UL INTERNATIONAL (UK) LTD
Kingsland Business Park,
Unit 1-3 Horizon,
Wade Rd,
Basingstoke RG24 8AH,
United Kingdom

appointed according to Article 29 of Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020

UK Technical Assessment

0843-UKTA-24/0040 of 30/09/2024

Technical Assessment Body Issuing the UKTA:	UL International (UK) Ltd
Trade name of the construction product	Astro Batt
Product family to which the construction product belongs	Fire Stopping and Fire Sealing Products – Penetration Seals
Manufacturer	Astroflame Fireseals Ltd Unit 8, The I.O. Centre Stephenson Road Segensworth Fareham Hampshire PO15 5RU
Manufacturing plant(s)	A/008
This UK Technical Assessment contains	157 pages including 1 Annex which forms an integral part of this assessment.
This UK Technical Assessment* is issued, on the basis of	EAD 350454-00-1104, September 2017

Translations of this UK Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this UK Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

*** in accordance with Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020**

Table Of Contents

1 TECHNICAL DESCRIPTION OF THE PRODUCT 3
2 SPECIFICATION OF THE INTENDED USES OF THE PRODUCT IN ACCORDANCE WITH THE APPLICABLE UK ASSESSMENT DOCUMENT (PRE-EXIT EUROPEAN ASSESSMENT DOCUMENT): EAD 350454-00-1104: 2017 3
3 PERFORMANCE OF THE PRODUCT AND REFERENCES TO THE METHODS USED FOR ITS ASSESSMENT 5
4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE 6
5 TECHNICAL DETAILS NECESSARY FOR THE IMPLEMENTATION OF THE AVCP SYSTEM, AS PROVIDED FOR IN THE APPLICABLE EAD 6
6 ISSUED ON: 7

ANNEX A – RESISTANCE TO FIRE CLASSIFICATION – ASTRO BATT 8

RIGID WALLS MINIMUM THICKNESS 70MM 8

SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES 8
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 9
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES 10
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 11

RIGID WALLS MINIMUM THICKNESS 75MM 12

SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CABLE TRUNKING 12
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CABLE TRUNKING 13

RIGID WALLS MINIMUM THICKNESS 100MM 17

DOUBLE LAYER ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 17

MAX APERTURE 2600MM WIDE X 2600MM HIGH 17

DOUBLE LAYER ASTRO BATT 50MM, INSULATED PLASTIC PIPES 40
SINGLE LAYER PATRESS, ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 42

RIGID WALLS MINIMUM THICKNESS 150MM 59

DOUBLE LAYER, ASTRO BATT 50MM, ELECTRICAL CABLES 59
SINGLE LAYER, ASTRO BATT 50MM, INSULATED METALLIC PIPES 62
SINGLE LAYER, ASTRO BATT 50MM, PLASTIC PIPES 63
DOUBLE LAYER, ASTRO BATT 50MM, ELECTRICAL CABLES 66
DOUBLE LAYER, ASTRO BATT 50MM, INSULATED METALLIC PIPES 70

FLEXIBLE AND RIGID WALLS MINIMUM THICKNESS 70MM 78

SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES 78
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 79
SINGLE LAYER PATRESS ASTRO BATT 50MM, ELECTRICAL CABLES 80
SINGLE LAYER PATRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 81

FLEXIBLE AND RIGID WALLS MINIMUM THICKNESS 75MM 82

SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CABLE TRUNKING 82
SINGLE LAYER PATTRESS ASTRO BATT 50MM, ELECTRICAL CABLES AND CABLE TRUNKING 83
SINGLE LAYER ASTRO BATT 50MM, PLASTIC PIPES 84

FLEXIBLE AND RIGID WALLS MINIMUM THICKNESS 100MM 87

DOUBLE LAYER ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 87
DOUBLE LAYER ASTRO BATT 50MM, PLASTIC PIPES 104
DOUBLE LAYER ASTRO BATT 50MM, INSULATED PLASTIC PIPES 110
SINGLE LAYER PATRESS, ASTRO BATT 50MM, ELECTRICAL CABLES AND CONDUITS 112
SINGLE LAYER PATRESS, ASTRO BATT 50MM, INSULATED METALLIC PIPES 114

RIGID FLOORS MINIMUM THICKNESS 150MM 131

DOUBLE LAYER, ASTRO BATT 50MM, ELECTRICAL CABLES 131
DOUBLE LAYER, ASTRO BATT 50MM, INSULATED METALLIC PIPES 134
DOUBLE LAYER, ASTRO BATT 50MM, PLASTIC PIPES 135
DOUBLE LAYER, ASTRO BATT 50MM, PATRESS INSTALLED ELECTRICAL CABLES 148
DOUBLE LAYER, ASTRO BATT 50MM, PATTRESS INSTALLED INSULATED METALLIC PIPES 150
DOUBLE LAYER, ASTRO BATT 50MM, PATTRESS INSTALLED PLASTIC PIPES 151
DOUBLE LAYER, ASTRO BATT 50MM, PLASTIC PIPES 154

ANNEX B – AIR PERMEABILITY – ASTRO BATT 157

SPECIFIC PARTS OF THE UK TECHNICAL ASSESSMENT

1 Technical description of the product

1) Astro Batt is a coated mineral wool batt used to reinstate the fire resistance performance of wall constructions where they have been provided with apertures for the penetration of single or multiple services.

2) Astro Batt is supplied coated on both faces. The batt is then cut, and friction fitted into the aperture in the wall.

3) Astro Batt are either 50mm thick and supplied in overall dimensions 1200mm x 600mm with a density of 140kg/m^3 or 60 mm thick and supplied in overall dimensions 1200mm x 600mm with a density of 140kg/m^3 and are coated to one face only.

4) Astro Intu Mastic is required to seal all joints and junctions during the sealing process. Astro Intu Mastic is subject to a separate UKTA referenced 24/0037 & 24/0038.

5) Astro HPE Sealant is required to seal around specific services (See Annex A). Astro HPE Sealant is subject to a separate UKTA referenced 24/0039.

2 Specification of the intended uses of the product in accordance with the applicable UK Assessment Document (Pre-Exit European Assessment Document): EAD 350454-00-1104: 2017

The intended use of Astro Batt is to reinstate the fire resistance performance of rigid and flexible wall constructions where they are penetrated by various cables and metallic pipes.

1) The specific elements of construction that the system Astro Batt may be used to provide a penetration seal in, are as follows:

   Rigid Walls:

   The wall must have a minimum thickness of 150 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m^3.

   The wall must have a minimum thickness of 100 mm and comprise concrete, aerated concrete or masonry, with a minimum density of 650 kg/m^3.

   Flexible Walls:

   The wall must have a minimum thickness of 75 mm and comprise timber or steel studs lined on both faces with minimum 2 layers of 12.5 mm thick, 'Type F' Gypsum boards according to EN 520. In timber stud walls, the cavity must be closed between the penetration seal and the 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.

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

3) The Astro Batt may be used to provide a penetration seal with pipes and cables, and cable trays and ladders (for details see Annex A).

4) The total amount of cross section of services (including insulation) should not exceed 60% of the penetration area.

5) The minimum permitted separation between adjacent seals/apertures is 200 mm.

6) Pipes and cables do not have to be installed singular.

7) The provisions made in this UK Technical Assessment are based on an assumed intended working life of the batts of 25 years, provided that the conditions laid down in the product data sheet for the packaging/transport/storage/installation/use/repair are met.

   The indications given on the intended working life cannot be interpreted as a guarantee given by the producer or the Technical Assessment Body but are to be regarded only as a means for selecting the appropriate products in relation to the expected economically reasonable working life of the works.

8) The use category of the Astro Batt is Type Z_1: Intended for use in internal conditions with humidity equal to or higher than 85% RH excluding temperatures below 0^{o}C, without exposure to rain or UV.

9) Precautions are required to be taken to prevent a person stepping onto a blank horizontal penetration seal or falling against a blank vertical, or sloped, penetration seal.

3 Performance of the product and references to the methods used for its assessment

Product-type: Sealant		Intended use: Penetration Seal
Assessment method	Essential characteristic	Product performance
BWR 2 Safety in case of fire		
EN 13501-1	Reaction to fire	No performance determined
EN 13501-2	Resistance to fire	Annex A
BWR 3 Hygiene, health and environment		
EN 1026	Air permeability	Annex B
EAD 350454-00-1104, Annex C	Water permeability	No performance determined
Declaration of manufacturer & EN 16516	Content, emission and/or release of dangerous substances	Declaration of manufacturer
BWR 4 Safety in use		
EOTA TR 001:2003	Mechanical resistance and stability	No performance determined
EOTA TR 001:2003	Resistance to impact/movement	No performance determined
EOTA TR 001:2003	Adhesion	No performance determined
EAD 350454-00-1104, Clause 2.2.9	Durability	Type Z_1
BWR 5 Protection against noise		
EN 10140-1,2,4,5/ EN ISO 717-1	Airborne sound insulation	Rw (C; Ctr) = 24(-2; -3) dB
BWR 6 Energy economy and heat retention		
EN 12664, EN 12667, EN 12939, EN ISO 8990, EN ISO 6946, EN ISO 14683, EN ISO 10211, EN ISO 10456	Thermal properties	No performance determined
EN ISO 12572, EN 12086, EN ISO 10456	Water vapour permeability	No performance determined

4 ASSESSMENT AND VERIFICATION OF CONSTANCY OF PERFORMANCE (HEREINAFTER AVCP) SYSTEM APPLIED, WITH REFERENCE TO ITS LEGAL BASE

According to the Statutory Instrument 2019 No. 465 – made 5th March 2019 and cited as the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and coming into force on exit day and Statutory Instrument 2020 No. 1359 – made 26th November 2020 and cited as the Construction Products (Amendment etc.) (EU Exit) Regulations 2020 and coming into force immediately before the 2019 Regulations come into force, on the procedure for attesting the conformity of construction products as regards fire stopping, fire sealing and fire protective products, published as 'Pre-Exit' European Assessment Documents, (see https://www.gov.uk/guidance/pre-exit-european-assessment-documents-construction-products), the system of assessment and verification of constancy of performance (see Annex V to Construction Products Regulation 2011 as amended by the Construction Products (Amendment etc.) (EU Exit) Regulations 2019 and the Construction Products (Amendment etc.) (EU Exit) Regulations 2020) given in the following table(s) apply.

Product(s)	Intended use(s)	Level(s) or class(es)	System(s)
Fire stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	Any	1

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

Tasks of the manufacturer:

Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the product is in conformity with this UK Technical Assessment.

The manufacturer may only use initial / raw / constituent materials stated in the technical documentation of this UK Technical Assessment.

The factory production control shall be in accordance with the Control Plan of 18/10/2022 relating to the UK Technical Assessment 0843-UKTA-24/0040 issued on 30/09/2024 which is part of the technical documentation of this UK technical Assessment. The "Control Plan" is laid down in the context of the factory production control system operated by the manufacturer and deposited at UL International (UK) Ltd.

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the Control Plan.

Other tasks of the manufacturer

Additional information

The manufacturer shall provide a technical data sheet and an installation instruction with the following minimum information:

(a) Technical data sheet:

- Field of application:
- Building elements for which the penetration seal is suitable, type and properties of the building elements like minimum thickness, density, and - in case of lightweight constructions – the construction requirements.
- Limits in size, minimum thickness etc. of the penetration seal
- Construction of the penetration seal including the necessary components and additional products (e.g. backfilling material) with clear indication whether they are generic or specific.
- Services which the penetration seal is suitable, type and properties of the services like material, diameter, thickness etc. in case of pipes including insulation materials; necessary/allowed supports/fixings (e.g. pipe trays)

(b) Installation instruction:

- Steps to be followed
- Procedure in case of retrofitting
- Stipulations on maintenance, repair and replacement

6 Issued on:

30th September 2024

Report by:



P. Foster
Project Engineer Associate
Built Environment

Reviewed by:



C. Johnson
Senior Staff Engineer
Built Environment

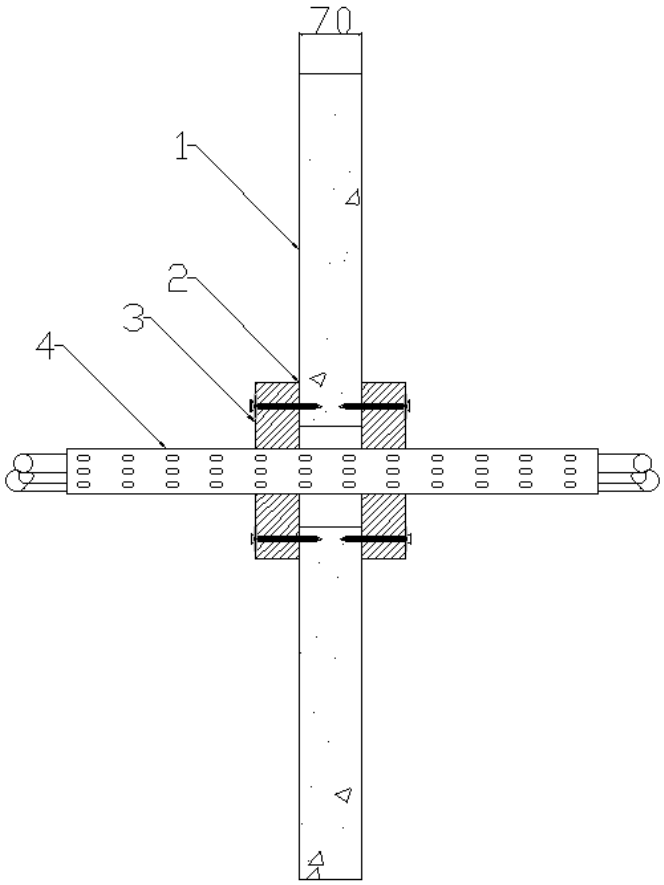
For and on behalf of UL International (UK) Ltd.

ANNEX A – Resistance to Fire Classification – Astro Batt

Rigid Walls Minimum Thickness 70mm

Single Layer Pattress Astro Batt 50mm, Electrical Cables

Max Aperture 730mm Wide x 1200mm High



Key
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

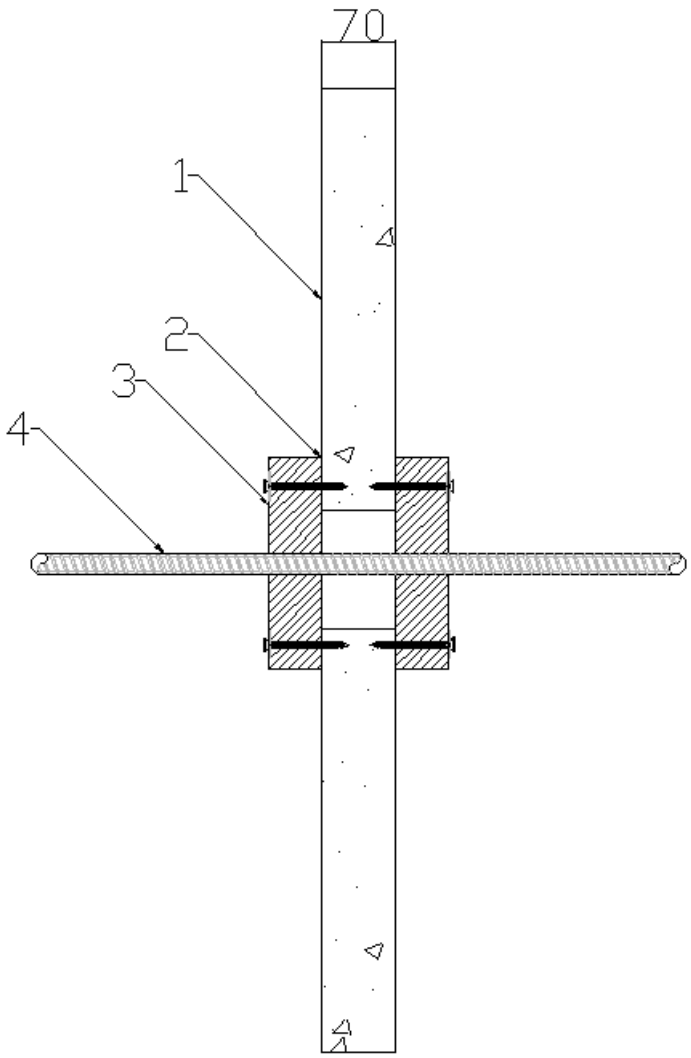
Service(s)	Classification
500mm wide x 60mm deep steel cable basket containing 3 x type 'B' cable and 20 x bundle of telecoms cables	EI 90
500mm wide x 60mm deep steel cable tray containing 1 x type 'B' cable, 3 x type 'A1' cable, 3 x type 'A2' cable, and 3 x type 'A3' cable	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Conduits

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Max Aperture 730mm Wide x 1200mm High



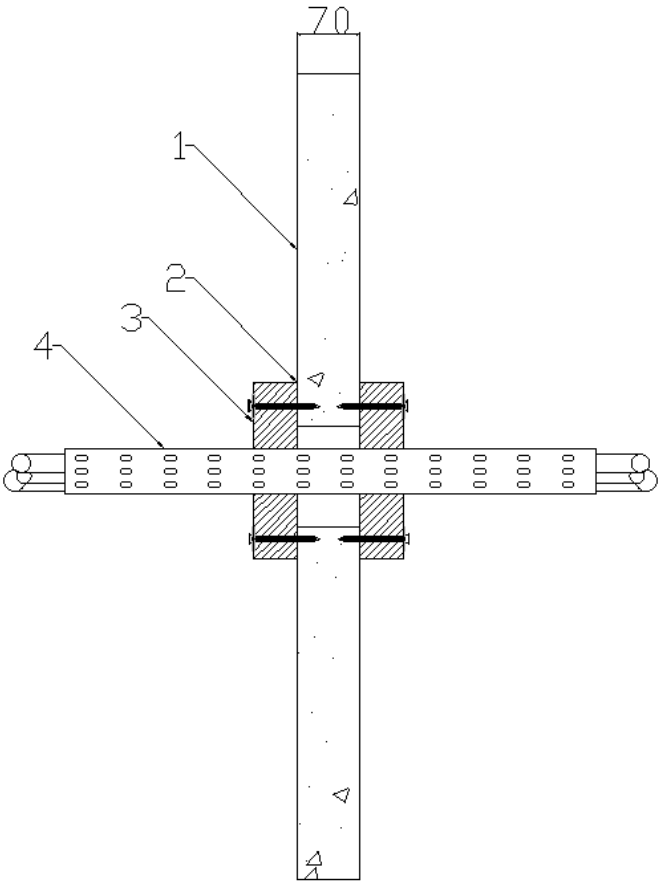
Key

1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

Service(s)	Classification
20mm dia Adaptaflex SPL20 flexible conduit	EI 90
20mm dia Kopex KSU 316 stainless steel flexible conduit	
150mm wide x 60mm deep steel cable tray containing 4 x FP200 Gold (Firealarm cable 7mm dia red) Cables	E 90 EI 60

Single Layer Pattress Astro Batt 50mm, Electrical Cables

Max Aperture 2600mm Wide x 2600mm High



Key

1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

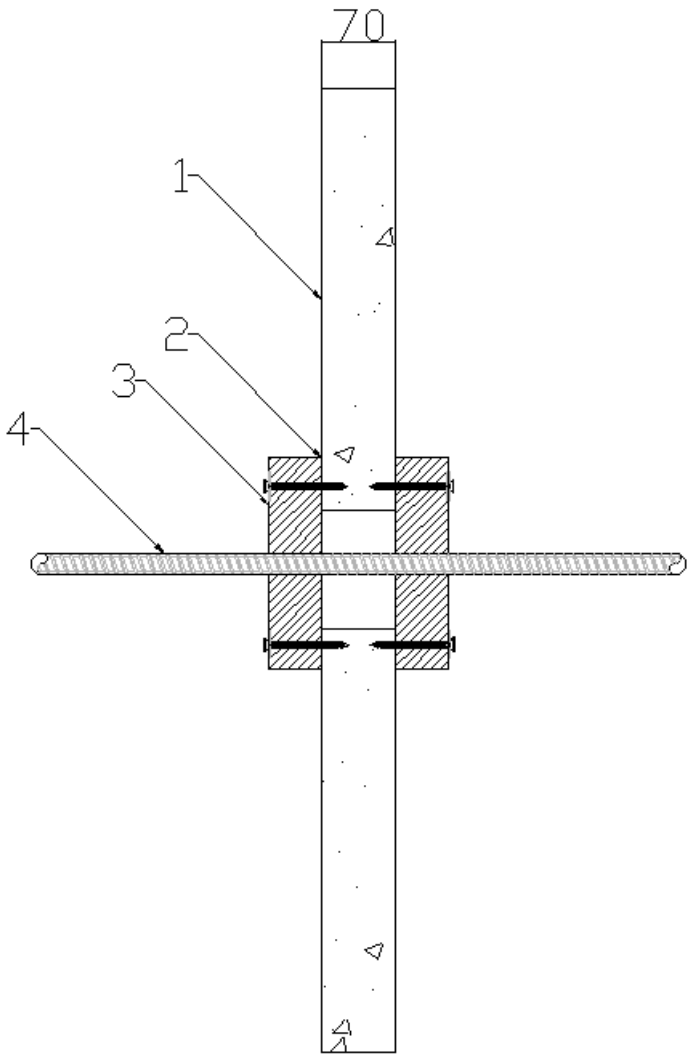
Service(s)	Classification
500mm wide x 60mm deep steel cable basket containing 3 x type ‘B’ cable and 20 x bundle of telecoms cables	EI 60
500mm wide x 60mm deep steel cable tray containing 1 x type ‘B’ cable, 3 x type ‘A1’ cable, 3 x type ‘A2’ cable, and 3 x type ‘A3’ cable	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Conduits

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Max Aperture 2600mm Wide x 2600mm High



Key

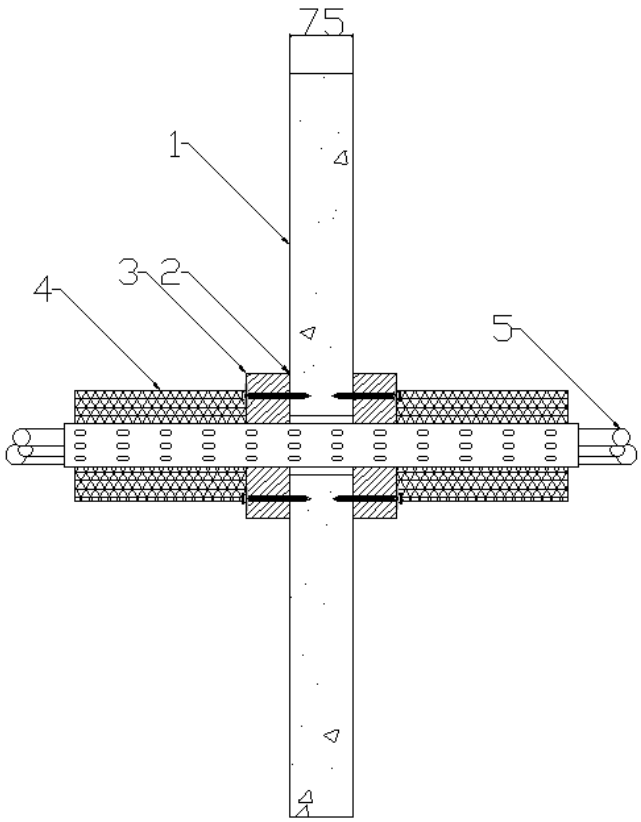
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

Service(s)	Classification
20mm dia Adaptaflex SPL20 flexible conduit	EI 60
20mm dia Kopex KSU 316 stainless steel flexible conduit	
150mm wide x 60mm deep steel cable tray containing 4 x FP200 Gold (Firealarm cable 7mm dia red) Cables	EI 60

Rigid Walls Minimum Thickness 75mm

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Cable Trunking

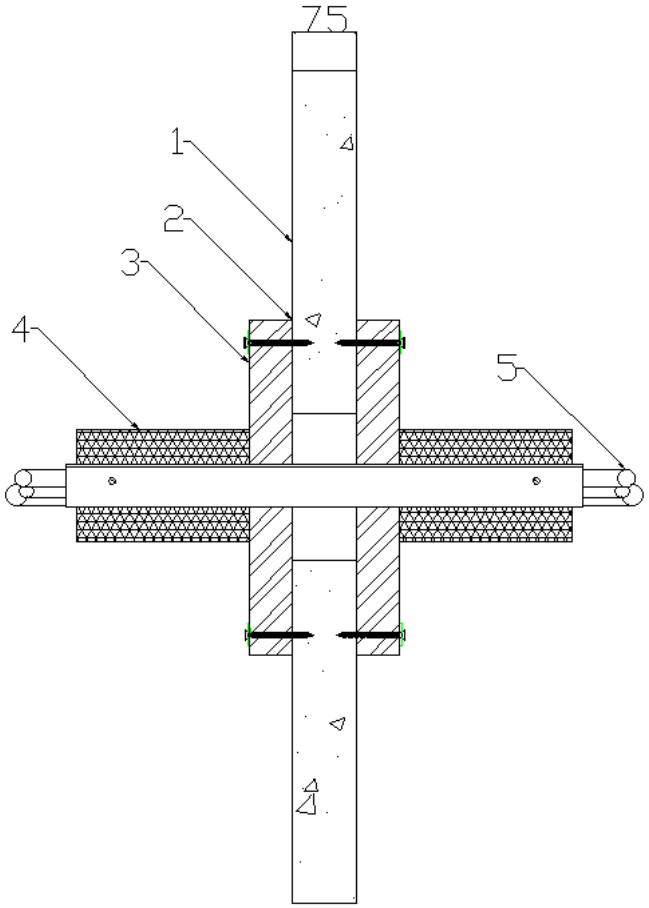
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings

<table>
<tr><td colspan="2">Max Aperture 2600mm Wide x 2600mm High</td></tr>
<tr><td>
</td><td>Key
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Insulation
5. Service Penetrations</td></tr>
<tr><td>Service(s)</td><td>Classification</td></tr>
<tr><td>50mm x 50mm Insulated steel cable trunking, Stone Wool 40mm thick, 45kg/m^3 (LI 400mm). Astro X Series Pillow tightly fitted around the cables in the section of trunking within the depth of the partition</td><td>EI 60 U/U</td></tr>
<tr><td>Cables 1xA1, 1xA2, 1xA3</td><td rowspan="4">EI 60</td></tr>
<tr><td>Cables 1xA1</td></tr>
<tr><td>Cables 1xA2</td></tr>
<tr><td>Cables 1xA3</td></tr>
</table>

installed at max 300mm centres

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Cable Trunking

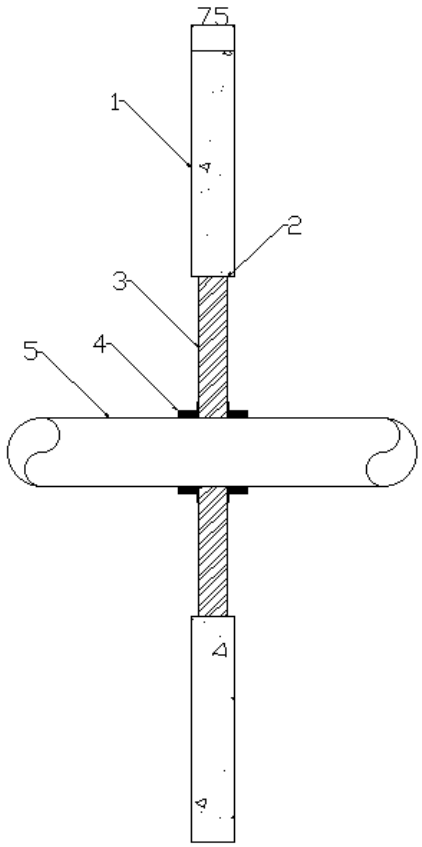
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

<table>
<tr><td colspan="2">Max Aperture 2600mm Wide x 2600mm High</td></tr>
<tr><td>
</td><td>Key
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Insulation
5. Service Penetration</td></tr>
<tr><td>Service(s)</td><td>Classification</td></tr>
<tr><td>150mm x 150mm Insulated steel cable trunking, Stone Wool 40mm thick, 45kg/m^3 (LI 400mm). Astro X Series Pillow tightly fitted around the cables in the section of trunking within the depth of the partition</td><td>EI 60 U/U</td></tr>
<tr><td>Cables 1xB1, 1xC1, 1xG1, 1xG2</td><td rowspan="4">EI 60</td></tr>
<tr><td>Cables 1xB1</td></tr>
<tr><td>Cables 1xC1</td></tr>
<tr><td>Unsheathed electrical cables 0-24mm dia</td></tr>
</table>

Single Layer Astro Batt 50mm, Plastic Pipes

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



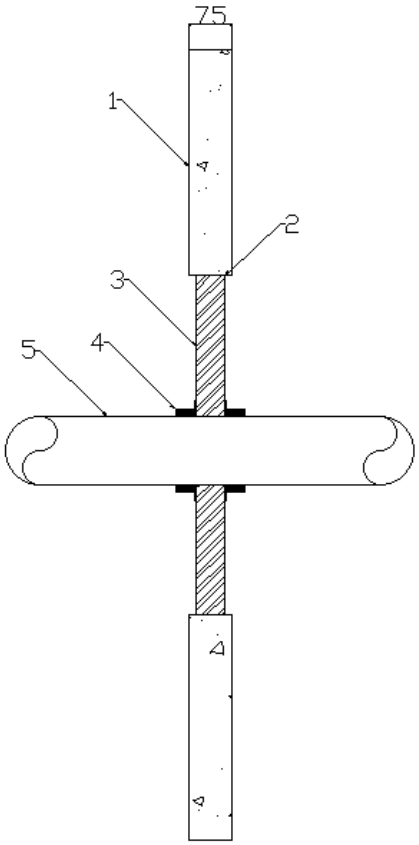
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Service Penetration

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 60 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



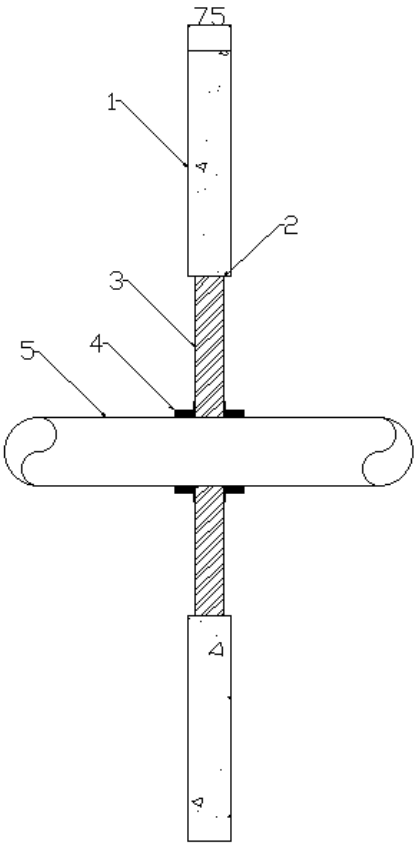
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Service Penetration

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



Key

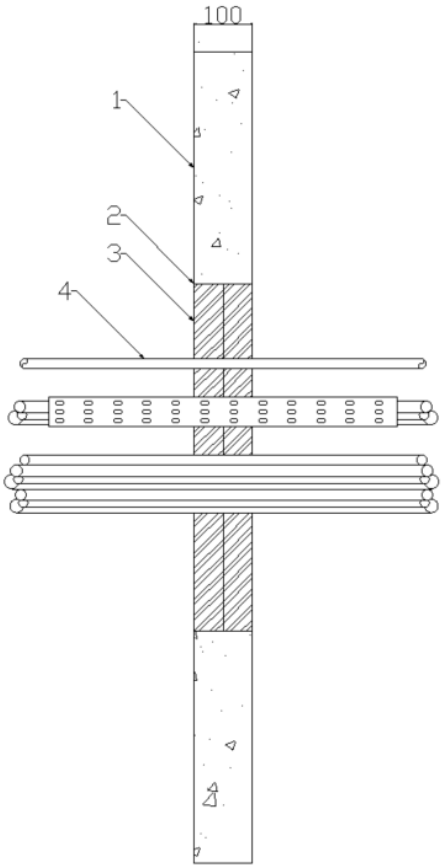
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Service Penetration

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Rigid Walls Minimum Thickness 100mm

Double Layer Astro Batt 50mm, Electrical Cables and Conduits

Max Aperture 2600mm Wide x 2600mm High

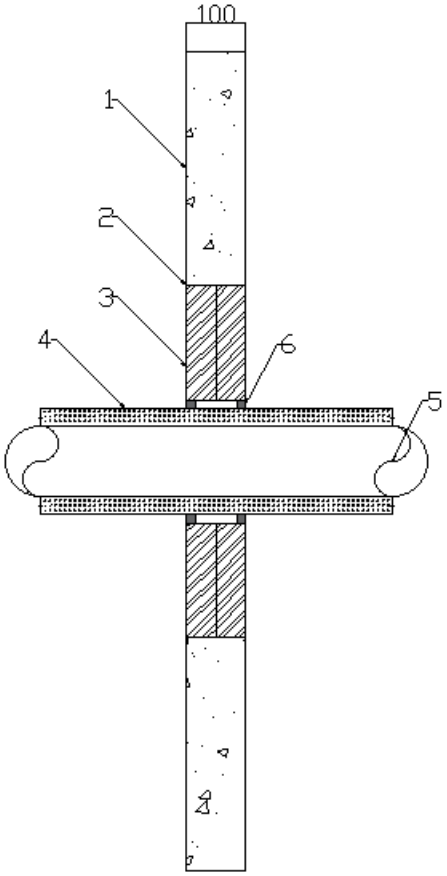


Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

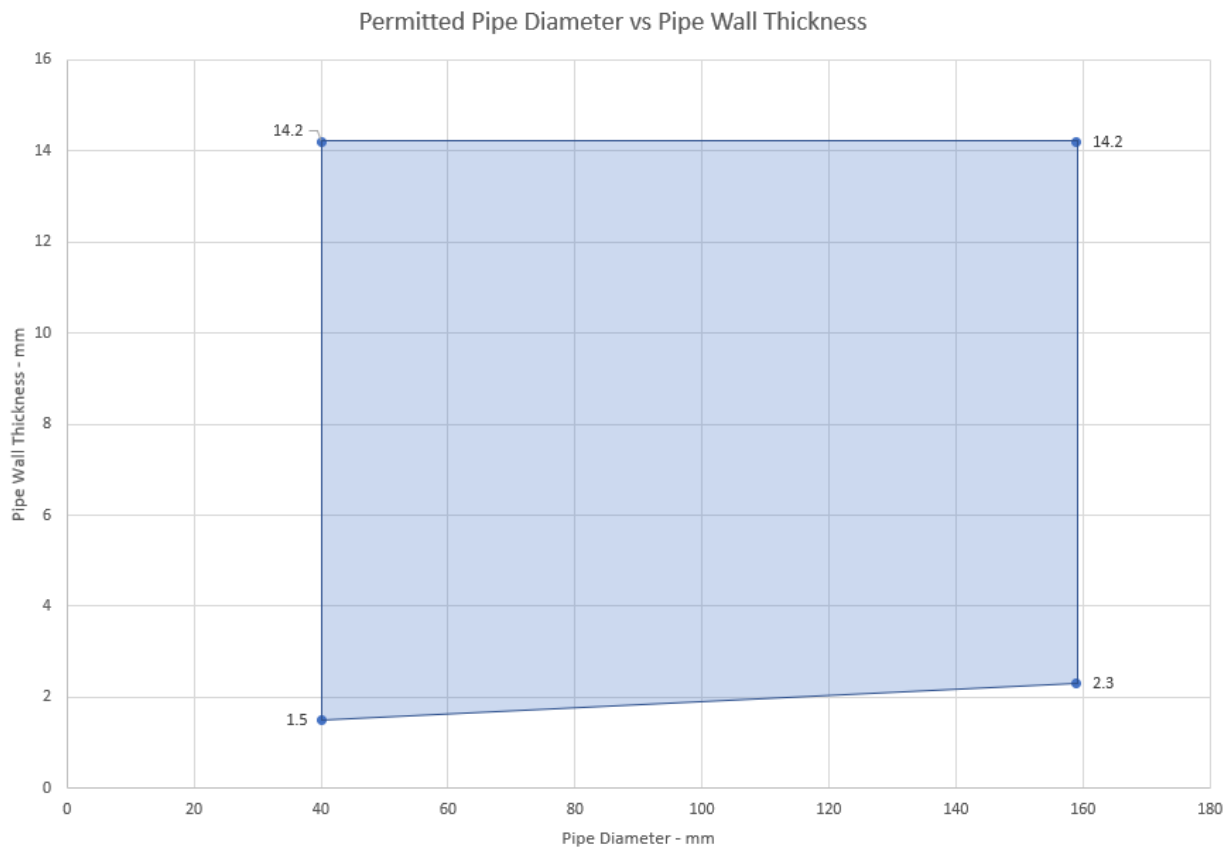
Service(s)	**Classification**
Electrical cables 0mm to 21mm dia	EI 60
Electrical cables 22mm to 50mm dia	E 60 EI 45
Electrical cables 51mm to 80mm dia	E 60 EI 30
Cable Trays and Ladders	E 60 EI 45
100 mm diameter bundle telecommunication cable type “F”	EI 60
Unsheathed electrical cables 0-24mm dia	
Steel or Copper Conduits up to 16mm	E 60 C/U
Plastic conduits up to 16mm	EI 60 C/U

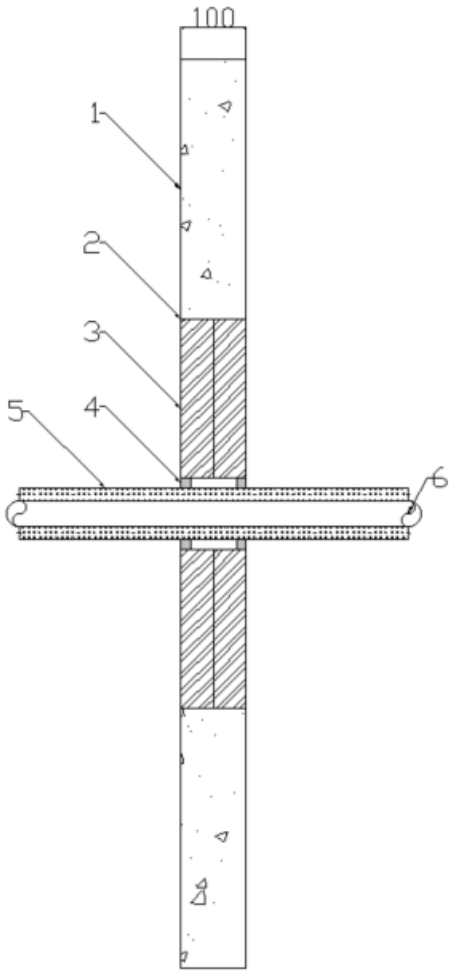
Double Layer Astro Batt 50mm, Insulated Metallic Pipes

