FIRES
The Experts On Fire Safety
FIRES, s.r.o., Osloboditeľov 282
059 35 Batizovce, Slovak Republic
www.fires.sk

Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

European Technical Assessment

ETA 19/0321 of 26/08/2019

General Part

Trade name of the construction product	Penetration seal System Polylack Elastic (U/U configuration)
Product family to which the construction product belongs	Fire Stopping and Fire Sealing Products. Penetration Seals The Product Area Code (PAC): 35
Manufacturer	Mercor Dunamenti Zrt. Nemeskéri Kiss Miklós u. 39. H-2131 Göd Hungary
Manufacturing plant(s)	Mercor Dunamenti Zrt. Nemeskéri Kiss Miklós u. 39. H-2131 Göd Hungary
This European Technical Assessment contains	115 pages including 4 Annexes which form an integral part of this assessment
	2 Annexes contain confidential information and is/are not included in the European Technical Assessment when that assessment is publicly disseminated
This European Technical Assessment is issued in accordance with regulation (EU) No 305/2011, on the basis of	European Assessment Document EAD 350454-00-1104 “Fire Stopping and Fire Sealing Products. Penetration Seals”

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

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full (excepted the confidential Annexes referred to above). However, partial reproduction may be made, with the written consent of the issuing Technical Assessment Body. Any partial reproduction has to be identified as such.

Specific part

1. Technical description of the product

The product, Penetration seal System Polylack Elastic (U/U configuration) is defined as system used to maintain the fire resistance of a separating wall/floor at the position where services pass through or where there is provision for services to pass through a separating wall/floor.

Penetration seal System Polylack Elastic (U/U configuration) is combination of Polylack Elastic, PS Bandage, PS collar, PS-25 wrap and mineral wool insulation and FEF insulation.

Polylack Elastic

White, ablative mastic. It is supplied in liquid form in buckets and used as a paint (to form coatings) or filler (for adhesion or filling gaps), to form mixed penetration seals where combustible pipes, insulated metal pipes, single cables or cable bundles penetrate walls and floors.

- Material consumption: (1,6 – 1,8) kg.m^{-2}
- Density: (1,25 ± 0,1) g.cm^{-3}

PS Bandage

Consists of fire-resistant filling materials, special graphite and additives mixed into thermoplastic materials.

- Plastic based strip on fiberglass substrate
- Density: (1,25 - 1,35) g.cm^{-3}
- Size of bandage: width: 125 mm,
  thickness: 2,0 mm

PS collar

Pipe closure devices (covered by ETA-17/0676), fire protection of penetration seals of combustible pipes passing through a separating wall/floor. PS Collar includes one or more layers of an intumescent, graphite based liner with a nominal thickness of 2,5 mm and width of 30 mm or 60 mm, inserted into a steel case. The housing of the collar is made of galvanized steel sheet with a thickness of 0,7 mm or stainless steel sheet with a thickness of 0,5 mm.

- Expansion ratio: up to approx. 8-fold
- Expansion temperature: 180°C to 200°C
- Expansion pressure: 1,6 N.mm^{-2}
- Density: (1,20 ± 0,25) g.cm^{-3}
- Dimensions: width: 30 mm and 60 mm, thickness: 2,5 mm

PS-25 wrap

Pipe closure devices (covered by ETA-17/0676)

- reaction to fire according to EN 13501-1: Class E
- average relative expansion ratio: min. 8-fold
- Expansion temperature: 180°C to 200°C
- Expansion pressure: 1 N.mm^{-2}
- Density: (1,20 ± 0,25) g.cm^{-3}
- Dimensions: width: 60 mm, thickness: 2,5 mm

Auxiliary products used with Polylack Elastic to form mixed penetration seals are:

- two types of synthetic flexible elastomeric foam (FEF) insulation in accordance with EN 14304:
  - K-Flex ST produced by L'Isolante K-Flex S.p.A.: Flexible Elastomeric Foam, in accordance with EN 14303, intended to be used as Thermal insulation for building equipment and industrial installations.
    - Width: 1000 mm and 1500 mm;
    - Thickness: 6 mm - 50 mm;
    - Bulk density: 49 kg.m^{-3};
    - Temperature range: - 200° C to + 116° C;
    - Coefficient of resistance to water vapour diffusion: μ > 7000;
    - Reaction to fire: B – s3, d0, acc. to EN 13501-1.
  - NH/Armaflex produced by Armacell UK Ltd: Foamed Synthetic Elastomer, in accordance with EN 14303, without chloride or bromide ions.
    - Thermal insulation material with closed cell structure and high flexibility;
    - Insulation for pipework, tanks and air ducts, for prevention of stress corrosion in stainless steel pipes;
    - Temperature range: - 200° C to + 105° C;
    - Bulk density: 49 kg.m^{-3};
    - Fire performance: Behaviour in fire – self-extinguishing, does not spread flame, does not drip;
    - Reaction to fire: E, D_L – s2, d0, EN 13501-1.
- stone mineral wool insulation with aluminium foil facing (with minimum density of 80 kg.m^{-3}), in accordance with EN 14303, with reaction to fire class A1, according to EN 13501-1,
- stone mineral wool boards, used as a backing material (with minimum thickness of 60 mm and minimum density of 150 kg.m^{-3}) in accordance with EN 14303 or EN 13162, with reaction to fire class A1, according to EN 13501-1.

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

2.1 Intended use

The intended use of Penetration seal System Polylack Elastic (U/U configuration) is to reinstate the fire resistance performance of flexible wall, rigid wall or rigid floor constructions where they are penetrated by combustible pipes, insulated metal pipes, single cables or cable bundles.

The specific elements of construction that the Penetration seal System Polylack Elastic (U/U configuration) may be used to provide a penetration seal in, are as follows:

Rigid walls: The wall must have a minimum thickness of 100 mm and comprise concrete, reinforced concrete, aerated concrete, ceramic brick, cavity brick or checker brick, with a minimum density of 450 kg.m^{-3}.

Flexible walls: The wall must have a minimum thickness 100 mm (steel construction with 50 mm width, double layers of gypsum boards type F according to EN 520 with thickness 12,5 mm and mineral wool with a thickness of 50 mm and with a bulk density of 100 kg.m^{-3}. In the wall is an opening with max. dimensions (2000 x 1200) mm with aperture framing and aperture lining. The opening is filled by two layers of stone wool with thickness of 60 mm and bulk density of 150 kg.m^{-3}. The surface of board is covered from both sides by layer of Polylack Elastic coating with thickness of 1 mm.

Rigid floors: The floor must have a minimum thickness of 150 mm and comprise concrete, reinforced concrete, aerated concrete, ceramic brick, cavity brick or checker brick with a minimum density of 620 kg.m^{-3}.

The surface of the cables and perforated cable trays, cable ladders, copper pipe and plastic pipe in length of 150 mm is protected by a layer of Polylack Elastic coating with dry thickness of 1 mm. The supporting construction is protected by a layer of Polylack Elastic coating with 1 mm thick and 20 mm width.

The supporting construction shall be classified in accordance with EN 13501-2 for the required fire resistance period (equal to or greater than specified in Annex D).

Polylack Elastic may be used to provide a penetration seal with specific combustible or metallic pipes, single cables and cable bundles (according to Annexes A and B).

Details of mixed penetration seals are provided in Annexes A and B.

Pipes or cables shall be supported at maximum 400 mm away from both faces of the wall constructions and from the upper face of floor constructions.

2.2 Use condition

Penetration seal System Polylack Elastic (U/U configuration) is intended for use in internal conditions with humidity equal to or higher than 85 % RH, excluding temperatures below 0°C, without exposure to rain or UV – use condition Type Z_2 according to EAD 350454-00-1104.

Although a penetration seal is intended for indoor applications only, the construction process may result in it being subjected to more exposed conditions for a period before the building envelope is closed. For this case provisions shall be made to protect temporarily exposed penetration seals according to the ETA-holder's installation instructions.

2.3 Working life

The performances given in this European Technical Assessment are based on an assumed working life of the product of 10 years. The indications given on the 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 choosing the right products in relation to the expected economically reasonable working life of the works.

The indications given as to the working life of the construction product cannot be interpreted as a guarantee neither given by the product manufacturer or his representative nor by the Technical Assessment Body, but are regarded only as a means for expressing the expected economically reasonable working life of the product.

2.4 General aspects

It is assumed that:

- damages to the penetration seal are repaired accordingly,
- the installation of the penetration seal does not affect the stability of the adjacent building element – even in case of fire,
- the installations are fixed to the adjacent building element in accordance with the relevant regulations in such a way that, in case of fire, no additional mechanical load is imposed to the penetration seal,
- the support of the installations is maintained for the required period of fire resistance and
- pneumatic dispatch systems, compressed air systems, etc. are switched off by additional means in case of fire.

This European Technical Assessment does not address any risks associated with the emission of dangerous liquids or gases caused by failure of the pipe(s) in case of fire nor does it prove the prevention of the transmission of fire through heat transfer via the medium in the pipes.

The risk of downward spread of fire caused by burning material which drips through a pipe to floors below, is not considered in this European Technical Assessment (see EN 1366-3: 2009, clause 1).

The durability assessment does not take account of the possible effect on the penetration seal of substances permeating through the pipe walls.

The assessment does not cover the avoidance of destruction of the penetration seal or of the adjacent building element(s) by forces caused by temperature changes in case of fire. This has to be considered when designing the piping system.

The European Technical Assessment is issued for the product on the basis of agreed data/information, deposited with the FIRES, s.r.o. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to the FIRES, s.r.o. before the changes are introduced. The FIRES, s.r.o. will decide whether or not such changes affect the European Technical Assessment and consequently the validity of the CE marking on the basis of the European Technical Assessment and if so whether further assessment or alterations to the European Technical Assessment, shall be necessary.

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

Product: Penetration seal System Polylack Elastic (U/U configuration)		**Intended use:** Penetration seal
Basic requirement for construction work	**Essential characteristic**	**Performance**
BWR 2: Safety in case of fire	Reaction to fire	Clause 3.1.1 of this ETA
	Resistance to fire	Clause 3.1.2 of this ETA

Product: Penetration seal System Polylack Elastic (U/U configuration)		**Intended use:** Penetration seal
Basic requirement for construction work	**Essential characteristic**	**Performance**
BWR 3: Hygiene, health and the environment	Air permeability	No performance assessed
	Water permeability	No performance assessed
	Content, emission and/or release of dangerous substances	Use category: IA1, S/W3 Declaration of the manufacturer: The product does not contain/release dangerous substances specified in EOTA TR 034, October 2015 Regarding the dangerous substances, there may be requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the Construction Products Regulation, these requirements need also to be complied with, when and where they apply.
BWR 4: Safety and accessibility in use	Mechanical resistance and stability	No performance assessed
	Resistance to impact/movement	No performance assessed
	Adhesion	No performance assessed
	Durability	Clause 3.3.4 of this ETA
BWR 5: Protection against noise	Airborne sound insulation	No performance assessed
BWR 6: Energy economy and heat retention	Thermal properties	No performance assessed
	Water vapour permeability	No performance assessed

Characterisation of all components of the of the Penetration seal System Polylack Elastic (U/U configuration) (sealing materials Polylack Elastic, PS Bandage, PS collar, PS-25 wrap) has been done according to cl. 2.2 of EAD 350454-00-1104. Received data are confidential and are deposited by FIRES, s.r.o.

3.1 Safety in case of fire (BWR 2)

3.1.1 Reaction to fire

Penetration seal System Polylack Elastic (U/U configuration) was assessed according to EAD 350454-00-1104 clause 2.2.1 and classified according to EN 13501-1: 2007 + A1: 2009 (classification identical with EN 13501-1: 2018).

Individual reaction to fire classes and field of application of sealing materials (Polylack Elastic, PS Bandage, PS collar, PS-25 wrap) are given in Annex C of this ETA.

3.1.2 Resistance to fire

Penetration seal System Polylack Elastic (U/U configuration) was tested according to EN 1363-1: 2012, EN 1366-3: 2009 and EAD 350454-00-1104 clause 2.2.2 and was classified according to EN 13501-2: 2016.

Individual resistance to fire classes and field of application of Penetration seal System Polylack Elastic (U/U configuration) are given in Annex D of this ETA.

3.2 Hygiene, health and the environment (BWR 3)

3.2.1 Air permeability

No performance assessed

3.2.2 Water permeability

No performance assessed

3.2.3 Content, emission and/or release of dangerous substances

According to declaration of the manufacturer, the Penetration seal System Polylack Elastic (U/U configuration) (sealing materials Polylack Elastic, PS Bandage, PS collar, PS-25 wrap) does not contain/release dangerous substances specified in EOTA TR 034, October 2015.

Regarding the dangerous substances, there may be requirements applicable to the product falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of Construction Products Regulation, these requirements need also to be complied with, when and where they apply.

3.3 Safety and accessibility in use (BWR 4)

3.3.1 Mechanical resistance and stability

No performance assessed

3.3.2 Resistance to impact/movement

No performance assessed

3.3.3 Adhesion

No performance assessed

3.3.4 Durability

Basic durability assessment of all components of the of the Penetration seal System Polylack Elastic (U/U configuration) (sealing materials Polylack Elastic, PS Bandage, PS collar, PS-25 wrap) has been done according to cl. 2.2.9 of EAD 350454-00-1104. Received data are confidential and are deposited by FIRES, s.r.o.

Components and materials compatibility – effects in contact with metal or plastics has been tested and assessed.

Expression of basic durability assessment: Penetration seal System Polylack Elastic (U/U configuration) is appropriate for use in internal conditions with humidity equal to or higher than 85 % RH excluding temperatures below 0°C, without exposure to rain or UV – use condition Type Z_2 according to EAD 350454-00-1104.

Penetration seal System Polylack Elastic (U/U configuration) is appropriate for intended use in regard to compatibility of components and materials concerning effects in contact with metal or plastics.

3.4 Protection against noise (BWR 5)

3.4.1 Airborne sound insulation

No performance assessed

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal properties

No performance assessed

3.5.2 Water vapour permeability

No performance assessed

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

According to the Decision 1999/454/EC[1], amended by Decision 2001/596/EC[2] of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No. 305/2011) given in the following tables apply:

Product(s)	Intended use(s)	Level(s) or class(es) (resistance to fire)	System(s)
Fire Stopping and Fire Sealing Products	For fire compartmentation and/or fire protection or fire performance	any	1

According to the Decision 1999/454/EC, amended by Decision 2001/596/EC of the European Commission the system(s) of assessment and verification of constancy of performance, with regard to reaction to fire, is 3.

Product(s)	Intended use(s)	Level(s) or class(es) (resistance to fire)	System(s)
Fire Stopping and Fire Sealing Products	For uses subject to regulations on reaction to fire	A1*, A2*, B*, C*	1
		A1**, A2**, B**, C**, D, E	3
		(A1 to E)***, F	4

* Products/materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material)
** Products/materials not covered by footnote (*)
*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of class A1 according to Commision Decision 96/603/EC, as amended)

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited by the Technical Assessment Body FIRES, s.r.o.

The notified product certification body shall carry out the continuous surveillance, assessment and evaluation of factory production control at least twice a year.

Issued in Batizovce on 26. 08. 2019 by FIRES, s.r.o.

