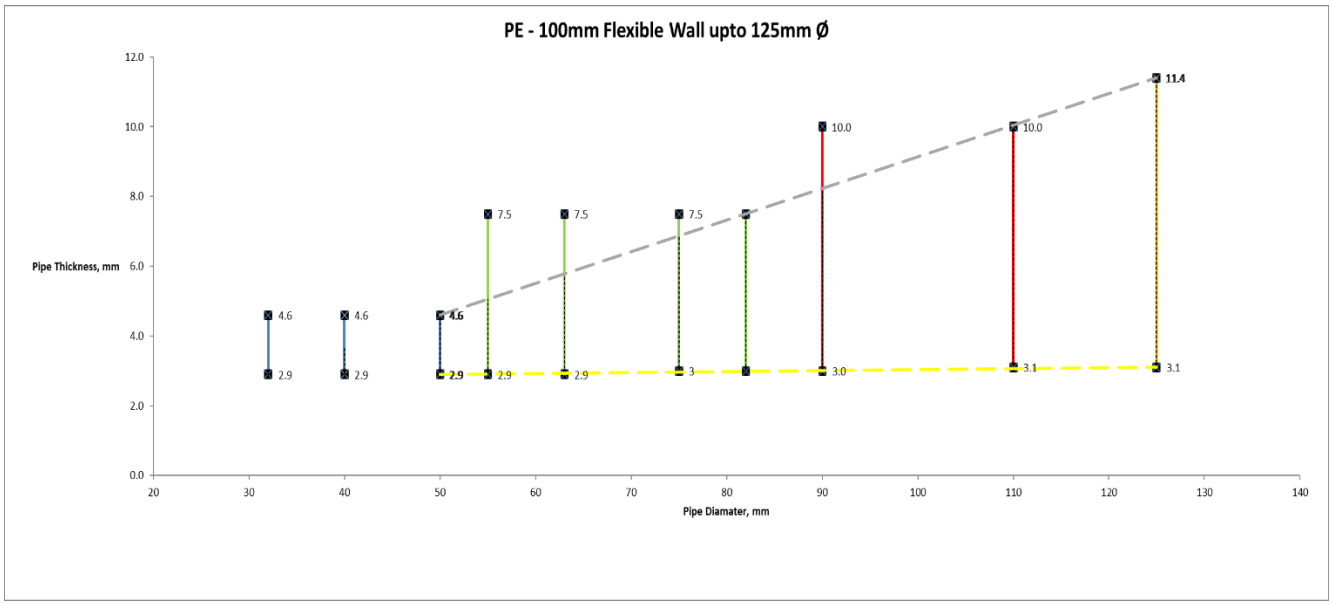
A.3.2.2 Graph 11



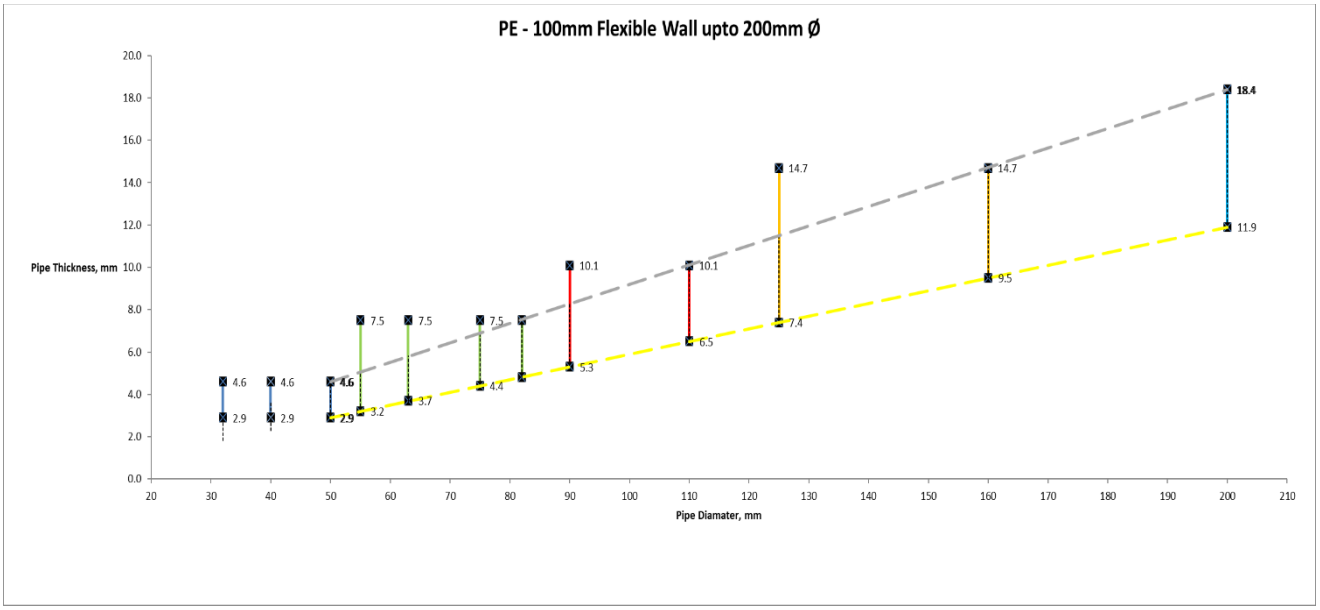
A.3.2.3 Graph 12