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service 6. Astro HPE Sealant

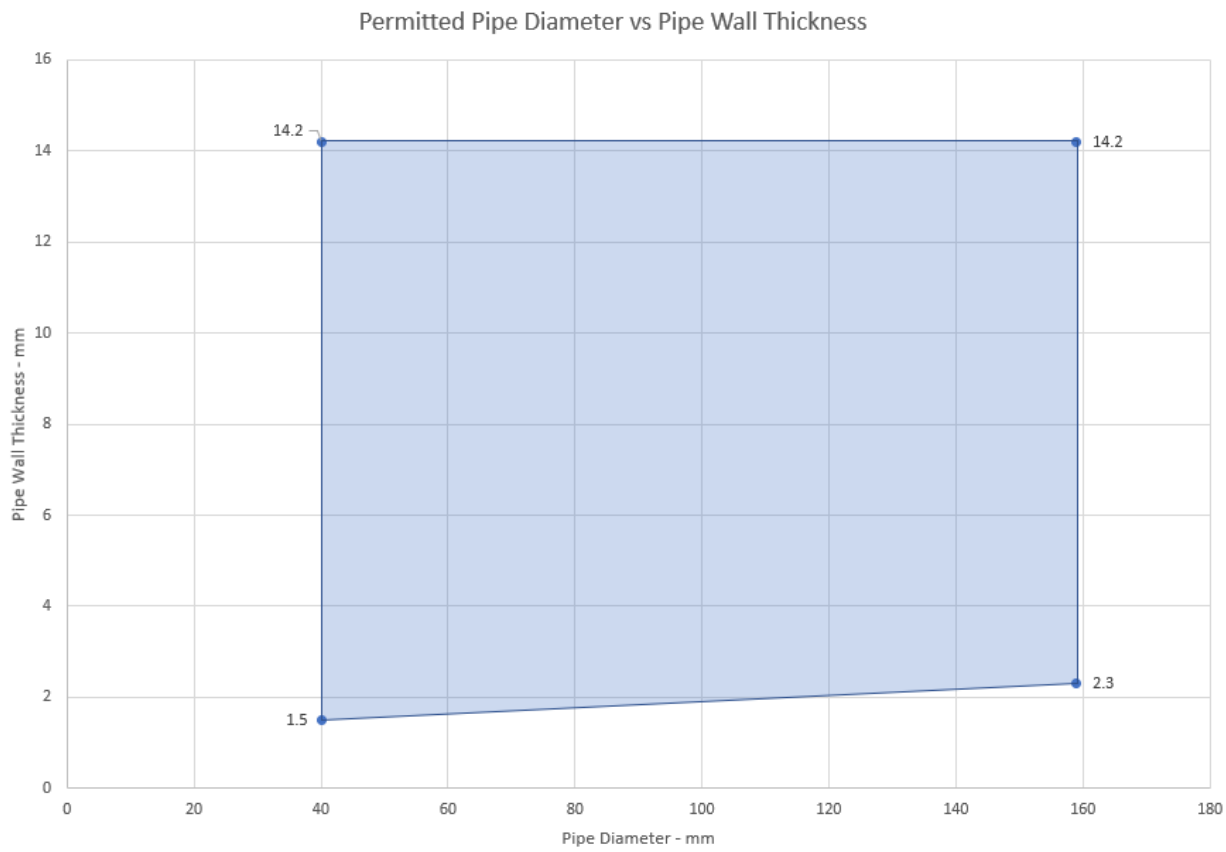
Service(s)	**Classification**
[1]Single copper or mild steel pipe 40mm diameter and 1.5 – 14.2 mm wall with sustained/continuous 20mm thick foil faced glass wool insulation (min 80Kg/m^3)	E 90 U/C EI 60 U/C
[1]Single copper or mild steel pipe 40-159mm diameter and 1.5 – 14.2 mm wall (see graph below) with sustained/continuous 30mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C

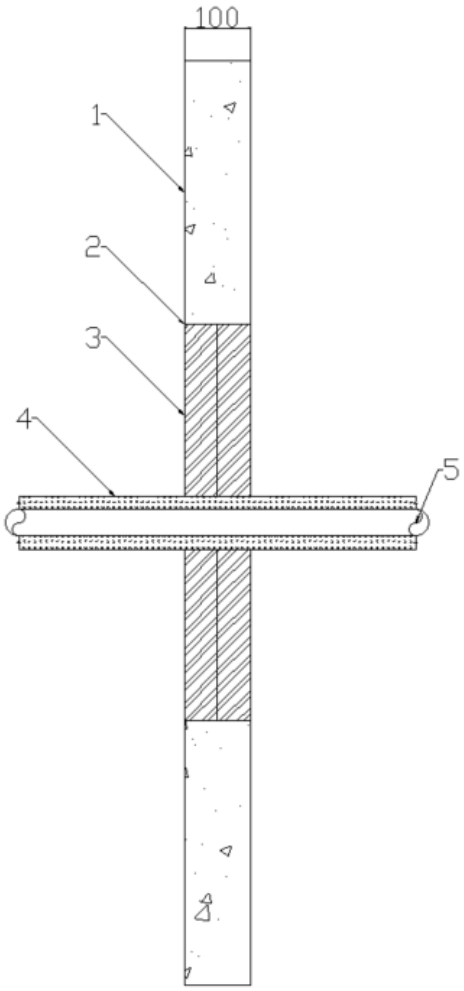
[1]15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the pipe

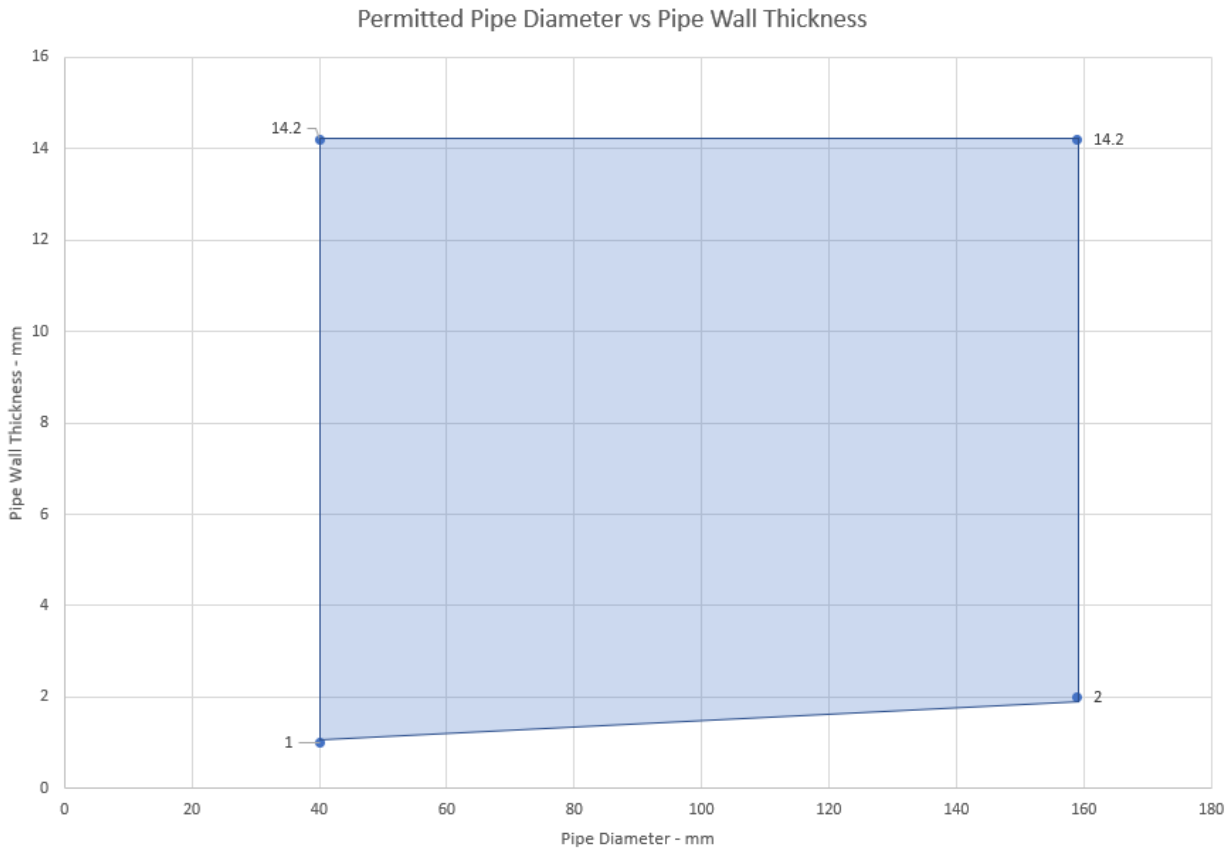

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
14.2
14.2
1.5
2.3
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180

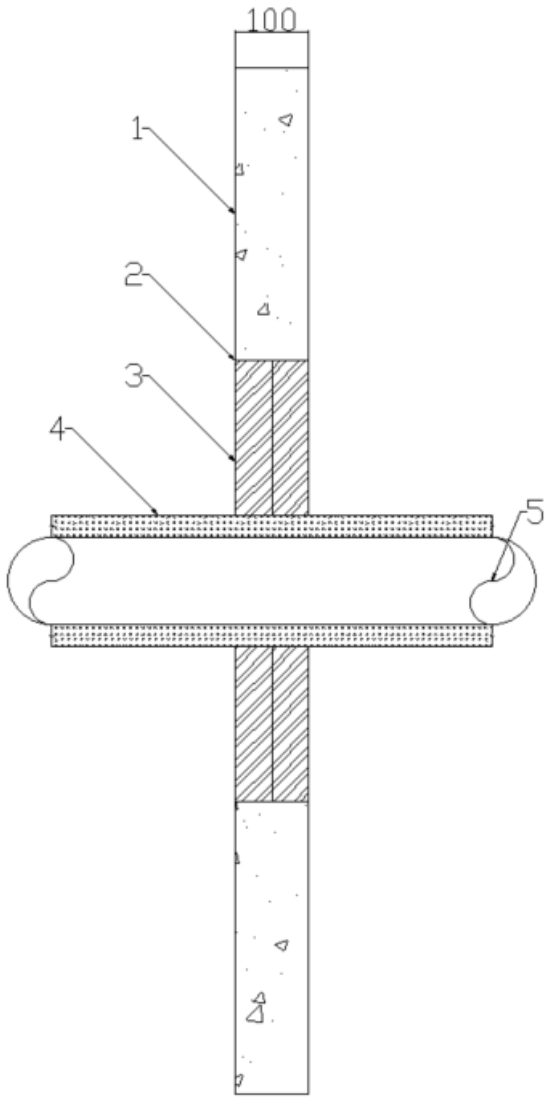
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[1]Single copper or mild steel pipe 40mm diameter and 1.5 – 14.2 mm wall with sustained/continuous 20mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C
[1]Single copper or mild steel pipe 40-159mm diameter and 1.5 – 14.2 mm wall (see graph below) with sustained/continuous 30mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C

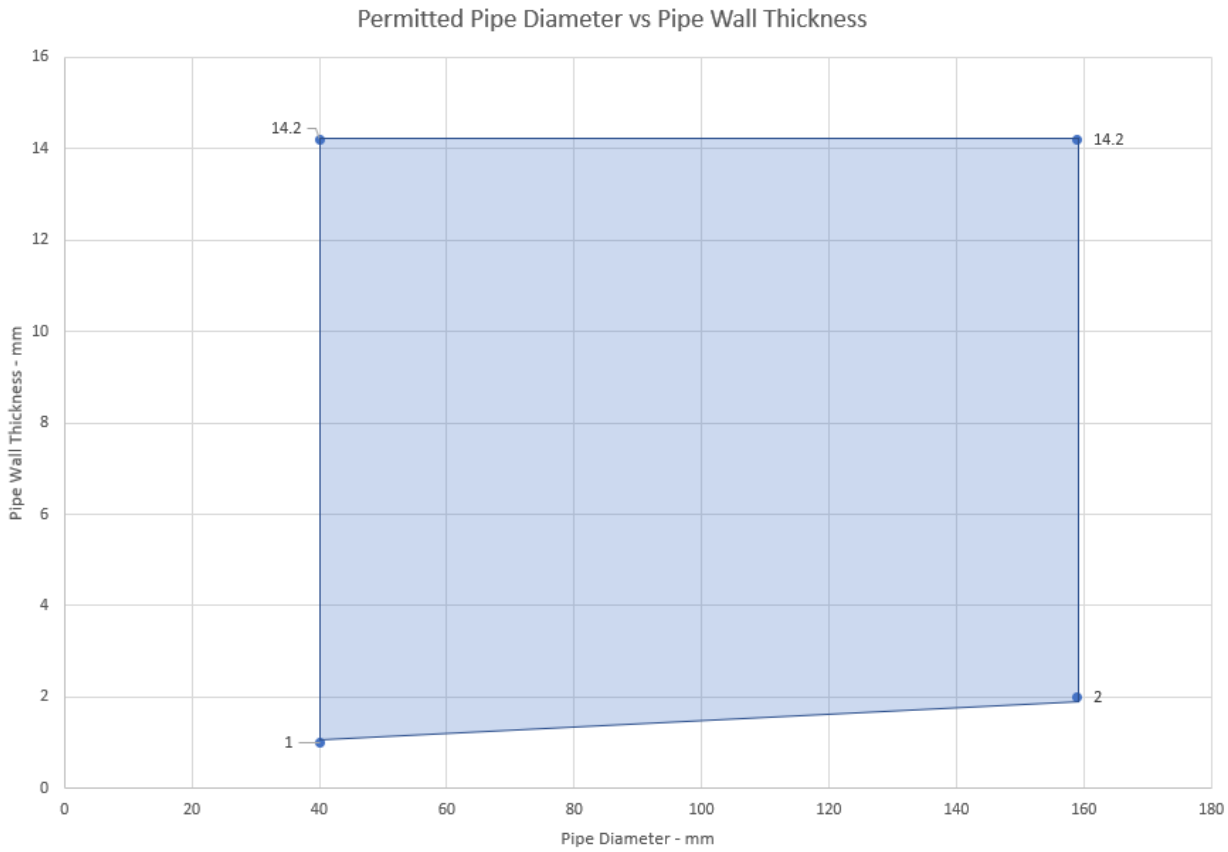
[1]15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the pipe


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
14.2
14.2
1.5
2.3
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below). 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 60 C/U

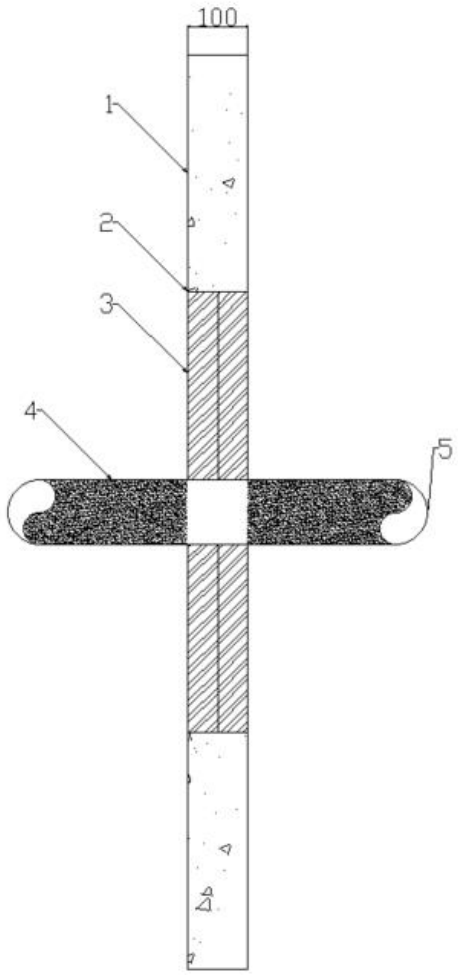

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
14.2
14.2
1
2
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below). 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 60 C/U


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
14.2
14.2
1
2
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180

Max Aperture 730mm Wide x 1200mm High

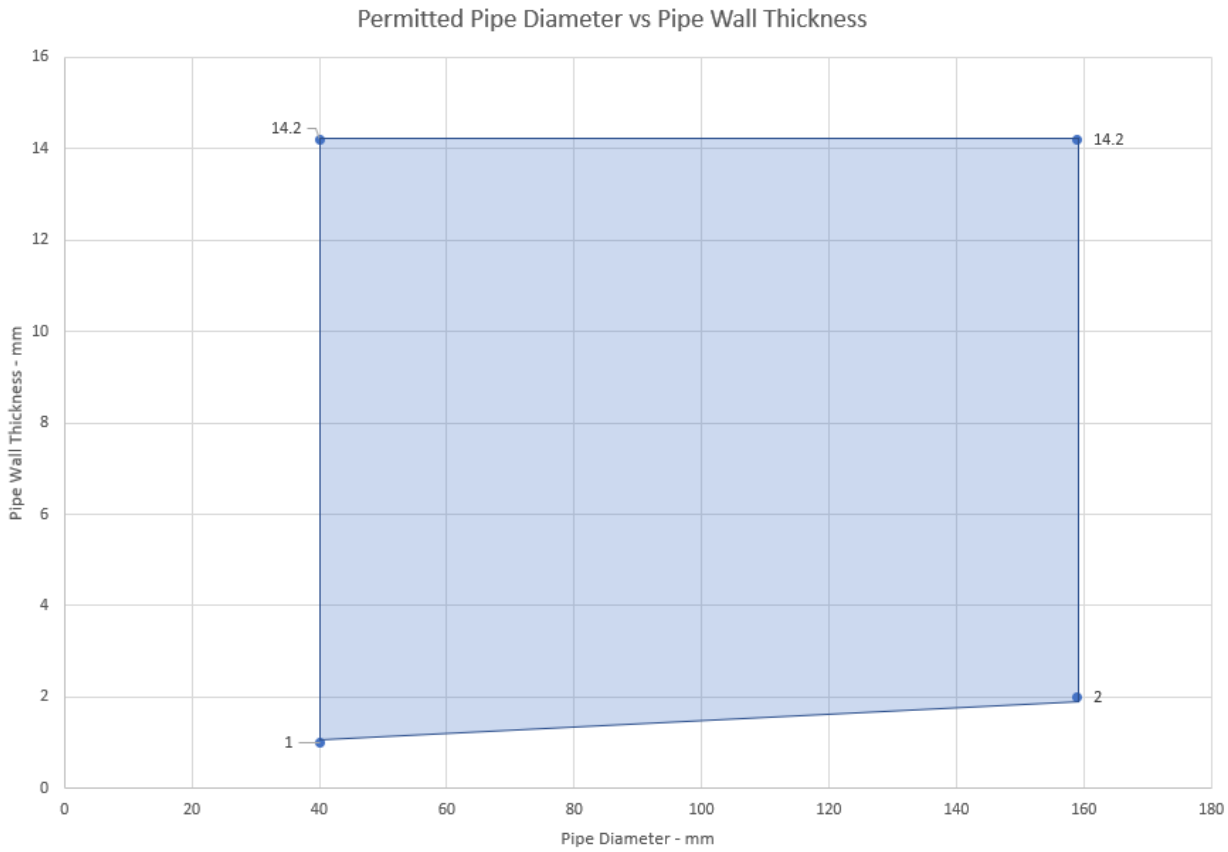
(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)

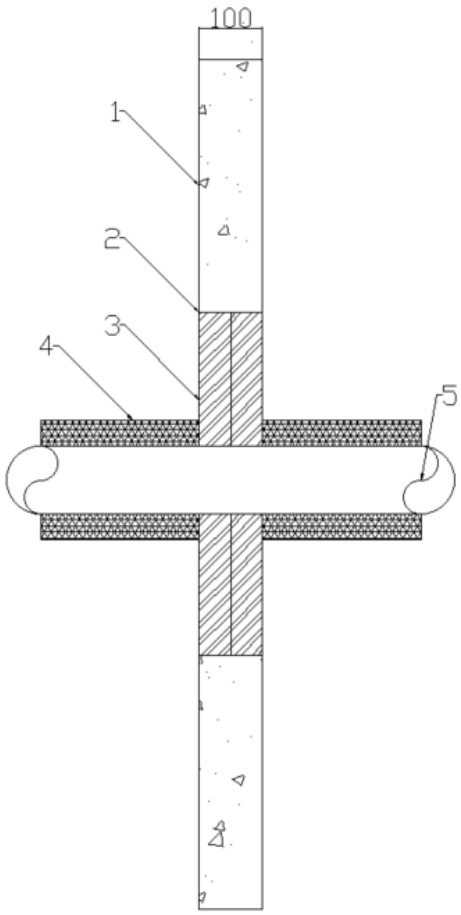


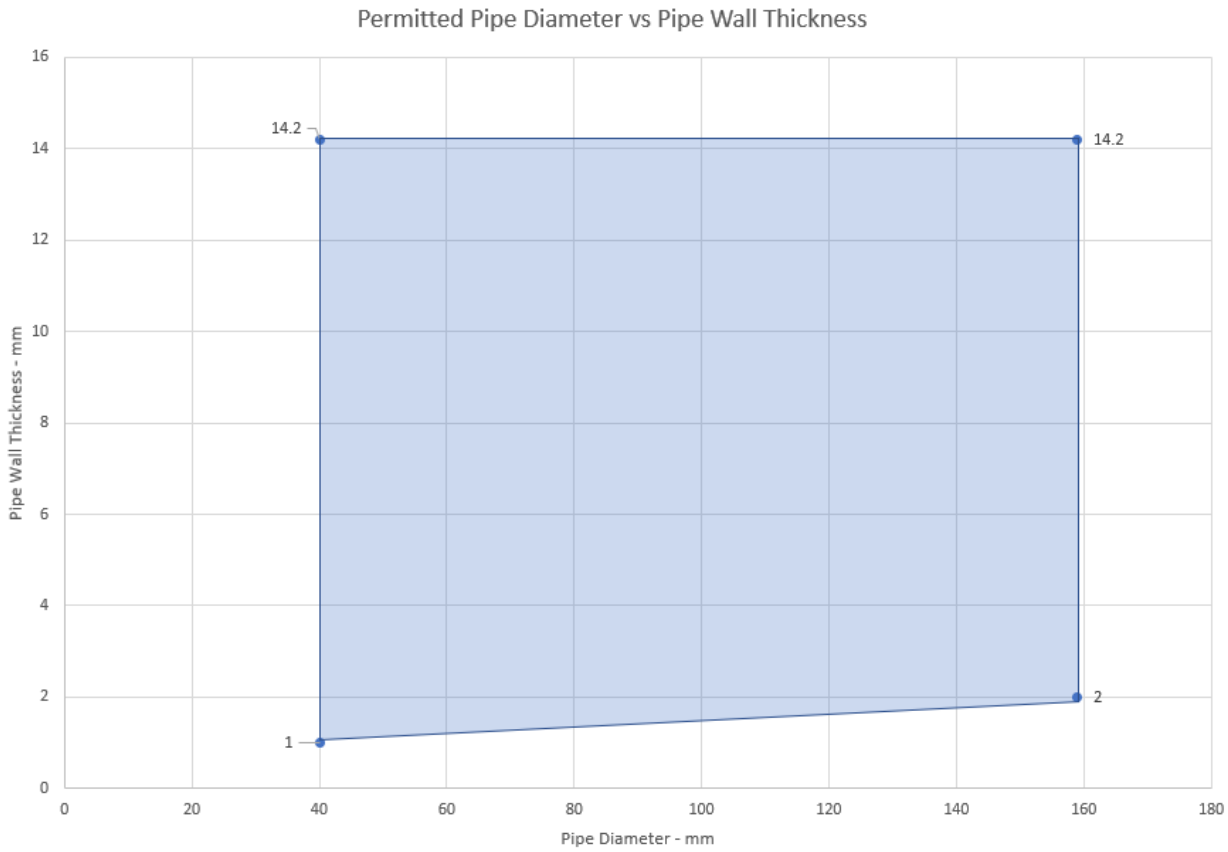
Key

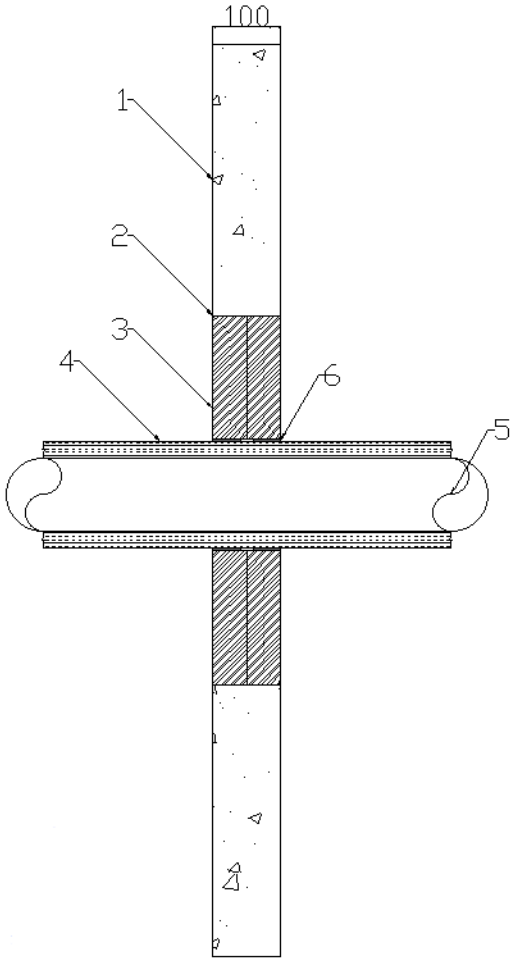
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro PS Coat
5. Penetration Service

Service(s)	**Classification**
Steel or Copper Pipe 108mm Ø, 1.5mm – 14.2mm wall thickness, 50mm thick foil faced stonewool insulation min. 100kg/m^3 (L/I 500mm)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 108mm Ø, 1.5mm – 14.2mm wall thickness, 50mm thick foil faced stonewool insulation min. 100kg/m^3 (C/I)	E 120 C/U EI 60 C/U
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below), 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1.0mm – 14.2mm wall thickness, Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below), Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 20 C/U
Steel 42-324mm Ø, 16mm wall thickness. 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 45 C/U


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
1
2

Max Aperture 2600mm Wide x 2600mm High (Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 108mm Ø, 1.5mm – 14.2mm wall thickness 50mm thick foil faced stonewool insulation min. 100kg/m^3 (L/I 500mm)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 108mm Ø, 1.5mm – 14.2mm wall thickness, 50mm thick foil faced stonewool insulation min. 100kg/m^3 (C/I)	EI 60 C/U
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below), 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1.0mm – 14.2mm wall thickness, Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness (see graph below), Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 60 C/U EI 20 C/U
Steel 42-324mm Ø, 16mm wall thickness. 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 400mm)	E 60 C/U EI 45 C/U

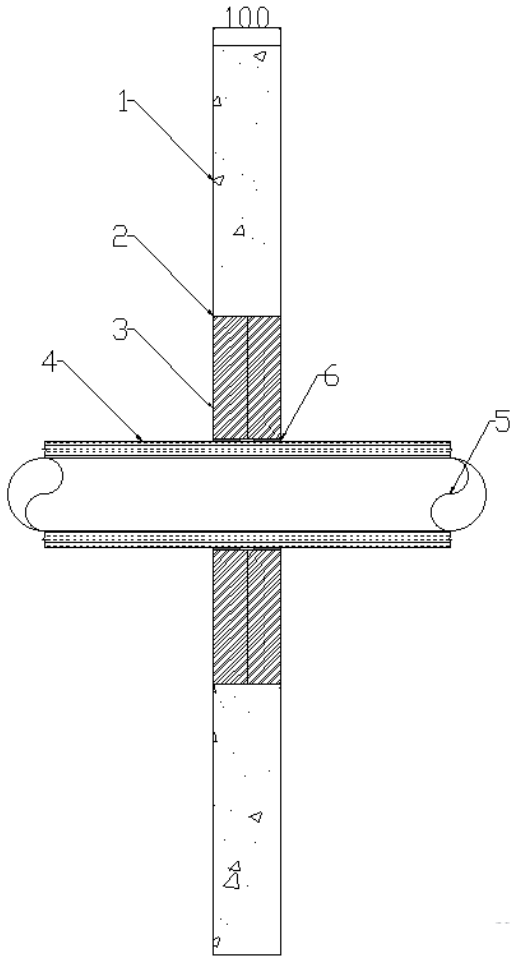

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
14.2
14.2
1
2
0
2
4
6
8
10
12
14
16
0
20
40
60
80
100
120
140
160
180

Max Aperture 750mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service 6. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
Service(s)	**Classification**
[1]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST Insulation[2] (C/S)	E 120 C/U EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST insulation[2] (C/S)	E 120 C/U EI 90 C/U
[1]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[3] (C/S)	E 120 C/U EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[3] (C/S)	E 120 C/U EI 90 C/U
[1]Steel or Copper Pipe 42mm Ø, 1.0–14.2mm wall thickness. 50mm thick glassfibre insulation (C/S)	E 120 C/U EI 90 C/U

[1]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the Astro Batt

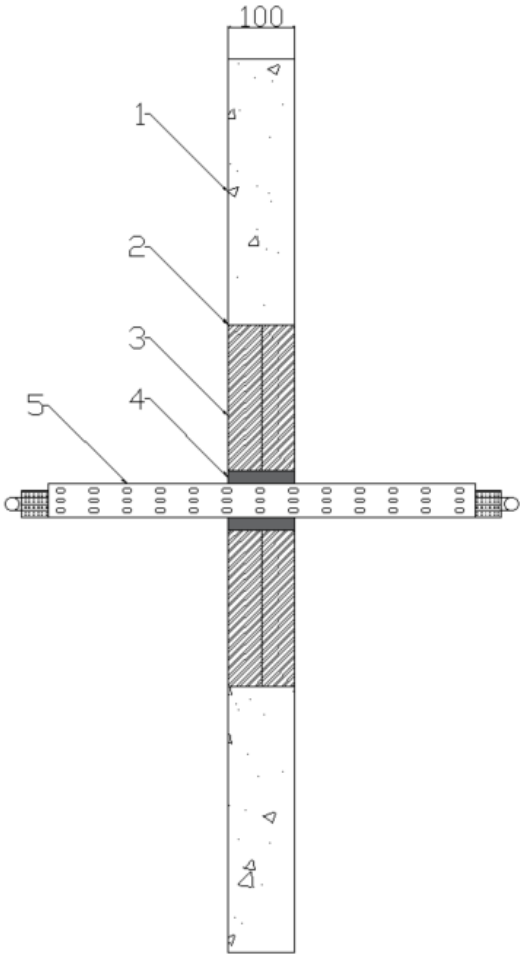
[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service 6. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap

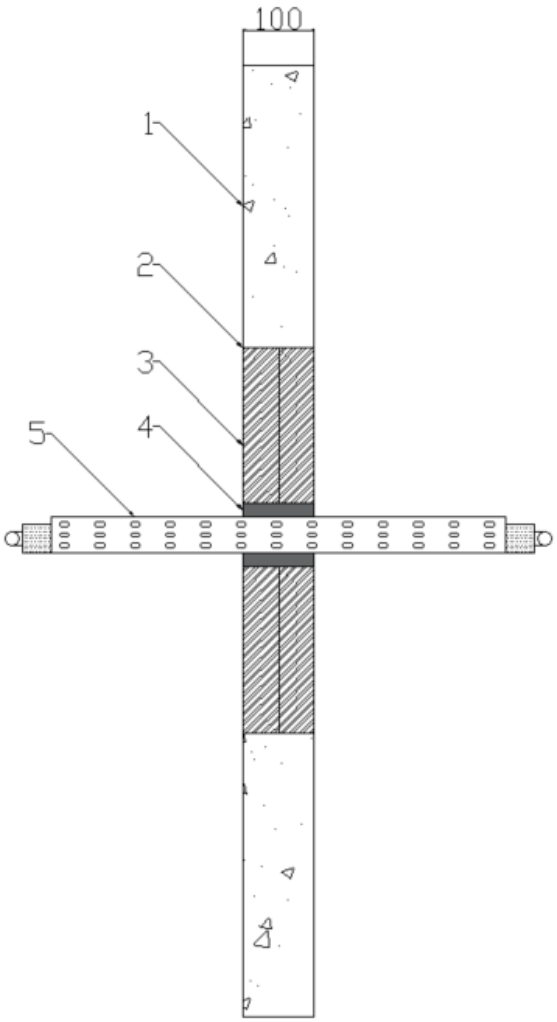
Service(s)	Classification
[1]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST Insulation[2] (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST insulation[2] (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[3] (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[3] (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1.02–14.2mm wall thickness. 50mm thick glassfibre insulation (C/S)	EI 60 C/U

[1]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the Astro Batt
[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1] 6 off Steel or Copper Pipe 22mm Ø, 0.9mm – 14.2mm wall thickness. 19mm thick Armaflex[2] (L/S 400mm)	EI 90 C/U
[1]500mm steel cable tray	E 90 EI 15

[1]Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1] 6 off Steel or Copper Pipe 22mm Ø, 0.9mm – 14.2mm wall thickness. 19mm thick Armaflex[2] (L/S 400mm)	EI 60 C/U
[1]500mm steel cable tray	E 60 EI 15

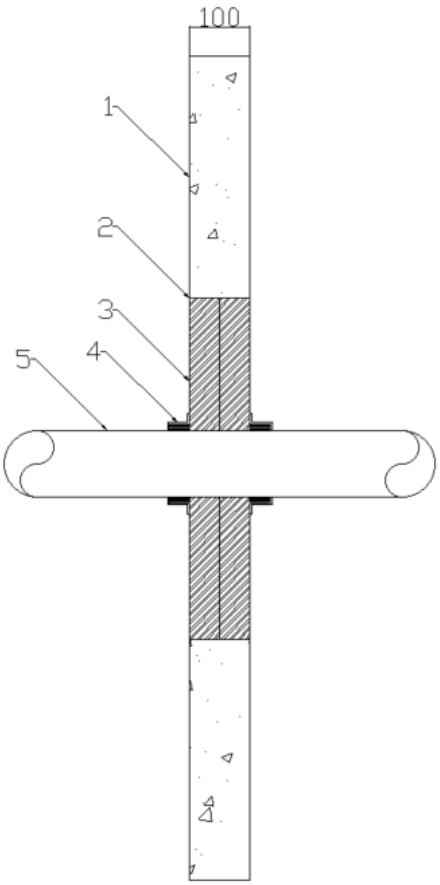
[1]Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

Double Layer Astro Batt 50mm, Plastic Pipes

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



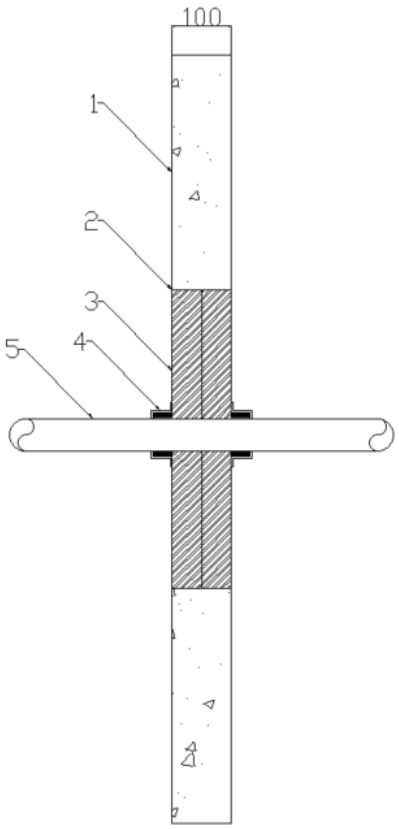
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 120 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



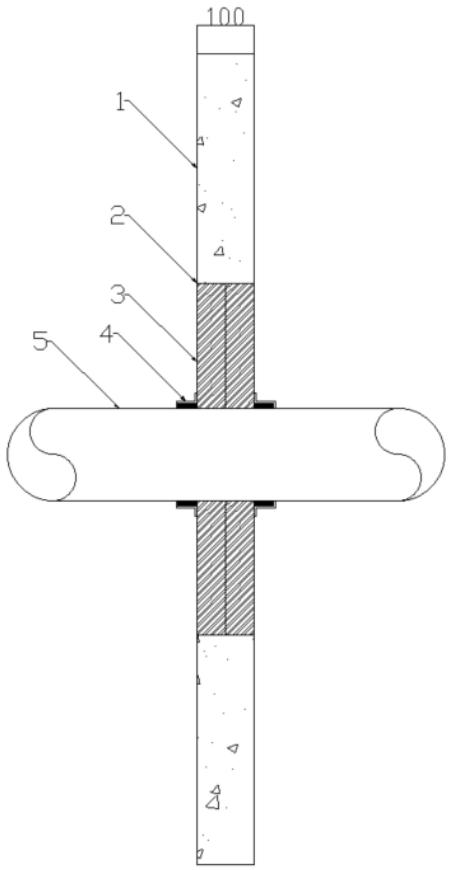
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 60 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



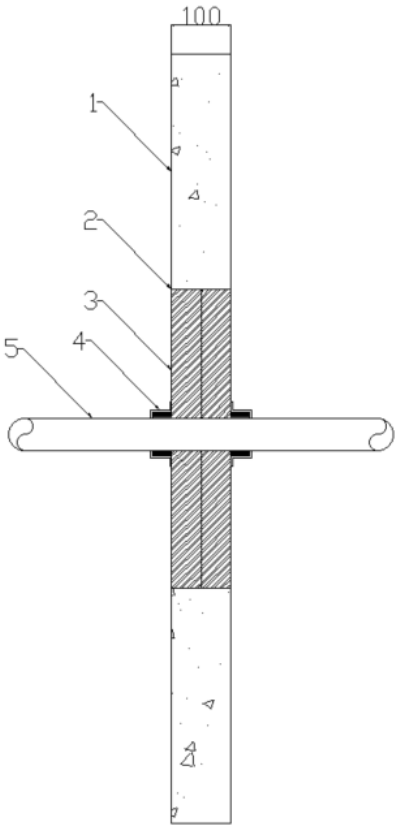
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



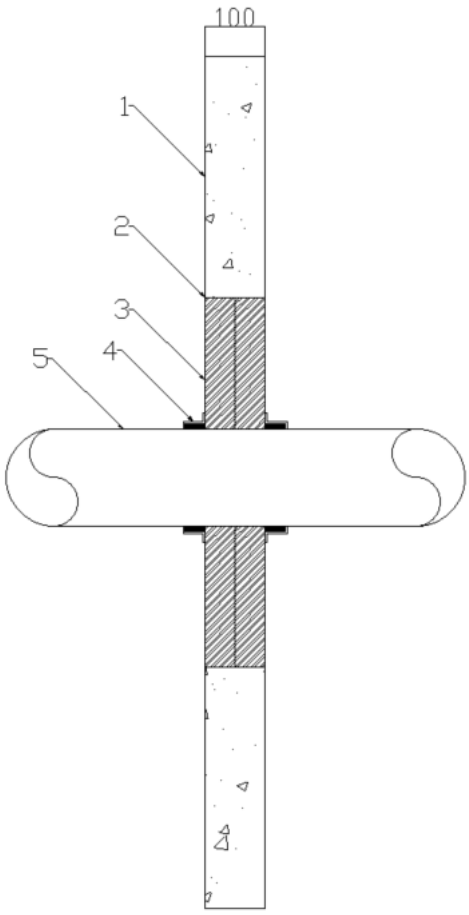
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