Approved by:

Ing. Michal Gašper
Head of the Technical Assessment Body

Prepared by:

Ing. Samuel Skokan
Assessor of the Technical Assessment Body

[1] Official Journal of the European Communities no. L 178, 14. 07. 1999
[2] Official Journal of the European Communities no. L 209, 02. 08. 2001

Annex A
Use: in flexible or rigid wall supporting construction
Maximum dimensions of penetration seal: (2000 x 1200) mm (width x height)

Table No. 1

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	-	—— // ——	-
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	-	—— // ——	-
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	-	—— // ——	-
H	1 pc 16x1 mm copper pipe	-	—— // ——	-
I	1 pc 16x1 mm plastic pipe	-	—— // ——	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	-	—— // ——	-
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	The surface of the pipes, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	-	—— // ——	-
1/Cu2	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	118 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
2/P7	Plastic pipe PE-HD D= 125 x 4 mm	125 mm	PS collar from both side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
3/S9	Steel pipe D=100 x 2,5 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	100 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
4/Cu6	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	60 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
5/P20	Plastic pipe PE HD D= 125 x 11,4 mm	145 mm	PS-25 wrap from both sides 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
6/P15	Plastic pipe PE HD 50x3 mm	60 mm	PS-25 wrap from both sides 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
9/P4	Plastic pipe PVC-U D= 125 x 7,4 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
10/P21	Geberit Silent 20 dB D=56x3,2 mm	56 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
11/S6	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	190 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
12/Cu3	Copper pipe D=89 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	121 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
13/P11	Plastic pipe PP-R D= 125 x 7,1 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
15/ Cu10	Copper pipe D=89 x 2 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 400 mm	90 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
16/S3	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	96 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
17/P3	Plastic pipe PVC-U D= 125 x 3,7 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
18/P17	Plastic pipe PVC-U 125x3,7 mm	145 mm	PS-25 wrap from both sides 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
19/P16	Plastic pipe PE HD 50x4,6 mm	60 mm	PS-25 wrap from both sides 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
20/P14	Plastic pipe PVC-U 50x3,7 mm	60 mm	PS-25 wrap from both sides 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
21//P5	Plastic pipe PE-HD D= 50 x 3 mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
22/Cu5	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	60 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
23/Cu4	Copper pipe D=89 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	180 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
24/G2	Plastic pipe Geberit Mepla D= 75 x 4,5 mm with non-com-bustible stone wool insulation 20 mm, pipe insulation LI 350 mm	75 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	U/C
25/P19	Plastic pipe PE HD 125x4 mm	145 mm	PS-25 wrap from both sides 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
26/S1	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	96 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
27/P6	Plastic pipe PE-HD D= 50 x 4,6mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
28/P10	Plastic pipe PP-R D= 50 x 8,3 mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
29/S2	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	150 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
30/Cu8	Copper pipe D=89 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	180 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
31/P22	Geberit Silent 20 dB D=110x6 mm	110 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
32/S4	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	150 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
33/S7	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
34/S5	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
35/Cu7	Copper pipe D=89 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	125 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
36/G1	Plastic pipe Geberit Mepla D= 32 x 3 mm with non-com-bustible stone wool insula-tion 20 mm, pipe insulation LI 350 mm	32 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	U/C
37/P18	Plastic pipe PVC-U D= 125 x 7,4 mm	145 mm	PS-25 wrap from both sides 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
38/P8	Plastic pipe PE-HD D= 125 x 11,4 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
39/S10	Steel pipe D=130 x 4 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 450 mm	130 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
40/Cu9	Copper pipe D=28 x 1 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	30 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
41/P2	Plastic pipe PVC-U D= 50 x 3,7 mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic (like corner filling) in the corners from both sides	U/U
44/P12	Plastic pipe PP-R D= 125 x 11,4 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

PS collars types DN50 are fixed to the wall by 3 pieces of steel screw ∅ 6 x 90 mm.
The collars are used for following services No.: 41/P2, 21/P5, 27/P6, 28/P10;

PS collars types DN63 are fixed to the wall by 3 pieces of steel screw ∅ 6 x 90 mm.
The collar is used for following service No.: 10/P21;

PS collars types DN110 are fixed to the wall by 6 pieces of steel screw ∅ 6 x 90 mm.
The collar is used for following service No.: 31/P22;

PS collars types DN125 are fixed to the wall by 6 pieces of steel screw ∅ 6 x 90 mm.
The collars are used for following services No.: 2/P7, 9/P4, 13/P11, 17/P3, 38/P8, 44/P12;

The following plastic pipes are sealed in the flexible wall construction:

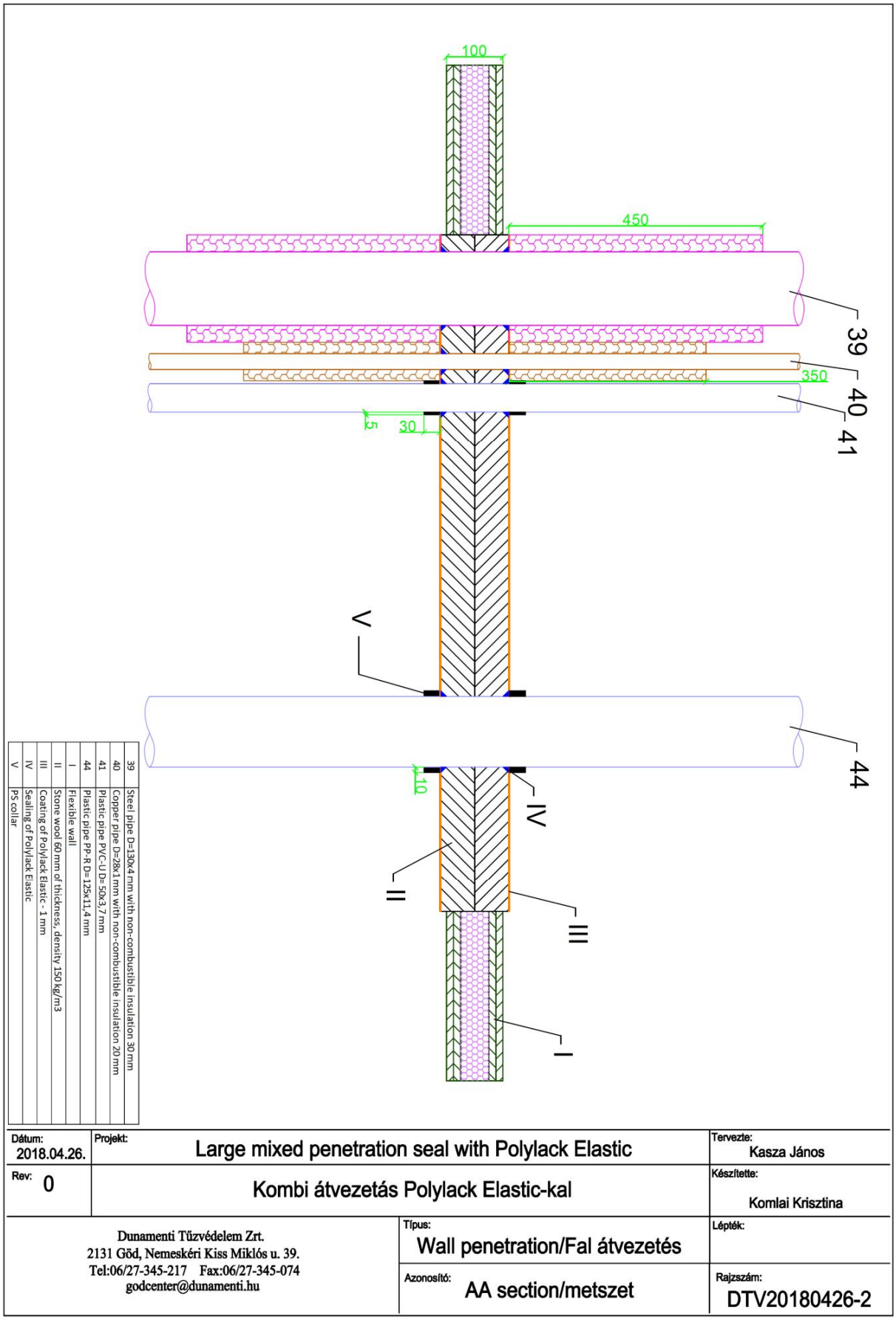
- PVC-U pipes in accordance with EN 1326-1, EN 1452-1 or EN 1453-1 with dimensions in accordance with table 1,
- PVC-C pipes in accordance with EN 1566-1 with dimensions in accordance with table 1,
- PE-HD pipes in accordance with EN 1516-1 or EN 12666-1, with dimensions in accordance with table 1,
- PE pipes in accordance with EN 12201-2, EN 1519-1 and EN 12666-1, with dimensions in accordance with table 1,
- ABS pipes in accordance with EN 1455-1 with dimensions in accordance with table 1,
- SAN+PVC pipes in accordance with EN 1565-1 with dimensions in accordance with table 1,
- PP-R pipes in accordance with EN ISO 15874, with dimensions in accordance with table 1.

Services No. 24/G2, 39/S10, 40/Cu9, 36/G1, 15/Cu10, 3/S9 are insulated by stone wool with bulk density 80 $kg.m^{-3}$ with reinforced aluminium foil facing. The information of the thickness and length of the insulation is listed in the table No. 1.

The mixed module contain cable ladders with width:
- 200 mm and wall thickness of 1 mm.
- 300 mm and wall thickness of 1,25 mm.

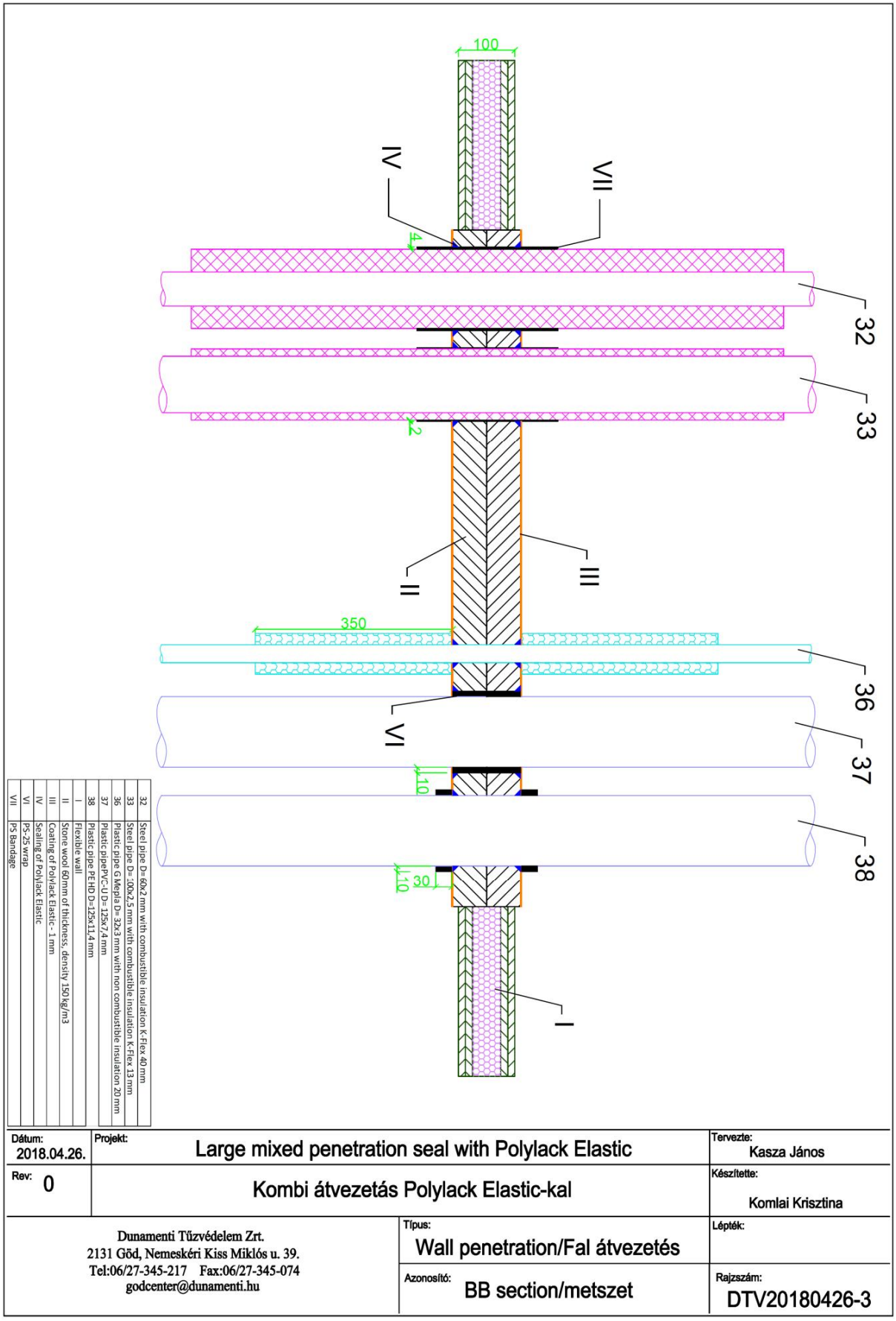
Non-perforated cable tray with width:
- 500 mm and wall thickness of 1,5 mm.

Perforated cable tray with width:
- 500 mm and wall thickness of 1,5 mm.

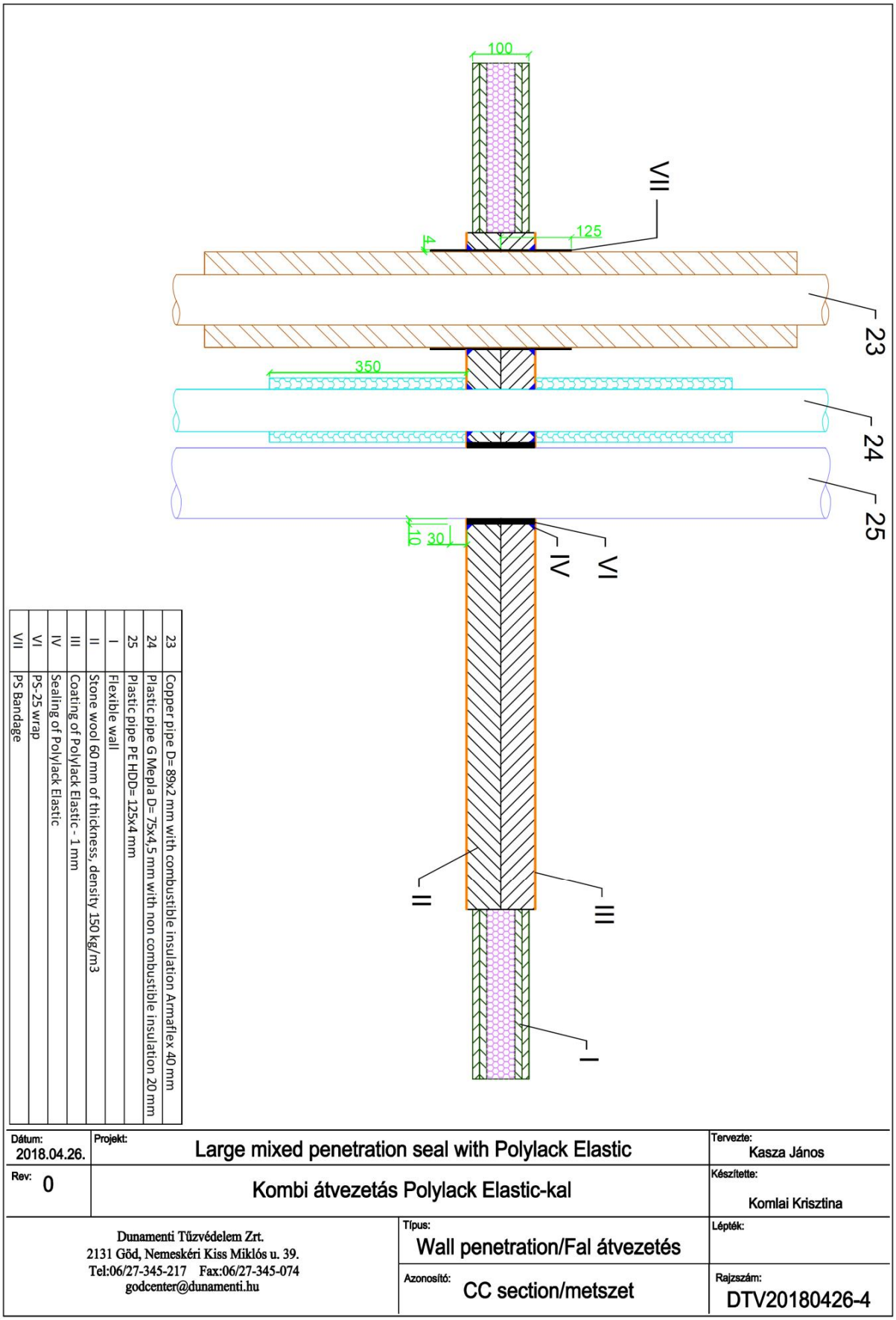


39	Steel pipe D=130x4 mm with non-combustible insulation 30 mm
40	Copper pipe D=28x1mm with non-combustible insulation 20 mm
41	Plastic pipe PVC-U D=50x3,7 mm
44	Plastic pipe PP-R D=125x11,4 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: AA section/metszet	Rajzszám: DTV20180426-2



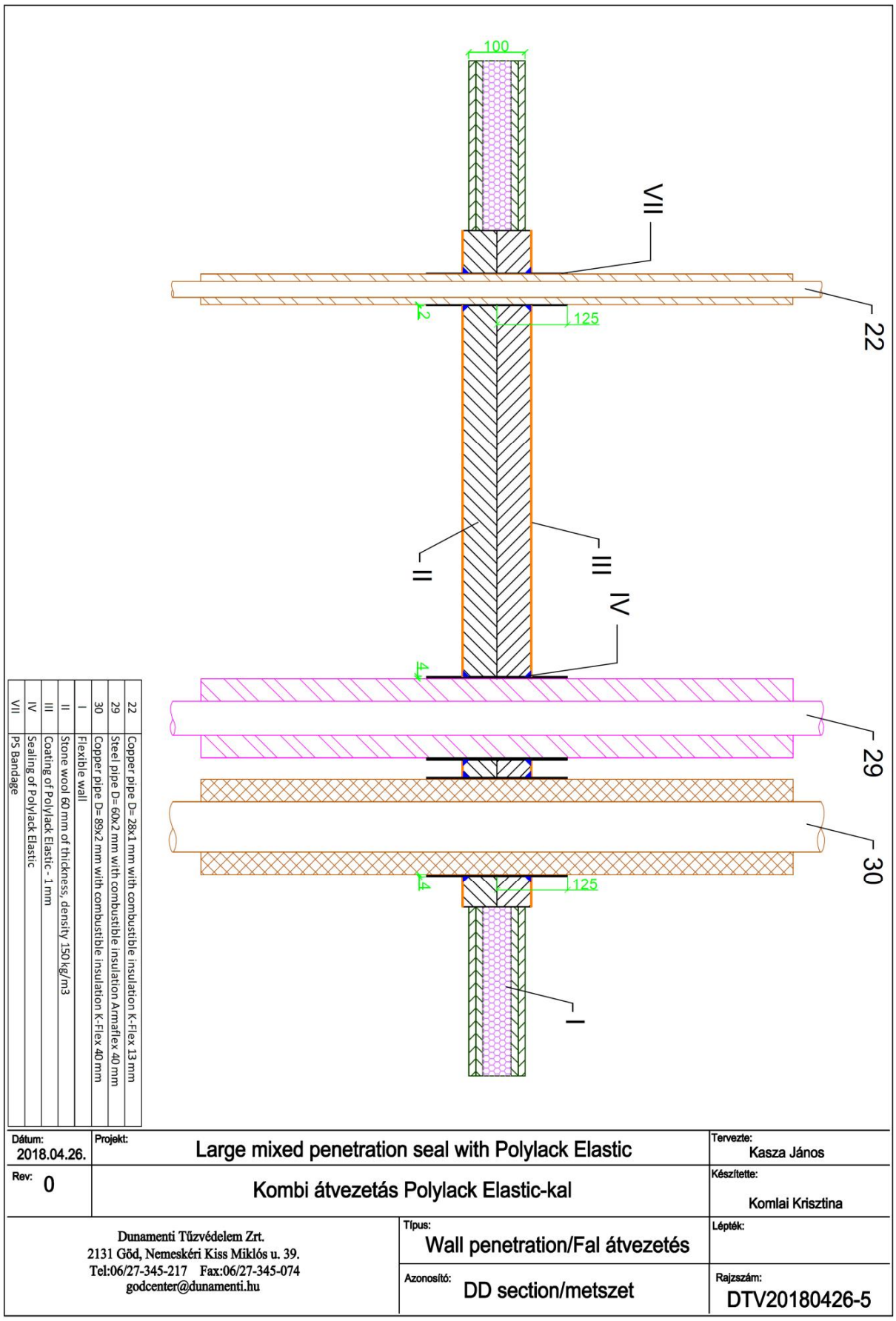
Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: BB section/metszet	Rajzszám: DTV20180426-3