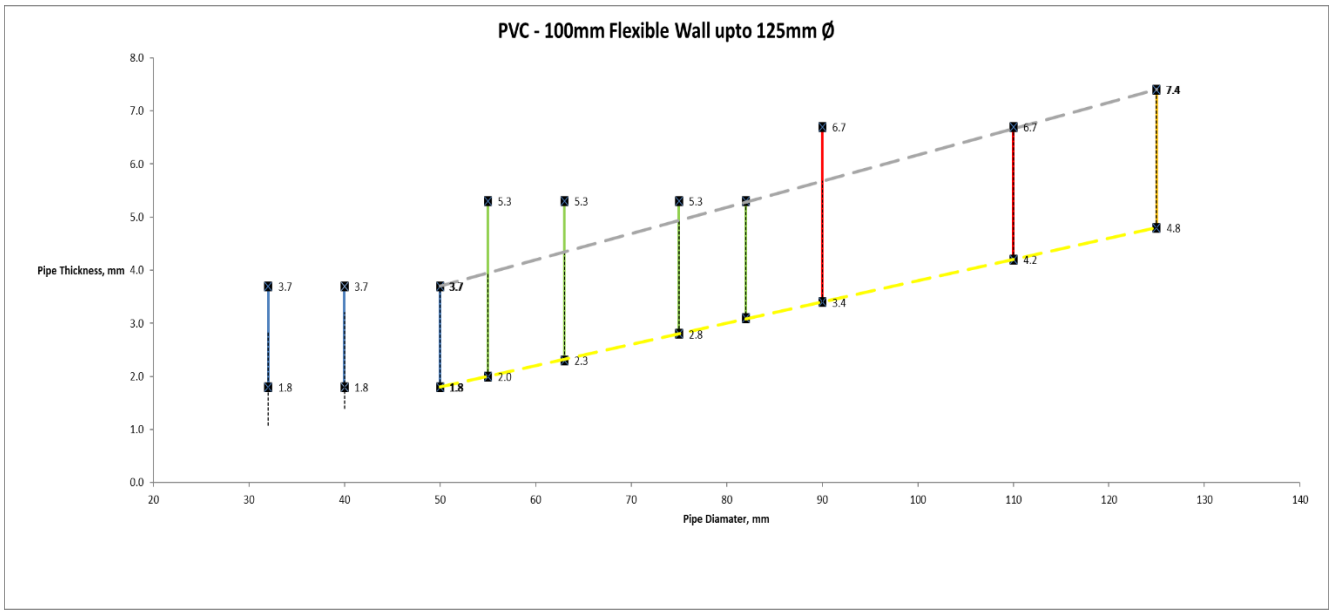
A.3.2.4 Graph 13



A.3.2.5 Graph 14



A.3.2.6 Graph 15



A.3.2.7 Graph 16