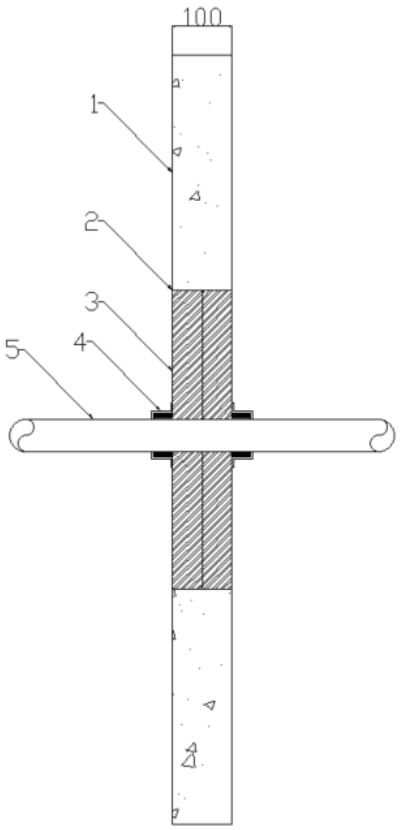
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

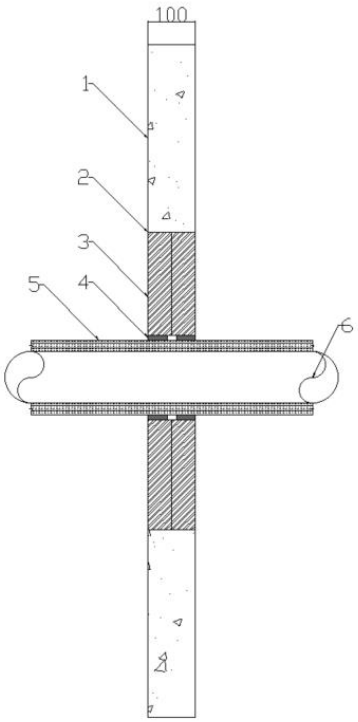
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Double Layer Astro Batt 50mm, Insulated Plastic Pipes

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt
[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 100mm distance between services and 50mm to edge of seal)



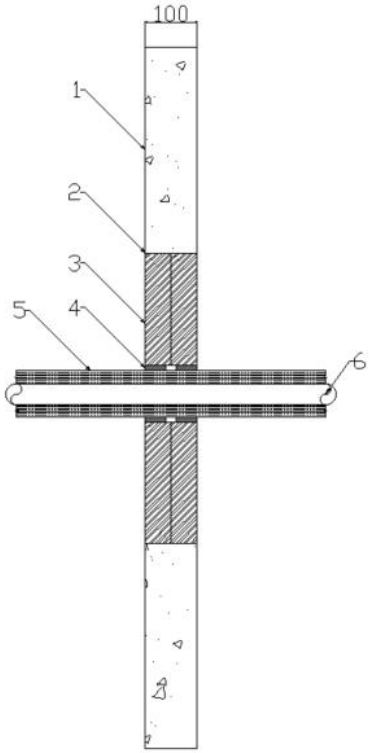
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
5. Insulation
6. Penetration Service

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe 40mm Ø, 1.9mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 15 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 120 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 20 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40mm Ø, 1.9mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 9 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 120 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 13 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	E 120 U/C EI 90 U/C

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 100mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
5. Insulation
6. Penetration Service

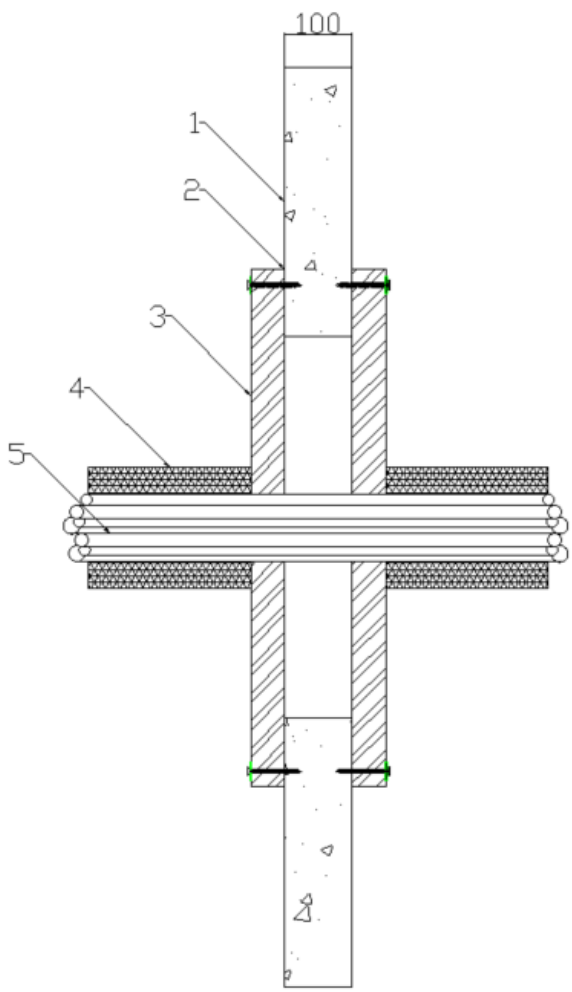
Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe 40mm Ø, 1.9mm wall thickness. 25 mm thick Kingspan Kooltherm FM insulation[3] (C/S)	3 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 15 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 20 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 1.9mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 9 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 13 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 60 U/C

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

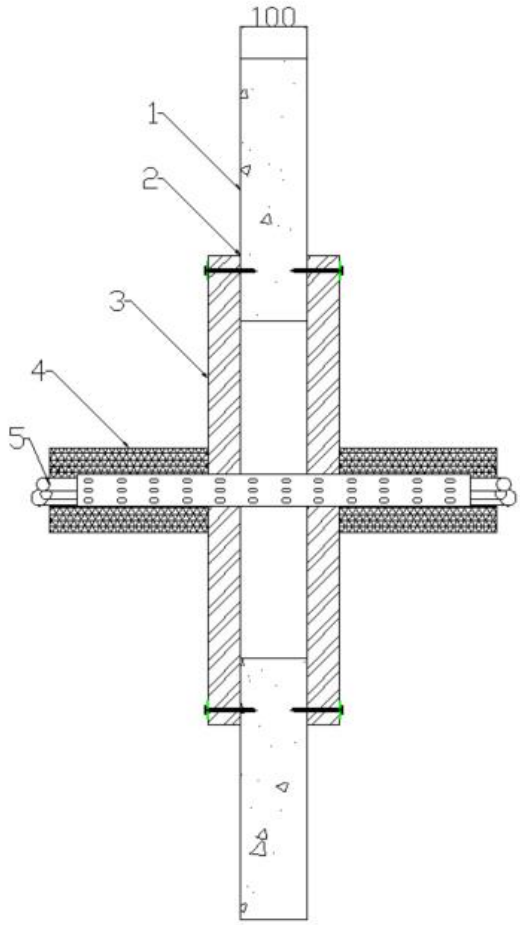
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Single Layer Patress, Astro Batt 50mm, Electrical Cables and Conduits

Max Aperture 750mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[2]Electrical cables upto 80mm Ø	EI 120
[2]Cable Trays and Ladders	
[2]100 mm diameter bundle telecommunication cable type “F”	
[2]Unsheathed electrical cables up to 24mm Ø	
[2]Steel or Copper Conduits up to 16mm Ø	
[2]Plastic conduits up to 16mm Ø	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

[2]Cables and cable trays wrapped with a single layer of 40mm thick, 40kg/m^3 Stonewool (L/I 300mm)

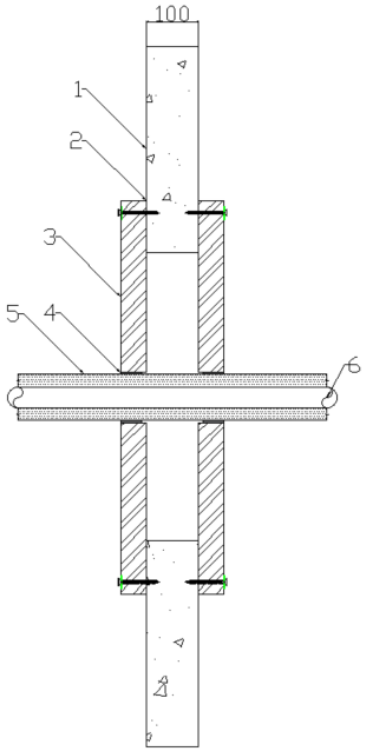
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[2]Electrical cables upto 80mm Ø	EI 60
[2]Cable Trays and Ladders	
[2]100 mm diameter bundle telecommunication cable type “F”	
[2]Unsheathed electrical cables up to 24mm Ø	
[2]Steel or Copper Conduits up to 16mm Ø	
[2]Plastic conduits up to 16mm Ø	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

[2]Cables and cable trays wrapped with a single layer of 40mm thick, 40kg/m^3 Stonewool (L/I 300mm)

Single Layer Patress, Astro Batt 50mm, Insulated Metallic Pipes

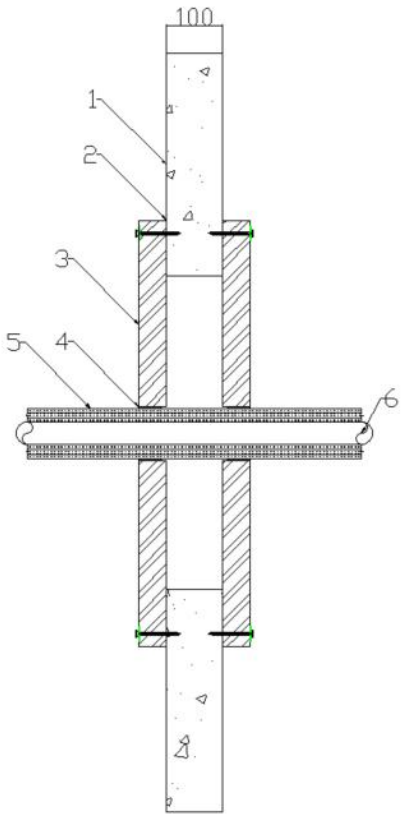
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 750mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[2]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST Insulation[3] (C/S)	E 120 C/U EI 60 C/U
[2]Steel or Copper Pipe 42-159mm Ø, 1.2 – 14.2mm wall thickness. 25mm thick K Flex ST insulation[3] (C/S)	E 120 C/U EI 90 C/U
[2]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST insulation[3] (C/S)	EI 120 C/U
[2]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[4] (C/S)	E 120 C/U EI 90 C/U
[2]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM insulation[4] (C/S)	EI 120 C/U
[2]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 50mm thick glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 90 C/U

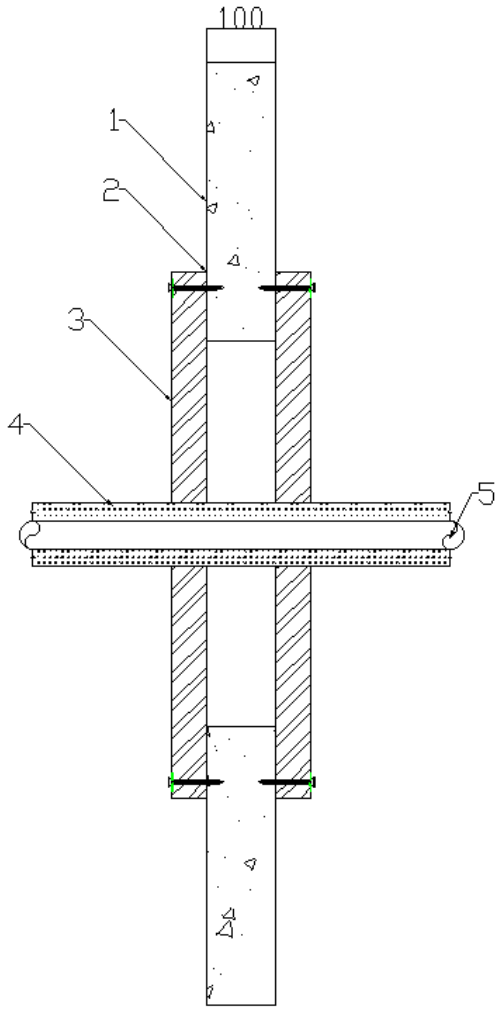
[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

[3]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

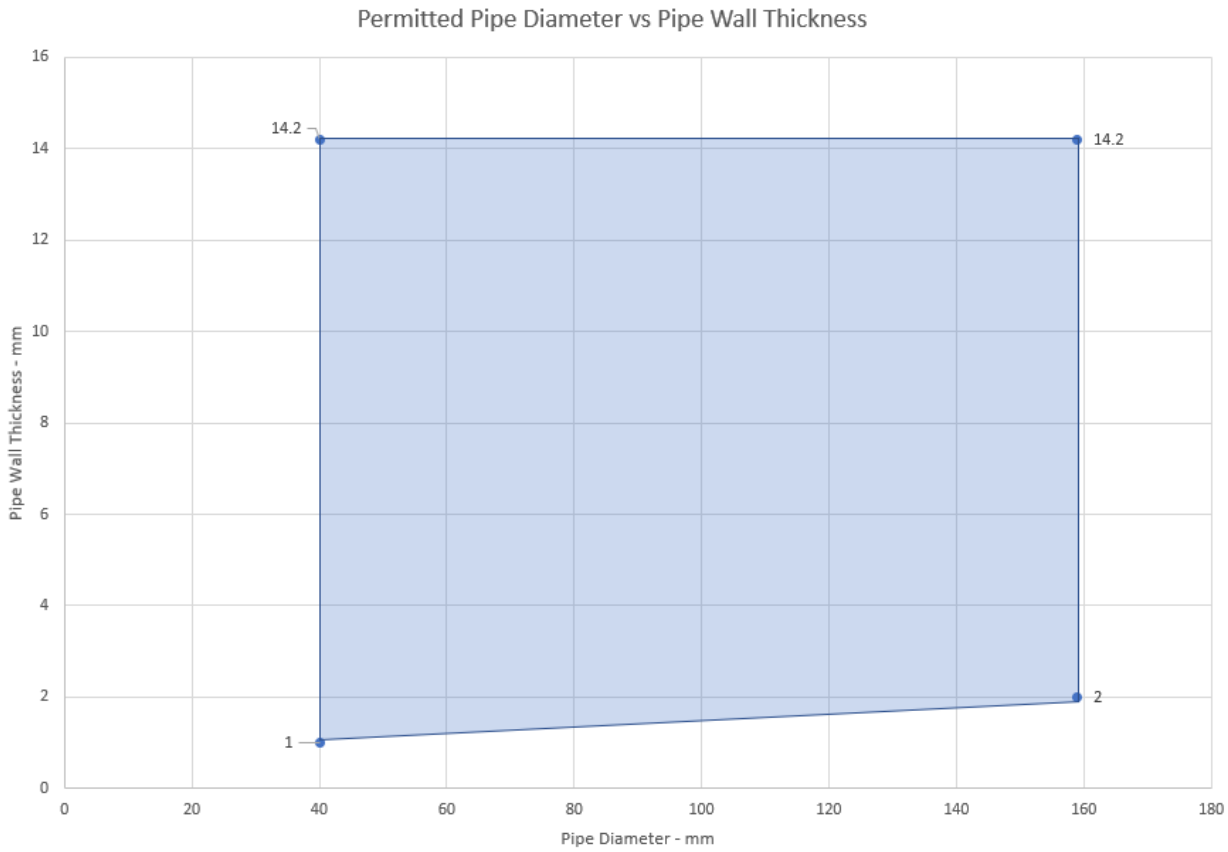
[4]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

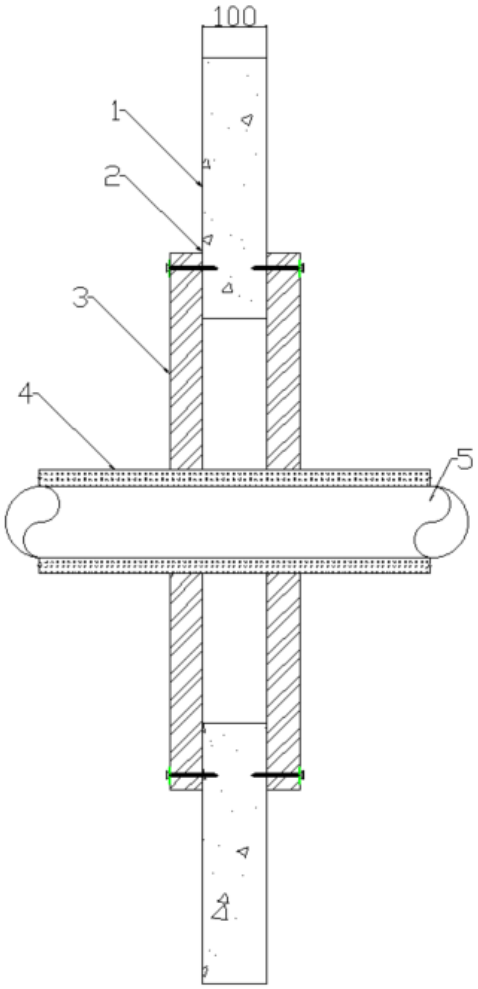
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[2]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST[3] Insulation (C/S)	EI 60 C/U
[2]Steel or Copper Pipe 42-159mm Ø, 1.2 – 14.2mm wall thickness. 25mm thick K Flex ST[3] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST[3] insulation (C/S)	
[2]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 50mm thick glassfibre insulation min. 30kg/m[3] (C/S)	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.
[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation
[3]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1
[4]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

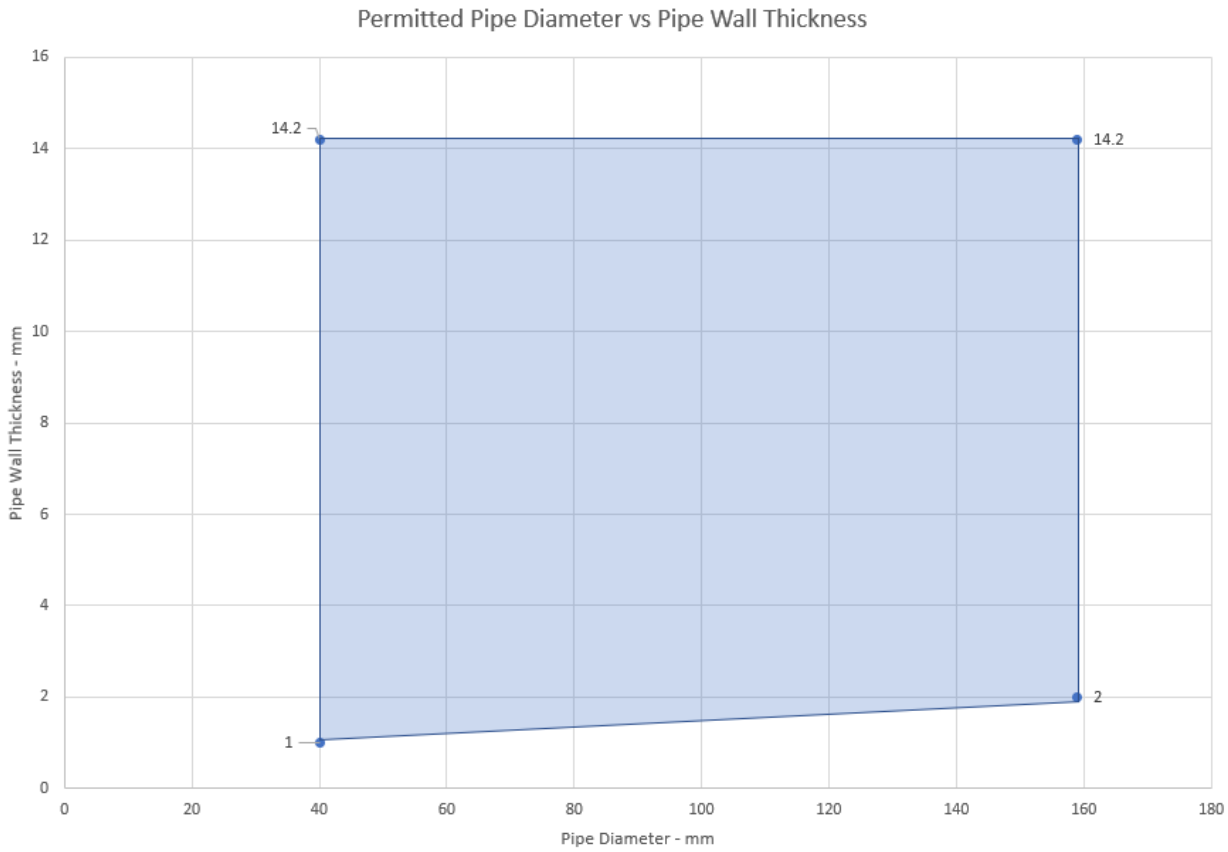
Max Aperture 750mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below). 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 90 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	EI 120 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
1
2

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness (see graph below). 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	EI 60 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

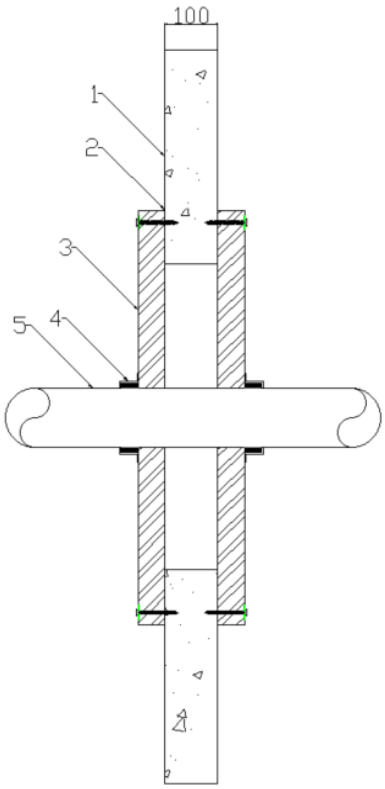

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
1
2

Single Layer Patress, Astro Batt 50mm, Plastic Pipes

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

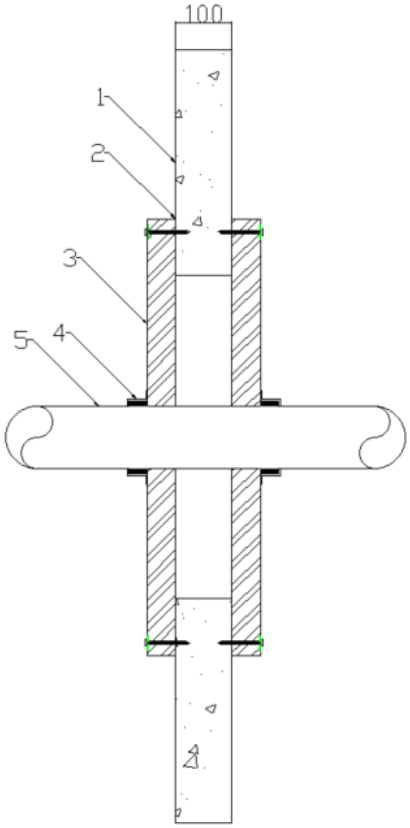
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 120 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

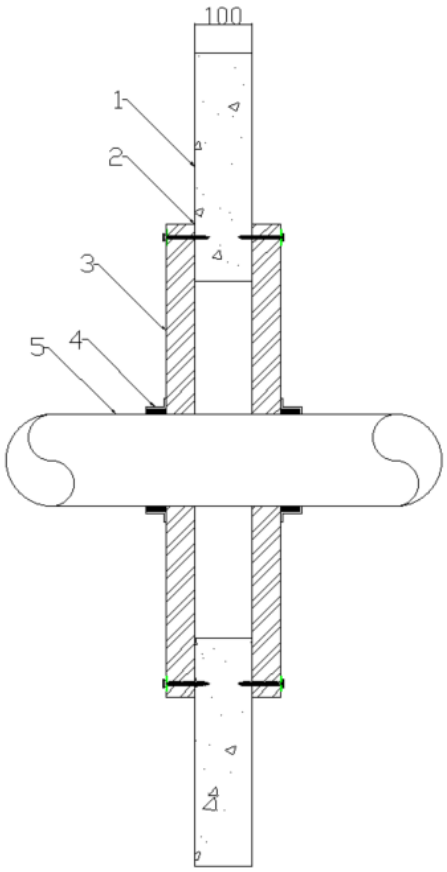
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 60 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

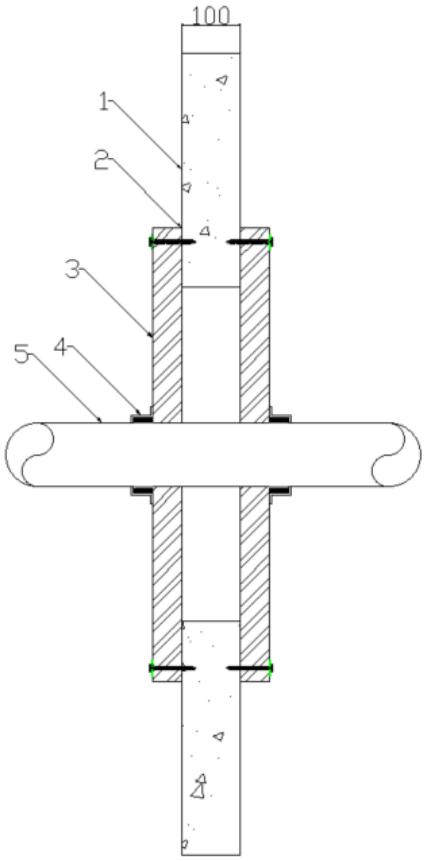
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

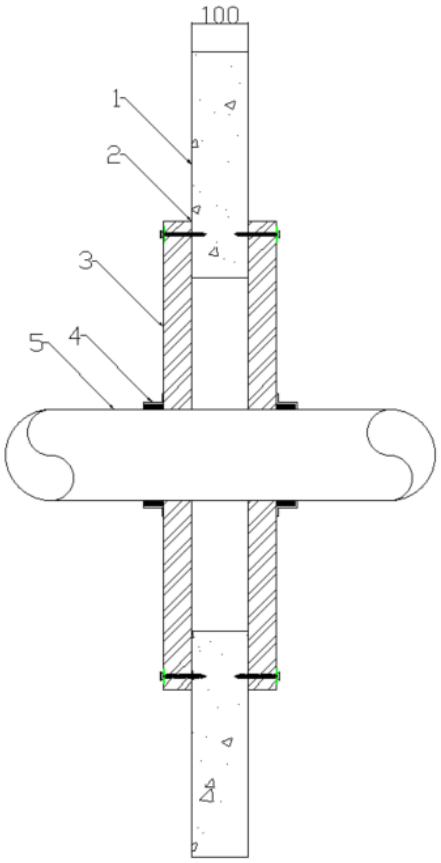
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

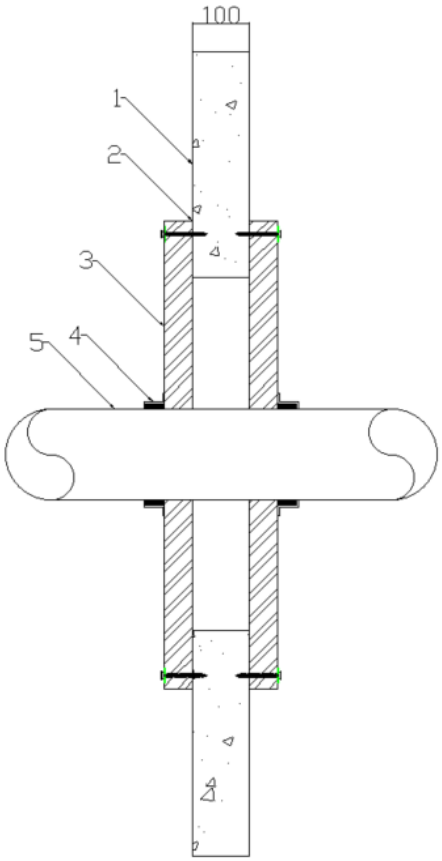
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

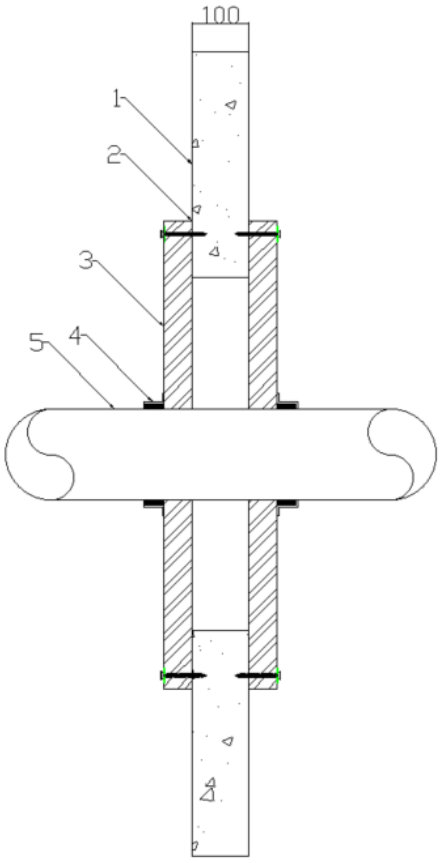
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

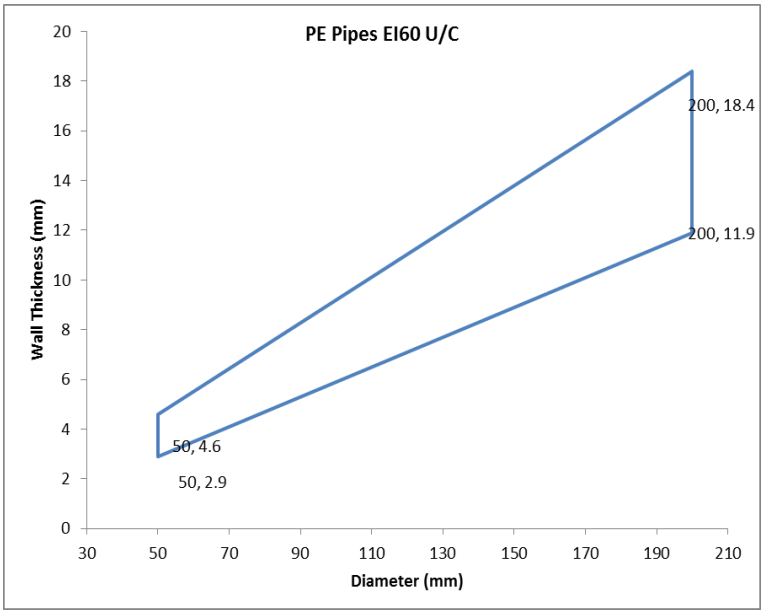
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

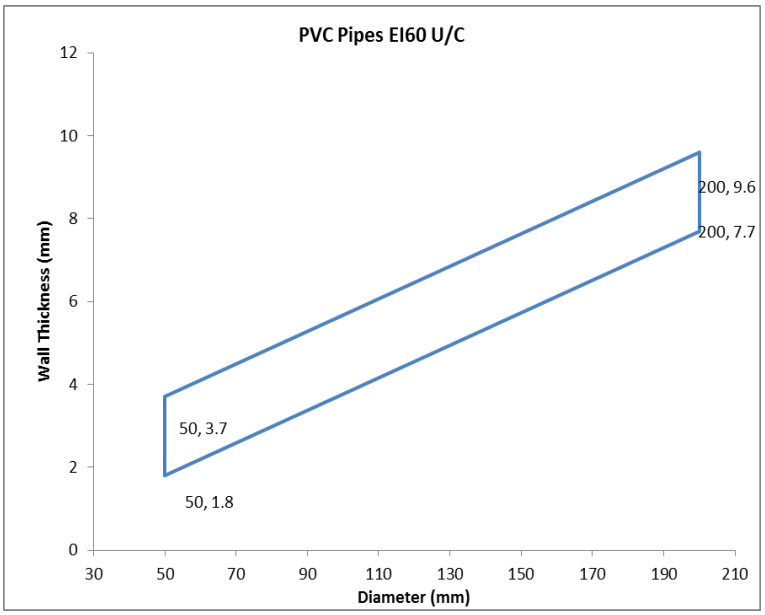
Scope and Classifications as below

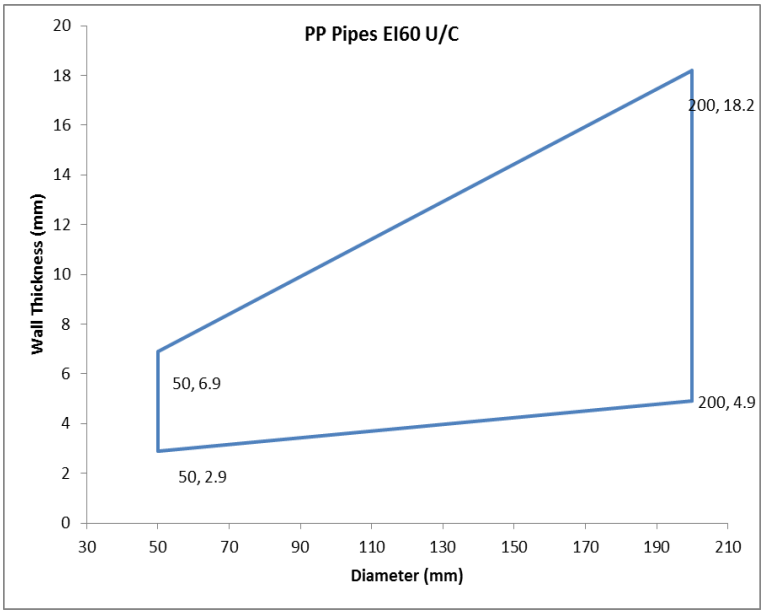
Intumescent Thickness	
Pipe Diameter	**Intumescent Material**
ø 32 mm - ø 50 mm	40 mm (W) x 2 mm (T)
ø 51 mm - ø 82 mm	40 mm (W) x 4 mm (T)
ø 83 mm - ø 115 mm	40 mm (W) x 6 mm (T)
ø 116 mm - ø 160 mm	40 mm (W) x 8 mm (T)
ø 161 mm - ø 200 mm	40 mm (W) x 10 mm (T)
ø 201 mm - ø 250 mm	40 mm (W) x 12 mm (T)

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

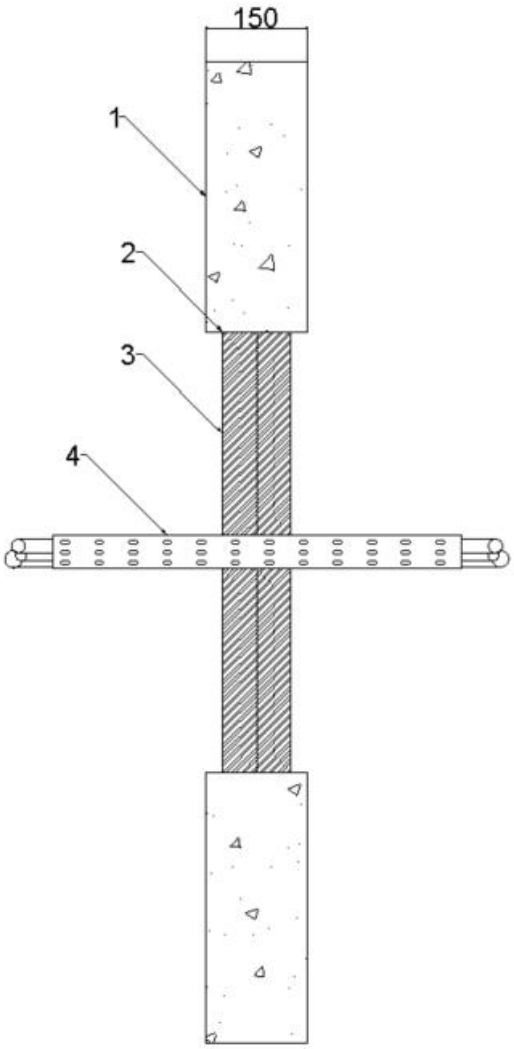

PE Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
200, 18.4
200, 11.9
50, 4.6
50, 2.9


PVC Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
200, 9.6
200, 7.7
50, 3.7
50, 1.8

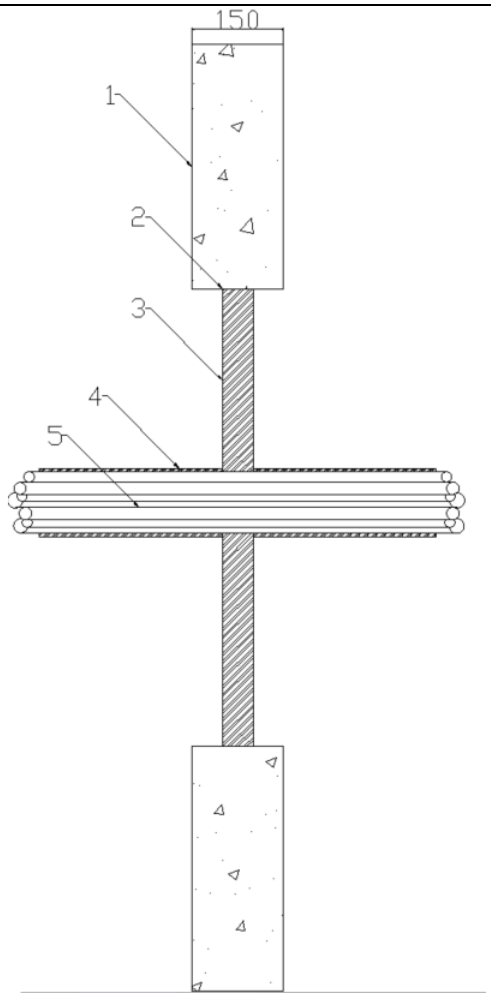

PP Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
20
18
16
14
12
10
8
6
4
2
0
30
50
70
90
110
130
150
170
190
210
200, 18.2
50, 6.9
200, 4.9
50, 2.9