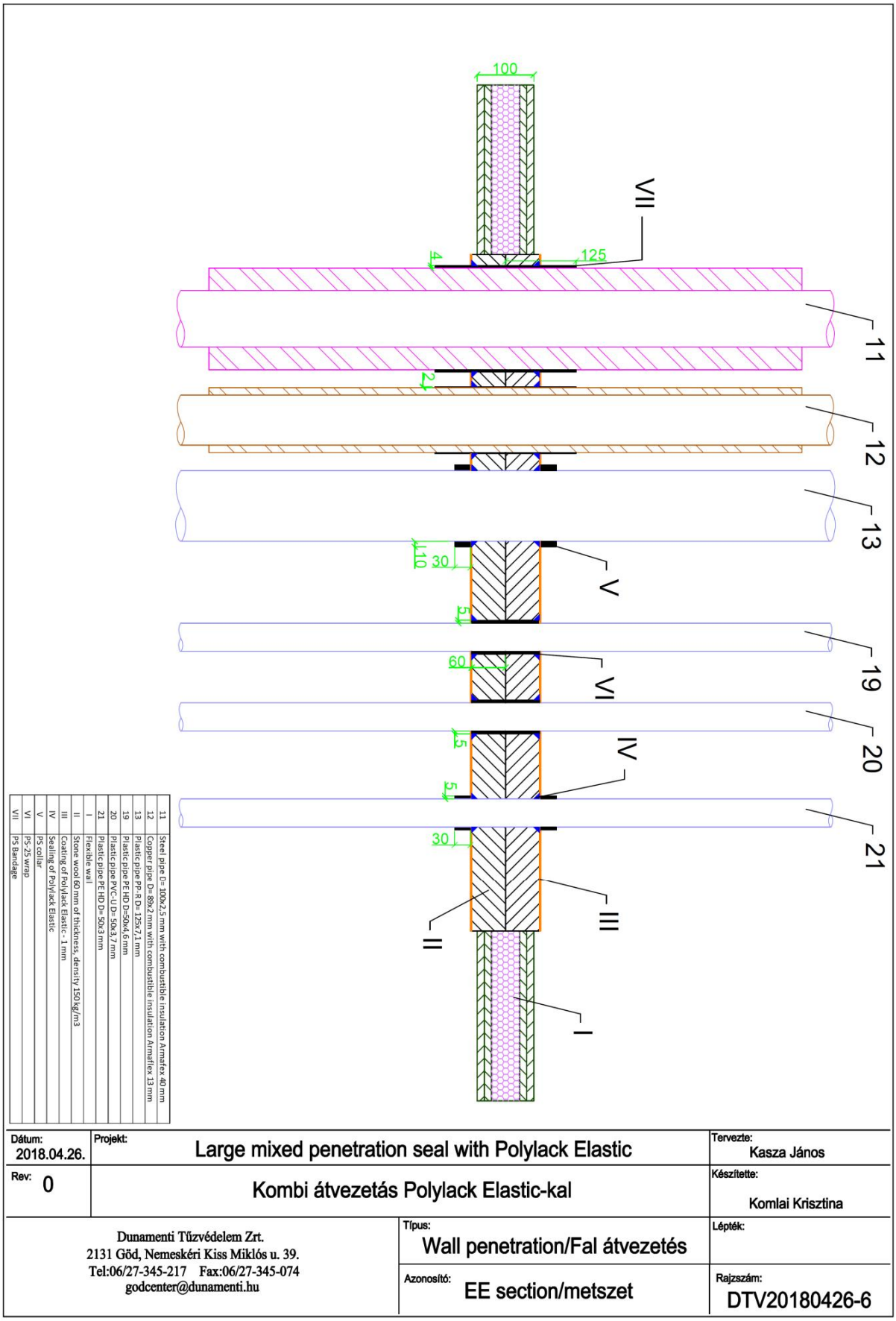
VII	PS Bandage
VI	PS-25 wrap
IV	Sealing of Polylack Elastic
III	Coating of Polylack Elastic - 1 mm
II	Stone wool 60 mm of thickness, density 150 kg/m3
I	Flexible wall
25	Plastic pipe PE HDD= 125x4 mm
24	Plastic pipe G Mepla D= 75x4,5 mm with non combustible insulation 20 mm
23	Copper pipe D= 89x2 mm with combustible insulation Armaflex 40 mm

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: CC section/metszet	Rajzszám: DTV20180426-4

No. 22/Cu5, 29/S2, 30/Cu8 - services



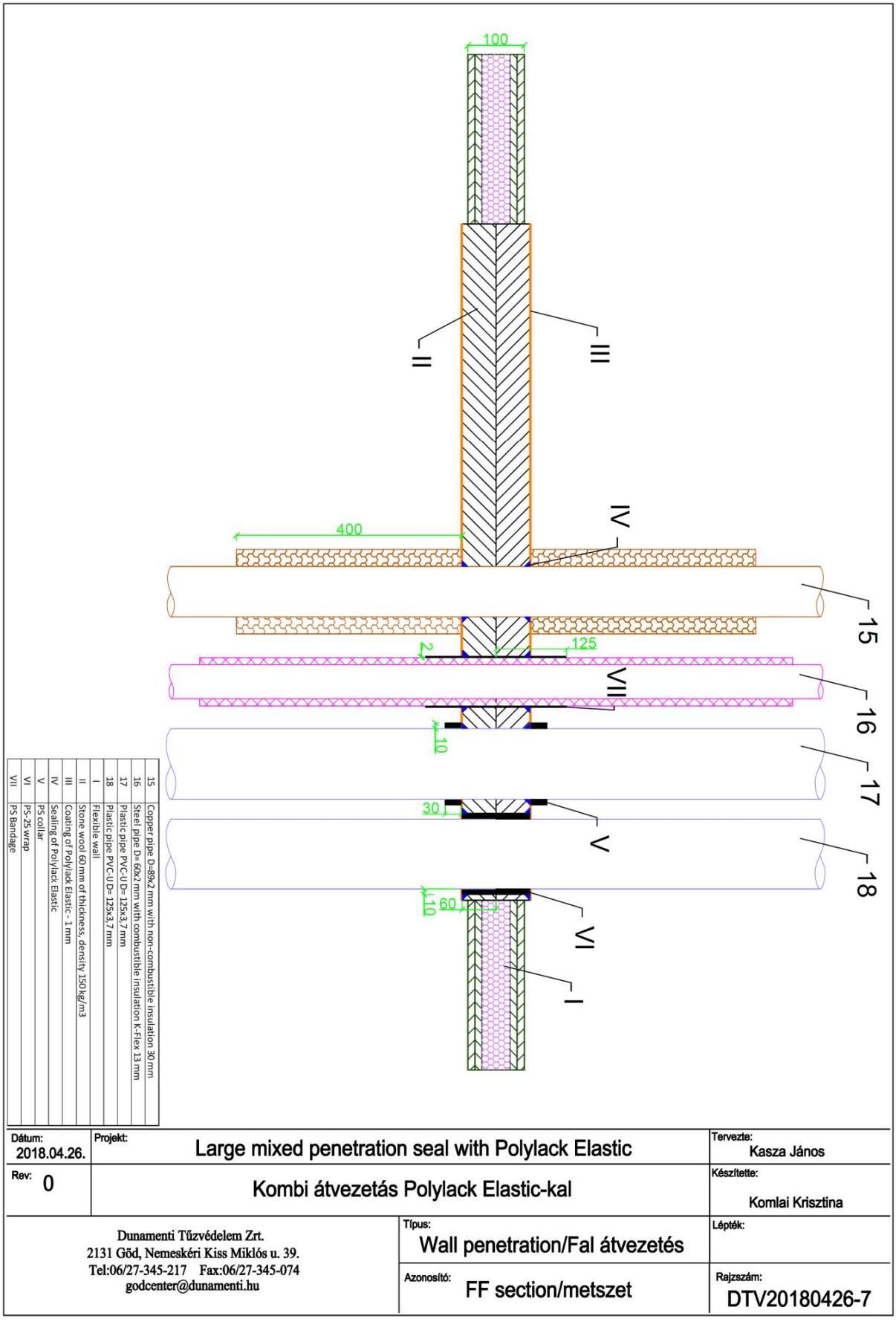
No. 11/S6, 12/Cu3, 13/P11, 19/P16, 20/P14, 21/P5 - services



11	Steel pipe D= 100x2,5 mm with combustible insulation Armaflex 40 mm	
12	Copper pipe D= 89x2 mm with combustible insulation Armaflex 13 mm	
13	Plastic pipe PP-R D= 125x7,1 mm	
19	Plastic pipe PE HD D=50x4,6 mm	
20	Plastic pipe PVC-U D= 50x3,7 mm	
21	Plastic pipe PE HD D= 50x3 mm	
I	Flexible wal	
II	Stone wool 60 mm of thickness, density 150 kg/m3	
III	Coating of Polylack Elastic - 1 mm	
IV	Sealing of Polylack Elastic	
V	PS collar	
VI	PS-25 wrap	
VII	PS Bandage	

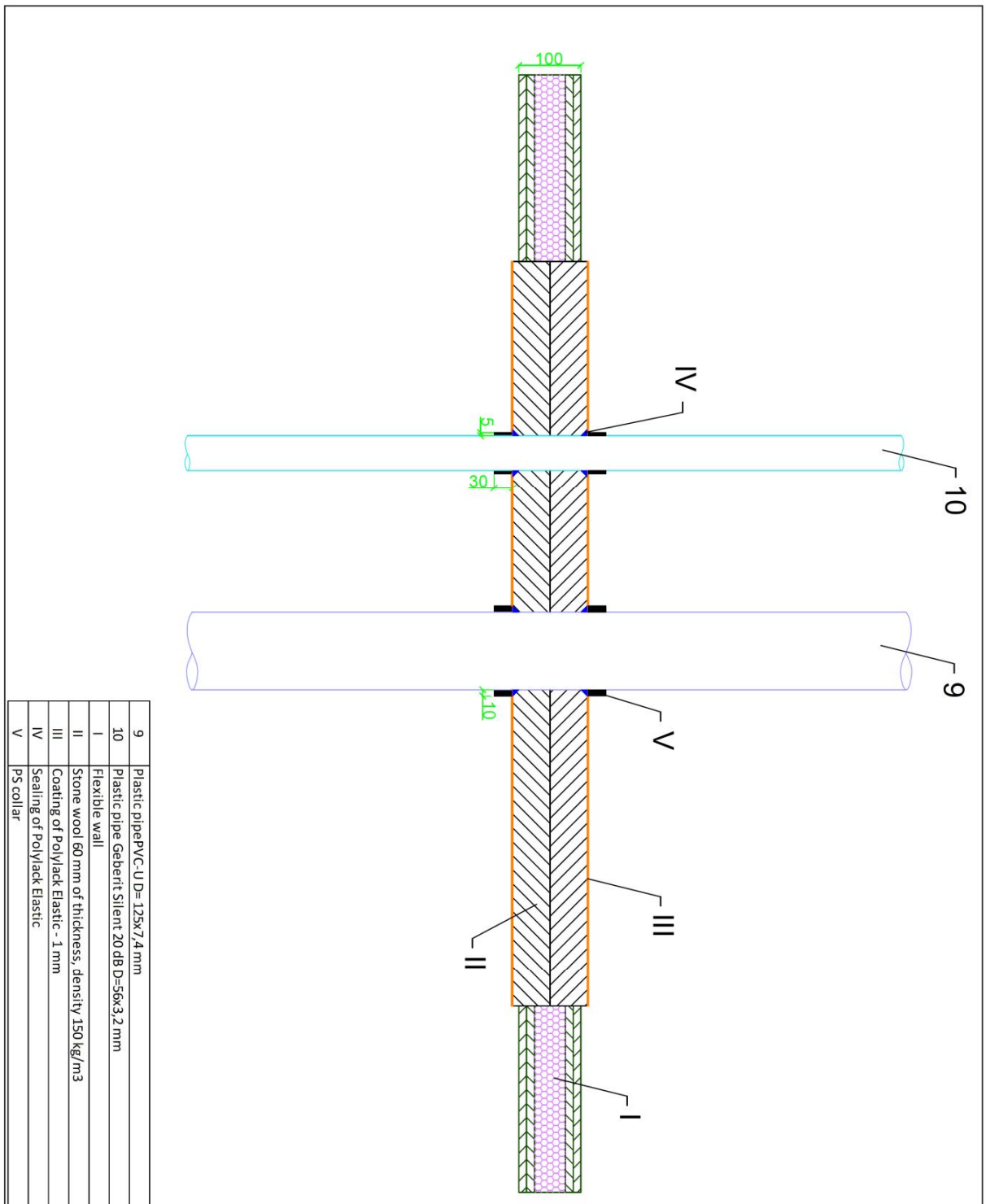
Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: EE section/metszet	Rajzszám: DTV20180426-6

No. 15/Cu10, 16/S3, 17/P3, 18/P17 - services



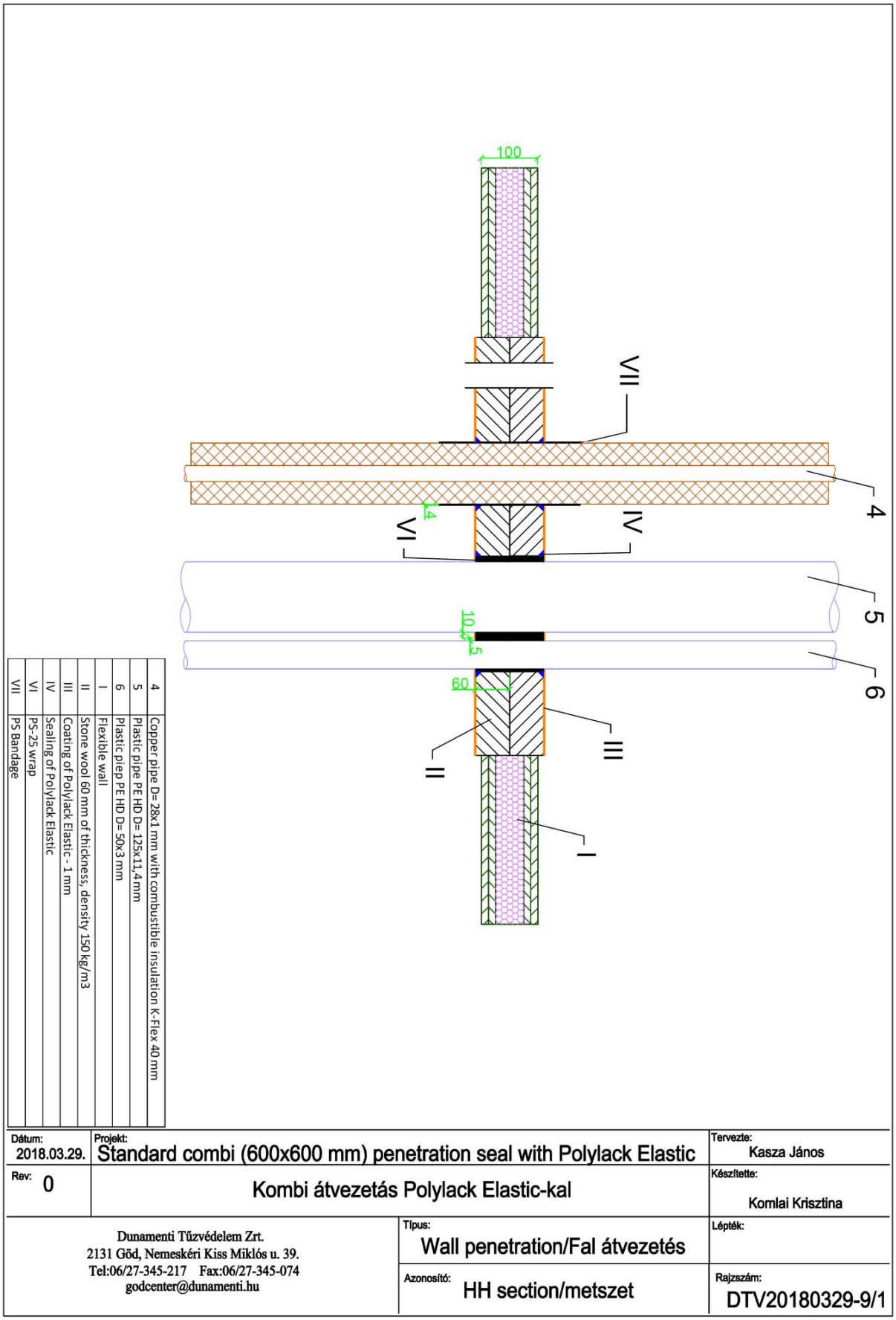
VII	PS Bandage
VI	PS-25 wrap
V	PS collar
IV	Sealing of Polylack Elastic
III	Coating of Polylack Elastic - 1 mm
II	Stone wool 60 mm of thickness, density 150 kg/m3
I	Flexible wall
18	Plastic pipe PVC-U D= 125x3,7 mm
17	Plastic pipe PVC-U D= 125x3,7 mm
16	Steel pipe D= 60x2 mm with combustible insulation K-Flex 13 mm
15	Copper pipe D=89x2 mm with non-combustible insulation 30 mm

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: FF section/metszet	Rajzszám: DTV20180426-7



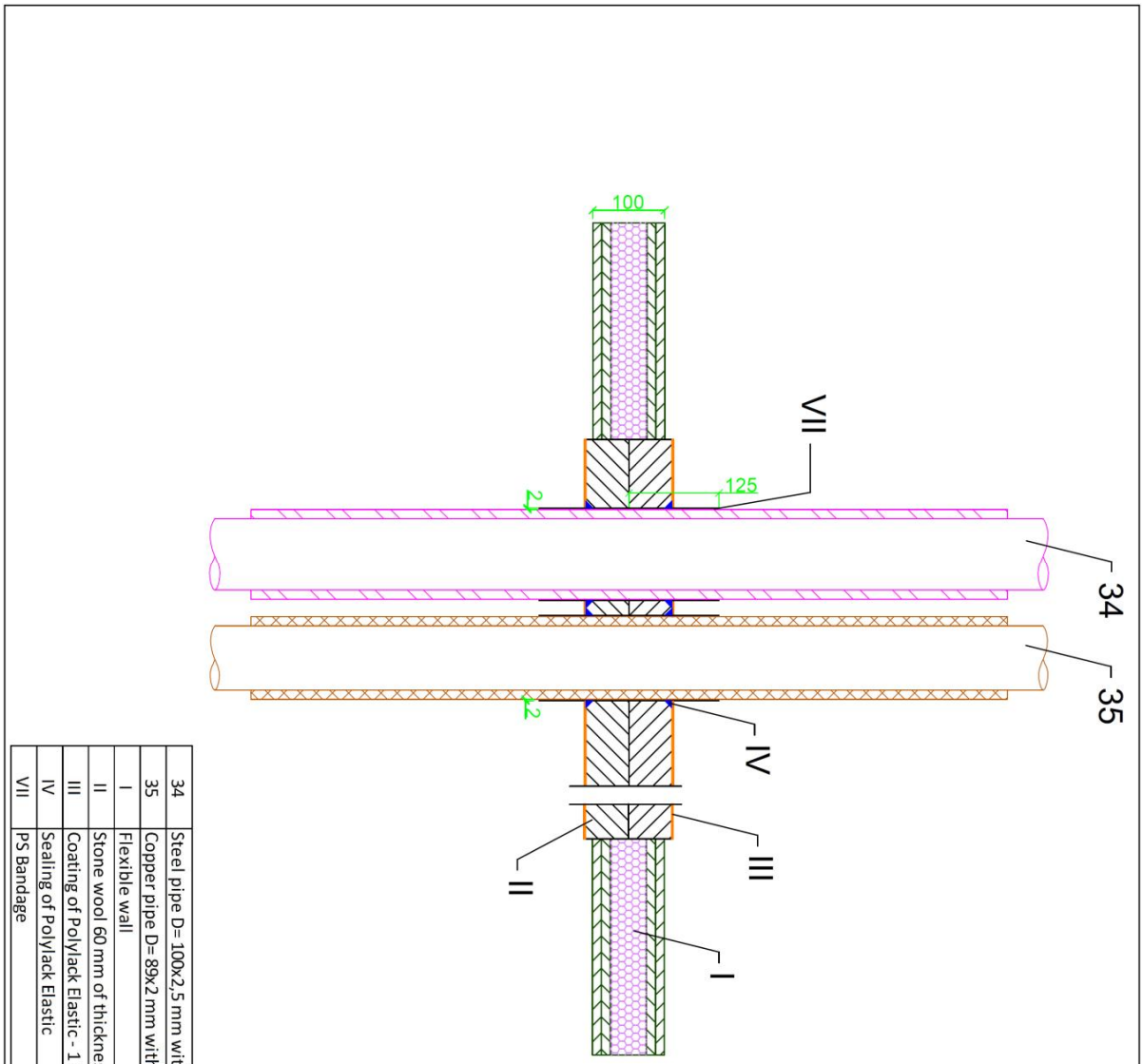
9	Plastic pipePVC-U D= 125x7,4 mm
10	Plastic pipe Geberit Silent 20 dB D=56x3,2 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: GG section/metszet	Rajzszám: DTV20180426-8



4	Copper pipe D= 28x1 mm with combustible insulation K-Flex 40 mm
5	Plastic pipe PE HD D= 125x11,4 mm
6	Plastic piep PE HD D= 50x3 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VI	PS-25 wrap
VII	PS Bandage

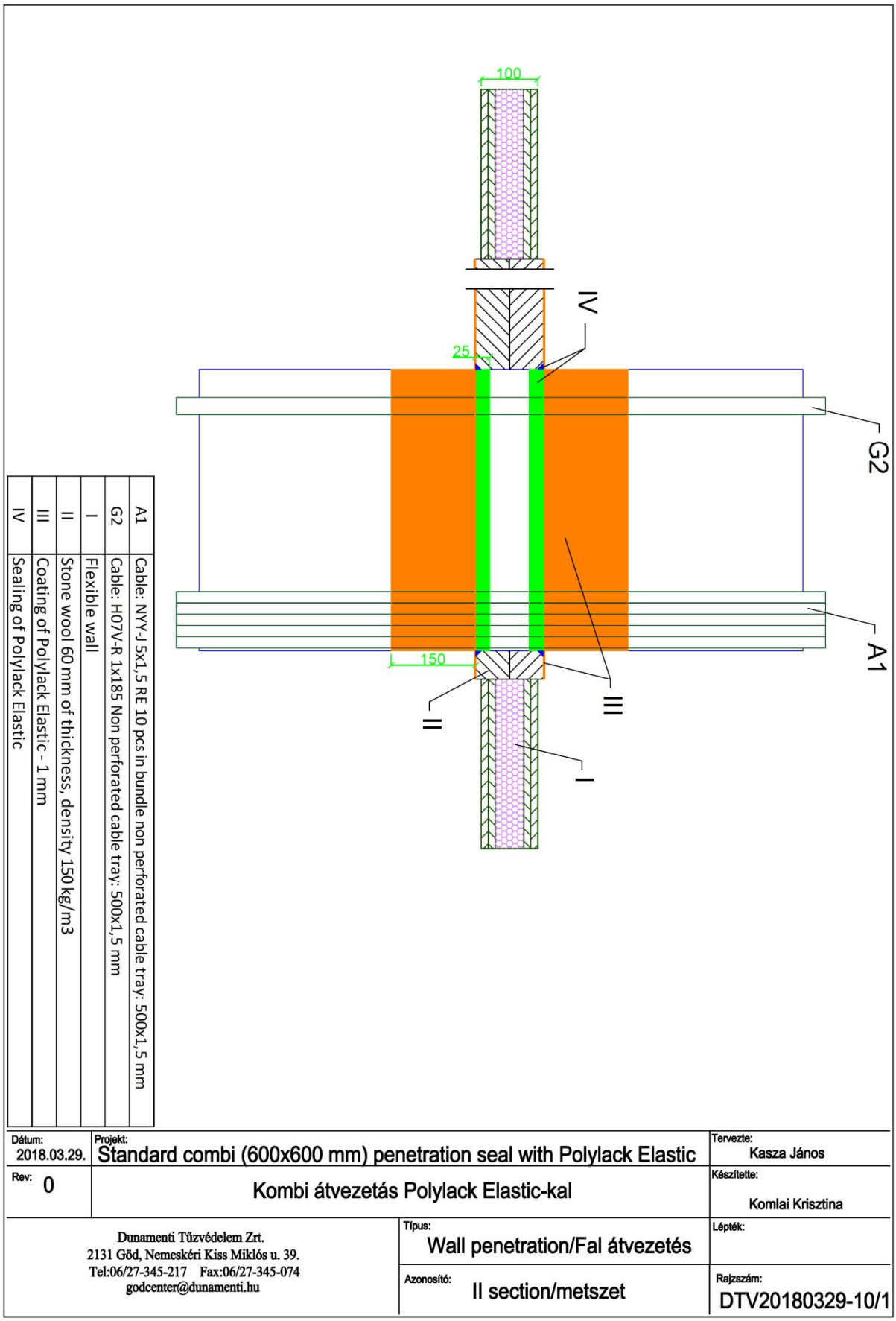
Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: HH section/metszet	Rajzszám: DTV20180329-9/1



34	Steel pipe D= 100x2,5 mm with combustible insulation Armaflex 13 mm
35	Copper pipe D= 89x2 mm with combustible insulation K-Flex 13 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VII	PS Bandage

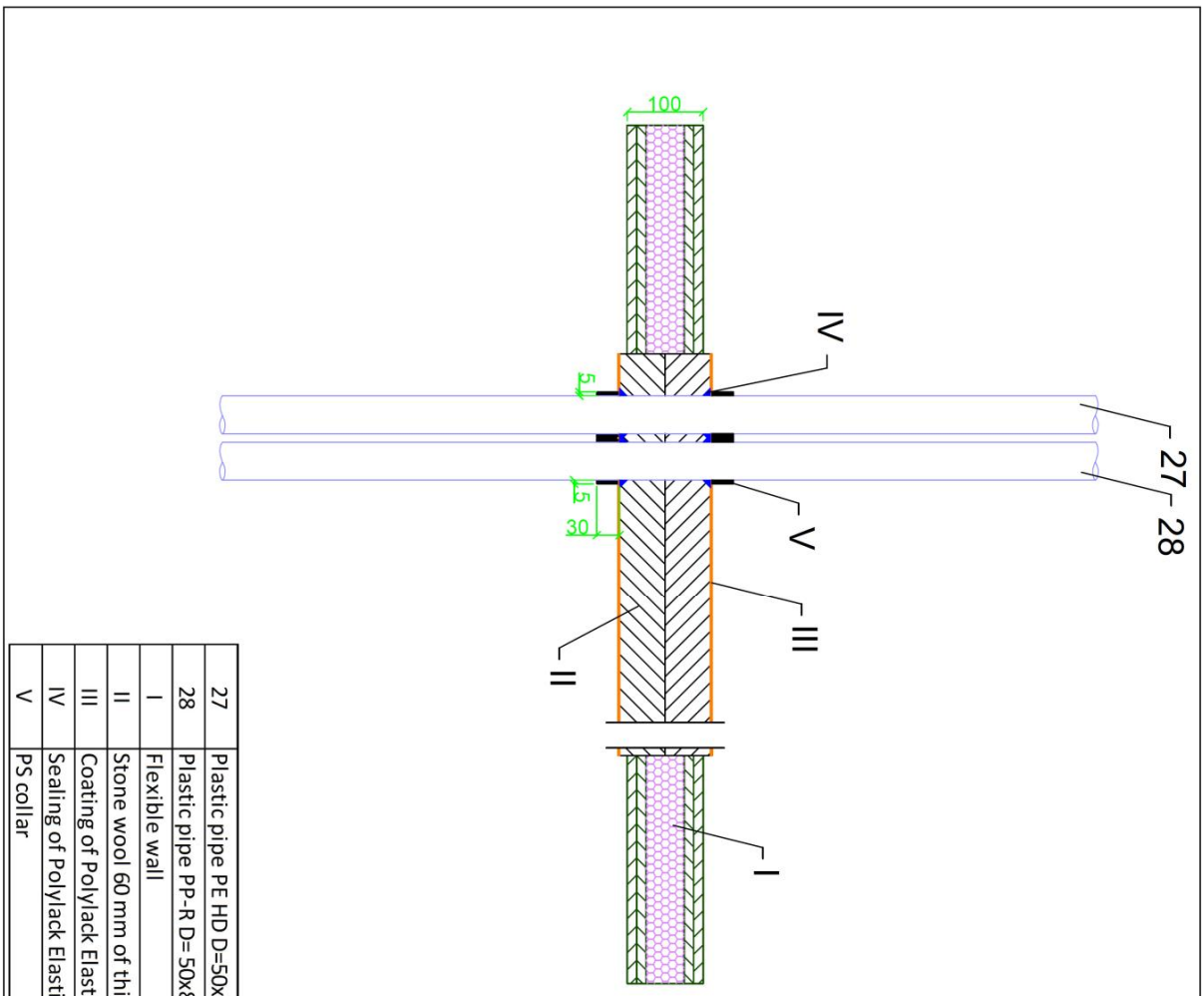
Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: HH section/metszet	Rajzszám: DTV20180426-9/2

No. G2, A1 - services



A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle non perforated cable tray: 500x1,5 mm
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic

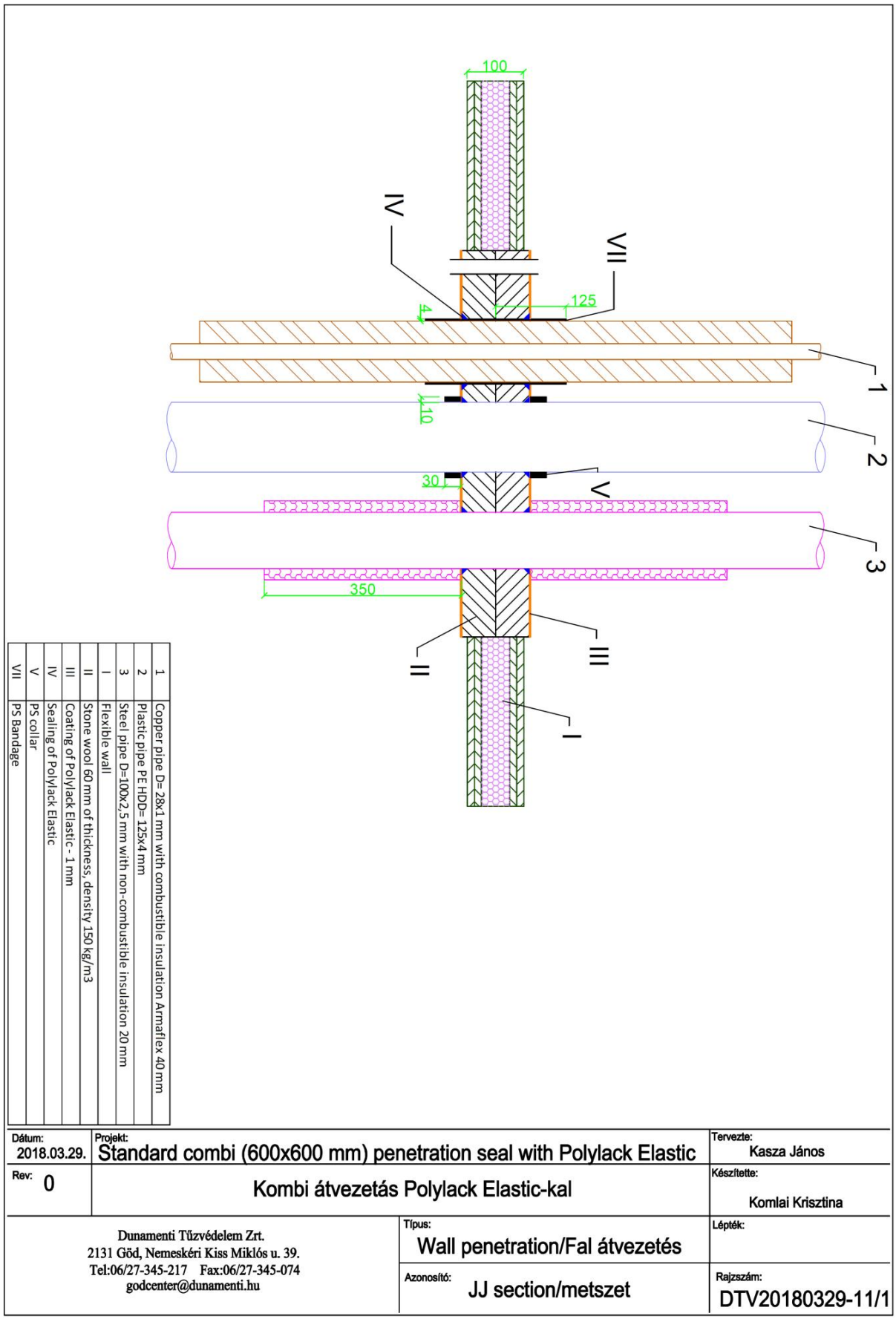
Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: II section/metszet	Rajzszám: DTV20180329-10/1