Rigid Walls Minimum Thickness 150mm

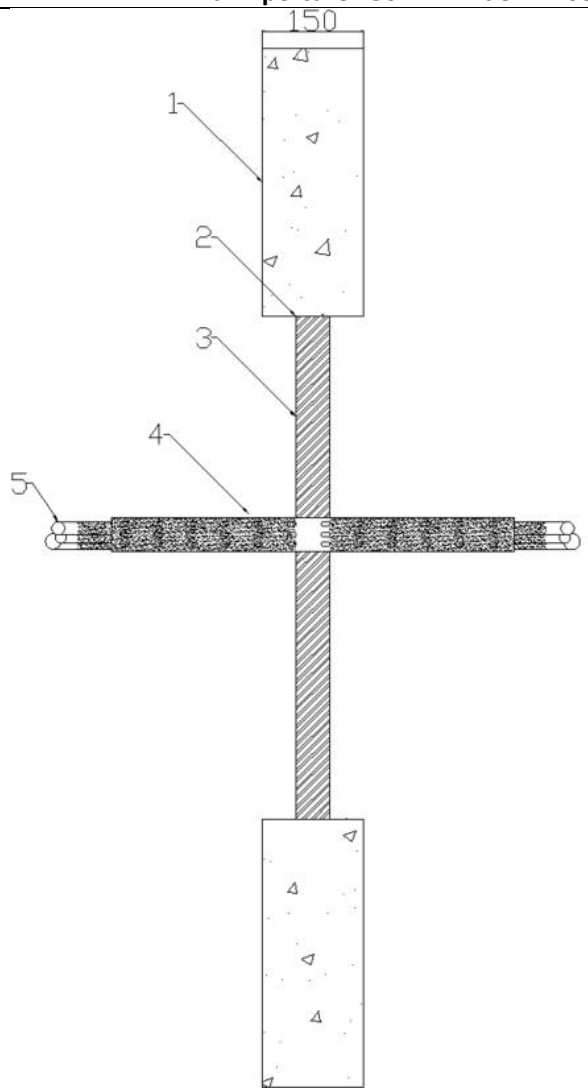
Double Layer, Astro Batt 50mm, Electrical Cables

Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Penetration Service
Service(s)	**Classification**
Electrical cables up to 0-21mm Ø	E120 EI90
Cable Tray	EI 60

Single Layer, Astro Batt 50mm, Electrical Cables

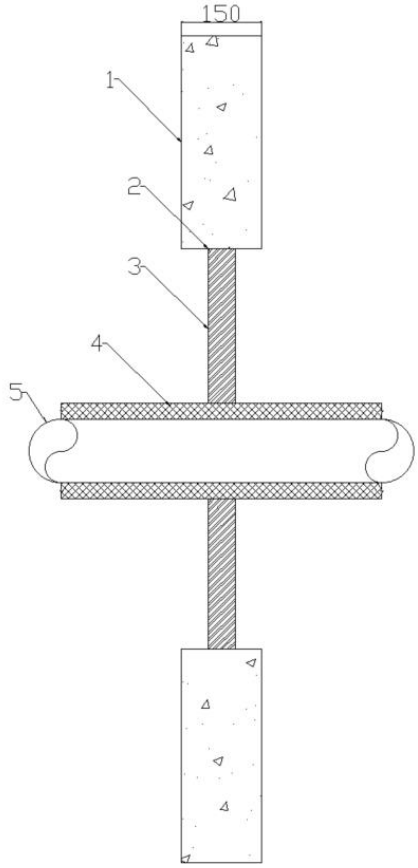
Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[1]Electrical cables up to 80mm Ø	EI 60
[1]Cable Trays and Ladders	EI 60
[1]100 mm diameter bundle telecommunication cable type "F"	EI 60
[1]Unsheathed electrical cables up to 24mmØ	EI 60

[1]Cables and cable trays wrapped with a single layer of 6mm thick Astro Thermal Defense Wrap (L/I 300mm)

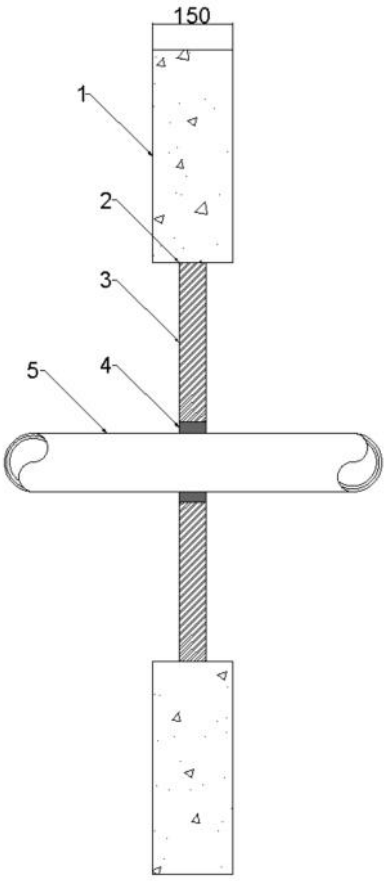
Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Penetration Specification	**Classification**
*500mm perforated cable tray	EI 30
*Electrical cables up to 21mm ø	EI 45
*1 off 'C1' Cable	
*1 off 'C2' Cable	
*1 off 'C3' Cable	

*All cables coated with 2mm DFT Astro PS Coat 300mm along the cables both sides of the seal

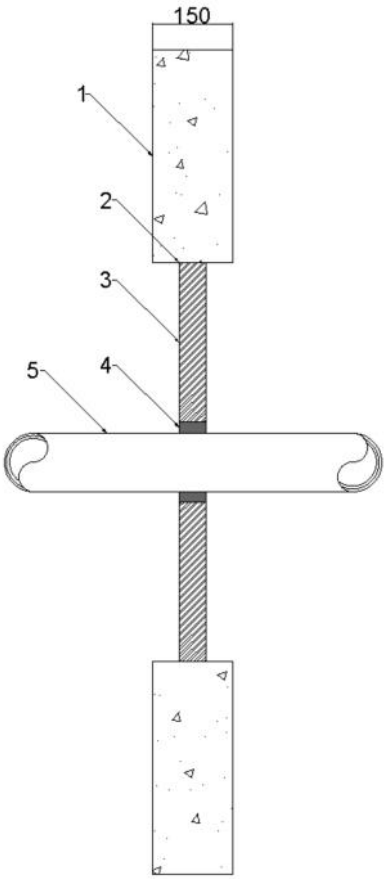
Single Layer, Astro Batt 50mm, Insulated Metallic Pipes

Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[1]Steel or Copper Pipe 108mm Ø, 1.5mm – 14.2mm Wall Thickness. (C/S) 40mm stone wool insulation (min 140Kg/m^3)	E60 C/U EI45 C/U
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	EI45 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E45 C/U EI20 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (C/I) 40mm stone wool insulation (min 40Kg/m^3)	E45 C/U EI30 C/U

Single Layer, Astro Batt 50mm, Plastic Pipes

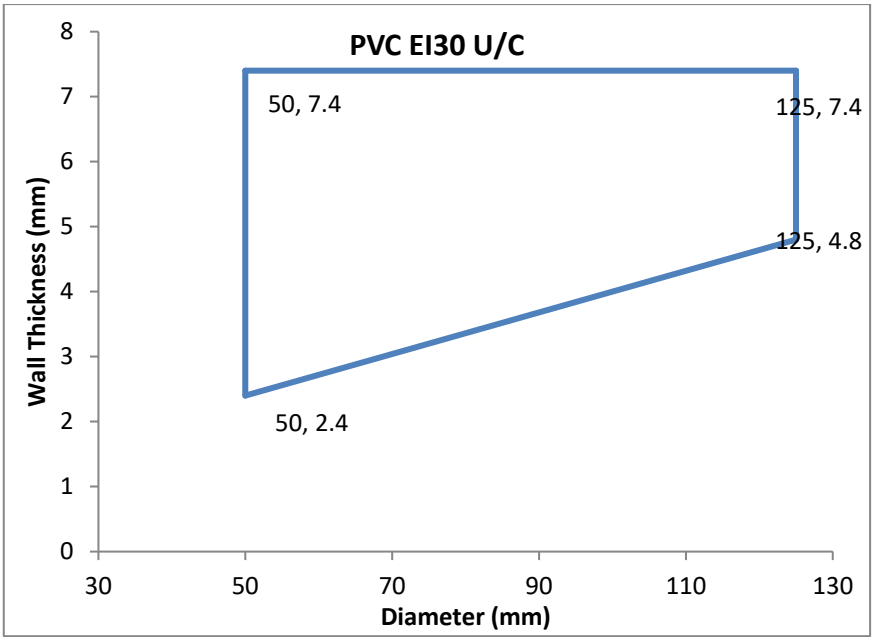
Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Penetration Specification	**Classification**
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	E 45 U/C EI 30 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

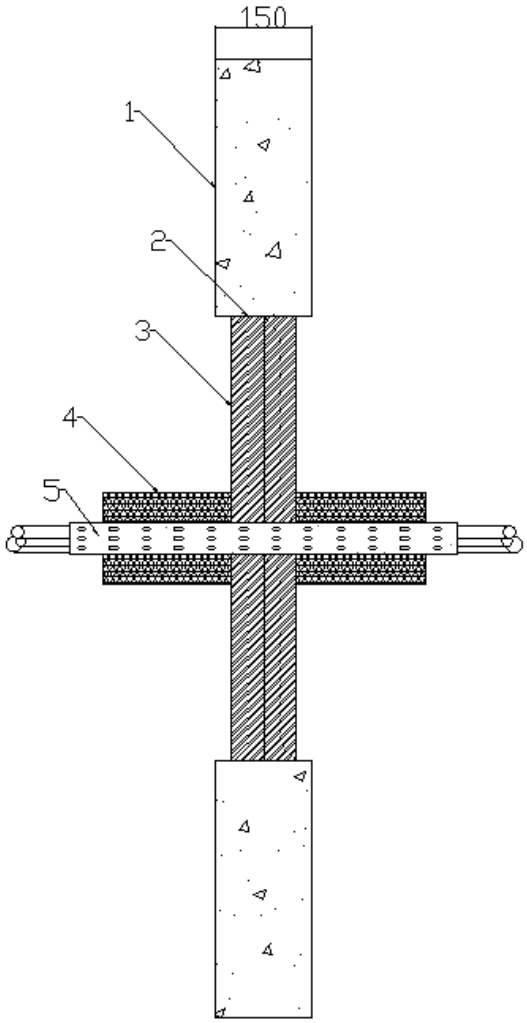
Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service

Penetration Specification	Classification
PVC Pipe 50mm ø 2.4mm wall thickness	**EI45 U/C**
Also scope as per graphs below	

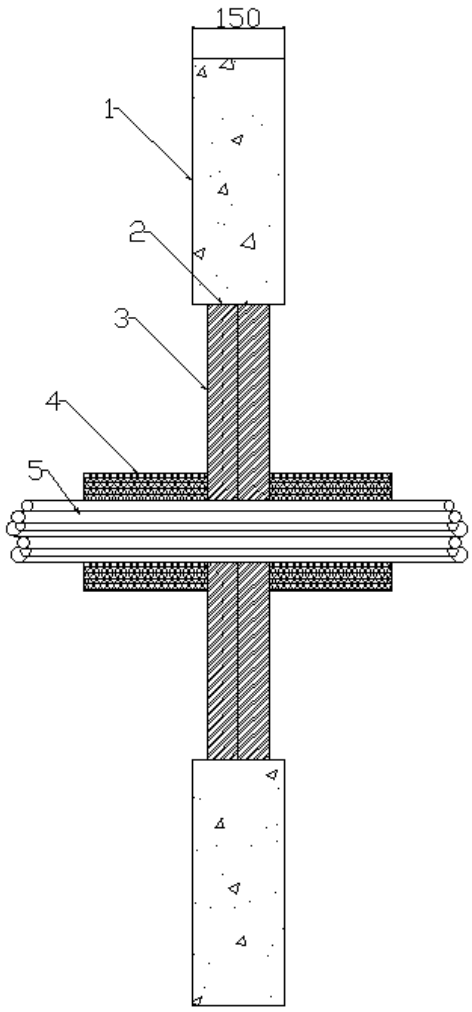
Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt


PVC EI30 U/C
50, 7.4
125, 7.4
125, 4.8
50, 2.4
Wall Thickness (mm)
Diameter (mm)
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

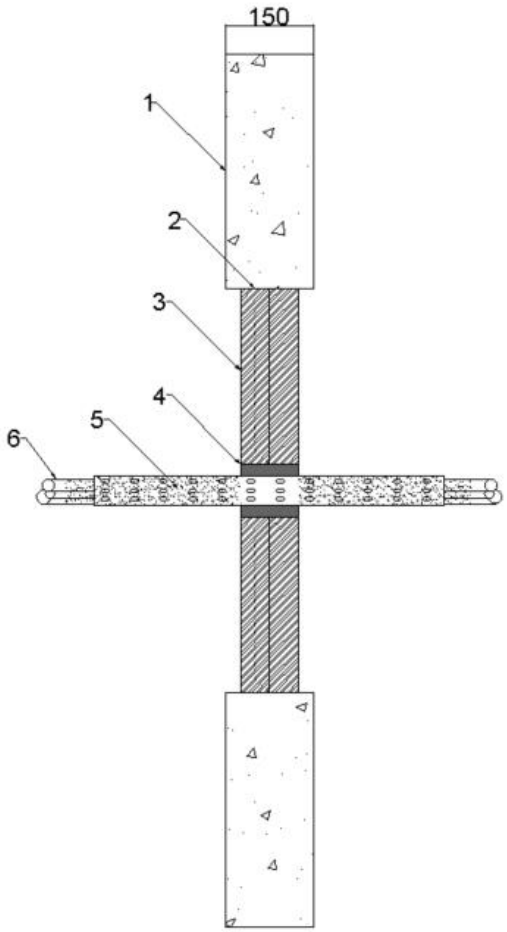
Double Layer, Astro Batt 50mm, Electrical Cables

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1]Electrical cables up to 21mm dia	EI 120
[1]Electrical cables 22mm – 80mm dia	E 120 EI 90
[1]Cable Trays and Ladders	EI 120
[1]100 mm diameter bundle telecommunication cable type “F”	EI 120
[1]Unsheathed electrical cables up to 24mm dia	EI 120

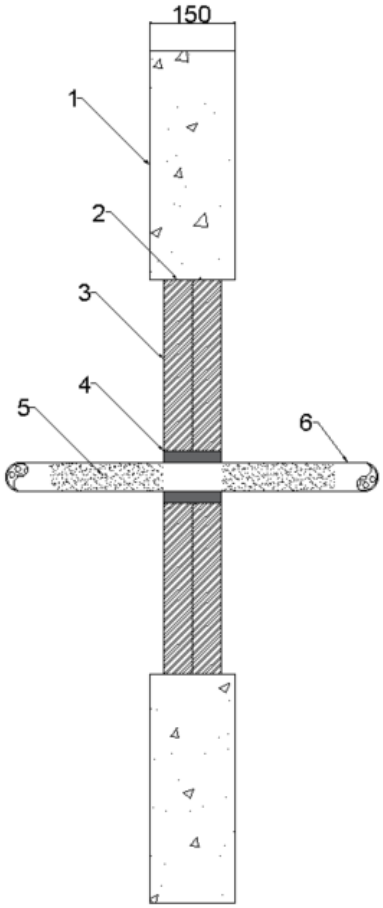
[1]Cables and cable trays wrapped with Stone Wool Insulation 45mm thick, 40Kg/m^3 (L/I 200mm)

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1]Electrical cables up to 21mm dia	EI 60
[1]Electrical cables 22mm – 80mm dia	
[1]Cable Trays and Ladders	
[1]100 mm diameter bundle telecommunication cable type “F”	
[1]Unsheathed electrical cables up to 24mm dia	

[1]Cables and cable trays wrapped with Stone Wool Insulation 45mm thick, 40Kg/m^3 (L/I 200mm)

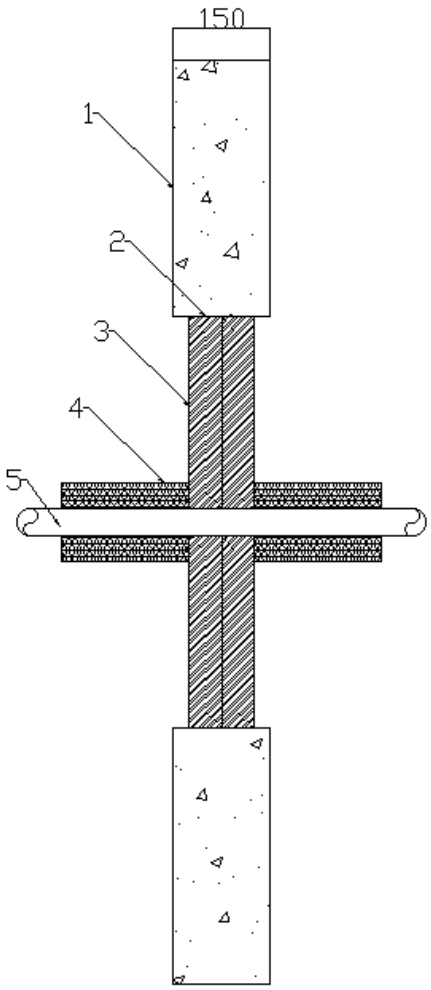
Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Astro PS Coat 6. Penetration Service
Penetration Specification	**Classification**
*500mm perforated cable tray	EI120
*Electrical cables up to 21mm ø	
*1 off 'C1' Cable	
*1 off 'C2' Cable	E120 EI90
*1 off 'C3' Cable	EI120

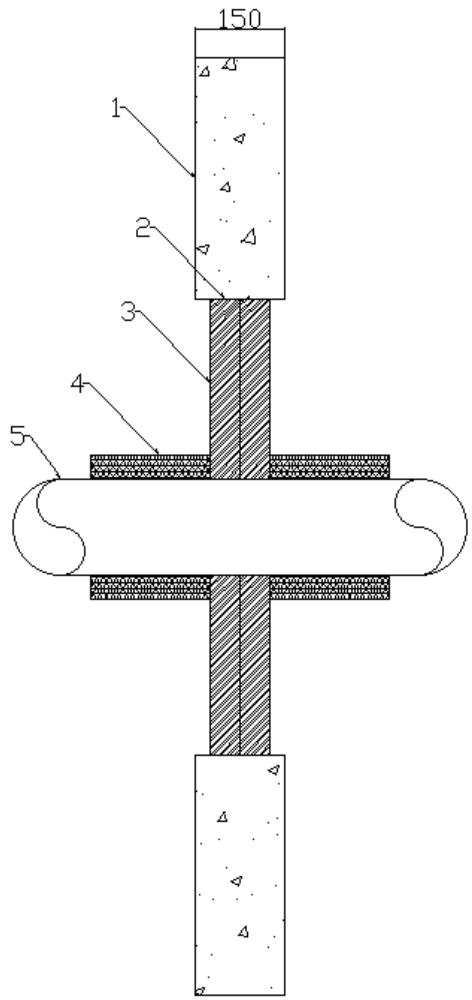
*All cables coated with 2mm DFT Astro PS Coat 300mm along the cables both sides of the seal
Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

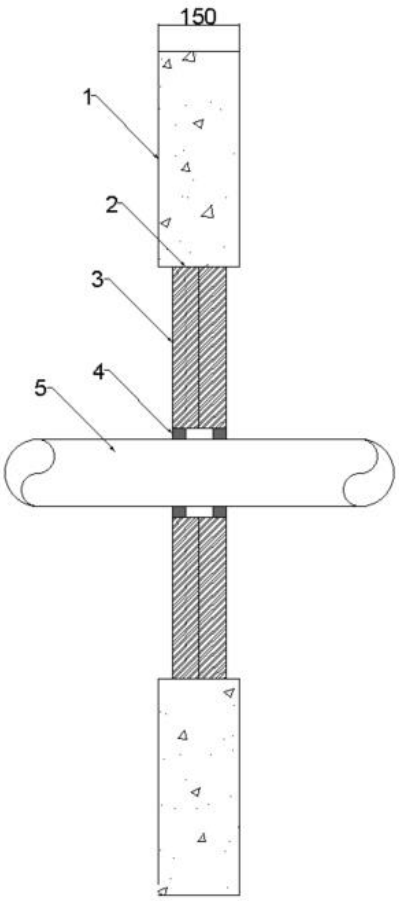
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Astro PS Coat 6. Penetration Service
Penetration Specification	**Classification**
*500mm perforated cable tray	EI 60
*Electrical cables up to 21mm ø	
*1 off ‘C1’ Cable	
*1 off ‘C2’ Cable	
*1 off ‘C3’ Cable	

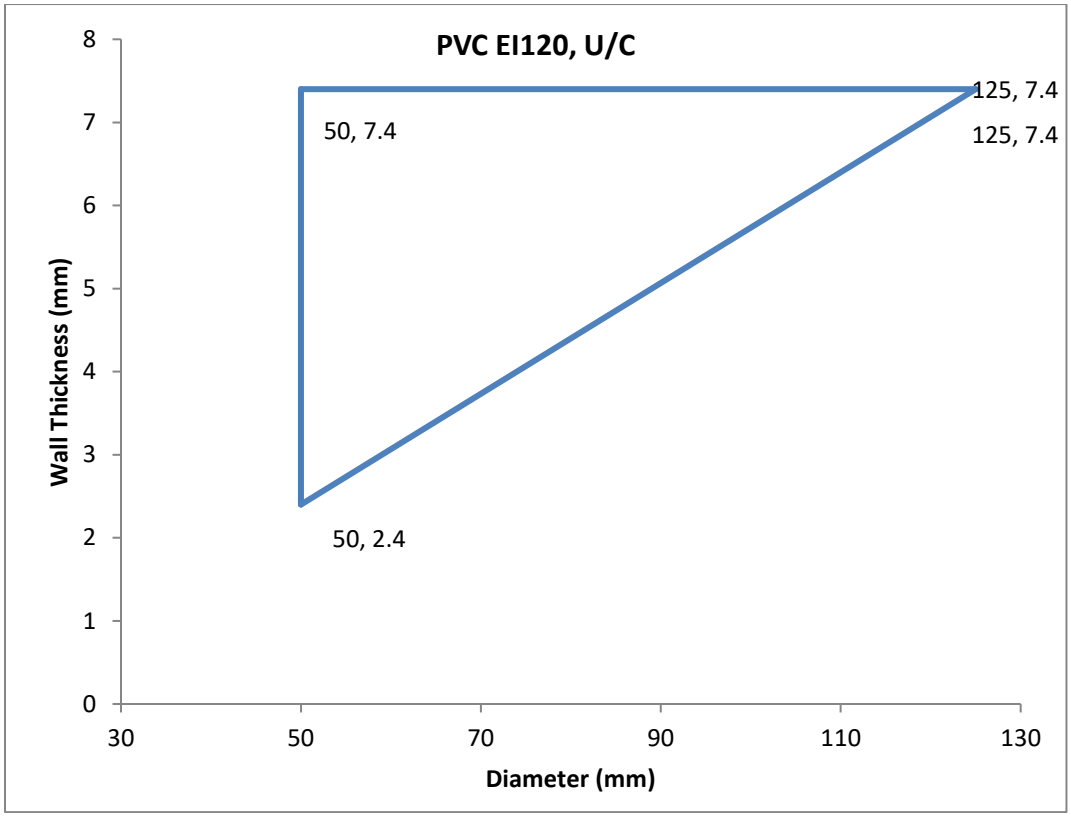
*All cables coated with 2mm DFT Astro PS Coat 300mm along the cables both sides of the seal
Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

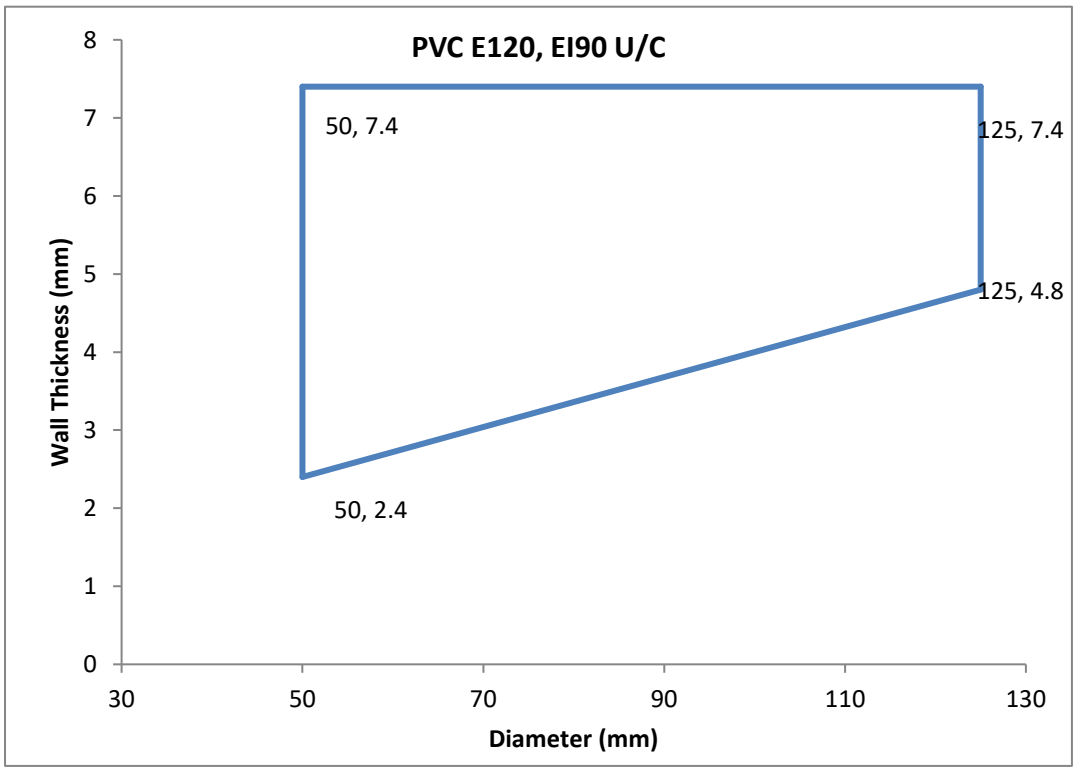
Double Layer, Astro Batt 50mm, Insulated Metallic Pipes

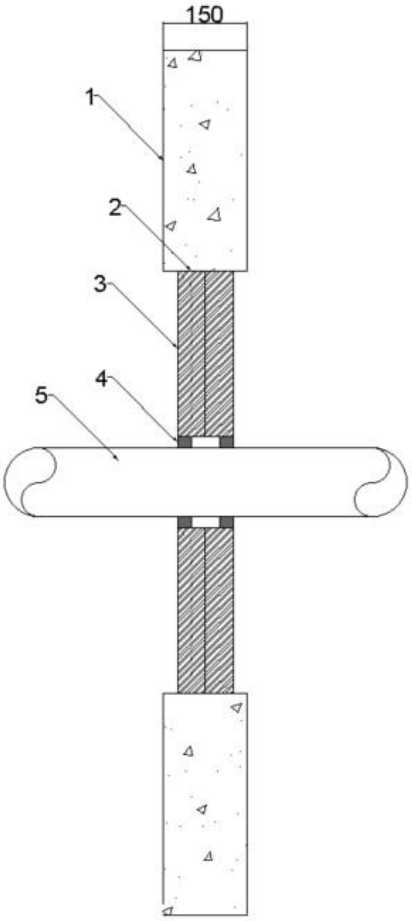
Max Aperture 730mm Wide x 1200mm High	
Service(s)  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/l 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 120 C/U EI 60 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/l 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 120 C/U EI 30 C/U

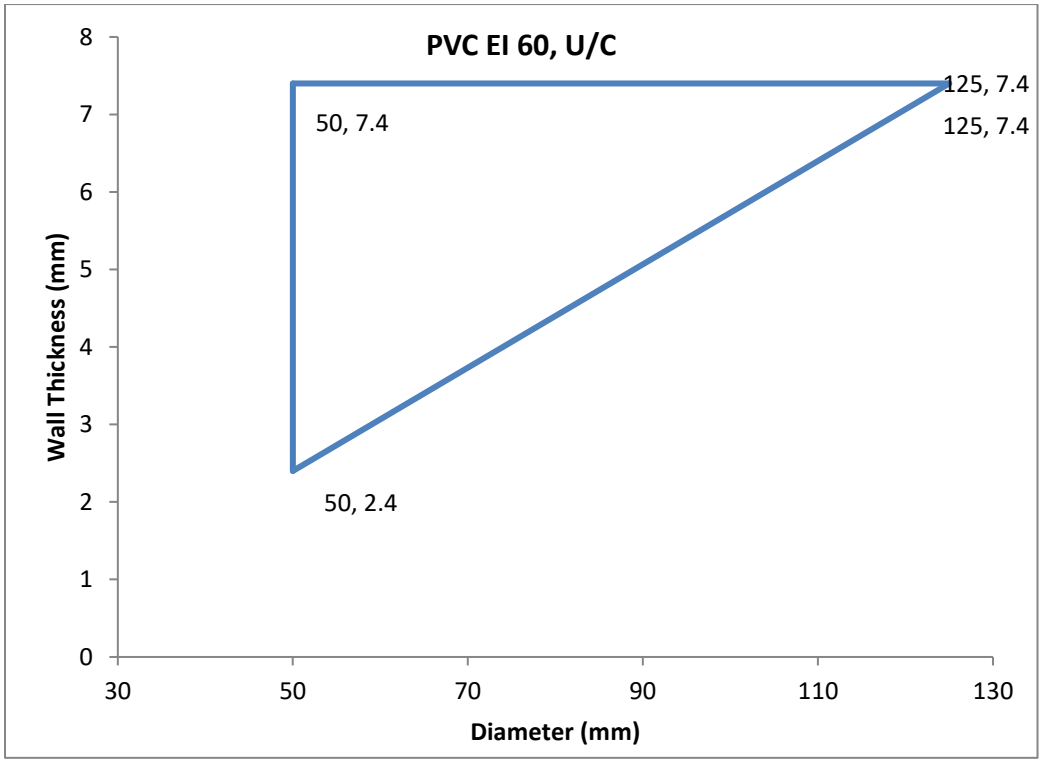
Max Aperture 2600mm Wide x 2600mm High	
Service(s)  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	EI 60 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 60 C/U EI 30 C/U

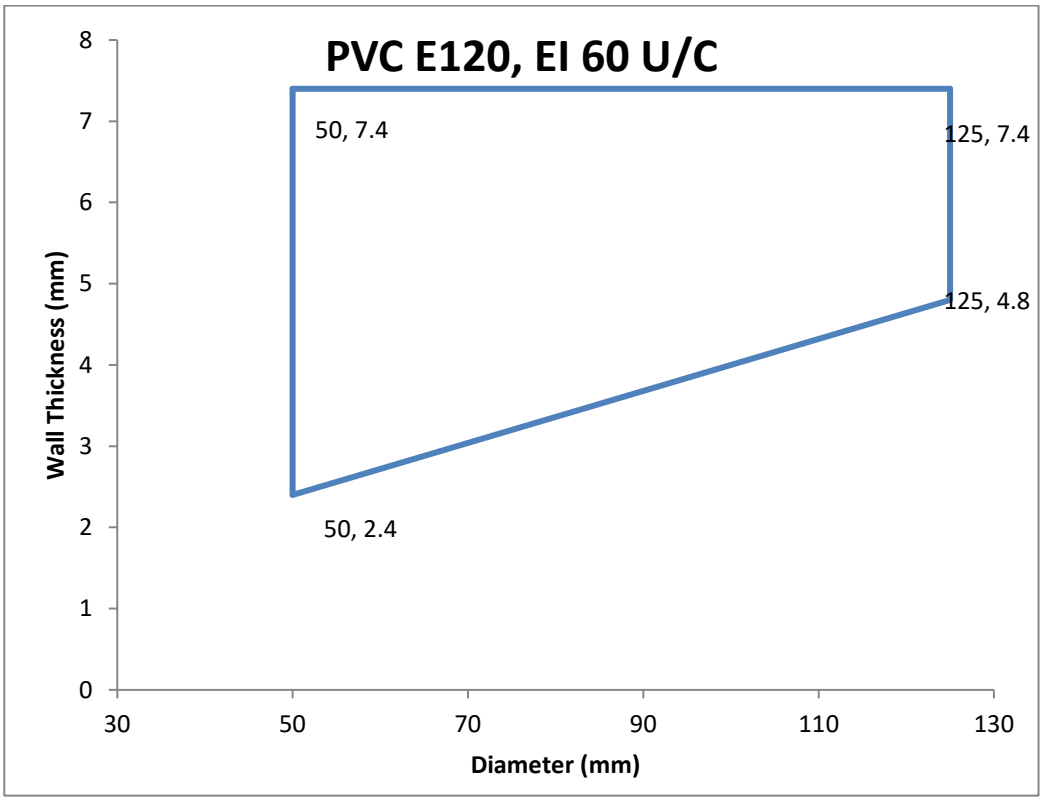
Max Aperture 750mm Wide x 1100mm High		
		Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Penetration Specification	**Astro HPE Sealant**	**Classification**
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Astro Batt	See graphs below

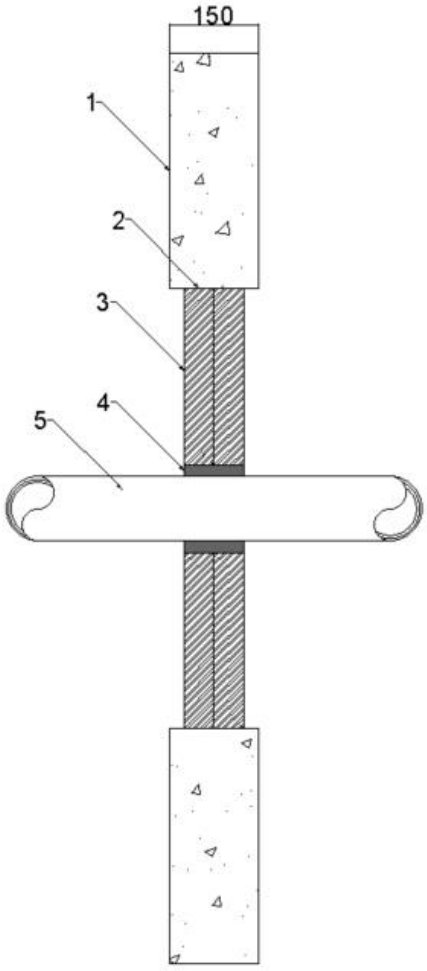

PVC EI120, U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 7.4
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130


PVC E120, EI90 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

Max Aperture 2600mm Wide x 2600mm High		
		Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Penetration Specification	**Astro HPE Sealant**	**Classification**
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Astro Batt	EI 60

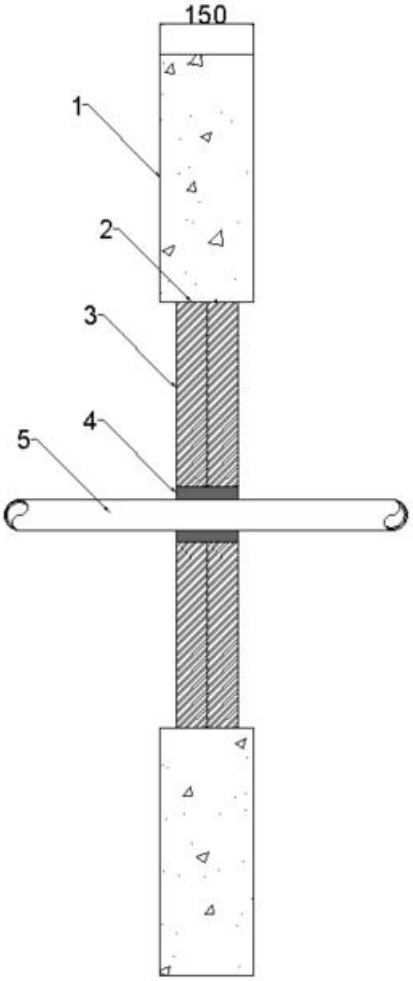

PVC EI 60, U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 7.4
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130


PVC E120, EI 60 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

Max Aperture 750mm Wide x 1100mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service

Penetration Specification	Classification
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	EI 120 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

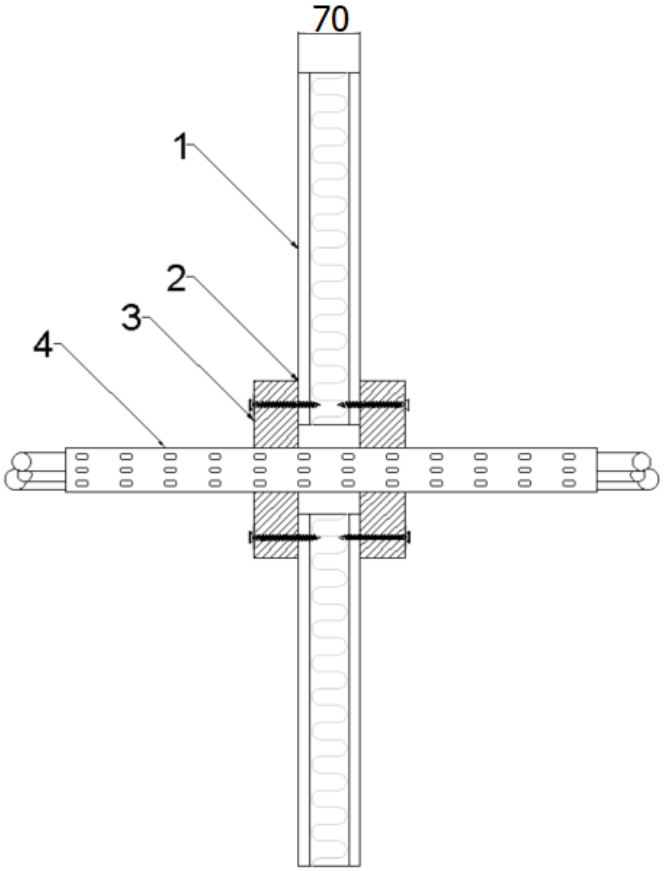
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Penetration Specification	**Classification**
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	EI 60 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