27	Plastic pipe PE HD D=50x4,6 mm
28	Plastic pipe PP-R D= 50x8,3 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

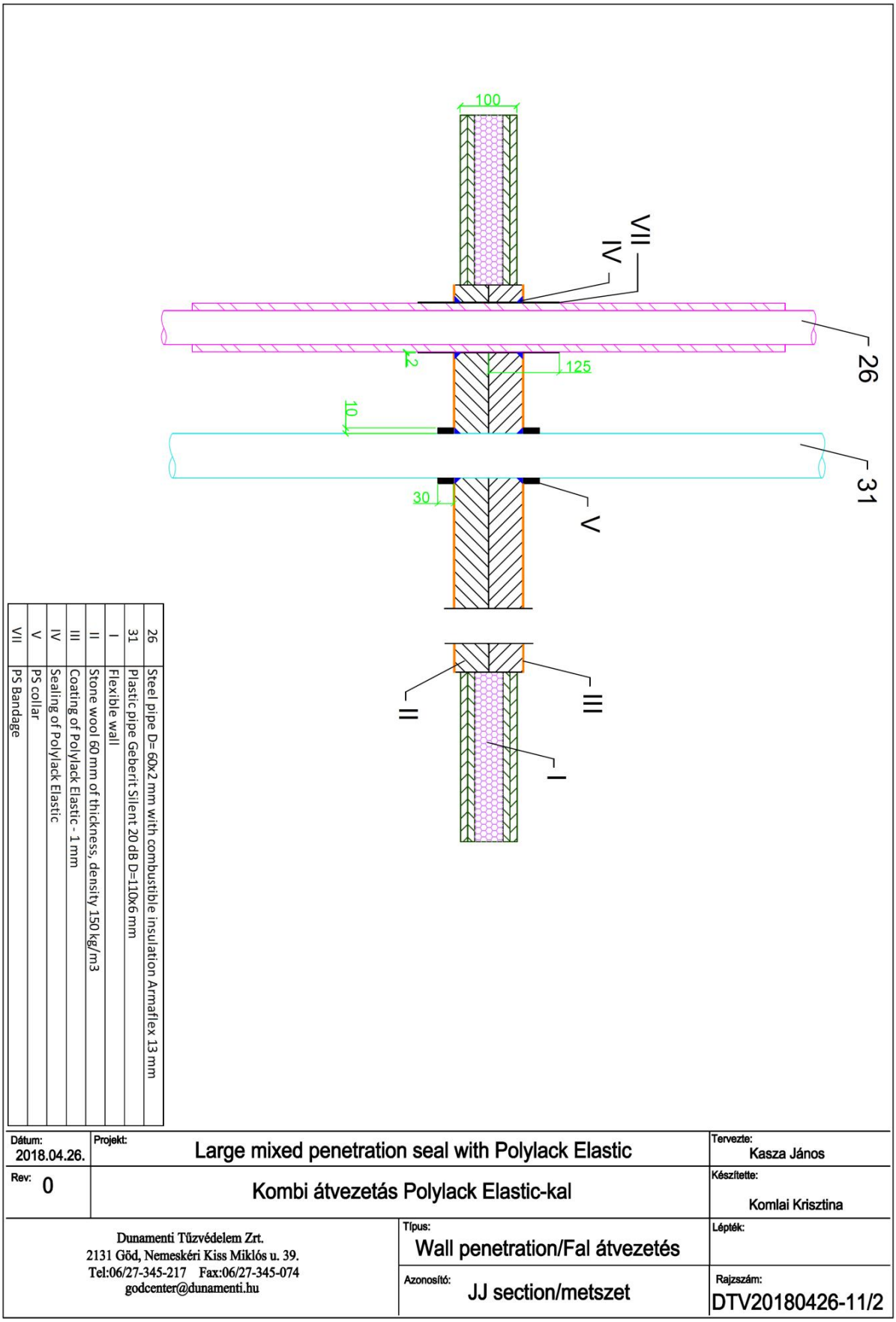
Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: II section/metszet	Rajzszám: DTV20180426-10/2

No. 1/Cu2, 2/P7, 3/S9 - services



VII	PS Bandage
V	PS collar
IV	Sealing of Polylack Elastic
III	Coating of Polylack Elastic - 1 mm
II	Stone wool 60 mm of thickness, density 150 kg/m3
I	Flexible wall
3	Steel pipe D=100x2,5 mm with non-combustible insulation 20 mm
2	Plastic pipe PE HDD= 125x4 mm
1	Copper pipe D= 28x1 mm with combustible insulation Armaflex 40 mm

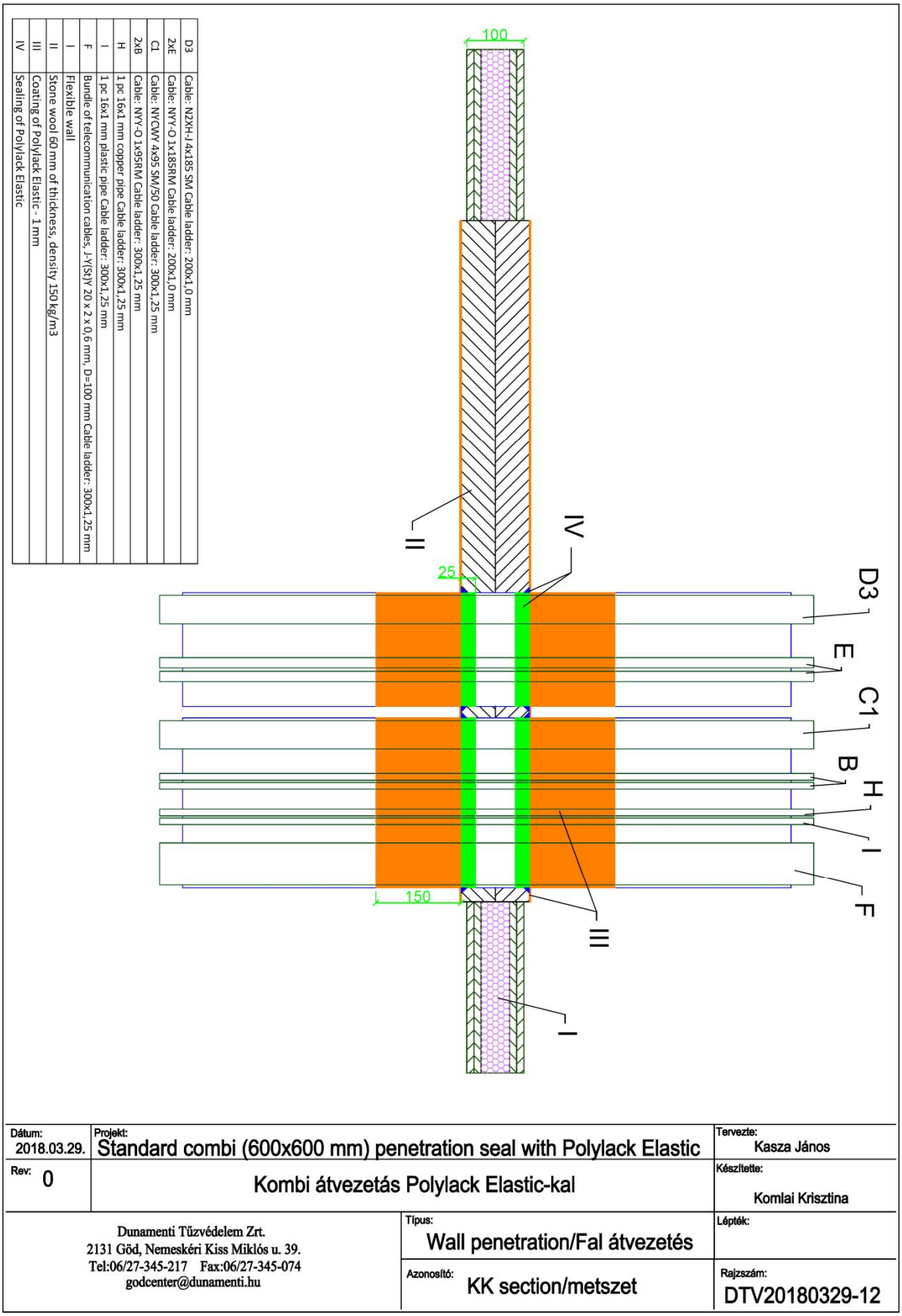
Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: JJ section/metszet	Rajzszám: DTV20180329-11/1

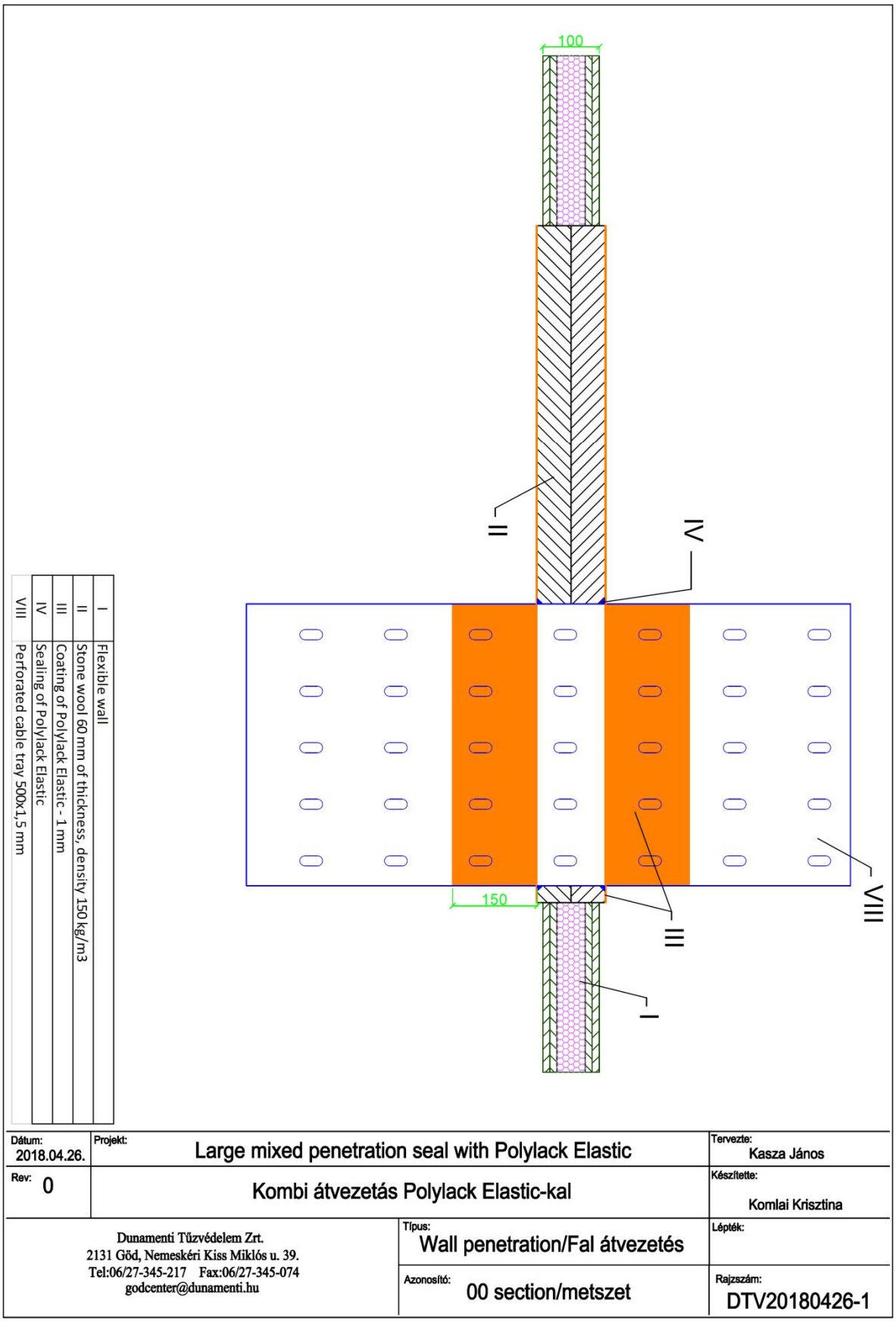


26	Steel pipe D= 60x2 mm with combustible insulation Armaflex 13 mm
31	Plastic pipe Geberit Silent 20 dB D=110x6 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VII	PS Bandage

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: JJ section/metszet	Rajzszám: DTV20180426-11/2

No. D3, E, C1, B, H, I, F - services





I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VIII	Perforated cable tray 500x1,5 mm

Dátum: 2018.04.26.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: 00 section/metszet	Rajzszám: DTV20180426-1

Table No. 2

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
Cables for standard penetration:				
D1	Cable: NYCWY 4x185 SM/95 Cable ladder: 300x1,25 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
2xE	Cable: NYY-O 1x185RM Cable ladder: 300x1,25 mm	-	── // ──	-
D2	Cable: H07RN-F 4G185 Cable ladder: 300x1,25 mm	-	── // ──	-
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	── // ──	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	The surface of the cable, perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
A2	Cable: H07RN-F5G1,5 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	── // ──	-
A3	Cable: N2XH-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	── // ──	-
2xB	Cable: NYY-O 1x95RM Perforated cable tray: 500x1,5 mm	-	── // ──	-
C1	Cable: NYCWY 4x95 SM/50 Perforated cable tray: 500x1,5 mm	-	── // ──	-
C2	Cable: H07RN-F 4G95 Perforated cable tray: 500x1,5 mm	-	── // ──	-
C3	Cable: N2XH-J 4x95 SM Perforated cable tray: 500x1,5 mm	-	── // ──	-

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
G1	Cable: H07V-R 1x95 Non perforated cable tray: 500x1,5 mm	-	The surface of the cable, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	—— // ——	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Non perforated cable tray: 500x1,5 mm	-	—— // ——	-
H	2 pcs 16x1 mm steel pipe 1 pc 16x0,5 copper pipe	-	—— // ——	-
I	3 pcs 16x1 mm plastic pipe	-	—— // ——	-
Cables for mixed penetration:				
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	-	—— // ——	-
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	-	—— // ——	-
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	-	—— // ——	-
H	1 pc 16 x 0,5 mm copper pipe	-	—— // ——	-
I	1 pc 16x1 mm plastic pipe	-	—— // ——	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	-	—— // ——	-

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	The surface of the pipes, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	-	⟶ // ⟶	-
14/P1	Plastic pipe PVC-U D= 50 x 1,8 mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
45/Cu1	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	60 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
5/P20	Plastic pipe PE HD D= 125 x 11,4 mm	145 mm	PS-25 wrap from both sides 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
34/S5	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
12/Cu3	Copper pipe D=88,9 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	121 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
16/S3	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	96 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
57/P23	Plastic pipe PVC-U D= 63 x 3 mm	63 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm- from exposed side collar in “U” shape- and Polylack Elastic in the corners from both sides	U/U
P33	Plastic pipe three-layer soundproof PP D= 125 x 3,9 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
33/S7	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
7/P13	Plastic pipe PVC-U 50x1,8 mm	60mm	PS-25 wrap from both sides 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
46/S8	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	190 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
8/P9	Plastic pipe PP-R D= 50 x 4,6 mm	50 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
P32	Plastic pipe three-layer soundproof PP D= 40 x 1,8 mm	40 mm	PS collar from both sides 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
35/Cu7	Copper pipe D=88,9 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	121 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
38/P8	Plastic pipe PE HD 125x11,4 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
58/24	Plastic pipe PVC-U D= 125 x 3,2 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm- from exposed side collar in “U” shape- and Polylack Elastic in the corners from both sides	U/U
59/25	Plastic pipe PVC-U D= 160 x 4 mm	160 mm	PS collar from both sides 6 layers of 2.5 mm intumescent strips (15x30) mm- from exposed side collar in “U” shape- and Polylack Elastic in the corners from both sides	U/U
44/P12	Plastic pipe PP-R D= 125 x 11,4 mm	125 mm	PS collar from both sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

PS collars types DN50 are fixed to the stone wool by 3 pieces of steel screw ∅ 6 x 90 mm.
The collars are used for following services No.: 14/P1, 8/P9;

PS collar type DN63 is fixed to the stone wool by 3 pieces of steel screw ∅ 6 x 90 mm.
The collar is used for following service No.: 57/P23;

PS collars types DN125 are fixed to the stone wool by 6 pieces of steel screw ∅ 6 x 90 mm.
The collars are used for following service No.: P33, 38/P8, 58/24, 44/P12;

PS collar type DN160 is fixed to the stone wool by 6 pieces of steel screw ∅ 6 x 90 mm.
The collar is used for following service No.: 59/25;

The following plastic pipes are sealed in the flexible wall construction:

- PVC-U pipes in accordance with EN 1326-1, EN 1452-1 or EN 1453-1 with dimensions in accordance with table 2,
- PVC-C pipes in accordance with EN 1566-1 with dimensions in accordance with table 2,
- PE-HD pipes in accordance with EN 1516-1 or EN 12666-1 with dimensions in accordance with table 2,
- PE pipes in accordance with EN 12201-2, EN 1519-1 and EN 12666-1 with dimensions in accordance with table 2,
- ABS pipes in accordance with EN 1455-1 with dimensions in accordance with table 2,
- SAN+PVC pipes in accordance with EN 1565-1 with dimensions in accordance with table 2,
- PP-R pipes in accordance with EN ISO 15874 with dimensions in accordance with table 2.

The standard mixed module version B according to EN 1366-3, figure F. 1B and standard configuration for cable penetration systems according to EN 1366-3, figure A.1. contains cable ladders with width:

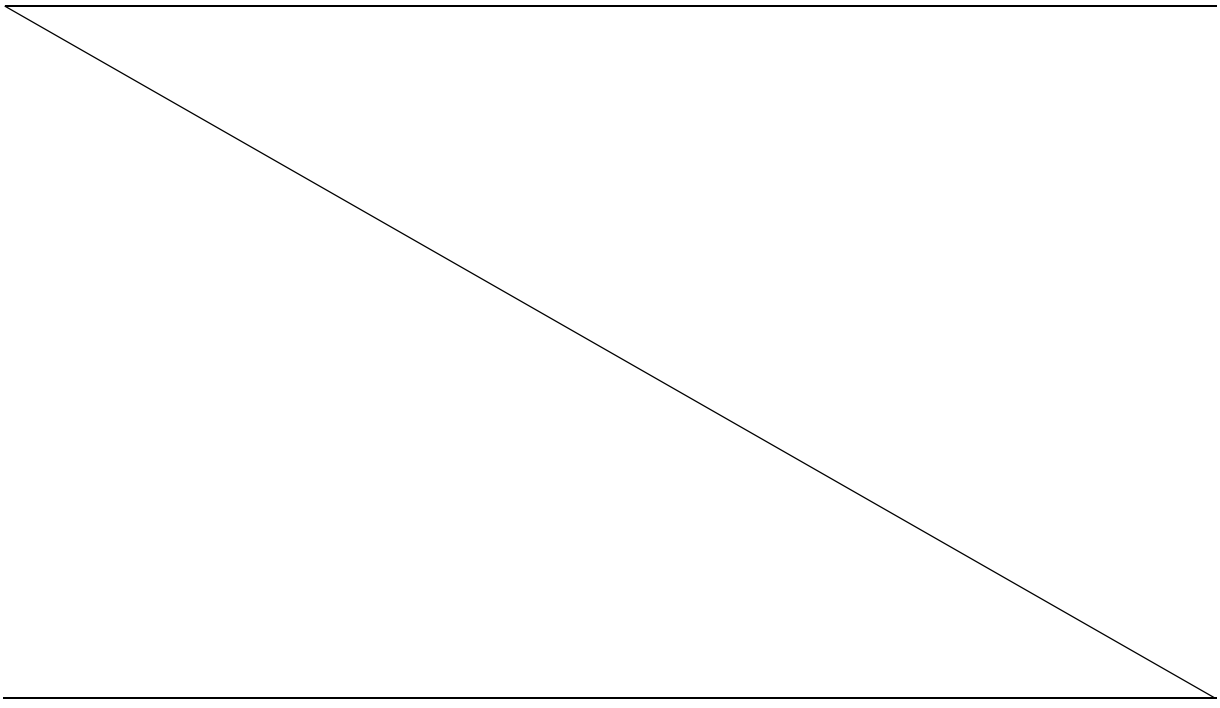
- 200 mm and wall thickness of 1 mm.
- 300 mm and wall thickness of 1,25 mm.

Non-perforated cable tray with width:

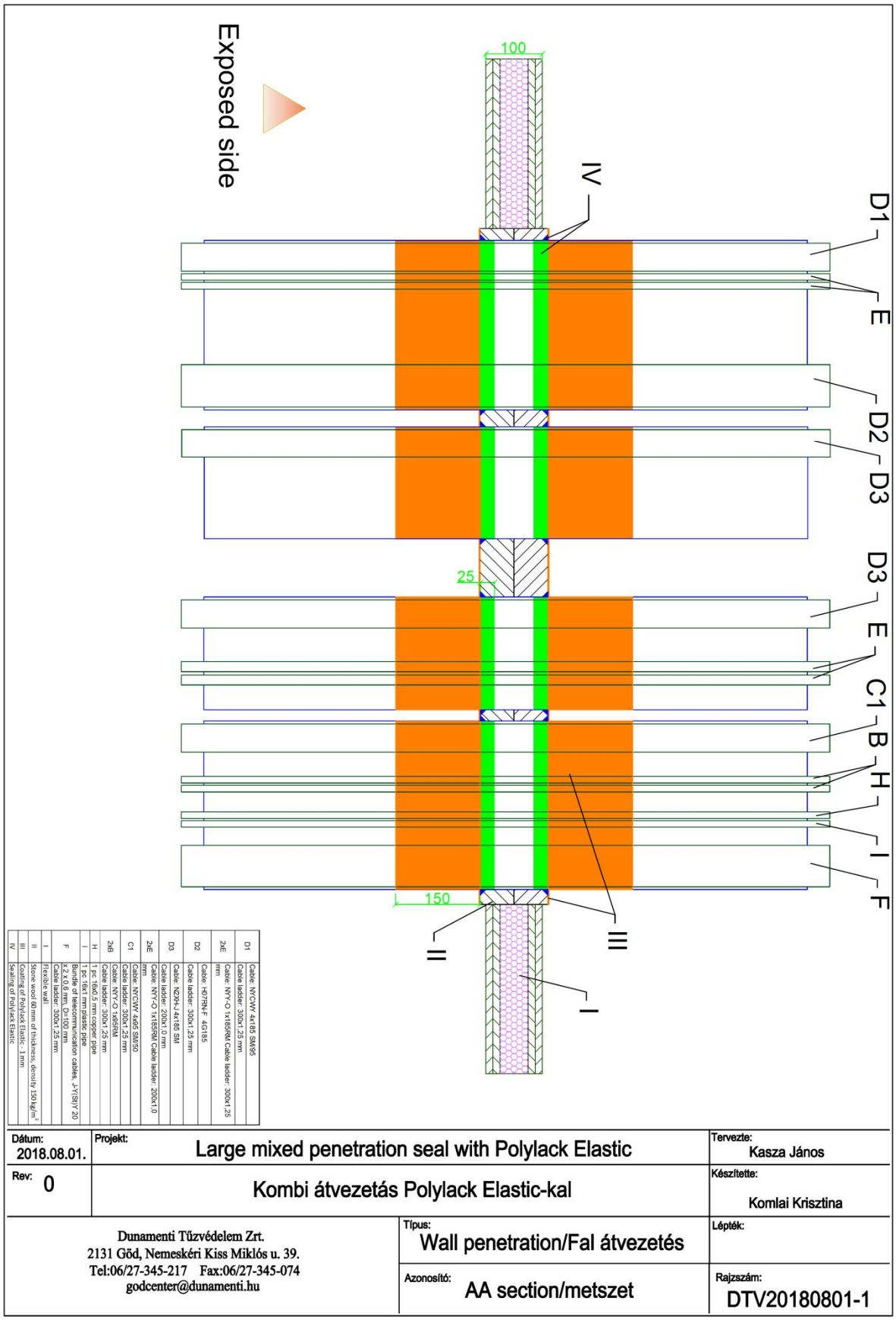
- 500 mm and wall thickness of 1,5 mm.

Perforated cable tray with width:

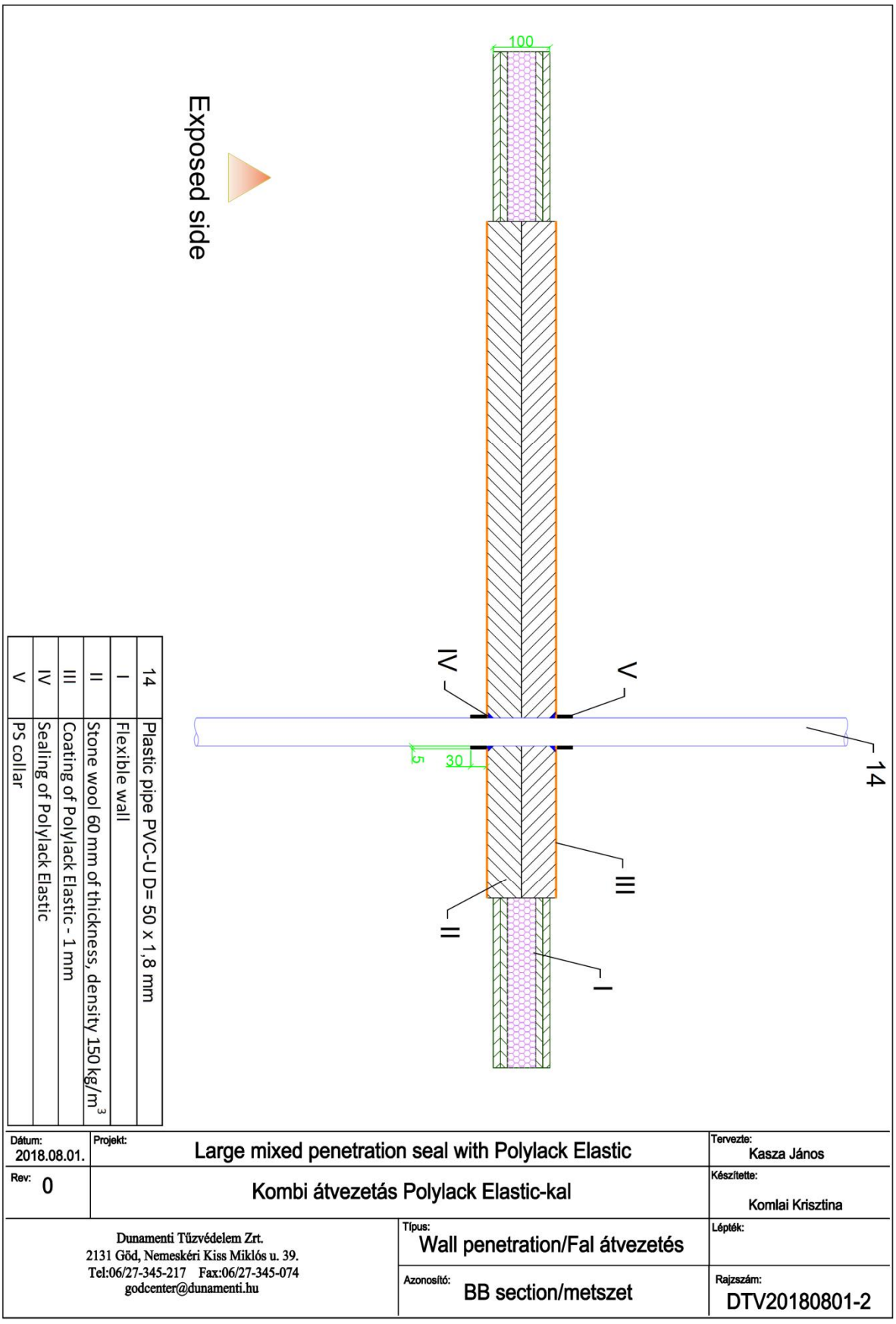
- 500 mm and wall thickness of 1,5 mm.



No. D1, E, D2, D3, E, C1, B, H, I, F - services



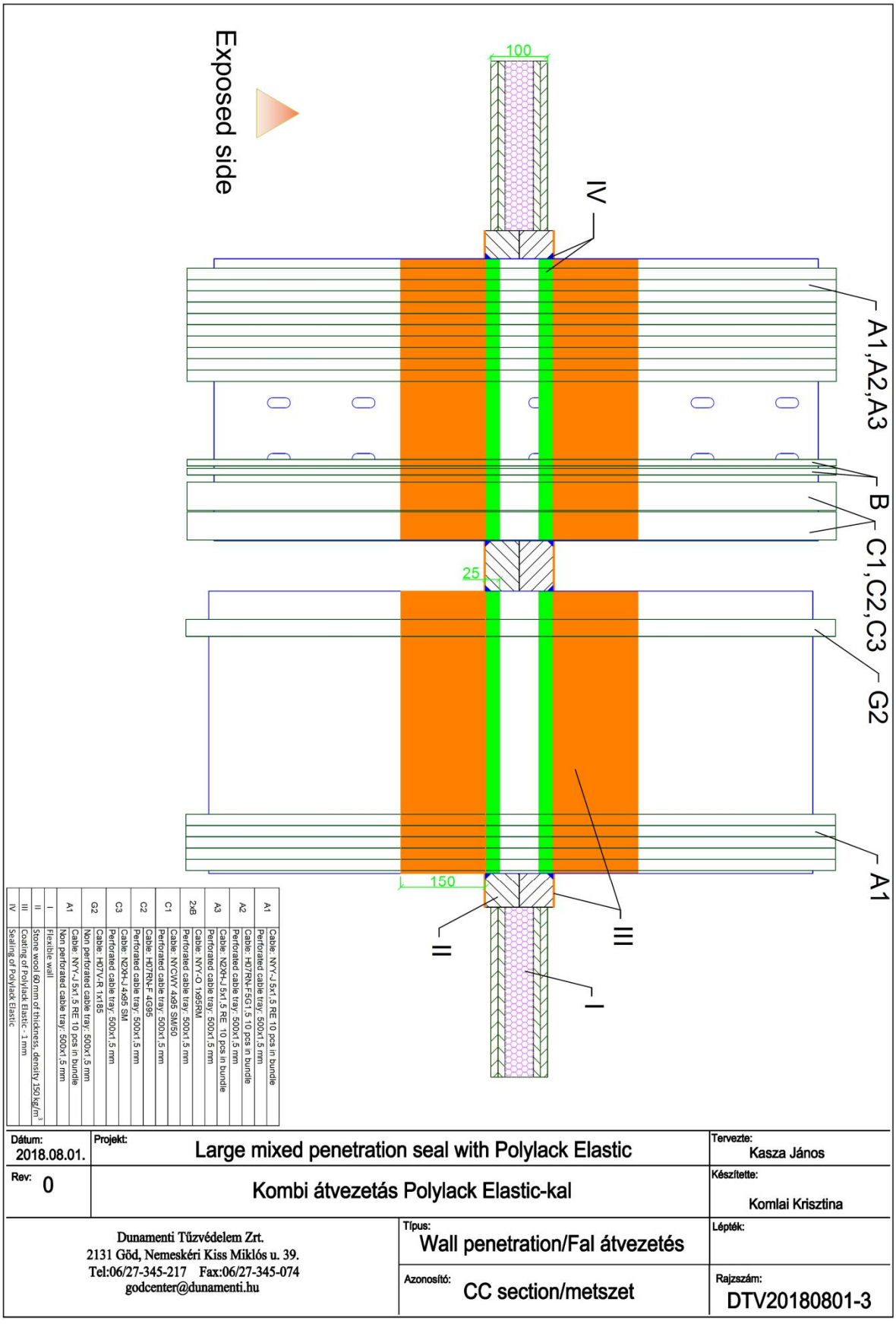
No. 14/P1 - services



14	Plastic pipe PVC-U D= 50 x 1,8 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m^3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

Dátum: 2018.08.01.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: BB section/metszet	Rajzszám: DTV20180801-2

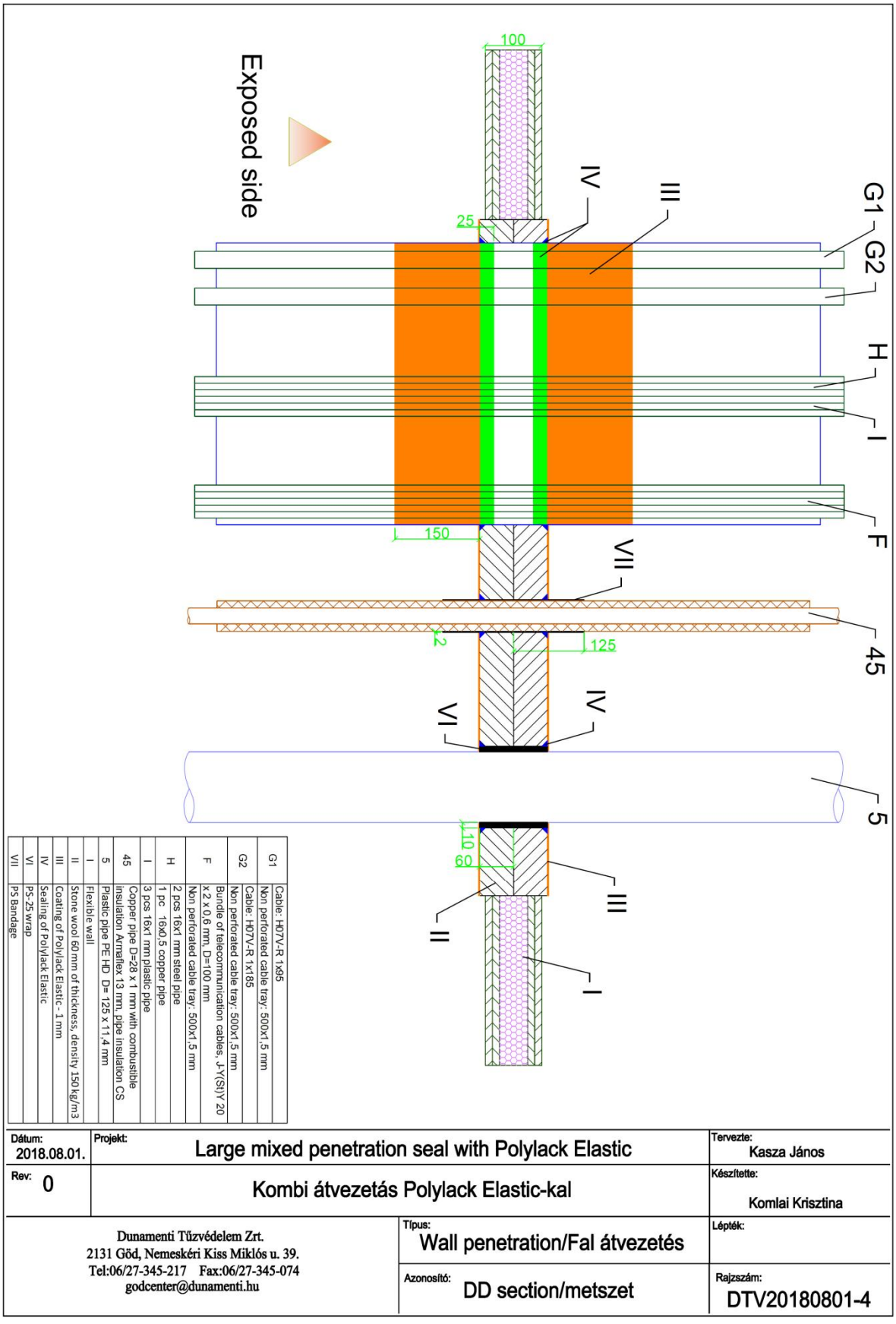
No. A1, A2, A3, B, C1, C2, C3, G2 - services



IV	Sealing of Polylack Elastic	
III	Coating of Polylack Elastic - 1 mm	
II	Stone wool 80 mm of thickness, density 150 kg/m^3	
I	Flexible wall	
A1	Non perforated cable tray: 500x1.5 mm	Cable: NYY-J 5x1.5 RE 10 pcs in bundle
G2	Non perforated cable tray: 500x1.5 mm	Cable: HDTV-R 1x185
C3	Perforated cable tray: 500x1.5 mm	Cable: N2XH-J 4x95 SM
C2	Perforated cable tray: 500x1.5 mm	Cable: HD7RN-F 4G95
C1	Perforated cable tray: 500x1.5 mm	Cable: NYCWY 4x95 SM/50
2xB	Perforated cable tray: 500x1.5 mm	Cable: NYY-O 1x95RM
A3	Perforated cable tray: 500x1.5 mm	Cable: N2XH-J 5x1.5 RE 10 pcs in bundle
A2	Perforated cable tray: 500x1.5 mm	Cable: HD7RN-F5G1.5 10 pcs in bundle
A1	Perforated cable tray: 500x1.5 mm	Cable: NYY-J 5x1.5 RE 10 pcs in bundle

Dátum: 2018.08.01.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: CC section/metszet	Rajzszám: DTV20180801-3