Flexible And Rigid Walls Minimum Thickness 70mm

Single Layer Pattress Astro Batt 50mm, Electrical Cables

Max Aperture 570mm Wide x 200mm High



Key

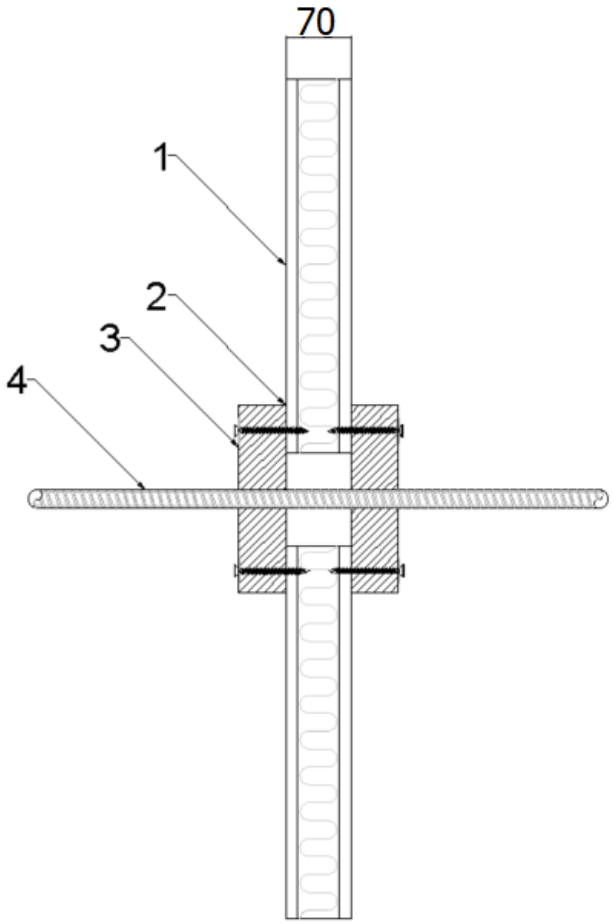
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration

Service(s)	Classification
500mm wide x 60mm deep steel cable basket containing 3 x type 'B' cable and 20 x bundle of telecoms cables	EI 90
500mm wide x 60mm deep steel cable tray containing 1 x type 'B' cable, 3 x type 'A1' cable, 3 x type 'A2' cable, and 3 x type 'A3' cable	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Conduits

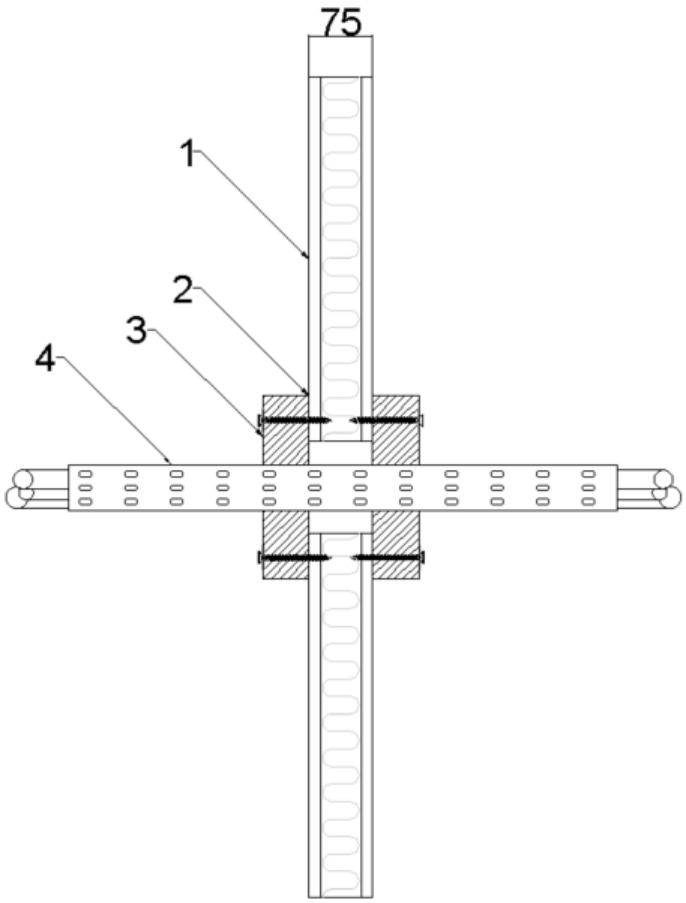
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed on all edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

<table>
<tr><td colspan="2">Max Aperture 570mm Wide x 200mm High</td></tr>
<tr><td>
</td><td>Key
1. Supporting Construction
2. Astro Intu Mastic
3. Astro Batt
4. Service Penetration</td></tr>
<tr><td>Service(s)</td><td>Classification</td></tr>
<tr><td>20mm dia Adaptaflex SPL20 flexible conduit</td><td rowspan="2">EI 90</td></tr>
<tr><td>20mm dia Kopex KSU 316 stainless steel flexible conduit</td></tr>
<tr><td>150mm wide x 60mm deep steel cable tray containing 4 x FP200 Gold (Firealarm cable 7mm dia red) Cables</td><td>E 90 EI 60</td></tr>
</table>

Flexible And Rigid Walls Minimum Thickness 75mm

Single Layer Patress Astro Batt 50mm, Electrical Cables

Max Aperture 570mm Wide x 200mm High



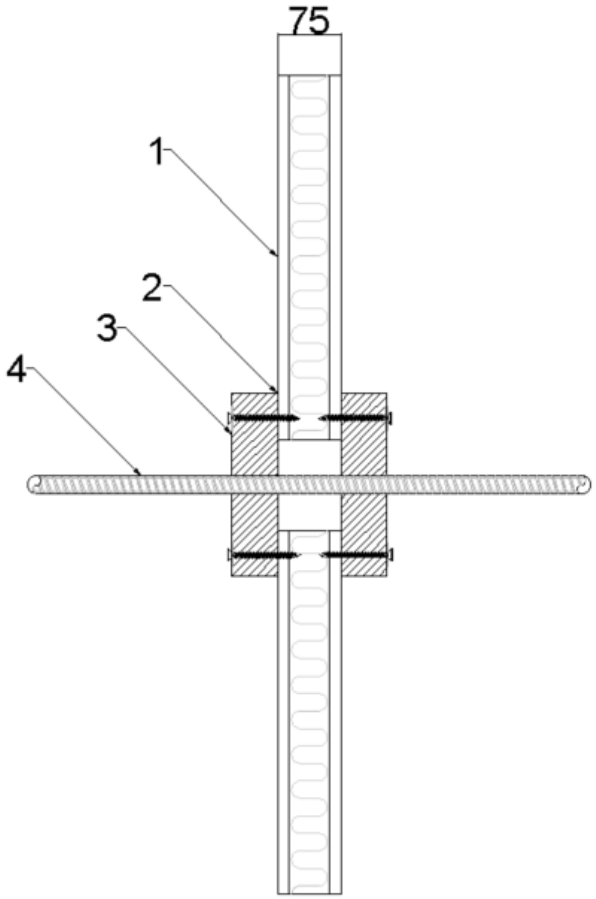
Key
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Penetration Service

Service(s)	Classification
500mm wide x 60mm deep steel cable basket containing 3 x type ‘B’ cable and 20 x bundle of telecoms cables	EI 90
500mm wide x 60mm deep steel cable tray containing 1 x type ‘B’ cable, 3 x type ‘A1’ cable, 3 x type ‘A2’ cable, and 3 x type ‘A3’ cable	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Single Layer Patress Astro Batt 50mm, Electrical Cables and Conduits

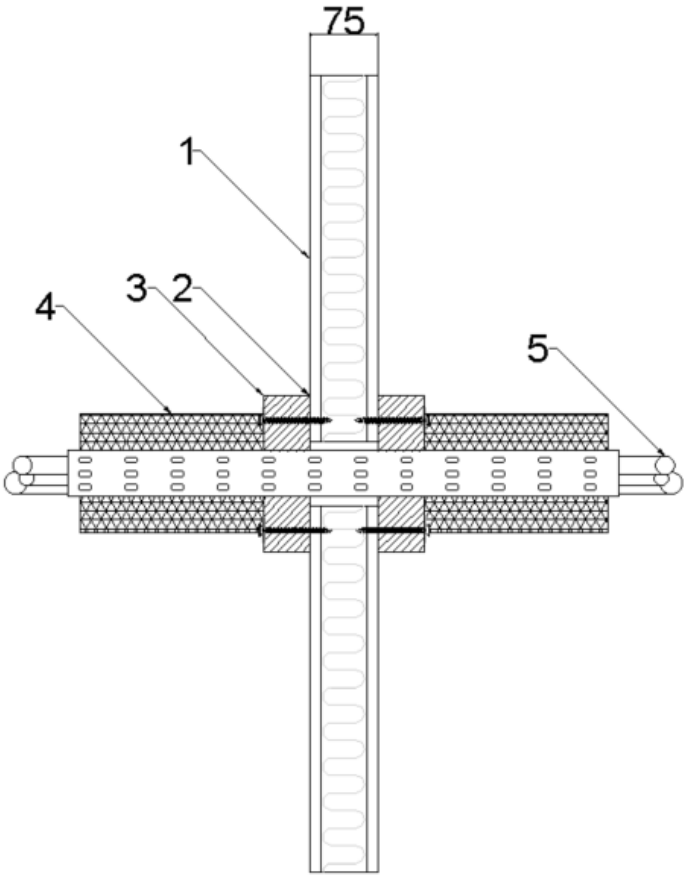
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

Max Aperture 200mm Wide x 200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Penetration Service
Service(s)	Classification
20mm dia Adaptaflex SPL20 flexible conduit	EI 90
20mm dia Kopex KSU 316 stainless steel flexible conduit	
150mm wide x 60mm deep steel cable tray	
4 x FP200 Gold (Firealarm cable 7mm dia red) Cables	E 90 EI 60

Flexible And Rigid Walls Minimum Thickness 75mm

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Cable Trunking

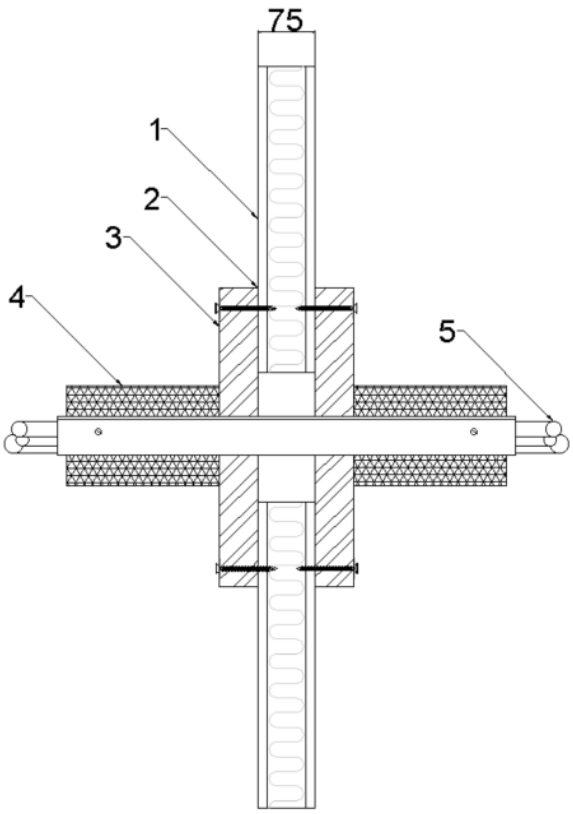
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings

<table>
<tr><td colspan="2">Max Aperture 70mm Wide x 70mm High</td></tr>
<tr><td>
</td><td><u>Key</u>
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Insulation
5. Penetration Service</td></tr>
<tr><td>Service(s)</td><td>Classification</td></tr>
<tr><td>50mm x 50mm Insulated steel cable trunking, Stone Wool 40mm thick, 45kg/m^3 (LI 400mm). Astro X Series Pillow tightly fitted around the cables in the section of trunking within the depth of the partition.</td><td>EI 60 U/U</td></tr>
<tr><td>Cables 1xA1, 1xA2, 1xA3</td><td rowspan="4">EI 60</td></tr>
<tr><td>Cables 1xA1</td></tr>
<tr><td>Cables 1xA2</td></tr>
<tr><td>Cables 1xA3</td></tr>
</table>

installed at max 300mm centres

Single Layer Pattress Astro Batt 50mm, Electrical Cables and Cable Trunking

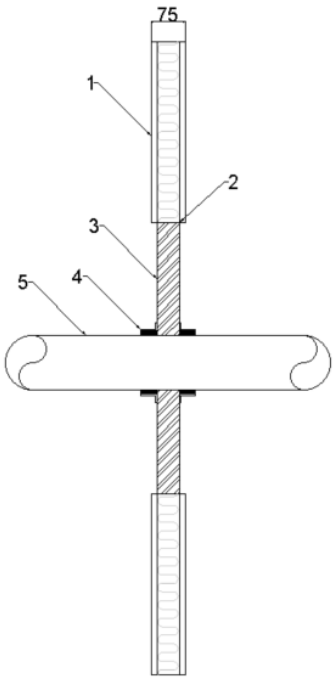
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 50mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

<table>
<tr><td colspan="2">Max Aperture 170mm Wide x 170mm High</td></tr>
<tr><td>
</td><td>Key
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Insulation
5. Penetration Service</td></tr>
<tr><td>Service(s)</td><td>Classification</td></tr>
<tr><td>150mm x 150mm Insulated steel cable trunking, Stone Wool 40mm thick, 45kg/m^3 (LI 400mm). Astro X Series Pillow tightly fitted around the cables in the section of trunking within the depth of the partition.</td><td>EI 60 U/U</td></tr>
<tr><td>Cables 1xB1, 1xC1, 1xG1, 1xG2</td><td rowspan="4">EI 60</td></tr>
<tr><td>Cables 1xB1</td></tr>
<tr><td>Cables 1xC1</td></tr>
<tr><td>Unsheathed electrical cables 0-24mm dia</td></tr>
</table>

Single Layer Astro Batt 50mm, Plastic Pipes

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



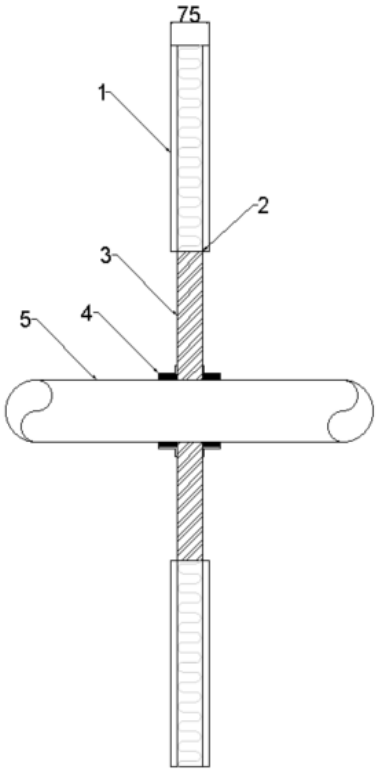
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 60 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



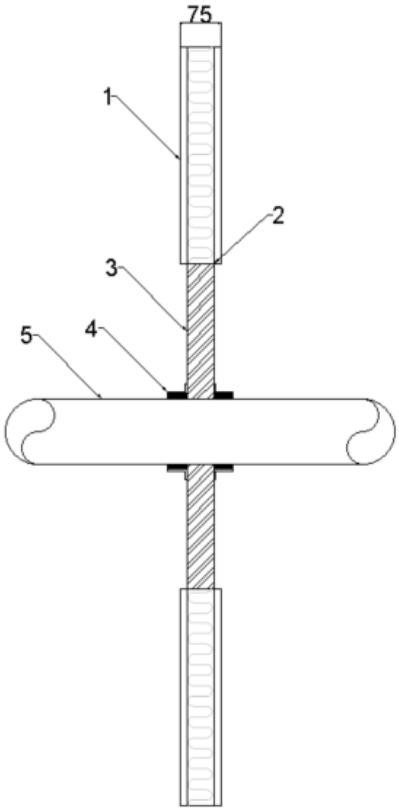
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Max Aperture 600mm Wide x 600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



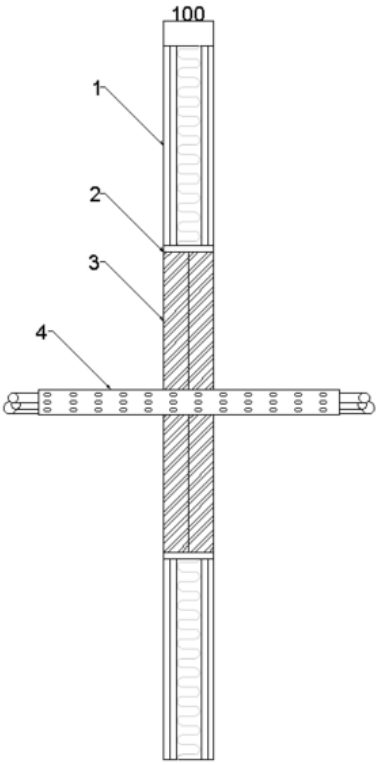
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

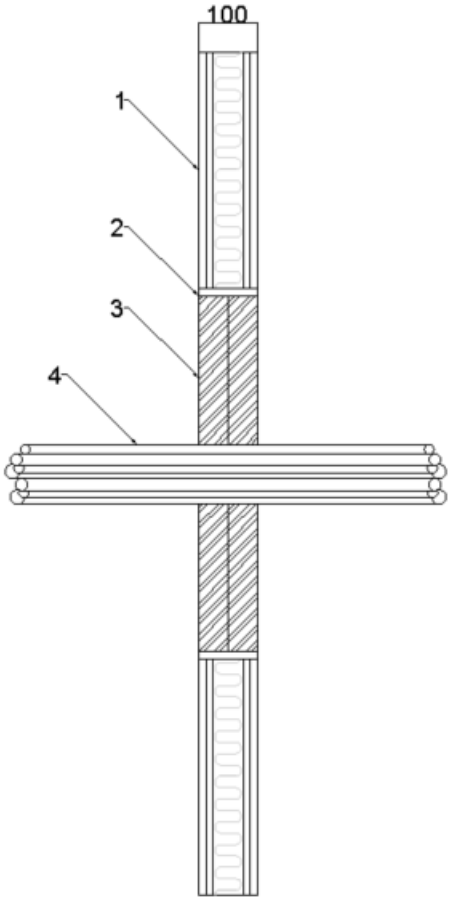
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

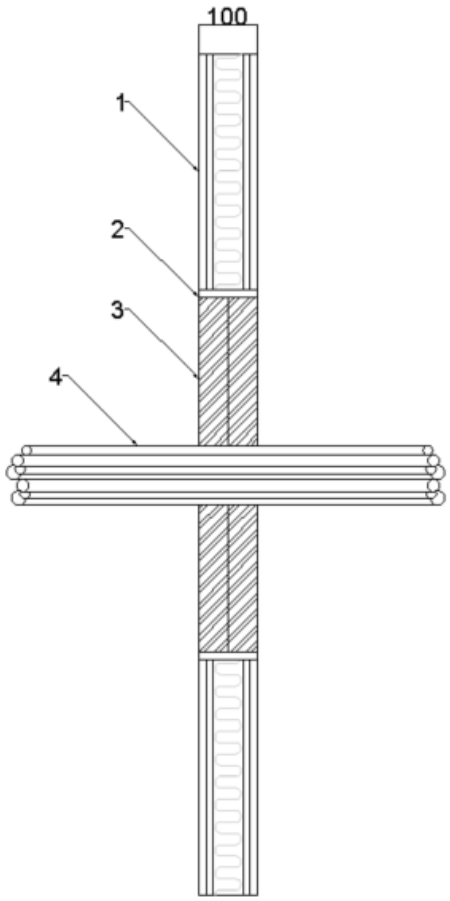
Flexible And Rigid Walls Minimum Thickness 100mm

Double Layer Astro Batt 50mm, Electrical Cables and Conduits

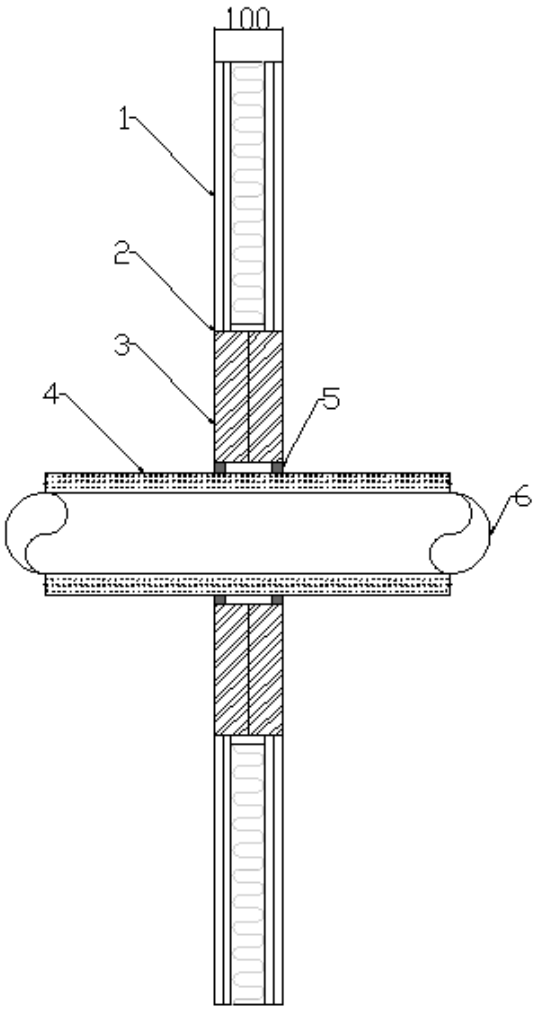
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Penetration Service

Service(s)	**Classification**
Electrical cables 0mm to 21mm dia	EI 60
Electrical cables 22mm to 50mm dia	E 60 EI 45
Electrical cables 51mm to 80mm dia	E 60 EI 30
Cable Trays and Ladders	E 60 EI 45
100 mm diameter bundle telecommunication cable type “F”	EI 60
Unsheathed electrical cables 0-24mm dia	
Steel or Copper Conduits up to 16mm	E 60 C/U
Plastic conduits up to 16mm	EI 60 C/U

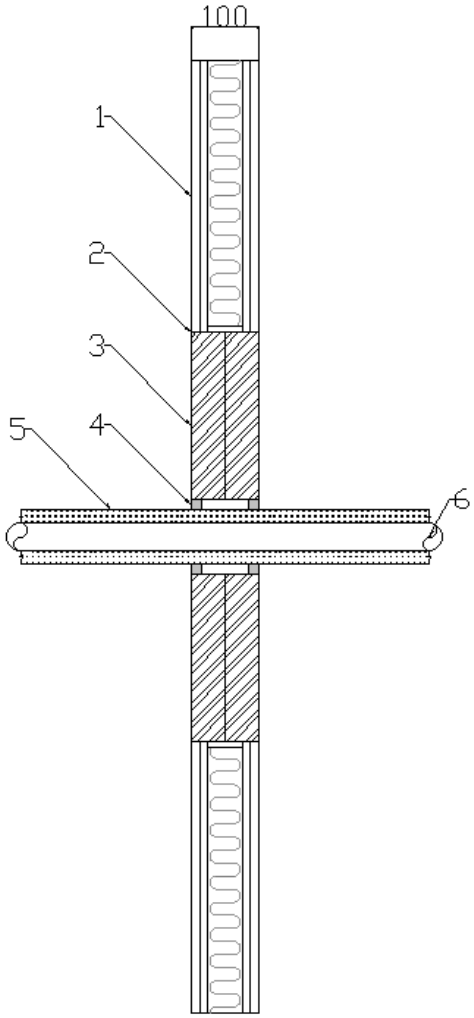
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Penetration Service
Service(s)	**Classification**
Electrical cables up to 21mm dia	EI 60
Electrical cables 22mm to 80mm dia	E 60 EI 45
Cable Trays and Ladders	EI 60
100 mm diameter bundle telecommunication cable type “F”	EI 60
Unsheathed electrical cables up to 17mm dia	E 60 EI 30
Unsheathed electrical cables 18-24mm dia	E 60 EI 15
Steel or Copper Conduits up to 16mm	E 60 EI 15
Plastic conduits up to 16mm	EI 60

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Penetration Service
Service(s)	**Classification**
Electrical cables up to 21mm dia	EI 60
Electrical cables 22mm to 80mm dia	E 60 EI 45
Cable Trays and Ladders	EI 60
100 mm diameter bundle telecommunication cable type “F”	EI 60
Unsheathed electrical cables up to 17mm dia	E 60 EI 30
Unsheathed electrical cables 18-24mm dia	E 60 EI 15
Steel or Copper Conduits up to 16mm	E 60 EI 15
Plastic conduits up to 16mm	EI 60

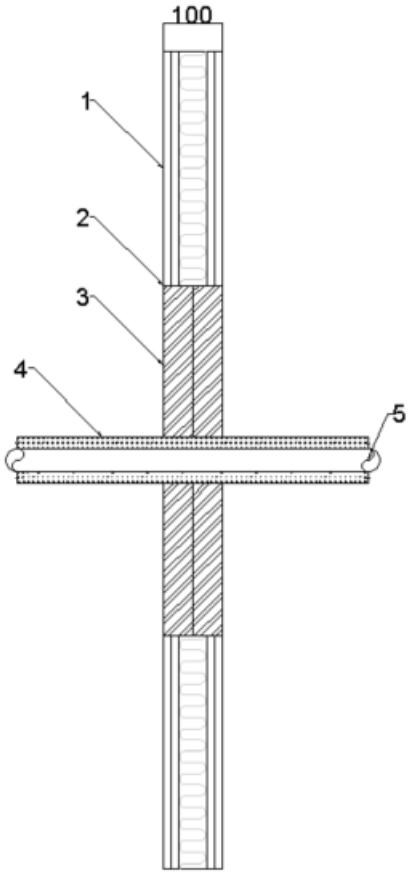
Double Layer Astro Batt 50mm, Insulated Metallic Pipes

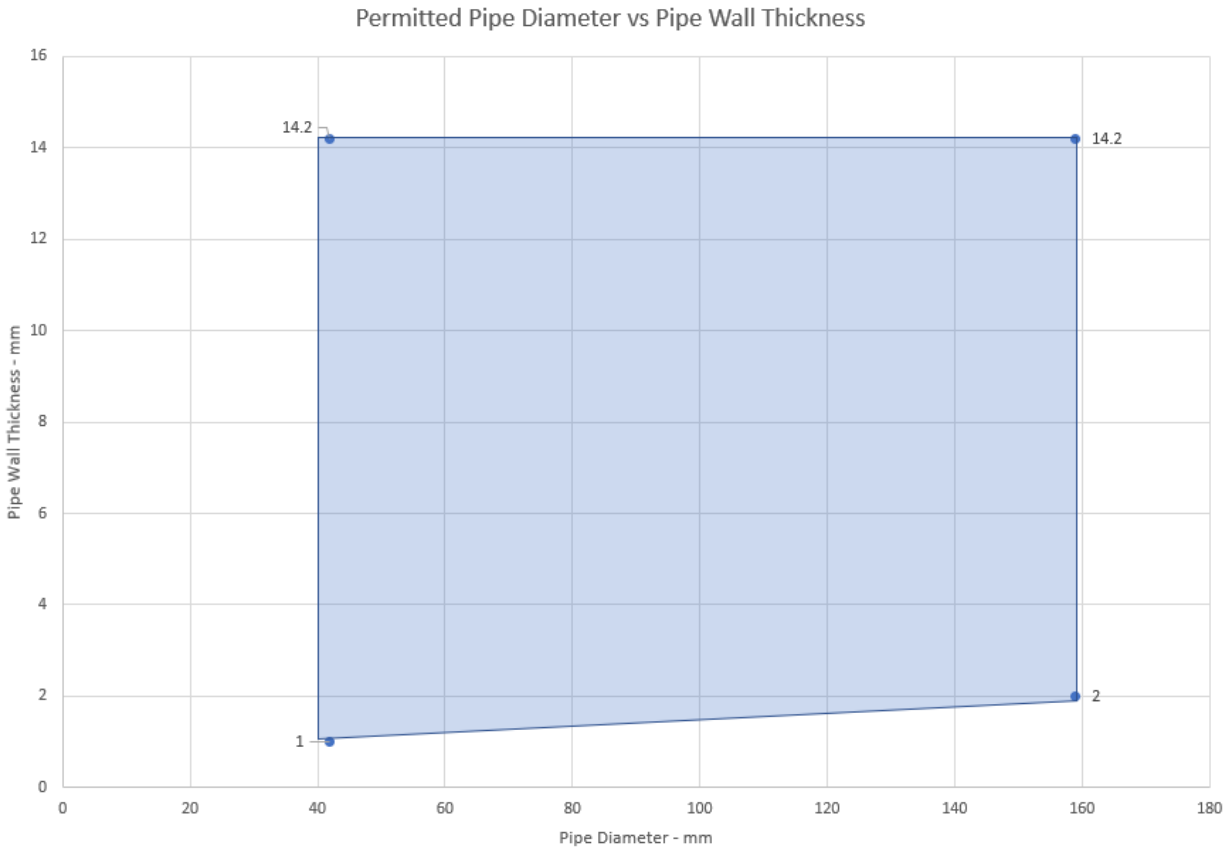
Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Astro HPE Sealant 6. Penetration Service
Service(s)	**Classification**
[1]Single copper or mild steel pipe 40mm diameter and 1.5 – 14.2 mm wall with sustained/continuous 20mm thick foil faced glass wool insulation (min 80Kg/m^3)	E 90 U/C EI 60 U/C
[1]Single copper or mild steel pipe 40-159mm diameter and 2.3 – 14.2 mm wall with sustained/continuous 30mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C

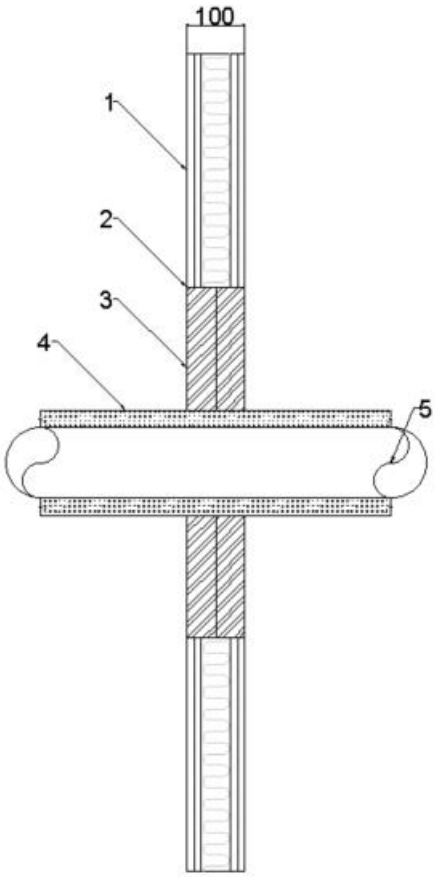
[1]15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the pipe

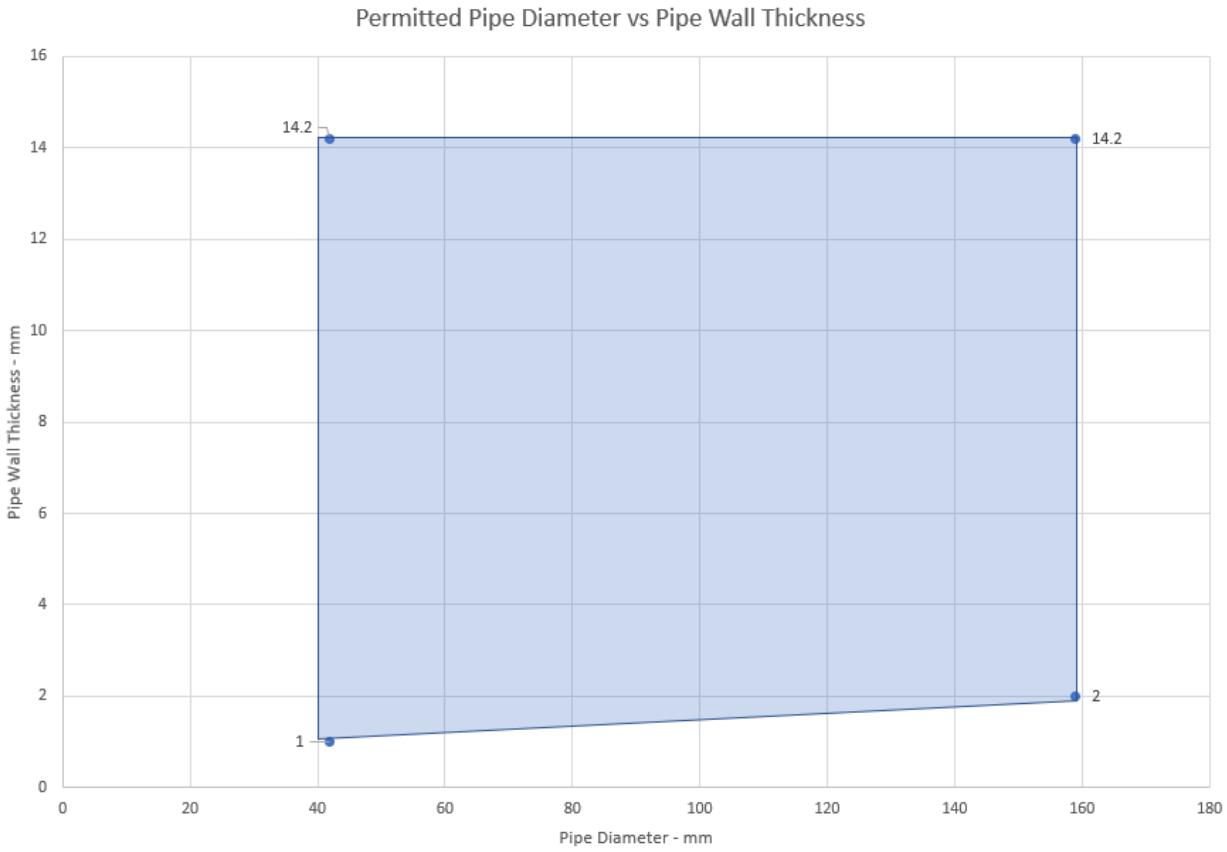
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[1]Single copper or mild steel pipe 40mm diameter and 1.5 – 14.2 mm wall with sustained/continuous 20mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C
[1]Single copper or mild steel pipe 40-159mm diameter and 2.3 – 14.2 mm wall with sustained/continuous 30mm thick foil faced glass wool insulation (min 80Kg/m^3)	EI 60 U/C

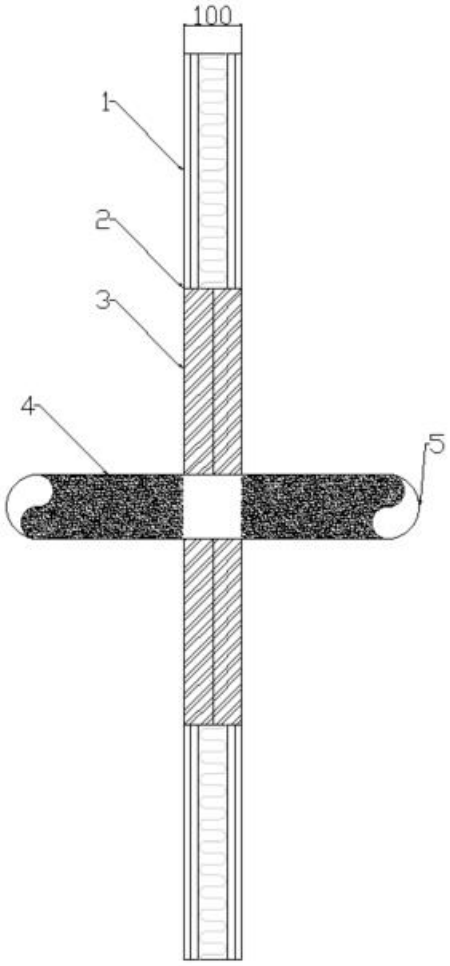
[1]15mm deep x 15mm wide annulus Astro HPE Sealant to both faces of the pipe

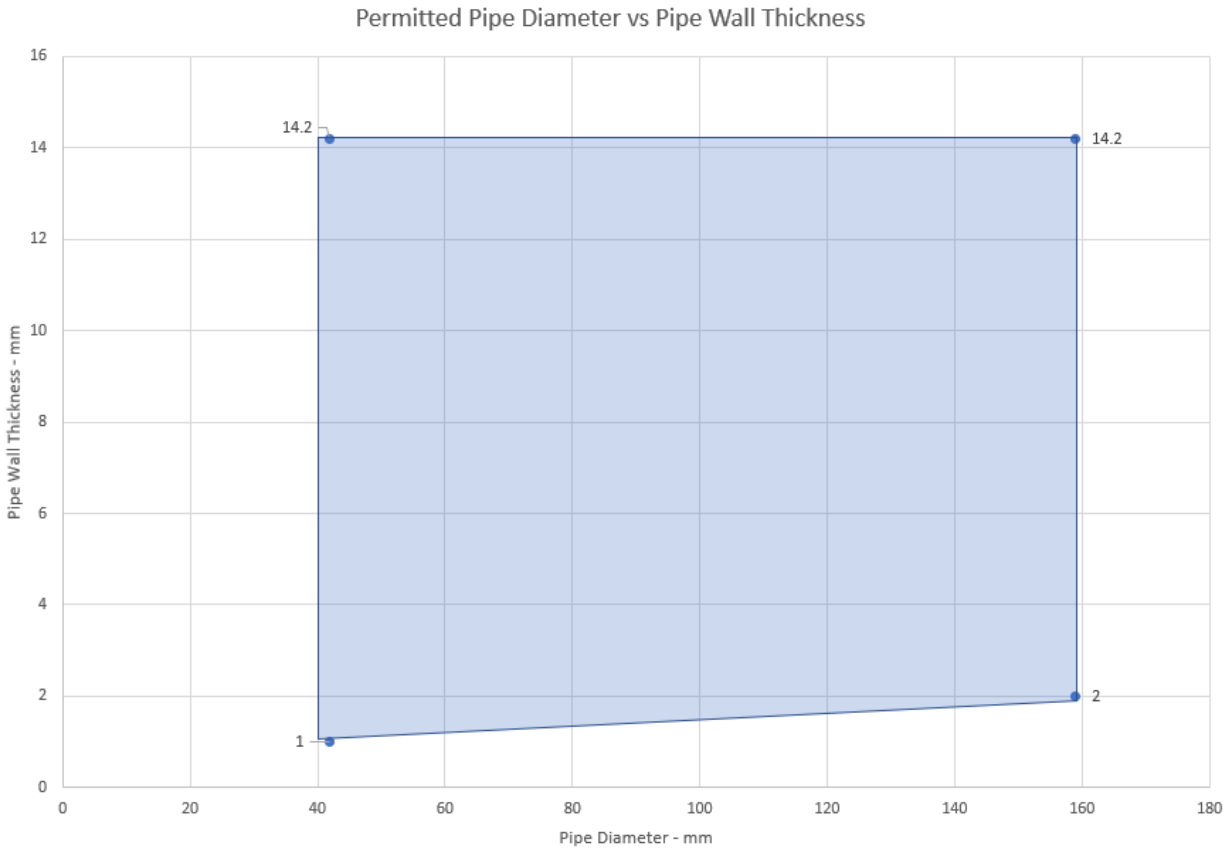
Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 60 C/U