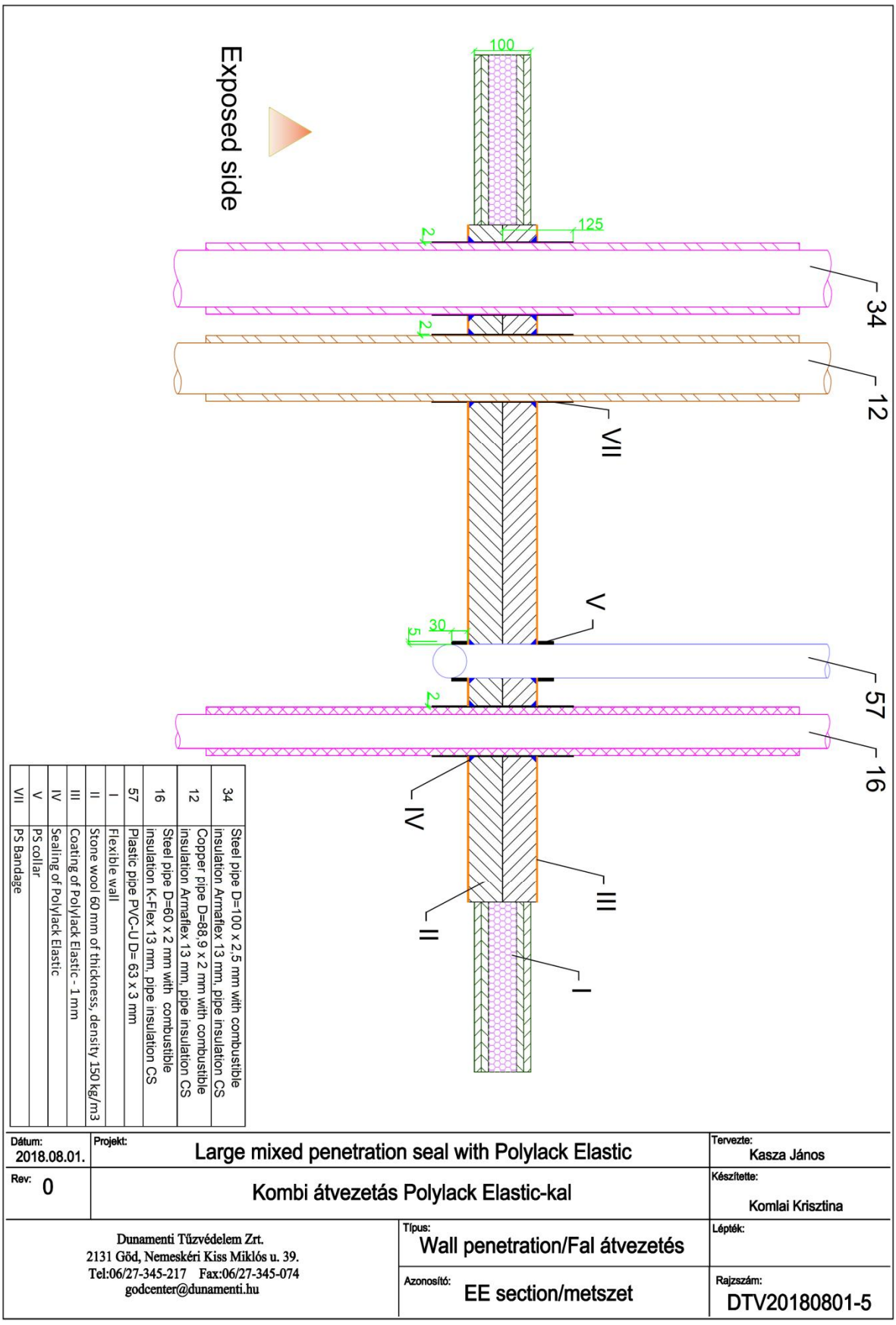
No. G1, G2, H, I, F, 45/Cu1 5/P20 - services



G1	Cable: H07V-R 1x95
	Non perforated cable tray: 500x1,5 mm
G2	Cable: H07V-R 1x185
	Non perforated cable tray: 500x1,5 mm
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm
	Non perforated cable tray: 500x1,5 mm
H	2 pcs 16x1 mm steel pipe
	1 pc 16x0,5 copper pipe
I	3 pcs 16x1 mm plastic pipe
45	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 13 mm, pipe insulation CS
5	Plastic pipe PE HD D= 125 x 11,4 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VI	PS -25 wrap
VII	PS Bandage

Dátum: 2018.08.01.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: DD section/metszet	Rajzszám: DTV20180801-4

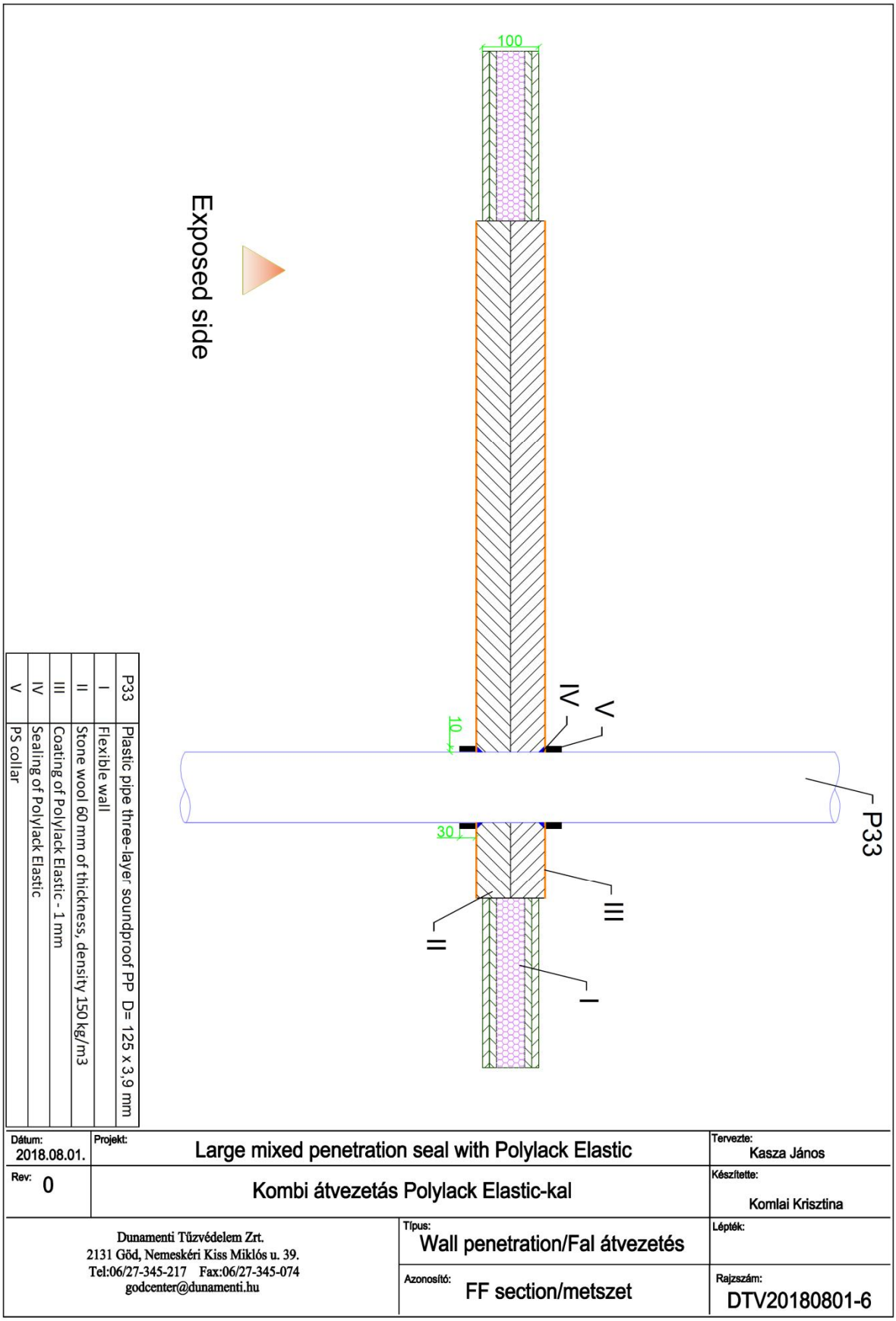
No. 34/S5, 12/Cu3, 57/P23, 16/S3 - services



34	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	
12	Copper pipe D=88,9 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	
16	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	
57	Plastic pipe PVC-U D= 63 x 3 mm	
I	Flexible wall	
II	Stone wool 60 mm of thickness, density 150 kg/m3	
III	Coating of Polylack Elastic - 1 mm	
IV	Sealing of Polylack Elastic	
V	PS collar	
VII	PS Bandage	

Dátum: 2018.08.01.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: EE section/metszet	Rajzszám: DTV20180801-5

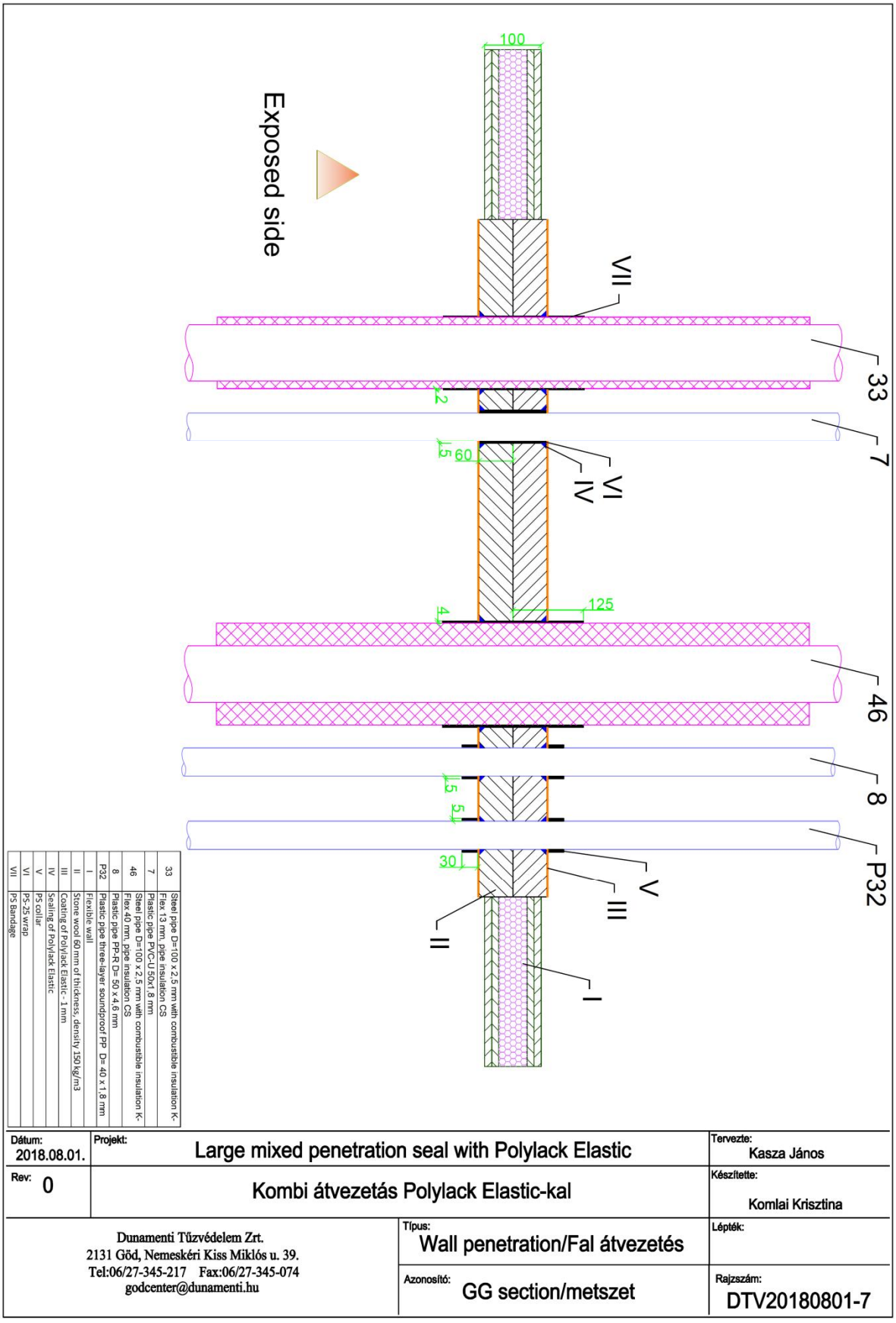
No. P33 - services



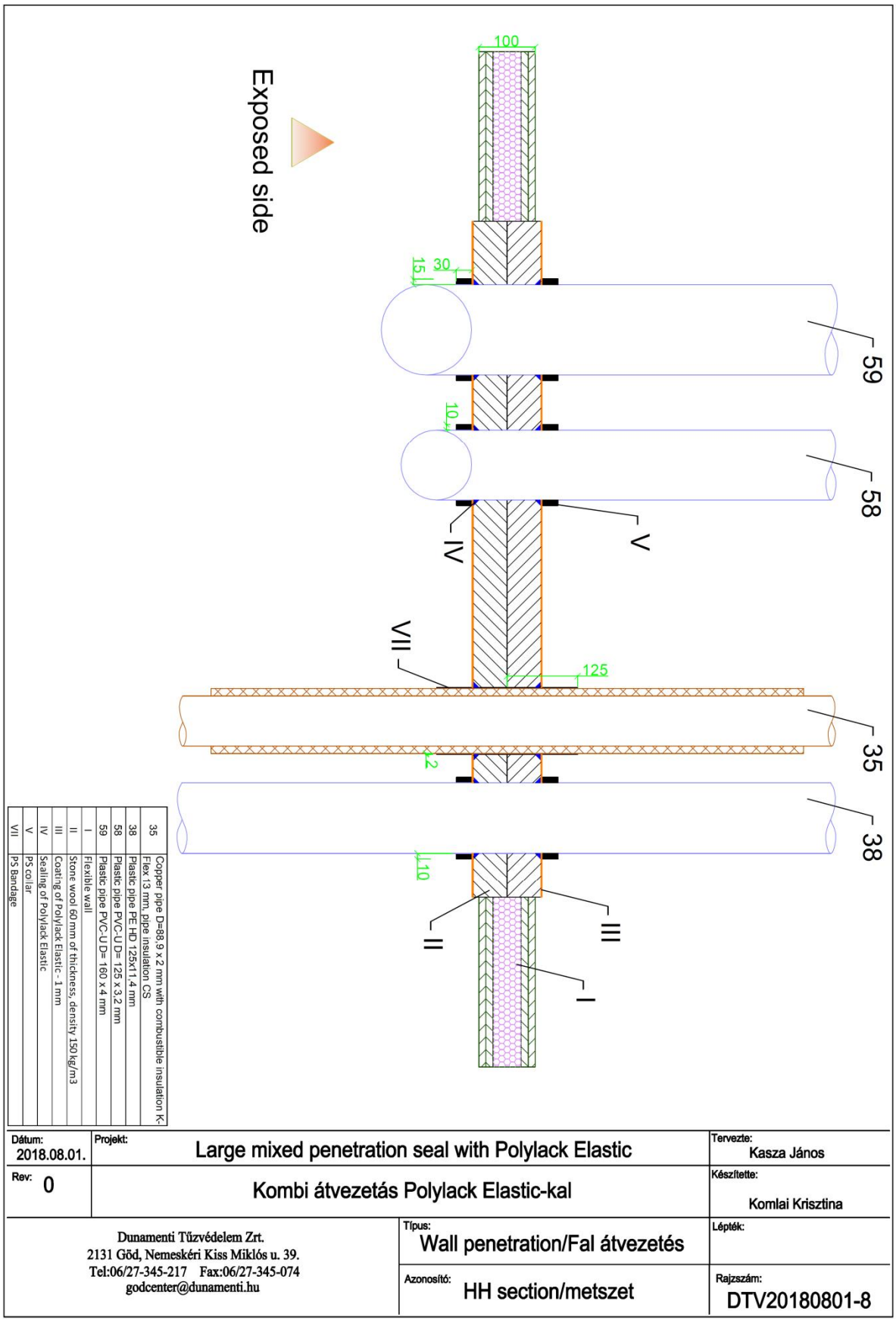
P33	Plastic pipe three-layer soundproof PP D= 125 x 3,9 mm
I	Flexible wall
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

Dátum: 2018.08.01.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Wall penetration/Fal átvezetés	Lépték:
	Azonosító: FF section/metszet	Rajzszám: DTV20180801-6