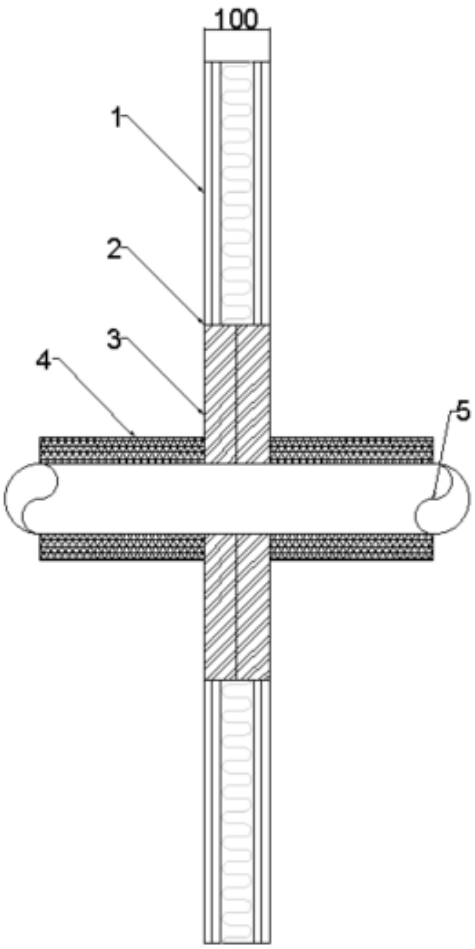

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
2
1

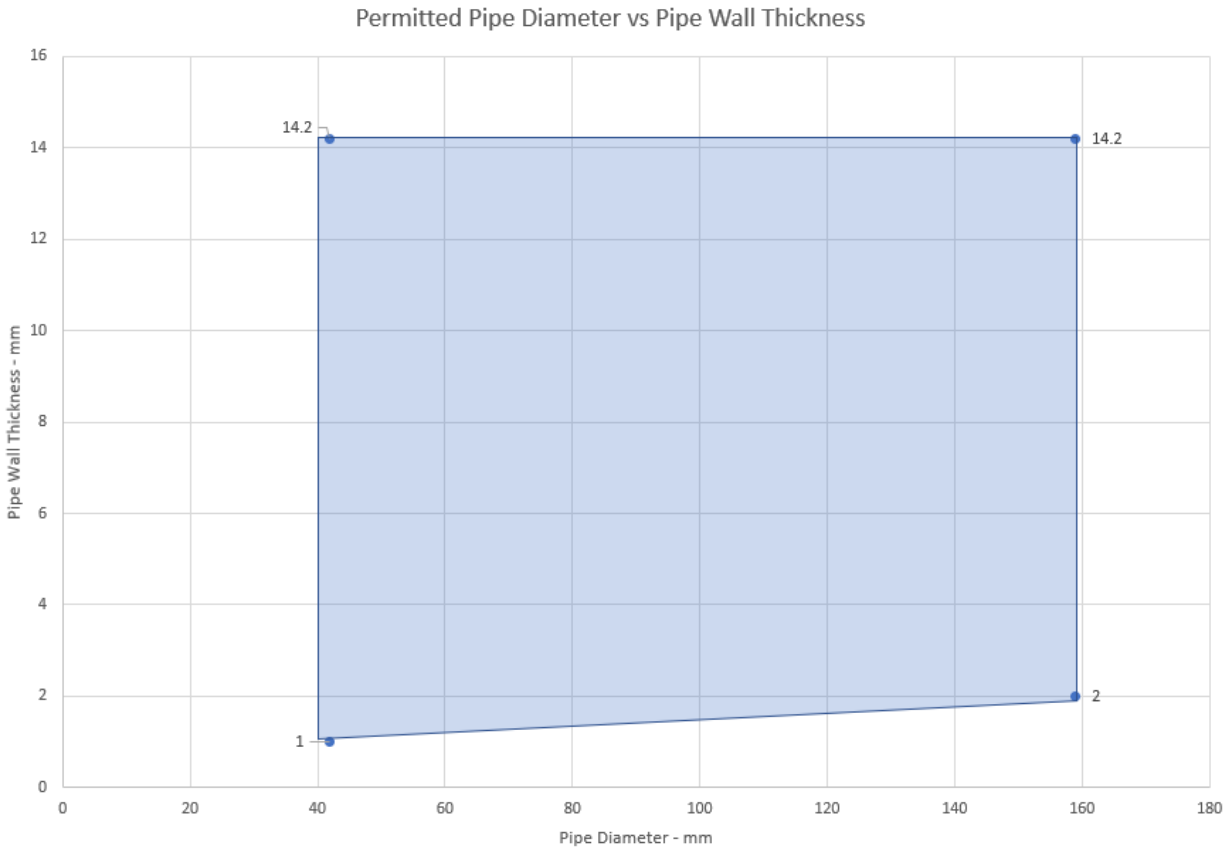
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 60 C/U

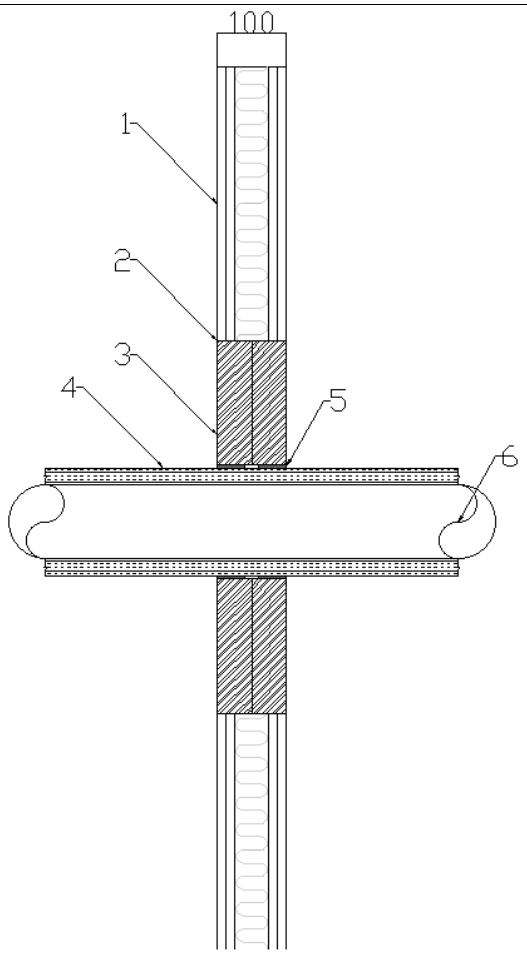

Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
2
1

Max Aperture 730mm Wide x 1200mm High (Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro PS Coat 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (C/I)	EI 60 C/U
Steel or Copper Pipe 42mm Ø, 1.0mm – 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 20 C/U
Steel 42-324mm Ø, 16mm wall thickness. 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 120 C/U EI 45 C/U


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
2
1

Max Aperture 2600mm Wide x 2600mm High (Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (L/I 400mm)	EI 45 C/U
Steel 42-324mm Ø, 16mm wall thickness. 40mm thick foil faced stonewool insulation min. 40kg/m^3 (C/I)	EI 60 C/U
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 42-159mm Ø, 1.0mm – 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 60 C/U EI 20 C/U
Steel 42-324mm Ø, 16mm wall thickness. 14.2mm wall thickness Astro PS Coat along the penetration 2mm DFT (L/I 300mm)	E 60 C/U EI 45 C/U


Permitted Pipe Diameter vs Pipe Wall Thickness
Pipe Wall Thickness - mm
Pipe Diameter - mm
16
14
12
10
8
6
4
2
0
0
20
40
60
80
100
120
140
160
180
14.2
14.2
2
1

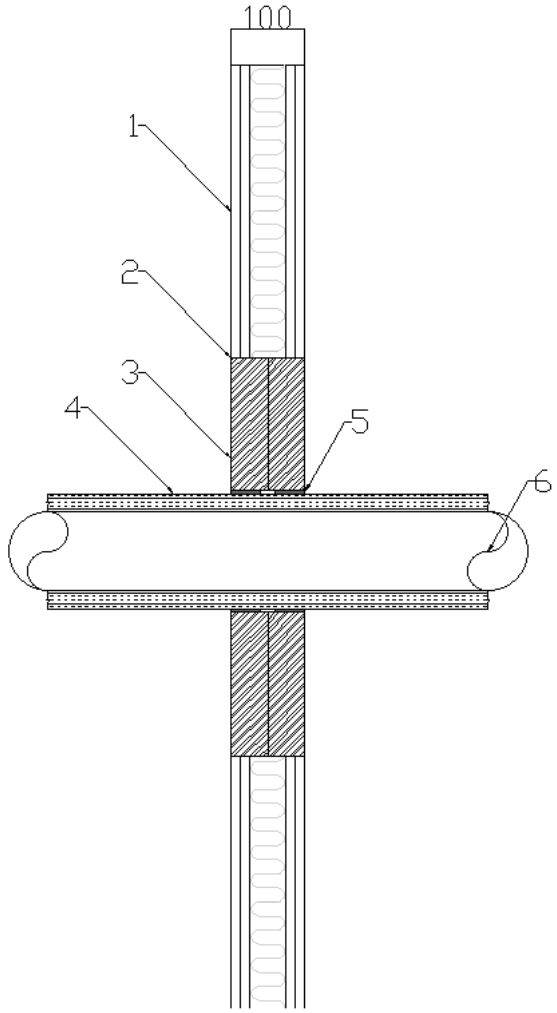
Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 6. Penetration Service

Service(s)	Classification
[1]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST[2] Insulation (C/S)	E 120 C/U EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST[2] insulation (C/S)	E 120 C/U EI 90 C/U
[1]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM3 insulation (C/S)	E 120 C/U EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[3] insulation (C/S)	E 120 C/U EI 90 C/U
[1]Steel or Copper Pipe 42mm Ø, 1.0–14.2mm wall thickness. 50mm thick glassfibre insulation (C/S)	E 120 C/U EI 90 C/U

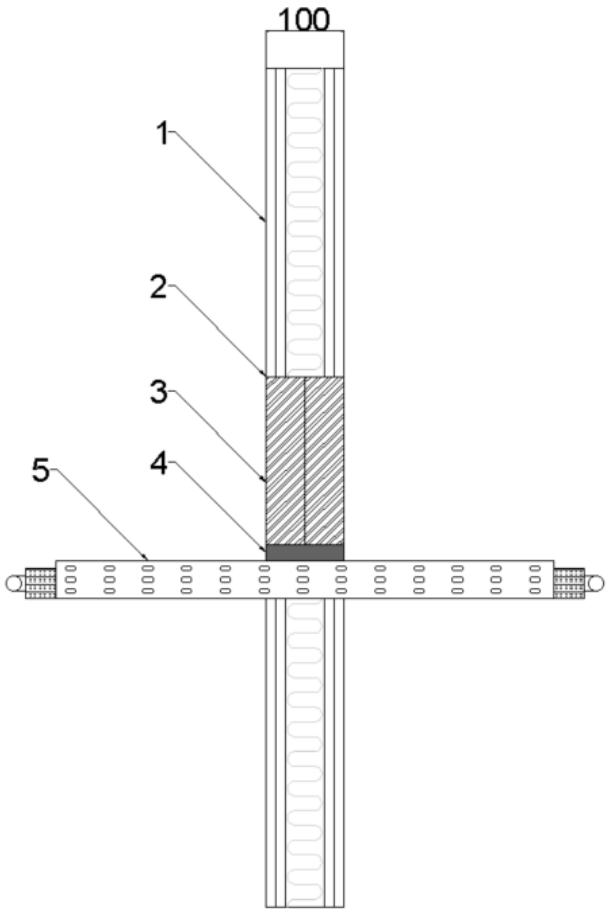
[1]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

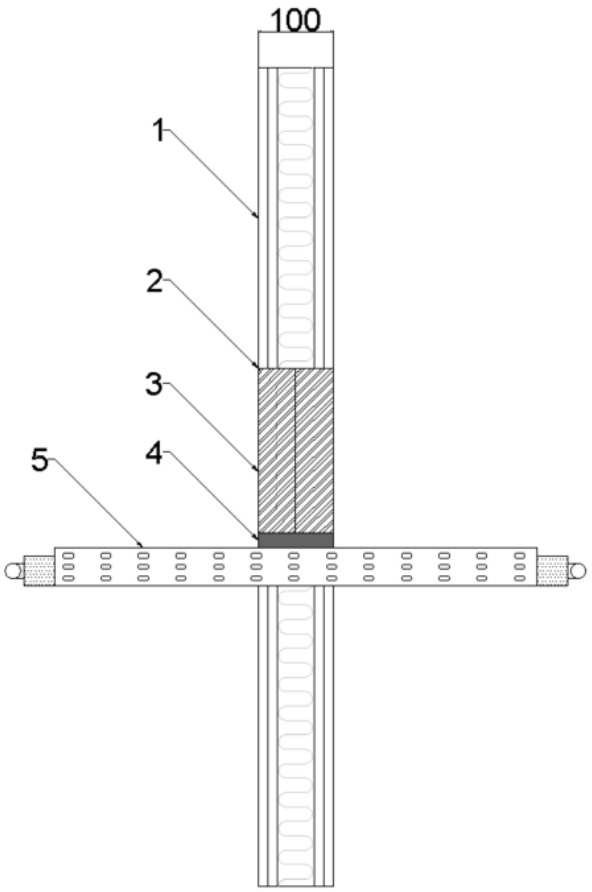
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 6. Penetration Service
Service(s)	**Classification**
[1]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST[2] Insulation (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST[2] insulation (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[3] insulation (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[3] insulation (C/S)	EI 60 C/U
[1]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 50mm thick glassfibre insulation (C/S)	EI 60 C/U

[1]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the Astro Batt
[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 730mm Wide x 1200mm High	
Zero distance to bottom of seal 	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1] 6 off Steel or Copper Pipe 22mm Ø, 0.9mm – 14.2mm wall thickness. 19mm thick Armaflex[2] (L/S 400mm)	EI 90 C/U
[1]500mm steel cable tray	E 90 EI 15

[1]Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

Max Aperture 2600mm Wide x 2600mm High	
Zero distance to bottom of seal 	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro HPE Sealant 5. Penetration Service
Service(s)	**Classification**
[1] 6 off Steel or Copper Pipe 22mm Ø, 0.9mm – 14.2mm wall thickness. 19mm thick Armaflex[2] (L/S 400mm)	EI 60 C/U
[1]500mm steel cable tray	E 60 EI 15

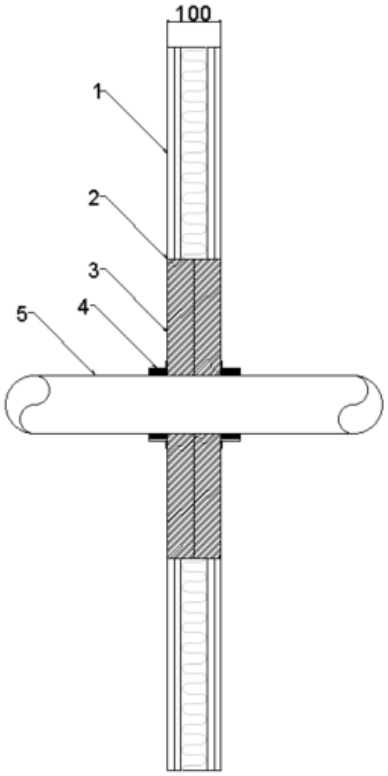
[1]Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

Double Layer Astro Batt 50mm, Plastic Pipes

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



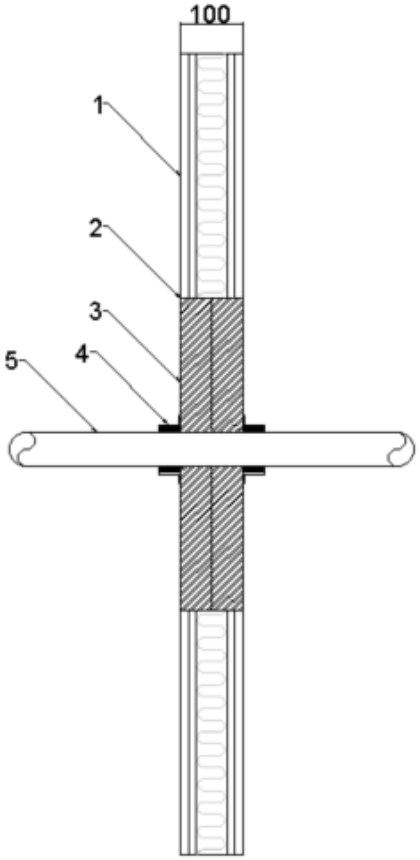
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 120 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



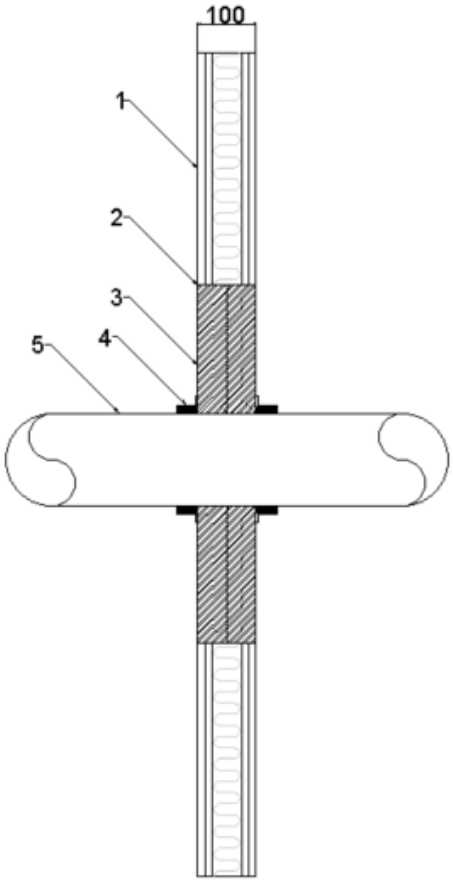
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 60 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



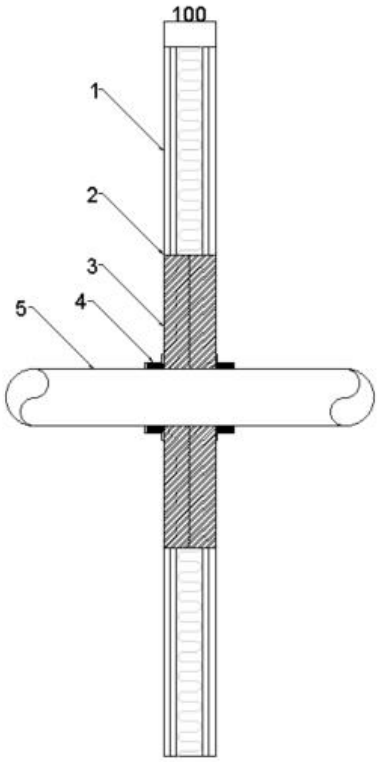
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



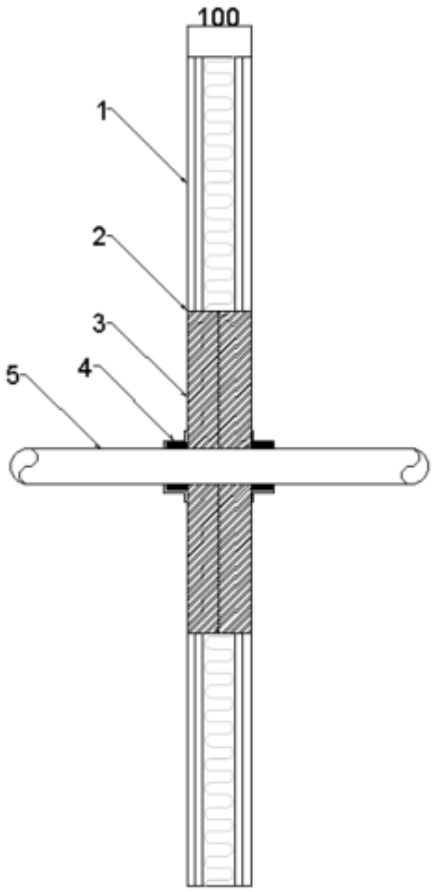
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



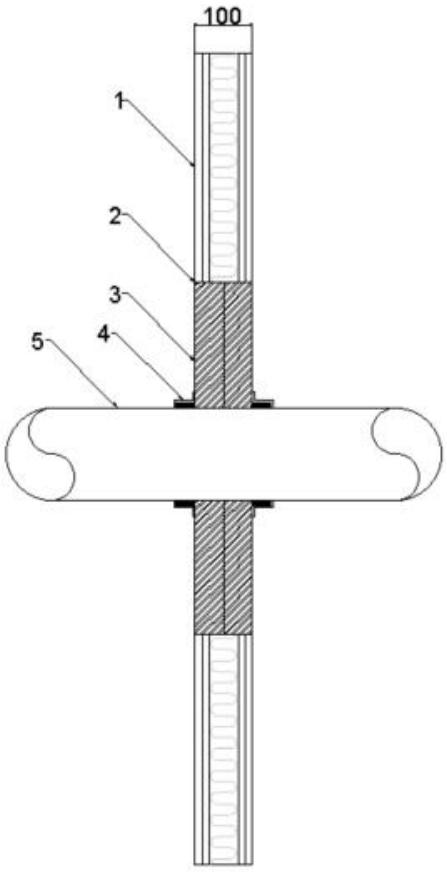
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)
Collars secured both faces of the substrate utilising 80mm long steel pig tail screw through to Astro Batt



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

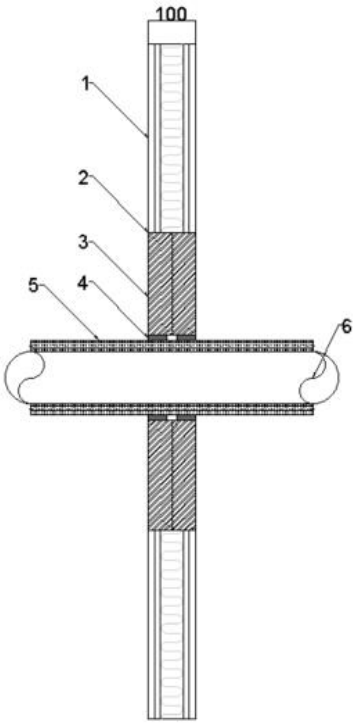
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Double Layer Astro Batt 50mm, Insulated Plastic Pipes

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt
[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 100mm distance between services and 50mm to edge of seal)



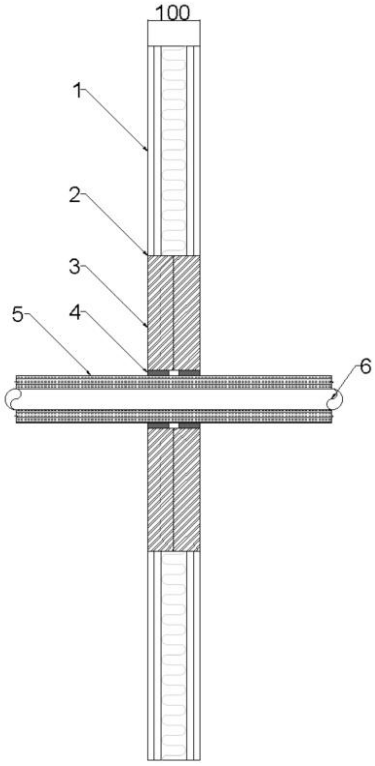
Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
5. Insulation
6. Penetration Service

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe 40mm Ø, 1.9mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 15 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 120 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 20 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	E 120 U/C EI 90 U/C
PVC Pipe 40mm Ø, 1.9mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	EI 120 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 9 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 120 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 13 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 120 U/C

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 100mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
5. Insulation
6. Penetration Service

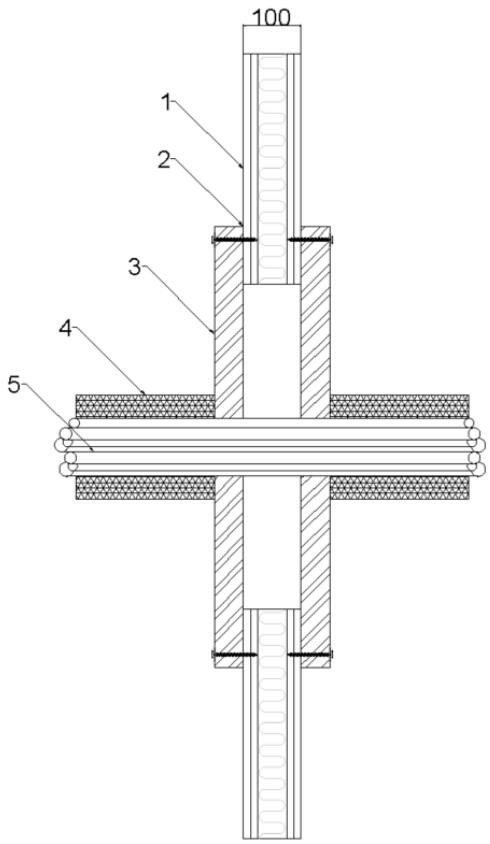
Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe 40mm Ø, 1.9mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 15 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 25 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 20 mm thick Kingspan Kooltherm FM[3] insulation (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 1.9mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	EI 60 U/C
PVC Pipe 40mm Ø, 3mm wall thickness. 9 mm thick Armacell Armaflex Class O[2] (C/S)	3 x 2mm thickness	
PVC Pipe 110mm Ø, 4.2mm wall thickness. 32 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 60 U/C
PVC Pipe 110mm Ø, 6.6mm wall thickness. 13 mm thick Armacell Armaflex Class O[2] (C/S)	5 x 2mm thickness	EI 60 U/C

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

[2]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

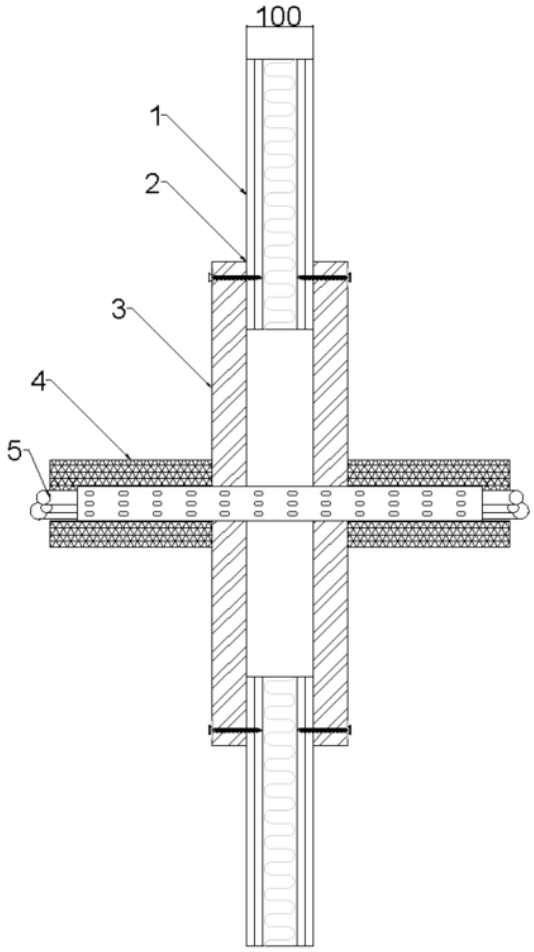
[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Single Layer Patress, Astro Batt 50mm, Electrical Cables and Conduits

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[2]Electrical cables up to 80mm Ø	EI 120
[2]Cable Trays and Ladders	
[2]100 mm diameter bundle telecommunication cable type “F”	
[2]Unsheathed electrical cables up to 24mm Ø	
[2]Steel or Copper Conduits up to 16mm Ø	
[2]Plastic conduits up to 16mm Ø	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

[2]Cables and cable trays wrapped with a single layer of 40mm thick, 40kg/m^3 Stonewool (L/I 300mm)

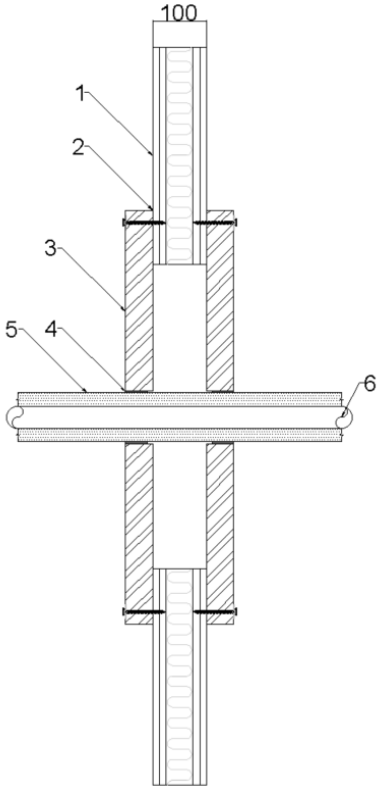
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
[2]Electrical cables upto 80mm Ø	EI 60
[2]Cable Trays and Ladders	
[2]100 mm diameter bundle telecommunication cable type "F"	
[2]Unsheathed electrical cables up to 24mm Ø	
[2]Steel or Copper Conduits up to 16mm Ø	
[2]Plastic conduits up to 16mm Ø	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres

[2]Cables and cable trays wrapped with a single layer of 40mm thick, 40kg/m^3 Stonewool (L/I 300mm)

Single Layer Patress, Astro Batt 50mm, Insulated Metallic Pipes

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings

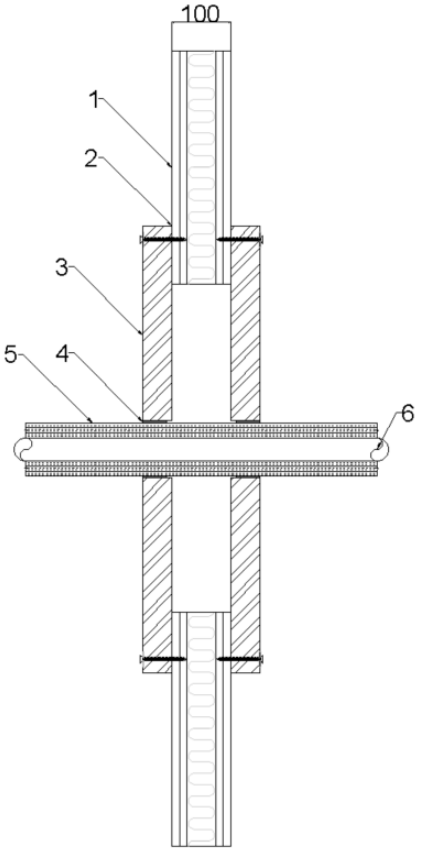
Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[2]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST[3] Insulation (C/S)	E 120 C/U EI 60 C/U
[2]Steel or Copper Pipe 42mm Ø, 1.2 – 14.2mm wall thickness. 13-25mm thick K Flex ST[3] insulation (C/S)	E 120 C/U EI 90 C/U
[2]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	E 120 C/U EI 60 C/U
[2]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	E 120 C/U EI 90 C/U
[2]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 50mm thick glassfibre insulation min. 30kg/m[3] (C/S)	E 120 C/U EI 90 C/U

installed at max 300mm centres.

[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

[3]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

[4]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

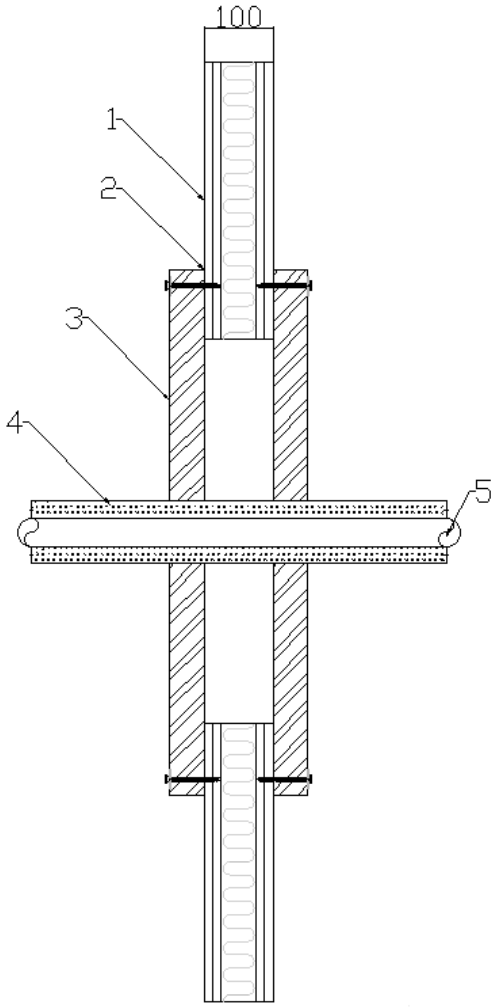
Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
[2]Steel or Copper Pipe 42-159mm Ø, 1.2mm – 14.2mm wall thickness. 13-25mm thick K Flex ST[3] Insulation (C/S)	EI 60 C/U
[2]Steel or Copper Pipe 42-159mm Ø, 1.2 – 14.2mm wall thickness. 25mm thick K Flex ST[3] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1 – 14.2mm wall thickness. 25-13mm thick K Flex ST[3] insulation (C/S)	
[2]Steel or Copper Pipe 42-108mm Ø, 1.2 – 14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1–14.2mm wall thickness. 25 -40mm thick Kingspan Kooltherm FM[4] insulation (C/S)	
[2]Steel or Copper Pipe 42mm Ø, 1.2–14.2mm wall thickness. 50mm thick glassfibre insulation min. 30kg/m[3] (C/S)	

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

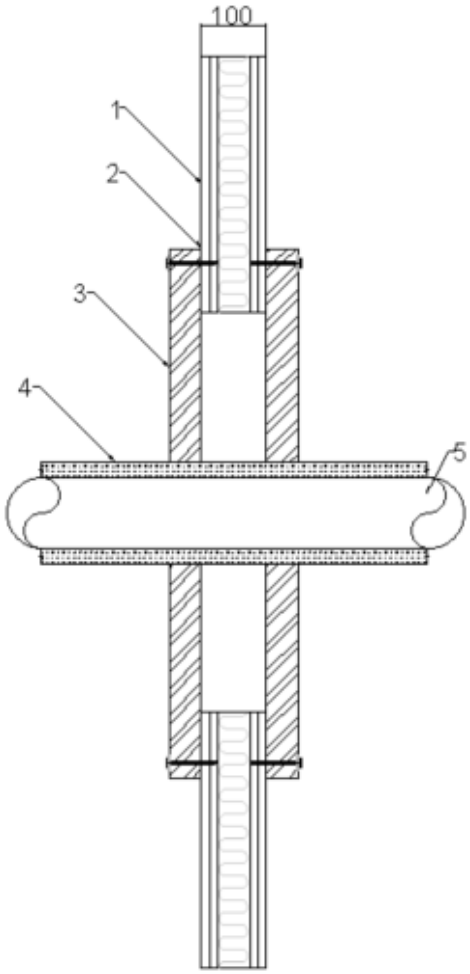
[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

[3]Or equivalent elastomeric pipe insulation classified BL – s2, d0 or better to EN 13501-1

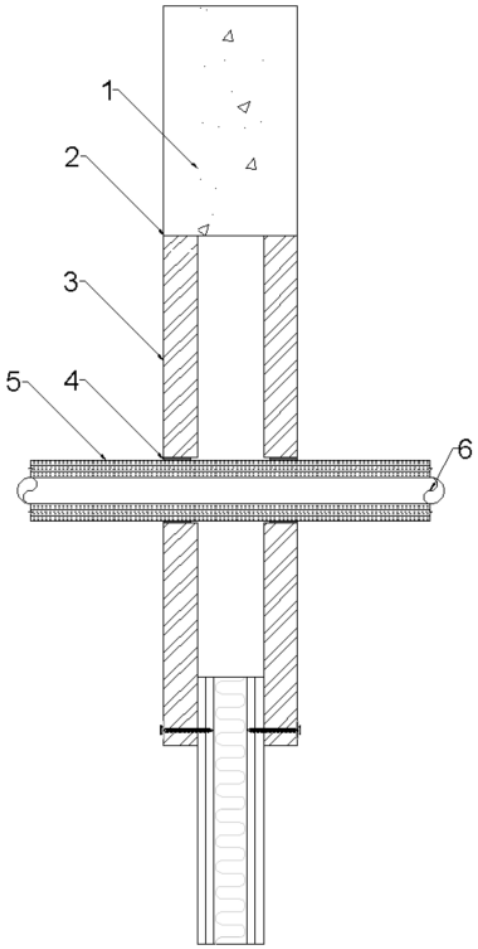
[4]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 730mm Wide x 1200mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 2mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 120 C/U EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 2600mm Wide x 2600mm High	
	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Insulation 5. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42-159mm Ø, 2mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 45 C/U
Steel or Copper Pipe 42mm Ø, 1mm – 14.2mm wall thickness. 25mm thick foil faced glassfibre insulation min. 30kg/m^3 (C/S)	E 60 C/U EI 60 C/U

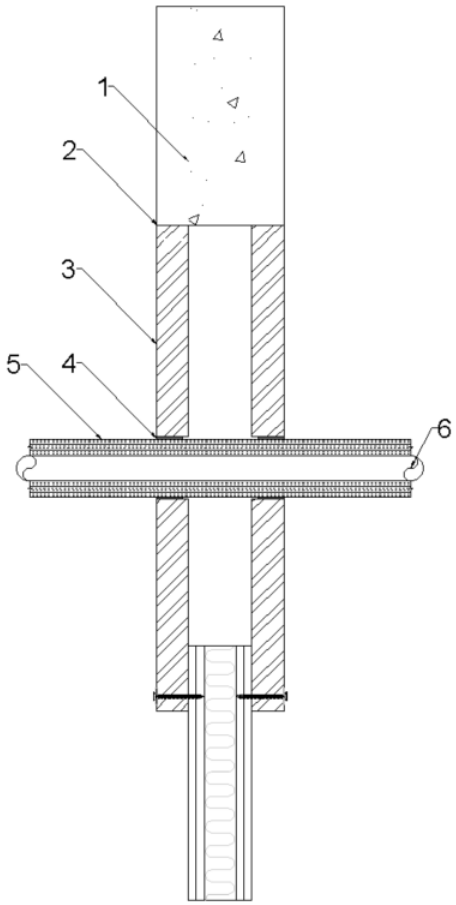
[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 730mm Wide x 1200mm High	
30mm overlap patress installed flush to soffit  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42mm Ø, 1.0mm – 14.2mm wall thickness. 50mm thick Kingspan[3] (C/S 400mm)	EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 30mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres. No fixing is applied to the head flush to the soffit

[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Max Aperture 2600mm Wide x 2600mm High	
30mm overlap patress installed flush to soffit  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Insulation 6. Penetration Service
Service(s)	**Classification**
Steel or Copper Pipe 42mm Ø, 1.0mm – 14.2mm wall thickness. 50mm thick Kingspan[3] (C/S 400mm)	EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 30mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres. No fixing is applied to the head flush to the soffit

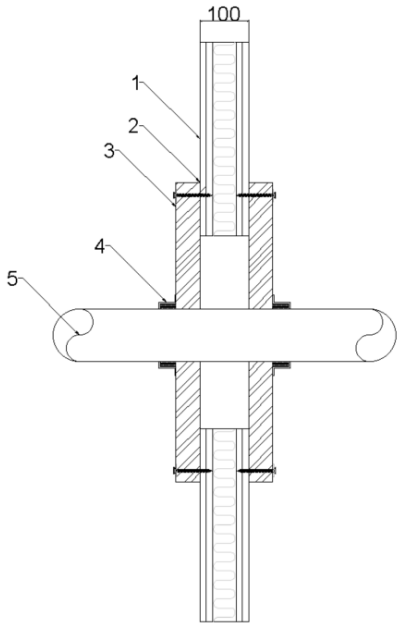
[2]2 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

[3]Or equivalent Phenloic foam pipe insulation classified BL – s1, d0 or better to EN 13501-1

Single Layer Patress, Astro Batt 50mm, Plastic Pipes

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

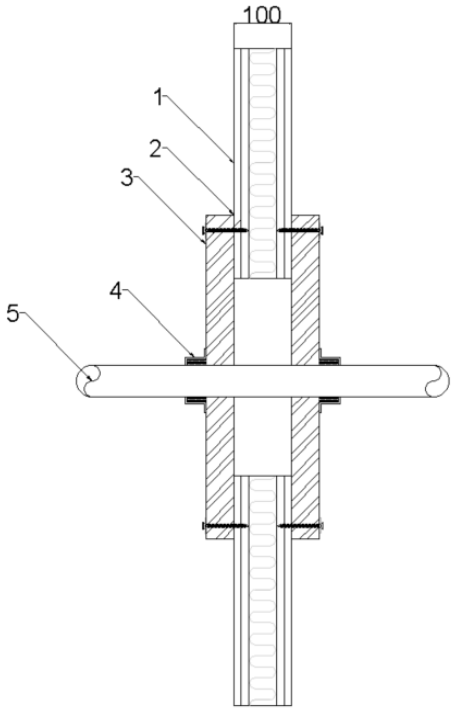
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	**EI 60 U/C**
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

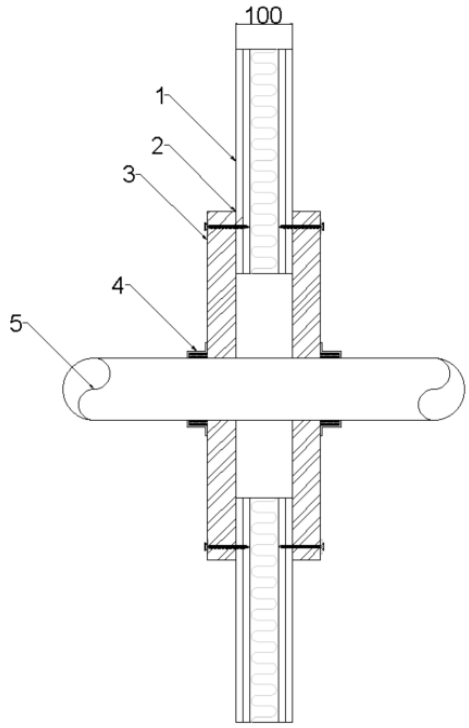
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PVC Pipe 32mm Ø, 1.8mm wall thickness	32mm	EI 120 U/C
PVC Pipe 40mm Ø, 1.8mm wall thickness	40mm	
PVC Pipe 50mm Ø, 1.8mm wall thickness	50mm	
PVC Pipe 55mm Ø, 1.8-2.3mm wall thickness	55mm	
PVC Pipe 63mm Ø, 2.3-3mm wall thickness	63mm	
PVC Pipe 75mm Ø, 3.1-4.8mm wall thickness	75mm	
PVC Pipe 82mm Ø, 3.1-4.8mm wall thickness	82mm	
PVC Pipe 90mm Ø, 4.2-7.4mm wall thickness	90mm	
PVC Pipe 100mm Ø, 4.2-7.4mm wall thickness	100mm	
PVC Pipe 110mm Ø, 4.2-7.4mm wall thickness	110mm	
PVC Pipe 125mm Ø, 6mm wall thickness	125mm	
PVC Pipe 140mm Ø, 6.1-7.5mm wall thickness	140mm	
PVC Pipe 160mm Ø, 6.2-9.5mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

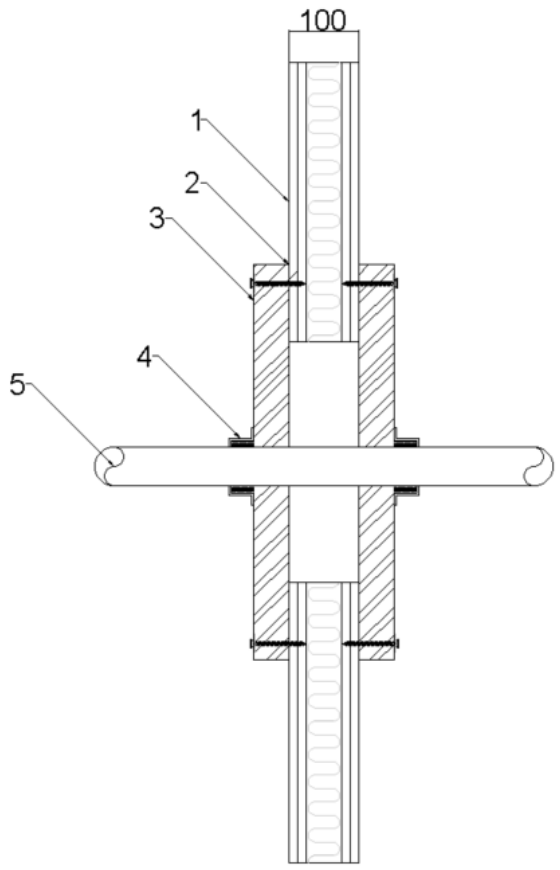
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

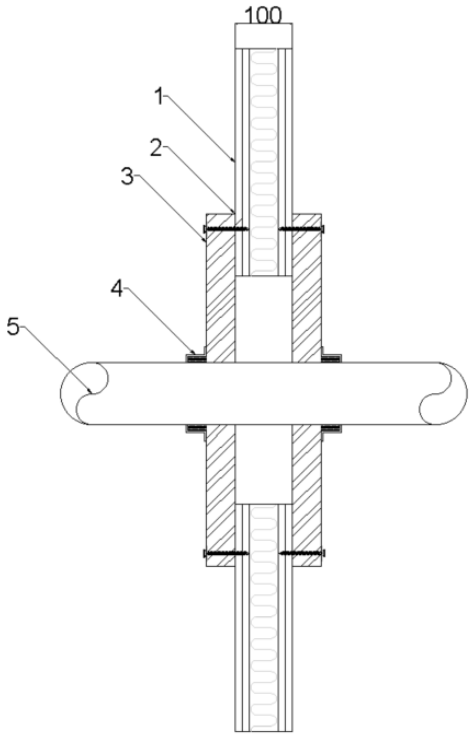
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PP Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PP Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PP Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PP Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PP Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PP Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PP Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PP Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PP Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PP Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PP Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PP Pipe 140mm Ø, 3.5-8mm wall thickness	140mm	
PP Pipe 160mm Ø, 4-14.6mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 730mm Wide x 1200mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

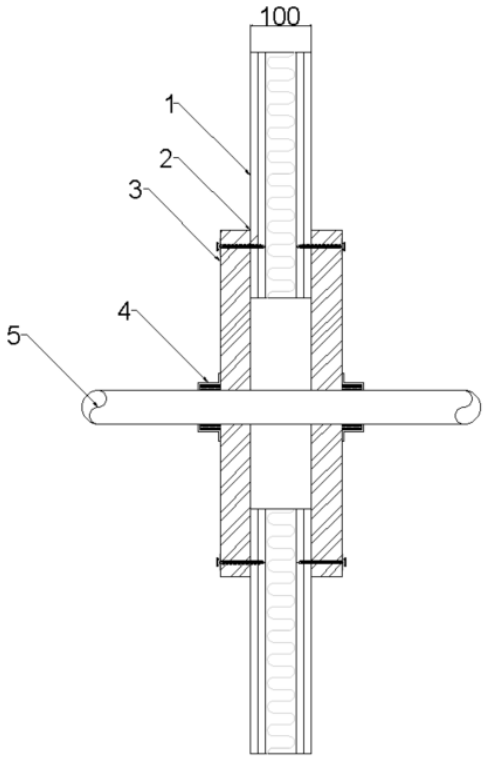
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 120 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

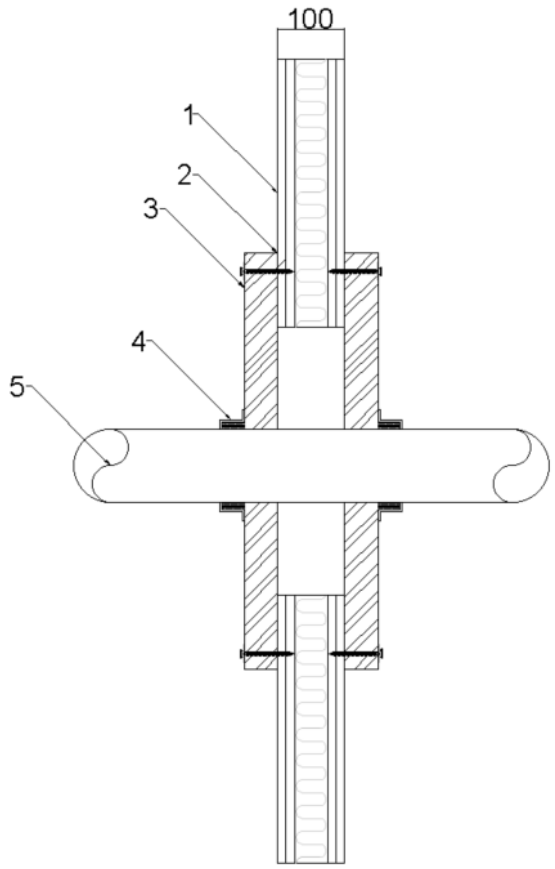
Service(s)	Astro X Series CE Pipe Collar Ref	Classification
PE Pipe 32mm Ø, 2.9mm wall thickness	32mm	EI 60 U/C
PE Pipe 40mm Ø, 2.9mm wall thickness	40mm	
PE Pipe 50mm Ø, 2.9mm wall thickness	50mm	
PE Pipe 55mm Ø, 2.9-4.4mm wall thickness	55mm	
PE Pipe 63mm Ø, 2.9-4.4mm wall thickness	63mm	
PE Pipe 75mm Ø, 2.8-6.7mm wall thickness	75mm	
PE Pipe 82mm Ø, 2.8-6.7mm wall thickness	82mm	
PE Pipe 90mm Ø, 2.7-10mm wall thickness	90mm	
PE Pipe 100mm Ø, 2.7-10mm wall thickness	100mm	
PE Pipe 110mm Ø, 2.7-10mm wall thickness	110mm	
PE Pipe 125mm Ø, 3.1mm wall thickness	125mm	
PE Pipe 140mm Ø, 3.9-5.8mm wall thickness	140mm	
PE Pipe 160mm Ø, 4.9-9.5mm wall thickness	160mm	

Collars secured both faces of the substrate utlising 80mm long pig tail screw through to the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.

Max Aperture 2600mm Wide x 2600mm High

(Penetrations positioned as per option 1 or 2 below, 0mm distance between services and 50mm to edge of seal)



Key

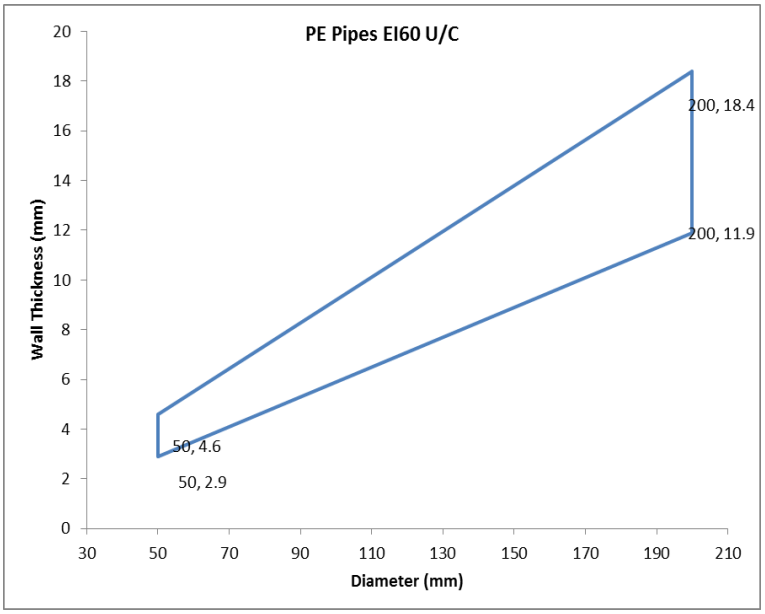
1. Supporting construction
2. Astro Intu Mastic
3. Astro Batt
4. Astro X Series CE Pipe Collar
5. Penetration Service

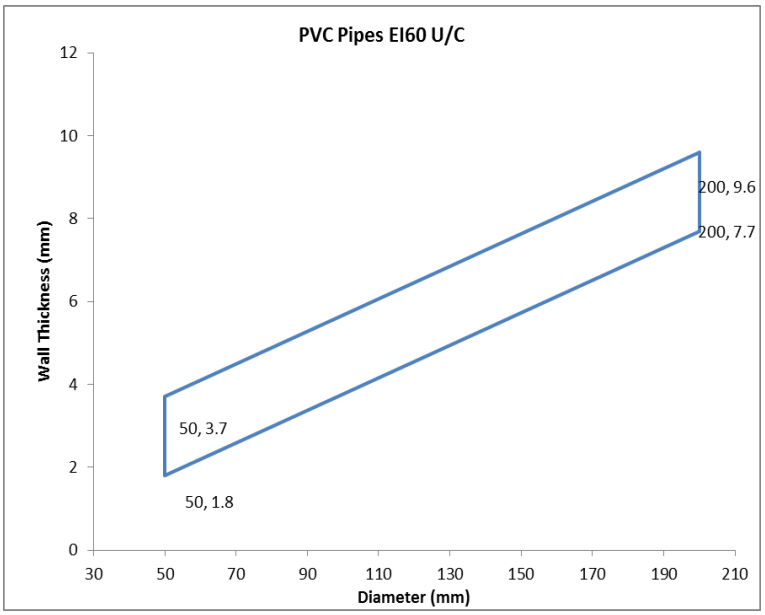
Scope and Classifications as below

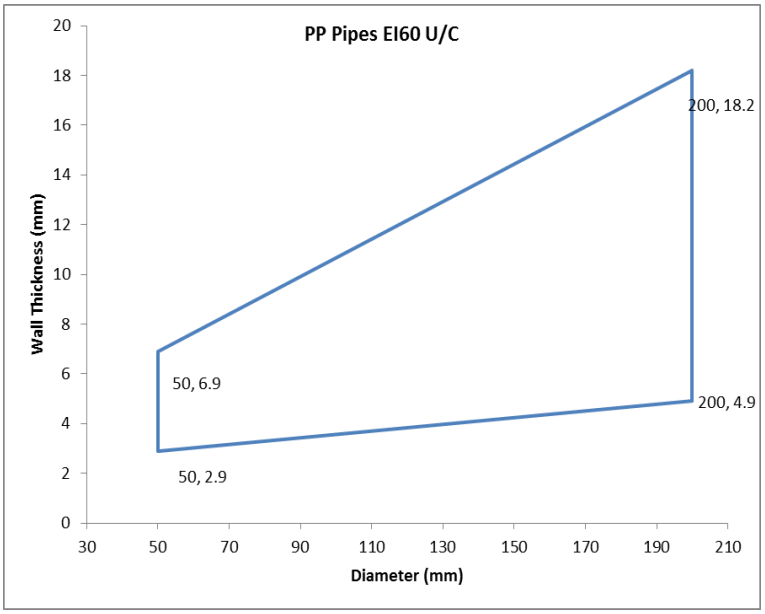
Intumescent Thickness	
Pipe Diameter	**Intumescent Material**
ø 32 mm - ø 50 mm	40 mm (W) x 2 mm (T)
ø 51 mm - ø 82 mm	40 mm (W) x 4 mm (T)
ø 83 mm - ø 115 mm	40 mm (W) x 6 mm (T)
ø 116 mm - ø 160 mm	40 mm (W) x 8 mm (T)
ø 161 mm - ø 200 mm	40 mm (W) x 10 mm (T)
ø 201 mm - ø 250 mm	40 mm (W) x 12 mm (T)

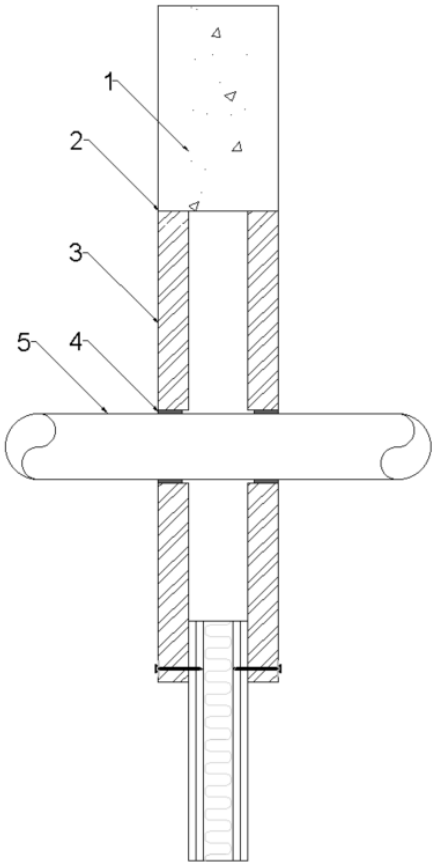
Wrap secured internally within both faces of the Astro Batt

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 100mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres.


PE Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
200, 18.4
200, 11.9
50, 4.6
50, 2.9

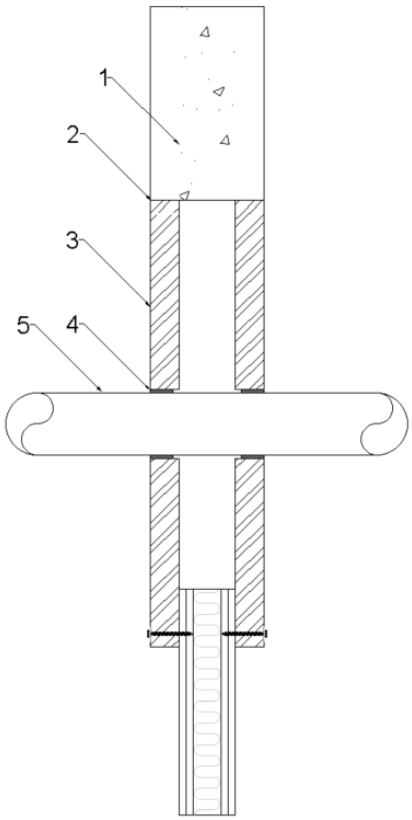

PVC Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
200, 9.6
200, 7.7
50, 3.7
50, 1.8


PP Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
200, 18.2
50, 6.9
200, 4.9
50, 2.9
0
2
4
6
8
10
12
14
16
18
20
30
50
70
90
110
130
150
170
190
210

Max Aperture 2600mm Wide x 2600mm High	
30mm overlap patress installed flush to soffit  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Penetration Service
Service(s)	**Classification**
PVC Pipe 110mm Ø, 4.2mm wall thickness	EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 30mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres. No fixing is applied to the head flush to the soffit

[2]4 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

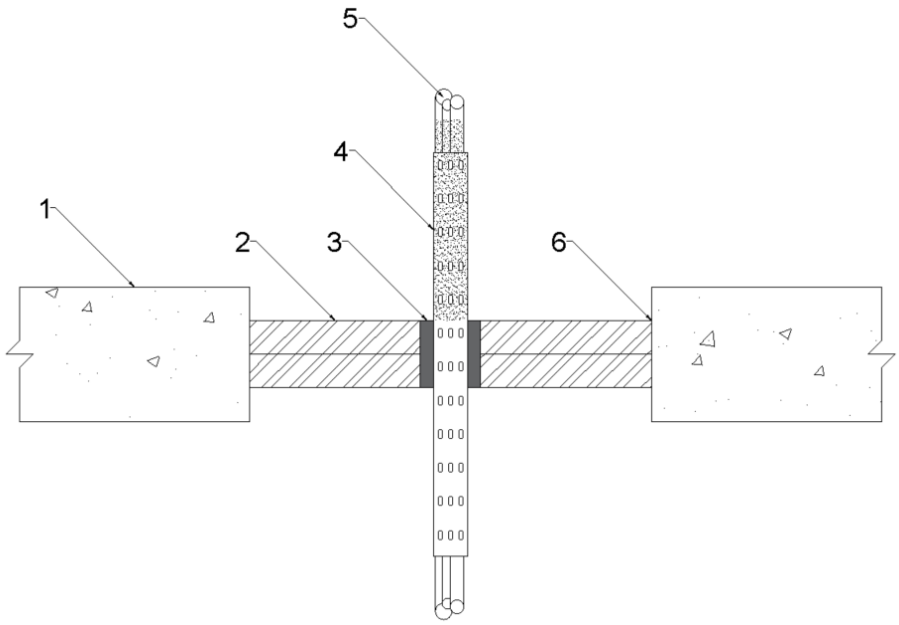
Max Aperture 2600mm Wide x 2600mm High	
30mm overlap patress installed flush to soffit  	Key 1. Supporting construction 2. Astro Intu Mastic 3. Astro Batt 4. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap 5. Penetration Service
Service(s)	**Classification**
PVC Pipe 110mm Ø, 4.2mm wall thickness	EI 60 C/U

[1]Patress installation of Astro Batt. The Batts are installed in horizontal rows and fixed in minimum two vertical edges. Overlap of batts to substrate min 30mm. Batts mechanically fixed to substrate with min 6mm x 80mm steel screws and steel retaining washer. Fixings installed at max 300mm centres. No fixing is applied to the head flush to the soffit

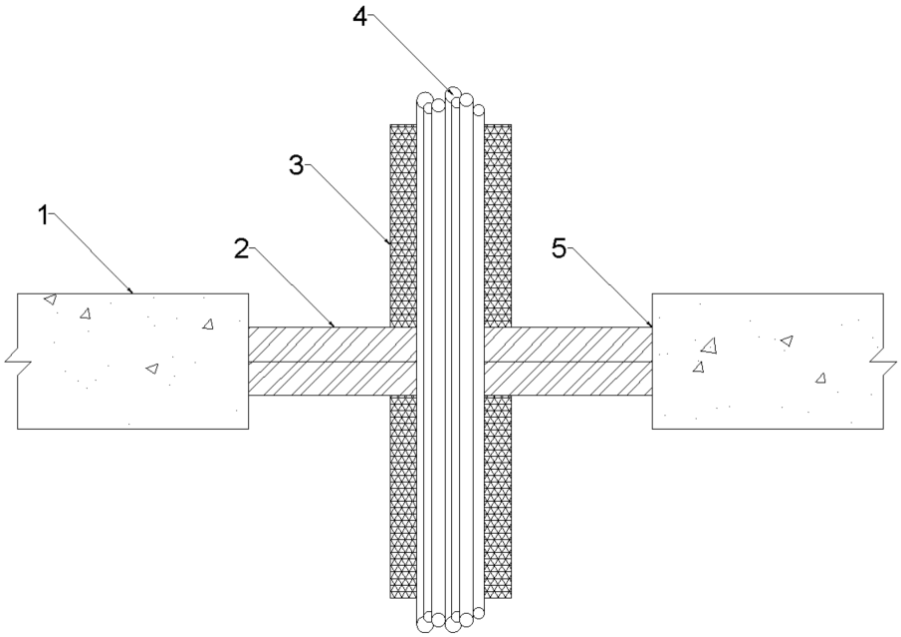
[2]4 x 2mm thick layers of Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap installed both sides of the substrate within the patress installation

Rigid Floors Minimum Thickness 150mm

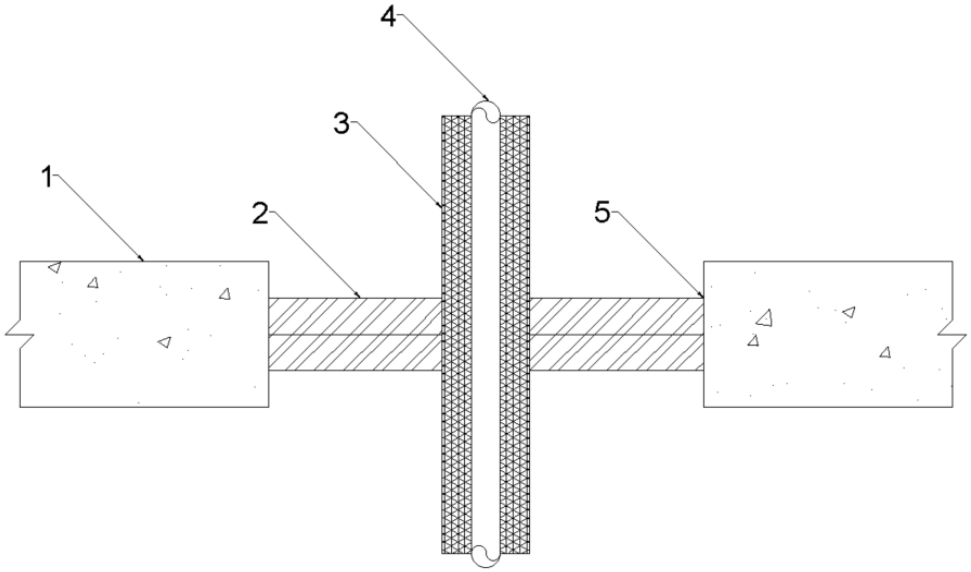
Double Layer, Astro Batt 50mm, Electrical Cables

Max Aperture 1100mm Wide x 1500mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Astro PS Coat 5. Penetration Service 6. Astro Intu Mastic
Penetration Specification	**Classification**
*500mm perforated cable tray	EI 60
*Electrical cables up to 21mm ø	
*1 off ‘C1’ Cable	
*1 off ‘C2’ Cable	
*1 off ‘C3’ Cable	

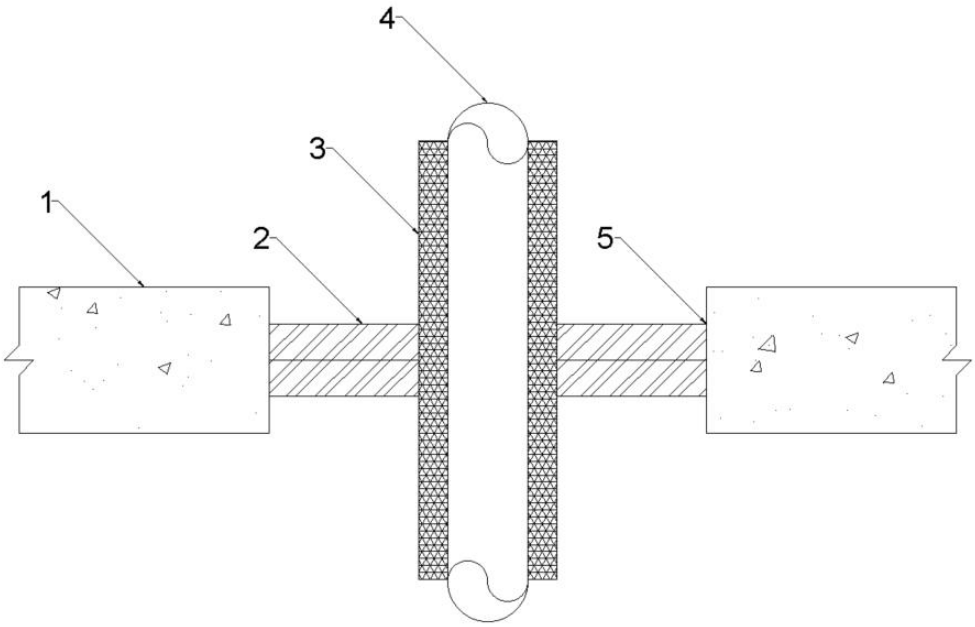
*All cables coated with 2mm DFT Astro PS Coat 300mm along the cables upper side of the seal
Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

Max Aperture 1100mm Wide x 1500mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro Intu Mastic
Service(s)	**Classification**
[1]Electrical cables upto 80mm dia	EI 60
[1]Cable Trays and Ladders	
[1]100 mm diameter bundle telecommunication cable type “F”	
[1]Unsheathed electrical cables up to 17mm dia	
[1]Unsheathed electrical cables 18-24mm dia	
[1]Steel or Copper Conduits up to 16mm	
[1]Plastic conduits up to 16mm	

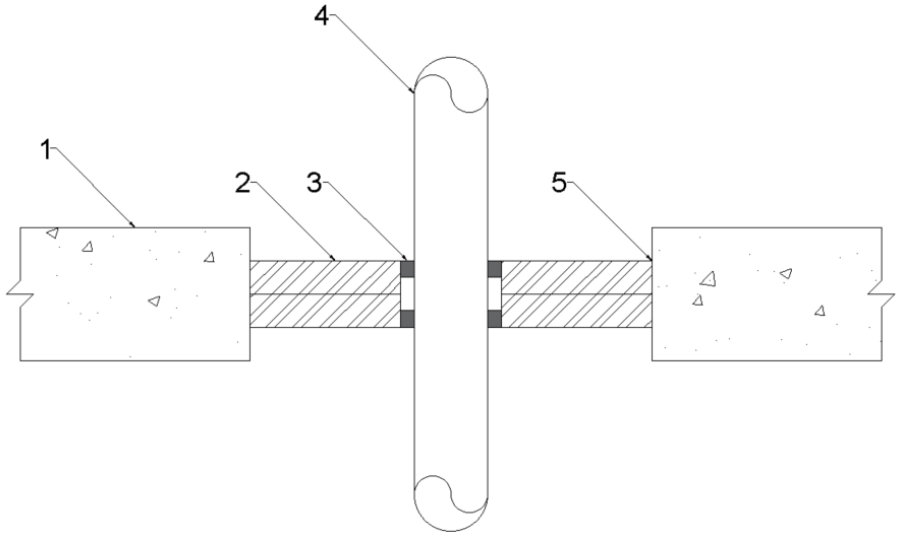
[1]Cables and cable trays wrapped with a single layer of 40mm thick stonewool, min 40kg/m^3 (L/I 300mm)

Max Aperture 700mm Wide x 1100mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro Intu Mastic
Service(s)	**Classification**
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	EI 120 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 120 C/U EI 30 C/U

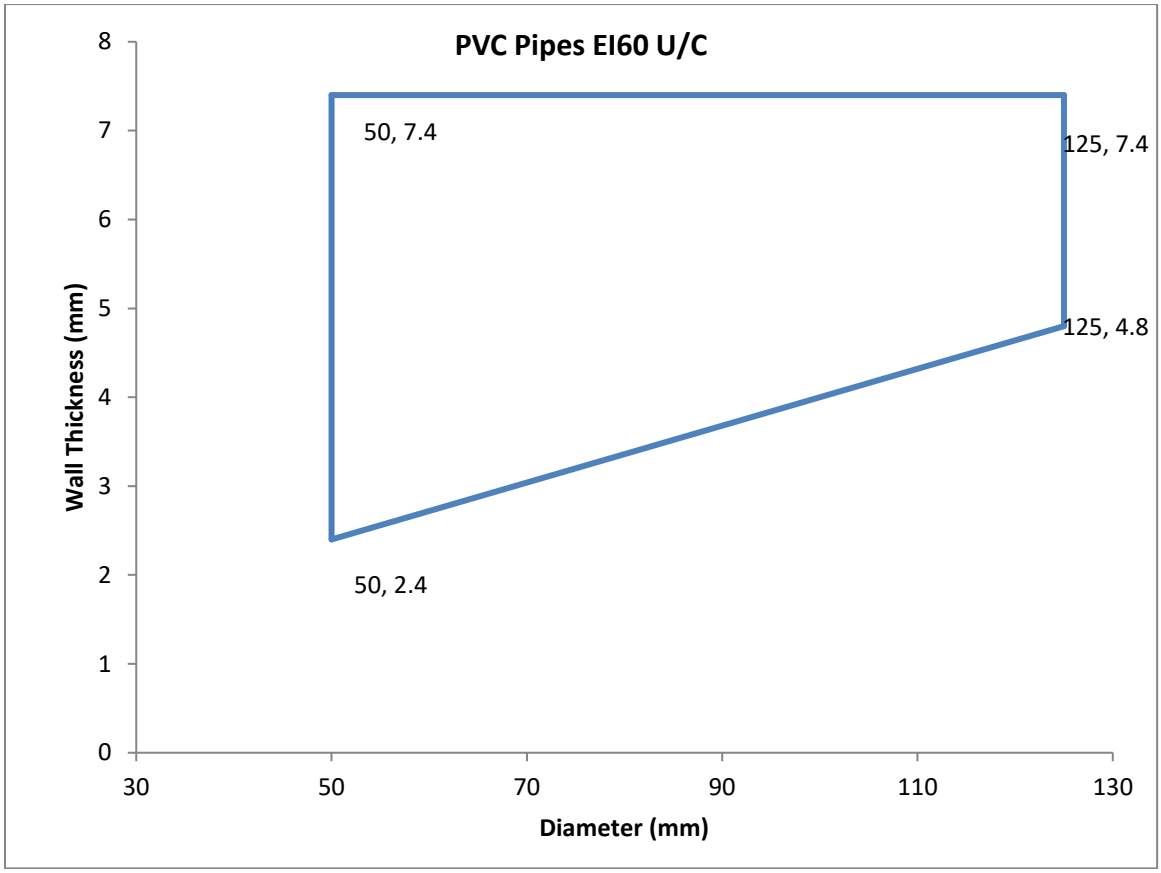
Double Layer, Astro Batt 50mm, Insulated Metallic Pipes

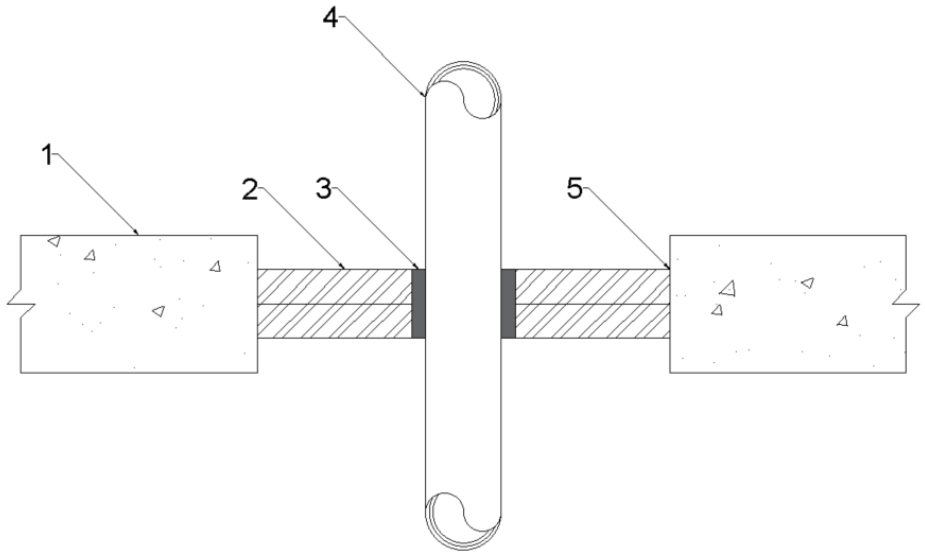
Max Aperture 1100mm Wide x 1500mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro Intu Mastic
Service(s)	**Classification**
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 90 C/U EI 60 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 90 C/U EI 30 C/U

Double Layer, Astro Batt 50mm, Plastic Pipes

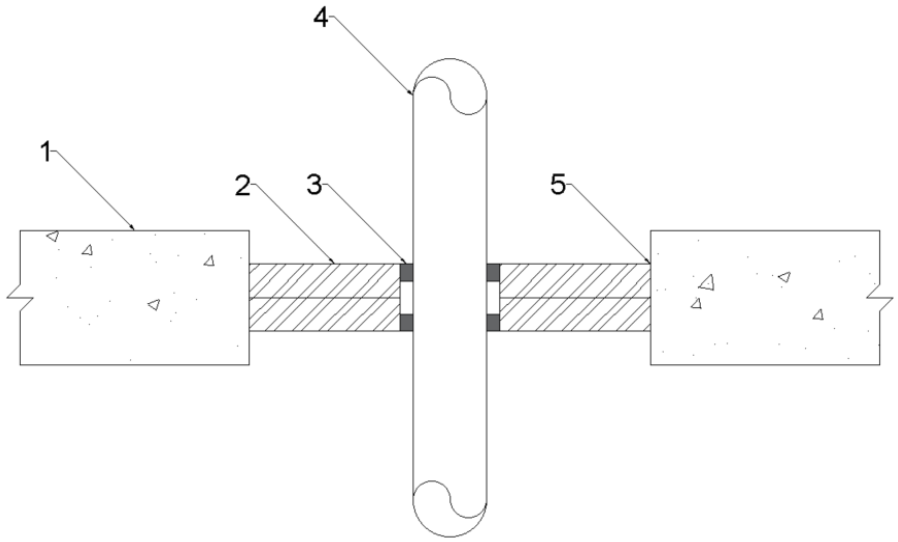
Max Aperture 750mm Wide x 1100mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic

Penetration Specification	Astro HPE Sealant	Classification
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Astro Batt	**See graphs below**

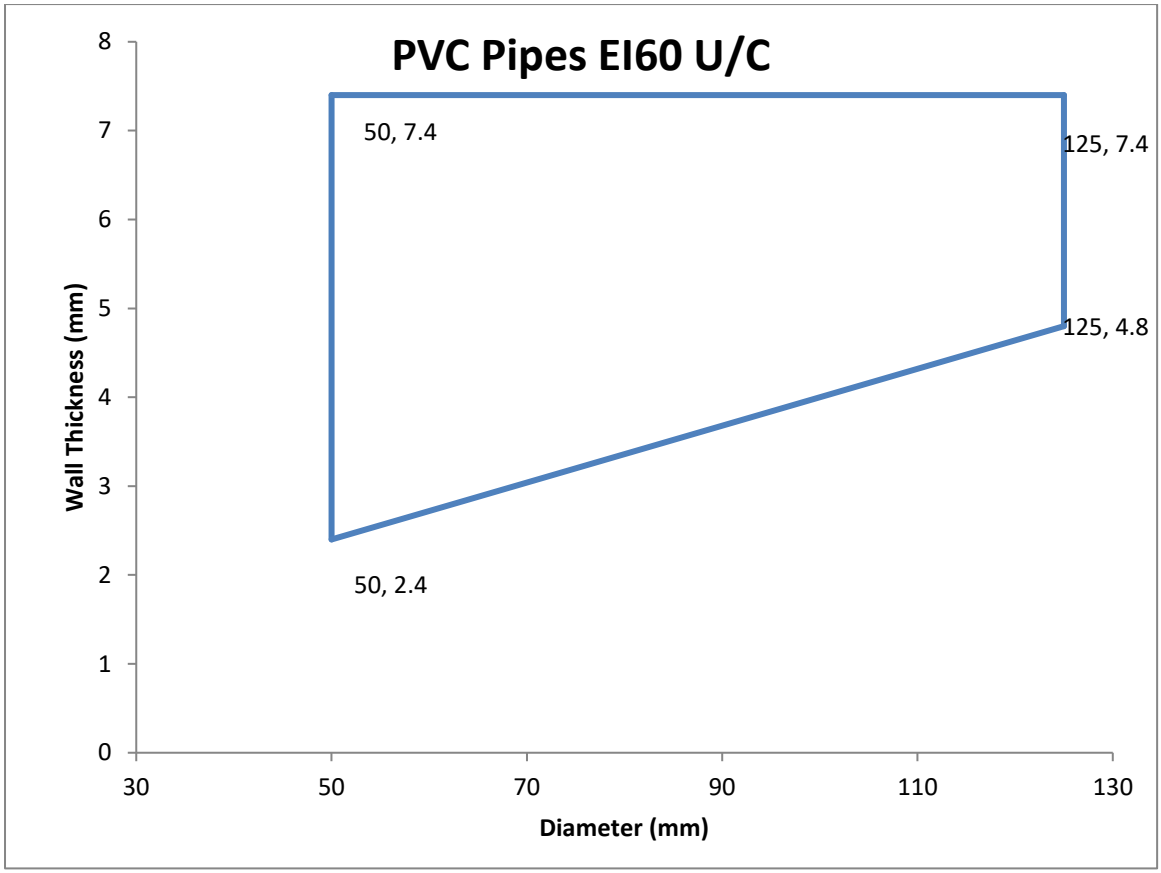

PVC Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

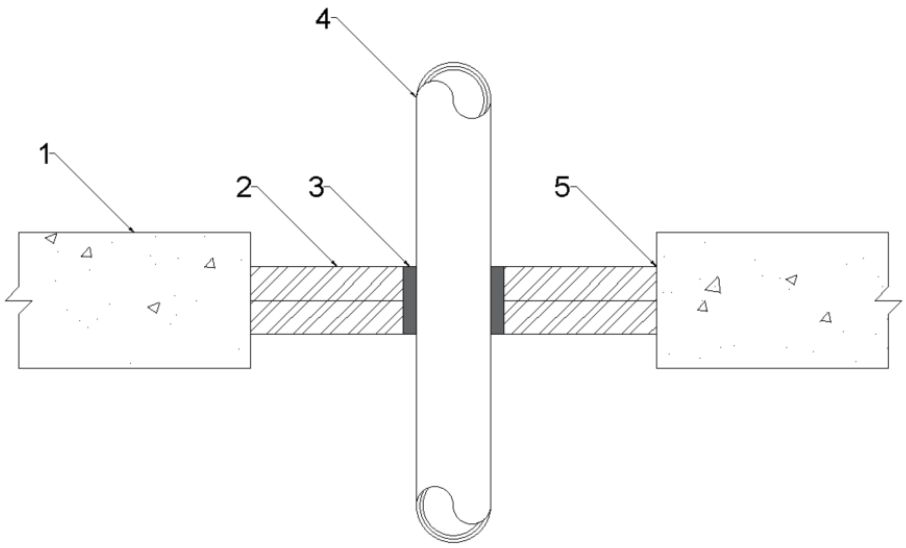
Max Aperture 750mm Wide x 1100mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic
Penetration Specification	**Classification**
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	EI 60 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

Max Aperture 1100mm Wide x 1500mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic

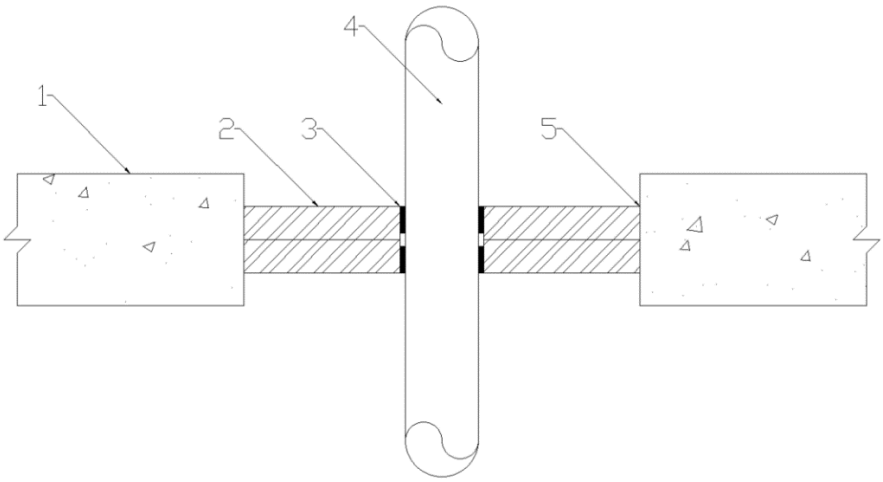
Penetration Specification	Astro HPE Sealant	Classification
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Astro Batt	**See graphs below**


PVC Pipes EI60 U/C
Wall Thickness (mm)
Diameter (mm)
50, 7.4
125, 7.4
125, 4.8
50, 2.4
0
1
2
3
4
5
6
7
8
30
50
70
90
110
130

Max Aperture 1100mm Wide x 1500mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic
Penetration Specification	**Classification**
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	EI 60 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

Max Aperture 350mm Wide x 1000mm Long

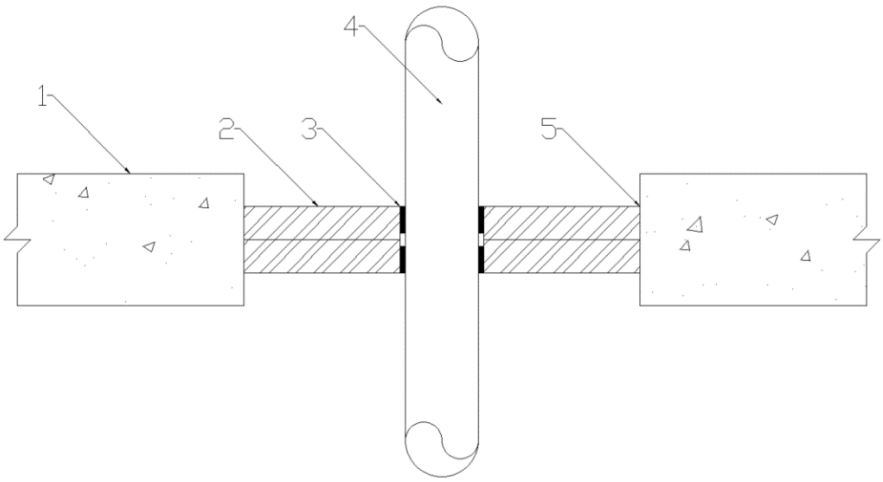


Key
1. Supporting construction
2. Astro Batt
3. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
4. Penetration Service
5. Astro Intu Mastic

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe up to 125mm Ø, 4.8-7.4mm wall thickness.	2mm thickness	EI 120 U/C
PP Pipe up to 40mm Ø, 3.1-17.1mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 11.4mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 3.1-11.4mm wall thickness.	2mm thickness	E 120 U/C EI 90 U/C

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

Max Aperture 1100mm Wide x 1500mm Long

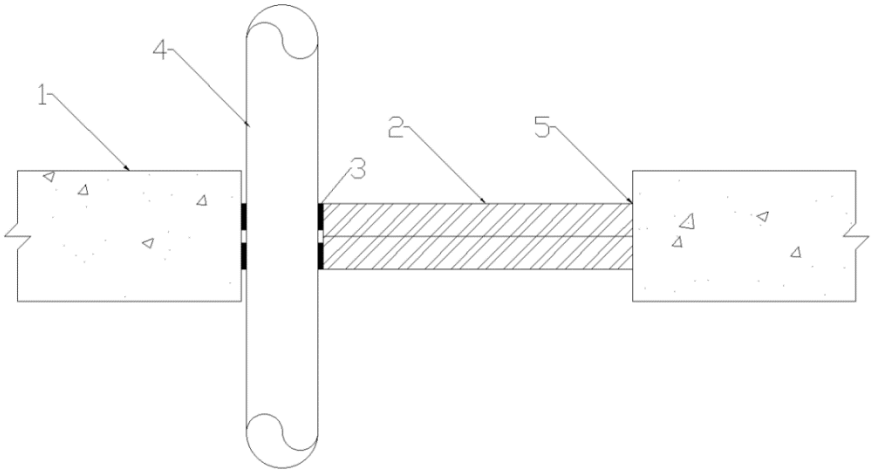


Key
1. Supporting construction
2. Astro Batt
3. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
4. Penetration Service
5. Astro Intu Mastic

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe up to 125mm Ø, 4.8-7.4mm wall thickness.	2mm thickness	EI 60 U/C
PP Pipe up to 40mm Ø, 3.1-17.1mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 11.4mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 3.1-11.4mm wall thickness.	2mm thickness	

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

Max Aperture 350mm Wide x 1000mm Long

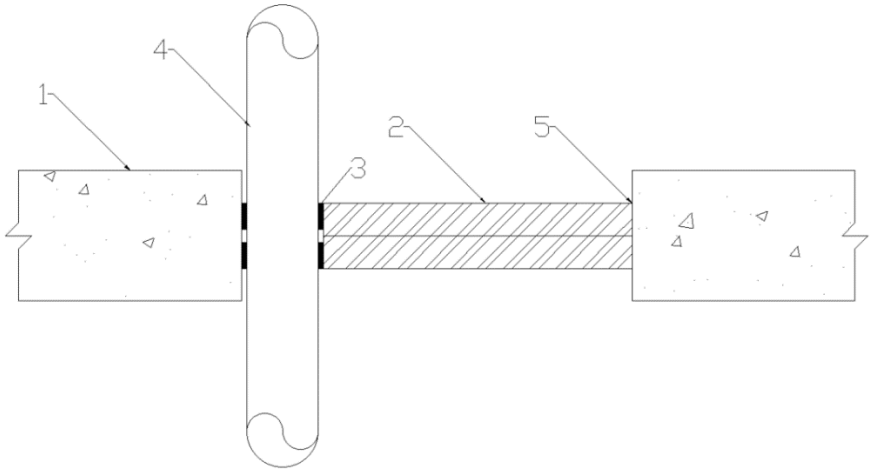


Key
1. Supporting construction
2. Astro Batt
3. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
4. Penetration Service
5. Astro Intu Mastic

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe up to 125mm Ø, 4.8-7.4mm wall thickness.	2mm thickness	EI 120 U/C
PP Pipe up to 40mm Ø, 3.1-17.1mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 11.4mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 3.1-11.4mm wall thickness.	2mm thickness	E 120 U/C EI 90 U/C

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

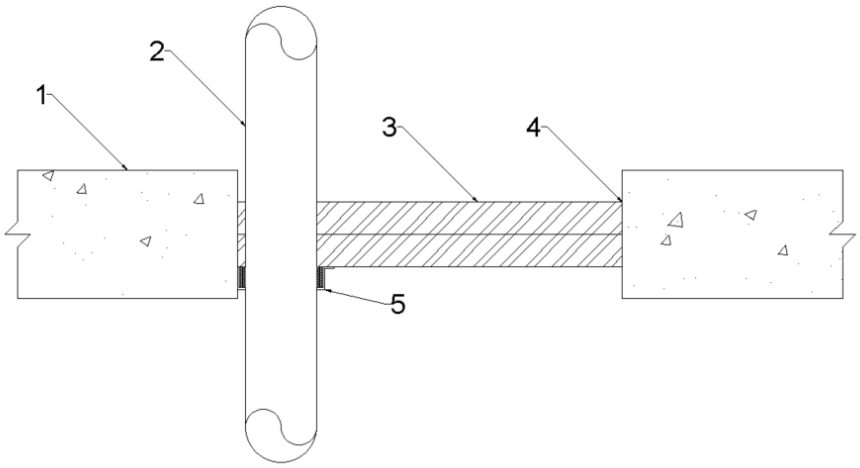
Max Aperture 1100mm Wide x 1500mm Long



Key
1. Supporting construction
2. Astro Batt
3. Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap
4. Penetration Service
5. Astro Intu Mastic

Service(s)	Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap Ref	Classification
PVC Pipe up to 125mm Ø, 4.8-7.4mm wall thickness.	2mm thickness	EI 60 U/C
PP Pipe up to 40mm Ø, 3.1-17.1mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 11.4mm wall thickness.	2mm thickness	
PE Pipe up to 125mm Ø, 3.1-11.4mm wall thickness.	2mm thickness	

[1]Astro X Series CE Pipe Wrap UL / Astro X Series CE Pipe Wrap secured internally within both faces of the Astro Batt

Max Aperture 350mm Wide x 1000mm Long	
	Key 1. Supporting construction 2. Penetration Service 3. Astro Batt 4. Astro Intu Mastic 5. Astro X Series CE Pipe Collar

Penetration Specification	Astro X Series CE Pipe Collars	Classification
Pipe Diameters as below. Zero Distance	Fixed to the underside of the Astro Batt utilising steel pig tail fixings	EI 120 U/C

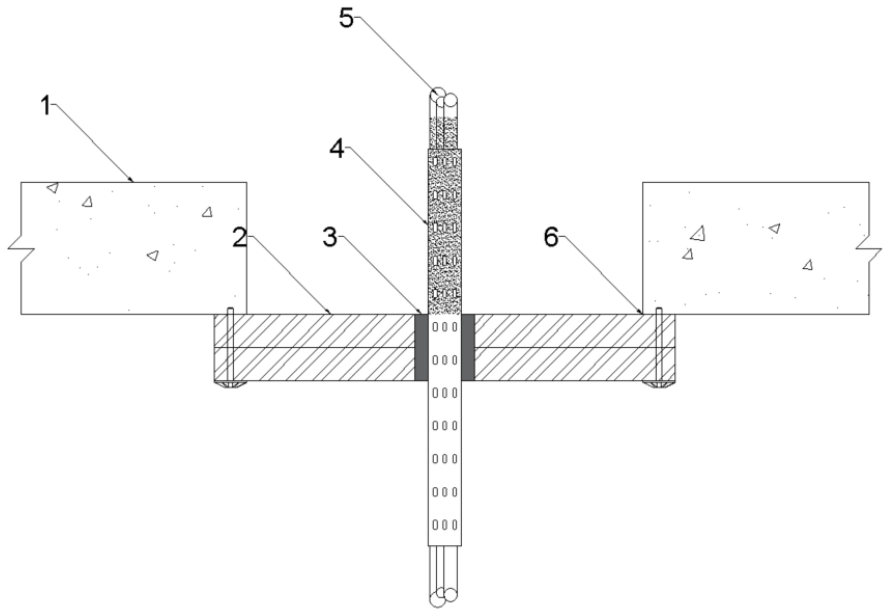
Penetration Specification	Collar Reference	Intumescent Material
PVC Pipe 32mm Ø 1.8mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PVC Pipe 40mm Ø 1.8mm wall thickness	40mm Astro X Series CE Pipe Collar	
PVC Pipe 50mm Ø 1.8mm wall thickness	50mm Astro X Series CE Pipe Collar	
PVC Pipe 55mm Ø 2.3-2.8mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PVC Pipe 63mm Ø 2.3-2.8mm wall thickness	63mm Astro X Series CE Pipe Collar	
PVC Pipe 75mm Ø 3.1-4.4mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PVC Pipe 82mm Ø 3.1-4.4mm wall thickness	82mm Astro X Series CE Pipe Collar	
PVC Pipe 90mm Ø 4.2-6.6mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PVC Pipe 100mm Ø 4.2-6.6mm wall thickness	100mm Astro X Series CE Pipe Collar	
PVC Pipe 110mm Ø 4.2-6.6mm wall thickness	110mm Astro X Series CE Pipe Collar	
PVC Pipe 125mm Ø 6.0mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PVC Pipe 140mm Ø 6.1-7.5mm wall thickness	140mm Astro X Series CE Pipe Collar	
PVC Pipe 160mm Ø 6.2-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

Penetration Specification	Collar Reference	Intumescent Material
PP Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PP Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	
PP Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PP Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PP Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PP Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PP Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	
PP Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PP Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PP Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PP Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PP Pipe 140mm Ø 3.5-8.0mm wall thickness	140mm Astro X Series CE Pipe Collar	
PP Pipe 160mm Ø 4.0-14.6mm wall thickness	160mm Astro X Series CE Pipe Collar	

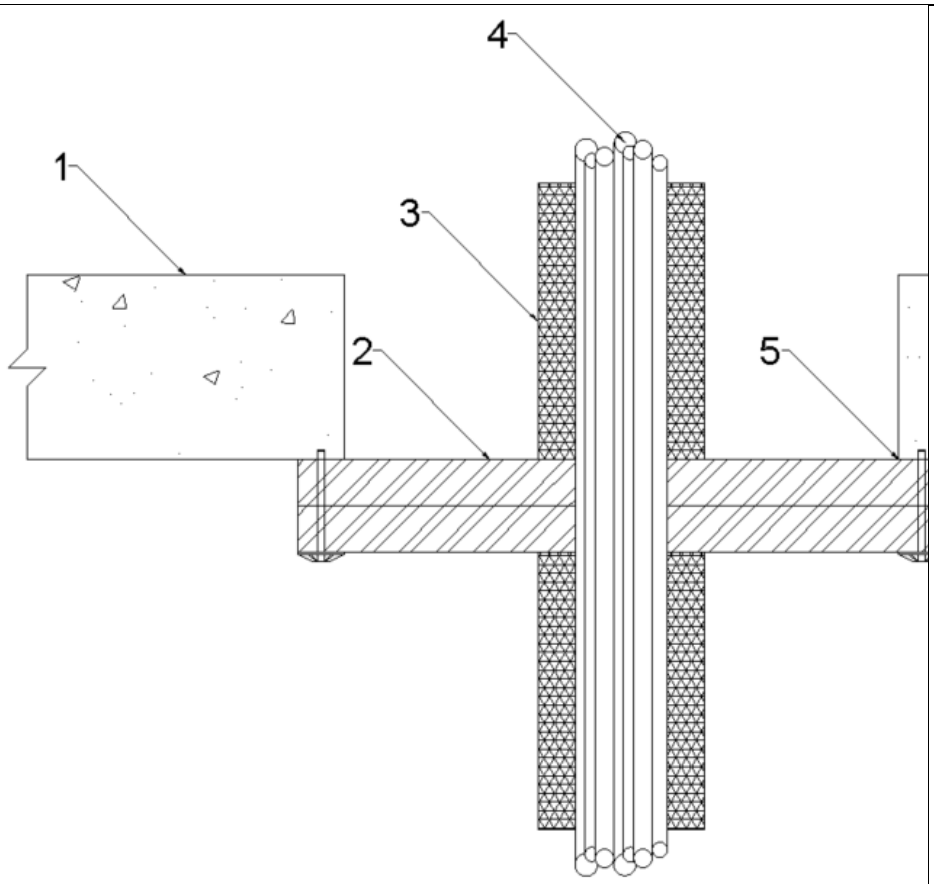
Penetration Specification	Collar Reference	Intumescent Material
PE Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PE Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	

PE Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PE Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PE Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PE Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	
PE Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PE Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PE Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PE Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PE Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PE Pipe 140mm Ø 3.9-5.8mm wall thickness	140mm Astro X Series CE Pipe Collar	
PE Pipe 160mm Ø 4.9-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

Double Layer, Astro Batt 50mm, Patress Installed Electrical Cables

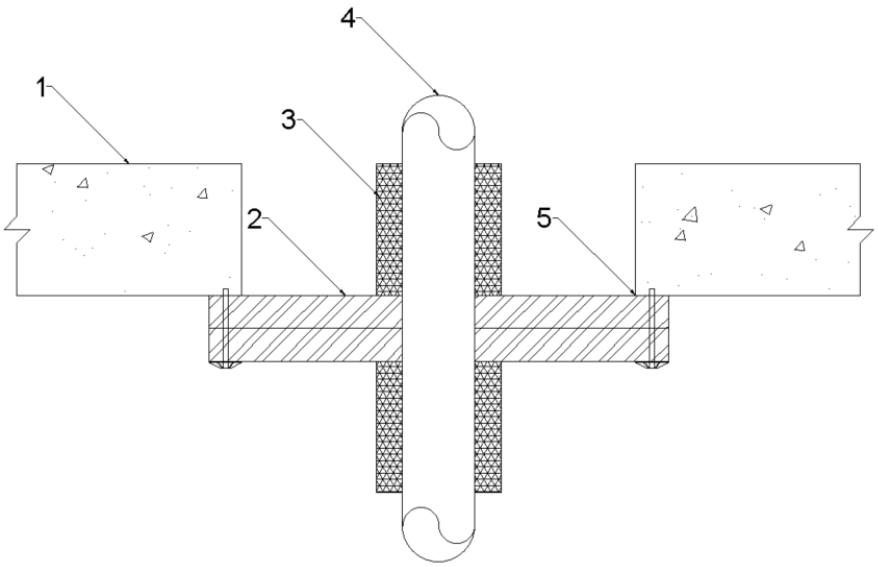
Max Aperture 1000mm Wide x 1300mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Astro PS Coat 5. Penetration Service 6. Astro Intu Mastic
Penetration Specification	**Classification**
*500mm perforated cable tray	EI 60
*Electrical cables up to 21mm ø	
*1 off ‘C1’ Cable	
*1 off ‘C2’ Cable	
*1 off ‘C3’ Cable	

*All cables coated with 2mm DFT Astro PS Coat 300mm along the cables upper side of the seal
Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

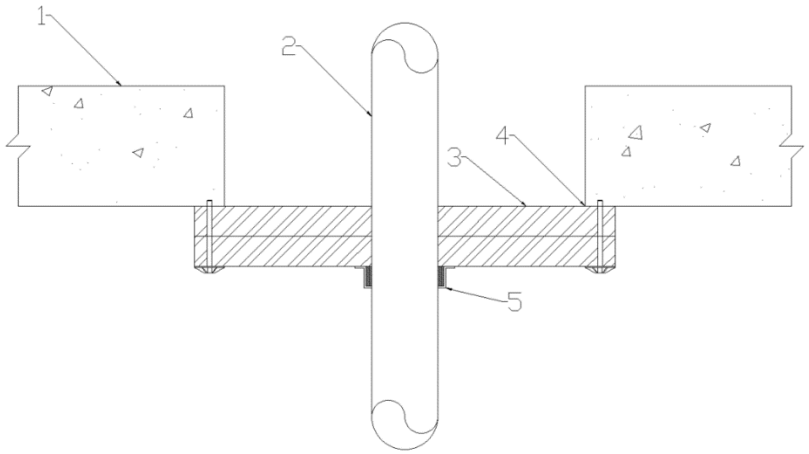
Max Aperture 1000mm Wide x 1300mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro Intu Mastic
Service(s)	**Classification**
[1]Electrical cables upto 80mm dia	EI 60
[1]Cable Trays and Ladders	
[1]100 mm diameter bundle telecommunication cable type "F"	
[1]Unsheathed electrical cables up to 17mm dia	
[1]Unsheathed electrical cables 18-24mm dia	
[1]Steel or Copper Conduits up to 16mm	
[1]Plastic conduits up to 16mm	

[1]Cables and cable trays wrapped with a single layer of 40mm thick stonewool, min 40kg/m^3 (L/I 300mm)

Double Layer, Astro Batt 50mm, Pattress Installed Insulated Metallic Pipes

Max Aperture 1000mm Wide x 1300mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro Intu Mastic
Service(s)	**Classification**
Steel or Copper Pipe 42mm Ø, 1.2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	EI 60 C/U
Steel or Copper Pipe 42mm – 159mm Ø, 2mm – 14.2mm wall thickness. (L/I 300mm) 40mm stone wool insulation (min 40Kg/m^3)	E 60 C/U EI 30 C/U

Double Layer, Astro Batt 50mm, Pattress Installed Plastic Pipes

Max Aperture 1000mm Wide x 1300mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Insulation 4. Penetration Service 5. Astro X Series CE Pipe Collar

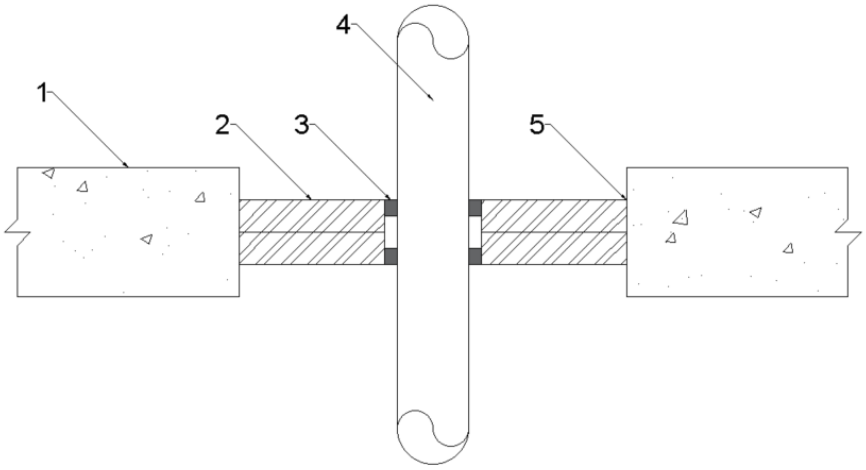
Penetration Specification	Astro X Series CE Pipe Collars	Classification
Pipe Diameters as below. Zero Distance	Fixed to the underside of the Astro Batt utilising steel pig tail fixings	EI 60 U/C

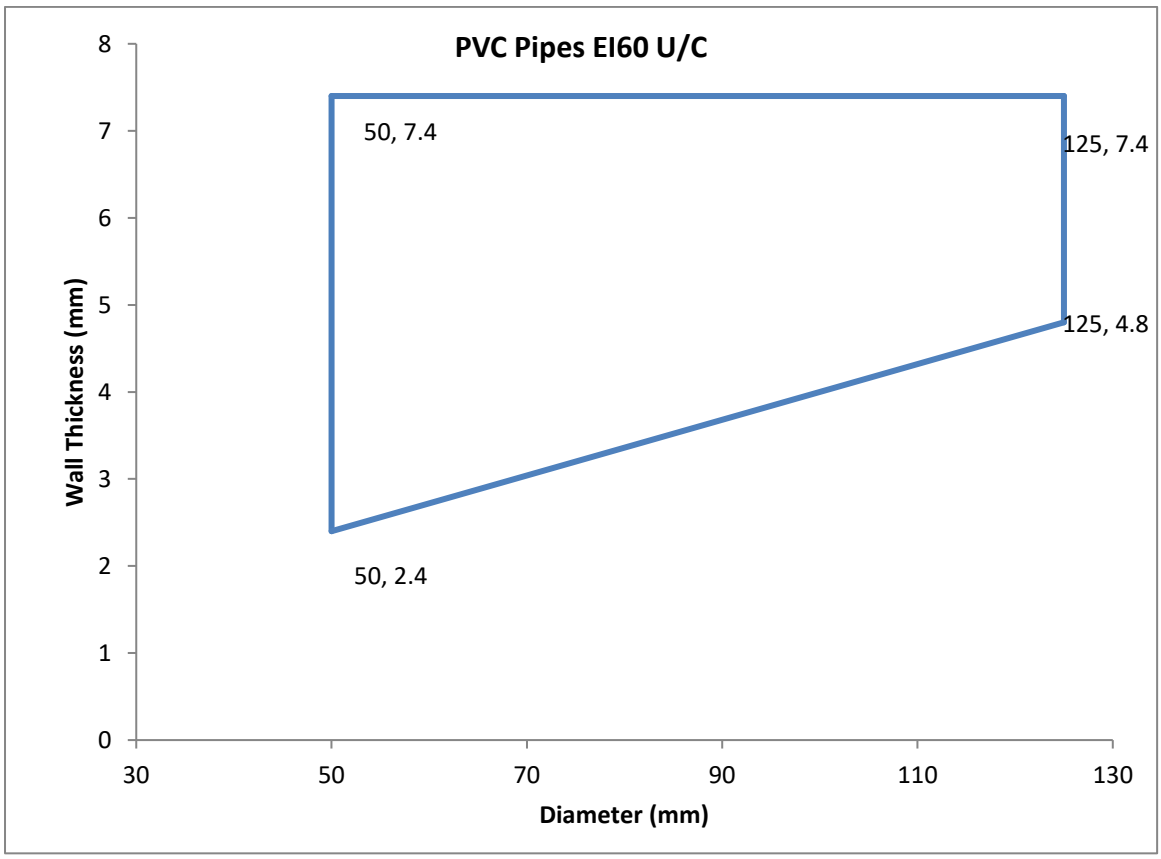
Penetration Specification	Collar Reference	Intumescent Material
PVC Pipe 32mm Ø 1.8mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PVC Pipe 40mm Ø 1.8mm wall thickness	40mm Astro X Series CE Pipe Collar	
PVC Pipe 50mm Ø 1.8mm wall thickness	50mm Astro X Series CE Pipe Collar	
PVC Pipe 55mm Ø 2.3-2.8mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PVC Pipe 63mm Ø 2.3-2.8mm wall thickness	63mm Astro X Series CE Pipe Collar	
PVC Pipe 75mm Ø 3.1-4.4mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PVC Pipe 82mm Ø 3.1-4.4mm wall thickness	82mm Astro X Series CE Pipe Collar	
PVC Pipe 90mm Ø 4.2-6.6mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PVC Pipe 100mm Ø 4.2-6.6mm wall thickness	100mm Astro X Series CE Pipe Collar	
PVC Pipe 110mm Ø 4.2-6.6mm wall thickness	110mm Astro X Series CE Pipe Collar	
PVC Pipe 125mm Ø 6.0mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PVC Pipe 140mm Ø 6.1-7.5mm wall thickness	140mm Astro X Series CE Pipe Collar	
PVC Pipe 160mm Ø 6.2-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

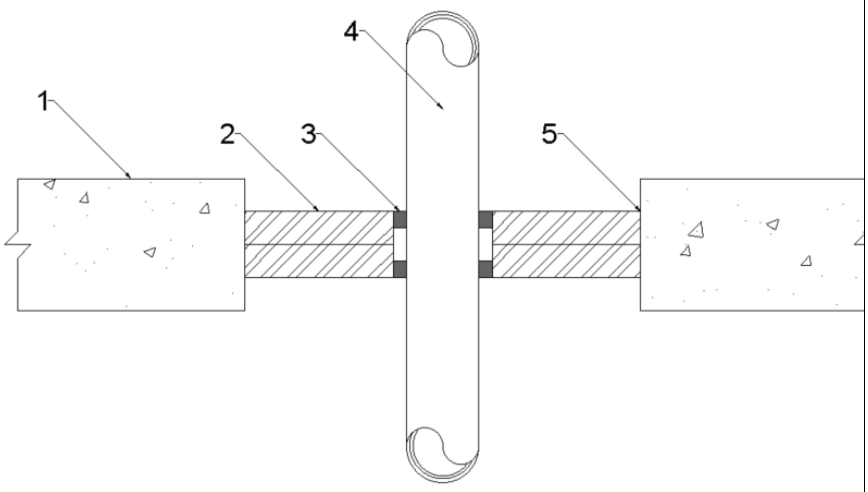
Penetration Specification	Collar Reference	Intumescent Material
PP Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PP Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	
PP Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PP Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PP Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PP Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PP Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	
PP Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PP Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PP Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PP Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PP Pipe 140mm Ø 3.5-8.0mm wall thickness	140mm Astro X Series CE Pipe Collar	
PP Pipe 160mm Ø 4.0-14.6mm wall thickness	160mm Astro X Series CE Pipe Collar	

Penetration Specification	Collar Reference	Intumescent Material
PE Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PE Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	
PE Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PE Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PE Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PE Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PE Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	
PE Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PE Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PE Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PE Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PE Pipe 140mm Ø 3.9-5.8mm wall thickness	140mm Astro X Series CE Pipe Collar	
PE Pipe 160mm Ø 4.9-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

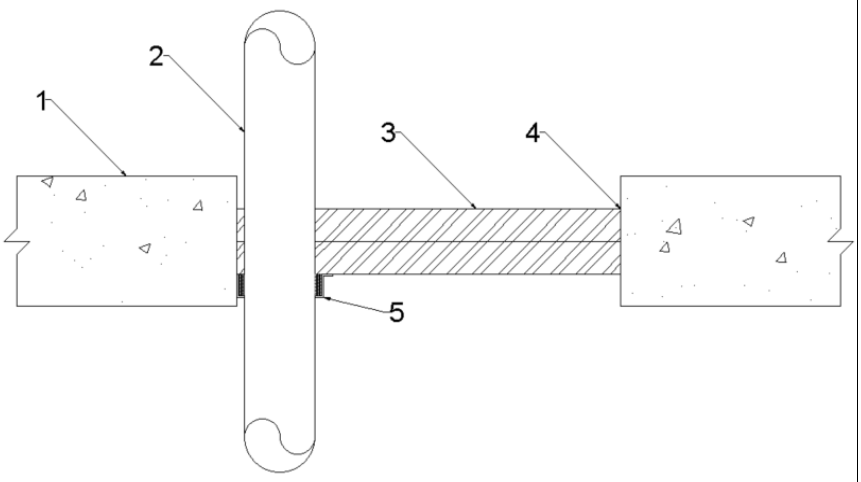
Double Layer, Astro Batt 50mm, Plastic Pipes

Max Aperture 1000mm Wide x 1300mm Long		
		Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic
Penetration Specification	**Astro HPE Sealant**	**Classification**
Pipe Diameters as below	20mm annulus, 25mm deep both faces of the Astro Batt	**See graphs below**



Max Aperture 1000mm Wide x 1300mm Long	
	Key 1. Supporting construction 2. Astro Batt 3. Astro HPE Sealant 4. Penetration Service 5. Astro Intu Mastic
Penetration Specification	**Classification**
Uponor MLC (Multi-Layer Composite) Pipe 40mm ø 4mm wall thickness	EI 60 U/C
Uponor MLC (Multi-Layer Composite) Pipe 50mm ø 4.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 63mm ø 6mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 75mm ø 7.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 90mm ø 8.5mm wall thickness	
Uponor MLC (Multi-Layer Composite) Pipe 110mm ø 10mm wall thickness	

Astro HPE Sealant 20mm annulus full 50mm depth of the Astro Batt

Max Aperture 1000mm Wide x 1300mm Long		
		Key 1. Supporting construction 2. Penetration Service 3. Astro Batt 4. Astro Intu Mastic 5. Astro X Series CE Pipe Collar
Penetration Specification	**Astro X Series CE Pipe Collars**	**Classification**
Pipe Diameters as below. Zero Distance	Fixed to the underside of the Astro Batt utilising steel pig tail fixings	EI 60 U/C

Penetration Specification	Collar Reference	Intumescent Material
PVC Pipe 32mm Ø 1.8mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PVC Pipe 40mm Ø 1.8mm wall thickness	40mm Astro X Series CE Pipe Collar	
PVC Pipe 50mm Ø 1.8mm wall thickness	50mm Astro X Series CE Pipe Collar	
PVC Pipe 55mm Ø 2.3-2.8mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PVC Pipe 63mm Ø 2.3-2.8mm wall thickness	63mm Astro X Series CE Pipe Collar	
PVC Pipe 75mm Ø 3.1-4.4mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PVC Pipe 82mm Ø 3.1-4.4mm wall thickness	82mm Astro X Series CE Pipe Collar	
PVC Pipe 90mm Ø 4.2-6.6mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PVC Pipe 100mm Ø 4.2-6.6mm wall thickness	100mm Astro X Series CE Pipe Collar	
PVC Pipe 110mm Ø 4.2-6.6mm wall thickness	110mm Astro X Series CE Pipe Collar	
PVC Pipe 125mm Ø 6.0mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PVC Pipe 140mm Ø 6.1-7.5mm wall thickness	140mm Astro X Series CE Pipe Collar	
PVC Pipe 160mm Ø 6.2-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

Penetration Specification	Collar Reference	Intumescent Material
PP Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PP Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	
PP Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PP Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PP Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PP Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PP Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	
PP Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PP Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PP Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PP Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PP Pipe 140mm Ø 3.5-8.0mm wall thickness	140mm Astro X Series CE Pipe Collar	
PP Pipe 160mm Ø 4.0-14.6mm wall thickness	160mm Astro X Series CE Pipe Collar	

Penetration Specification	Collar Reference	Intumescent Material
PE Pipe 32mm Ø 2.9mm wall thickness	32mm Astro X Series CE Pipe Collar	30mm (W) x 4mm (T)
PE Pipe 40mm Ø 2.9mm wall thickness	40mm Astro X Series CE Pipe Collar	
PE Pipe 50mm Ø 2.9mm wall thickness	50mm Astro X Series CE Pipe Collar	
PE Pipe 55mm Ø 2.9-4.4mm wall thickness	55mm Astro X Series CE Pipe Collar	30mm (W) x 6mm (T)
PE Pipe 63mm Ø 2.9-4.4mm wall thickness	63mm Astro X Series CE Pipe Collar	
PE Pipe 75mm Ø 2.8-6.7mm wall thickness	75mm Astro X Series CE Pipe Collar	30mm (W) x 8mm (T)
PE Pipe 82mm Ø 2.8-6.7mm wall thickness	82mm Astro X Series CE Pipe Collar	
PE Pipe 90mm Ø 2.7-10.0mm wall thickness	90mm Astro X Series CE Pipe Collar	30mm (W) x 10mm (T)
PE Pipe 100mm Ø 2.7-10.0mm wall thickness	100mm Astro X Series CE Pipe Collar	
PE Pipe 110mm Ø 2.7-10.0mm wall thickness	110mm Astro X Series CE Pipe Collar	
PE Pipe 125mm Ø 3.1mm wall thickness	125mm Astro X Series CE Pipe Collar	40mm (W) x 12mm (T)
PE Pipe 140mm Ø 3.9-5.8mm wall thickness	140mm Astro X Series CE Pipe Collar	
PE Pipe 160mm Ø 4.9-9.5mm wall thickness	160mm Astro X Series CE Pipe Collar	

ANNEX B – Air Permeability – Astro Batt

	Results under positive chamber pressure		Results under negative chamber pressure	
Pressure (Pa)	Leakage (m^3/h)	Leakage ($m^3/m^2/h$)	Leakage (m^3/h)	Leakage ($m^3/m^2/h$)
50	0.6	0.8	1.1	1.5
100	1.0	1.4	1.3	1.8
150	2.8	3.9	1.5	2.1
200	3.8	5.3	1.9	2.6
250	4.5	6.3	2.0	2.8
300	5.0	6.9	2.4	3.3
450	5.1	7.1	1.9	2.6
600	6.7	9.3	2.2	3.1