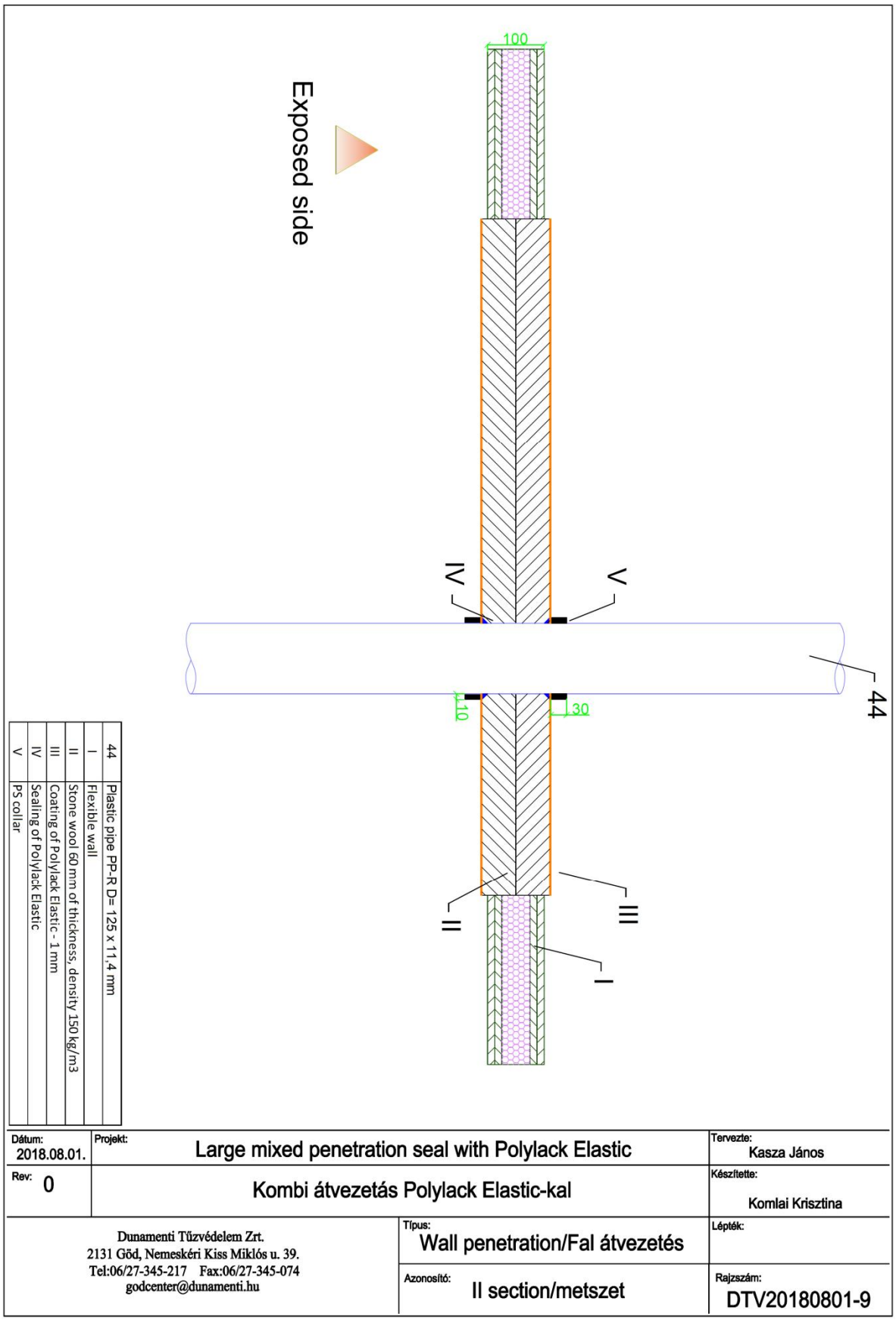
No. 33/S7, 7/P13, 46/S8, 8/P9, P32 - services



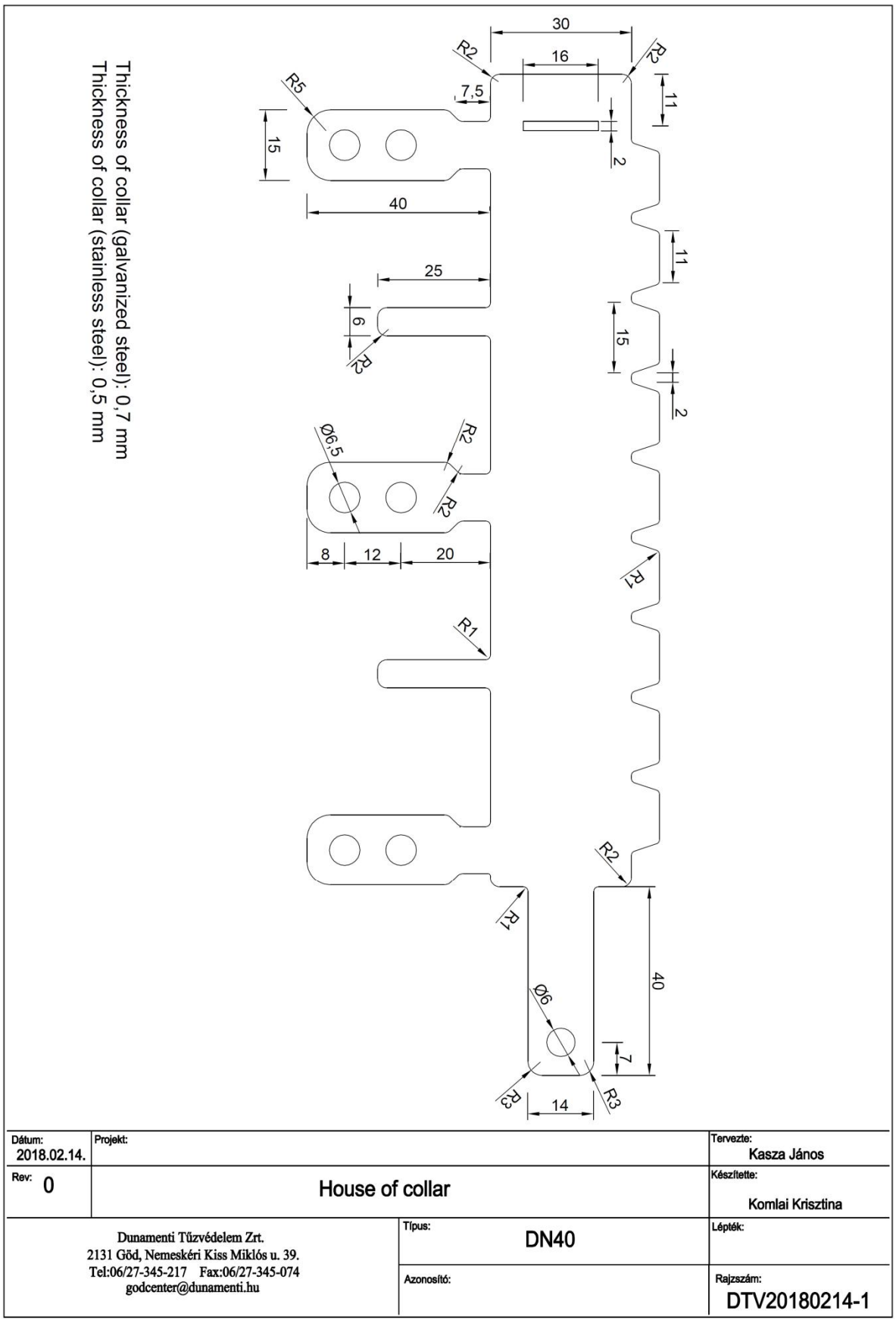
No. 59/P26, 58/P24, 35/Cu7, 38/P8 - services



No. 44/P12 - services

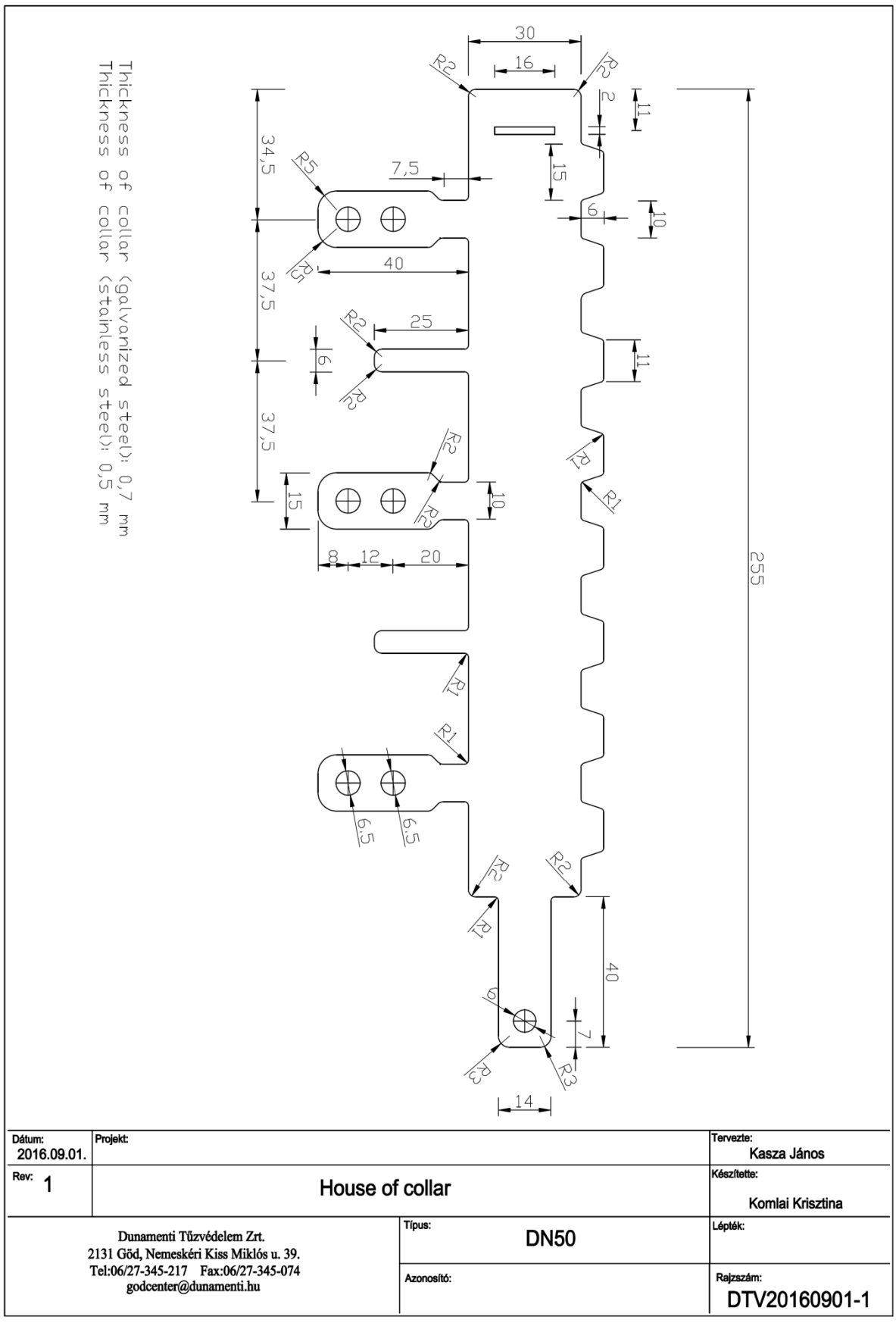


Housing of collar DN40

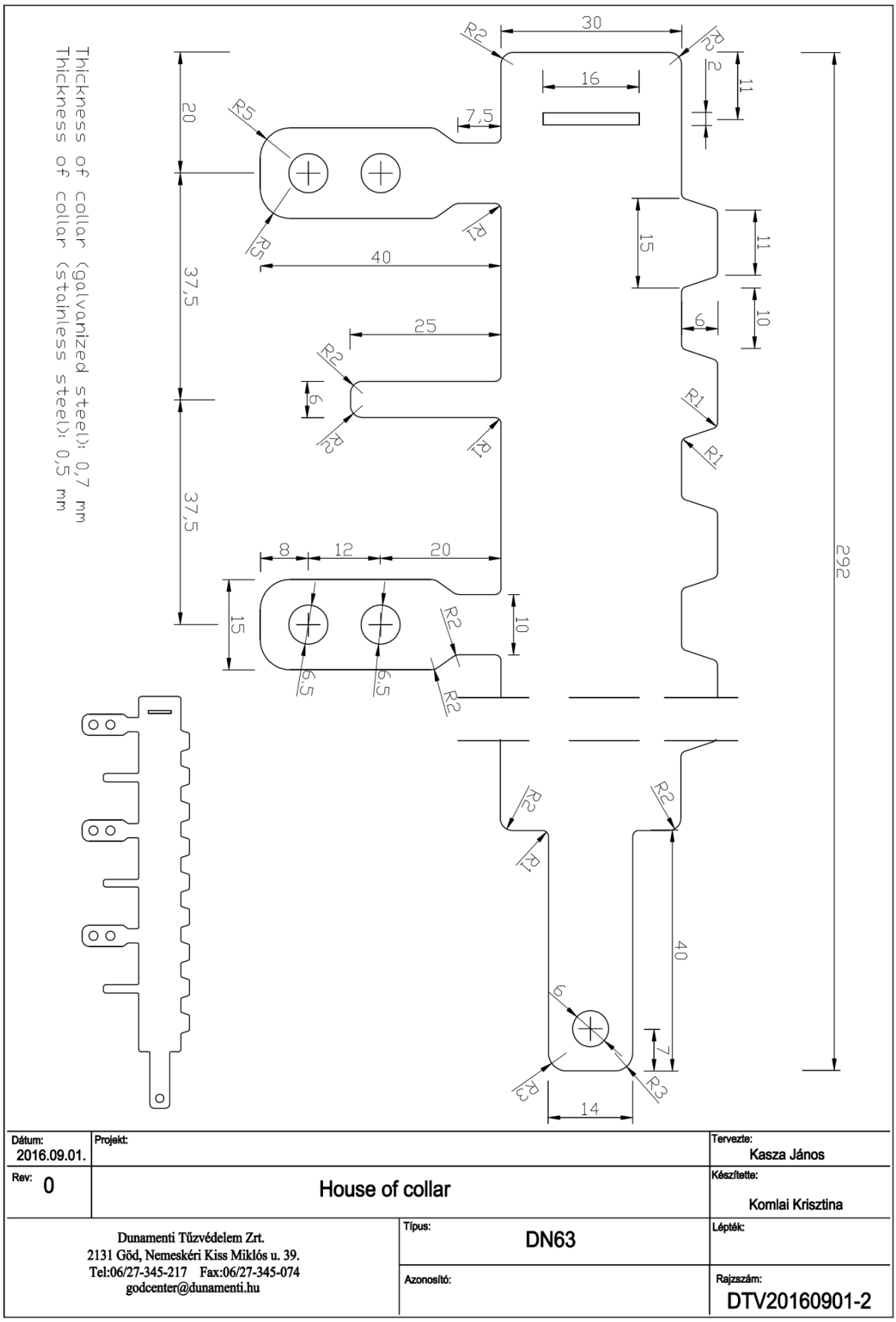


Dátum: 2018.02.14.	Projekt:	Tervezte: Kasza János
Rev: 0	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN40	Lépték:
	Azonosító:	Rajzszám: DTV20180214-1

Housing of collar DN50

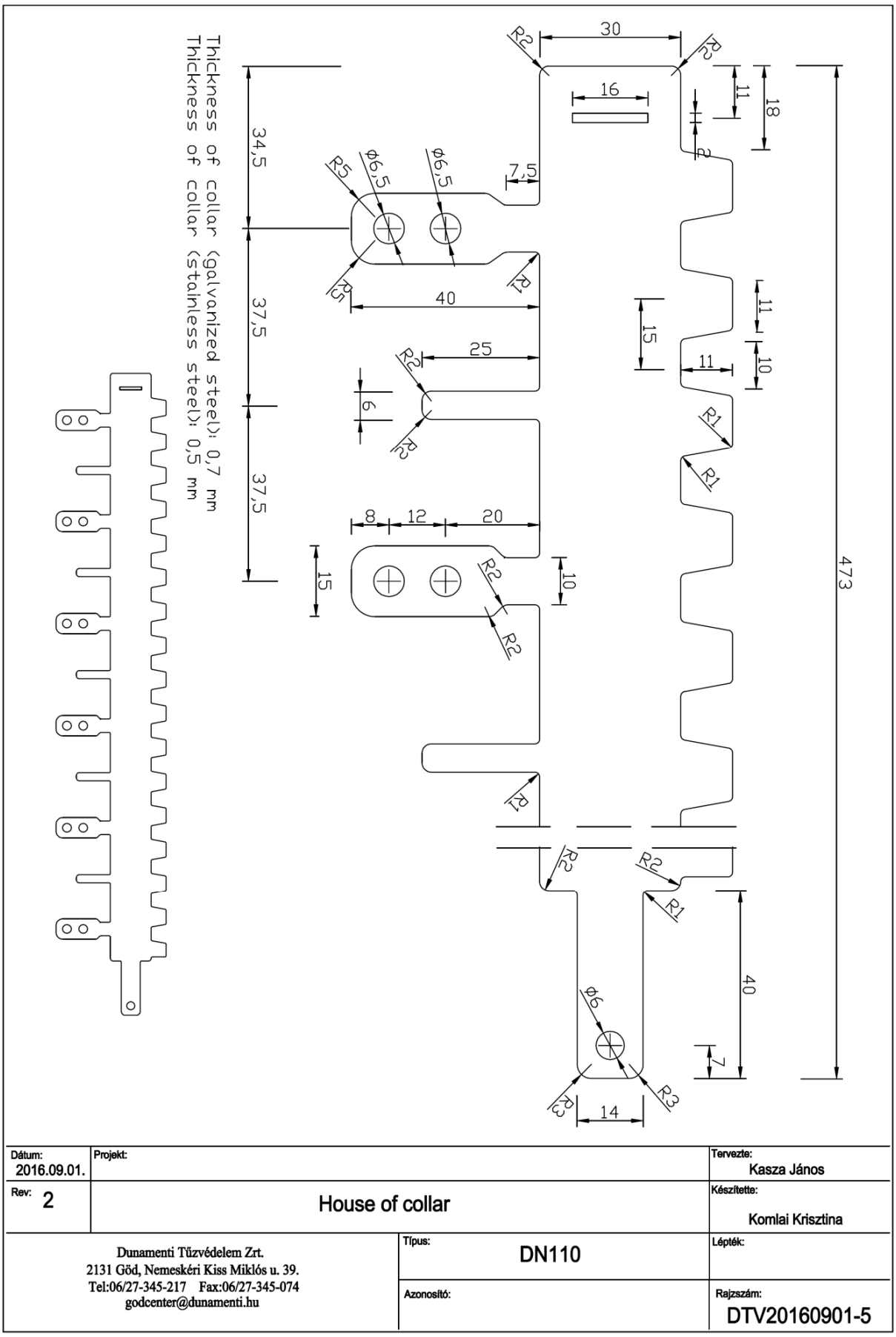


Housing of collar DN63



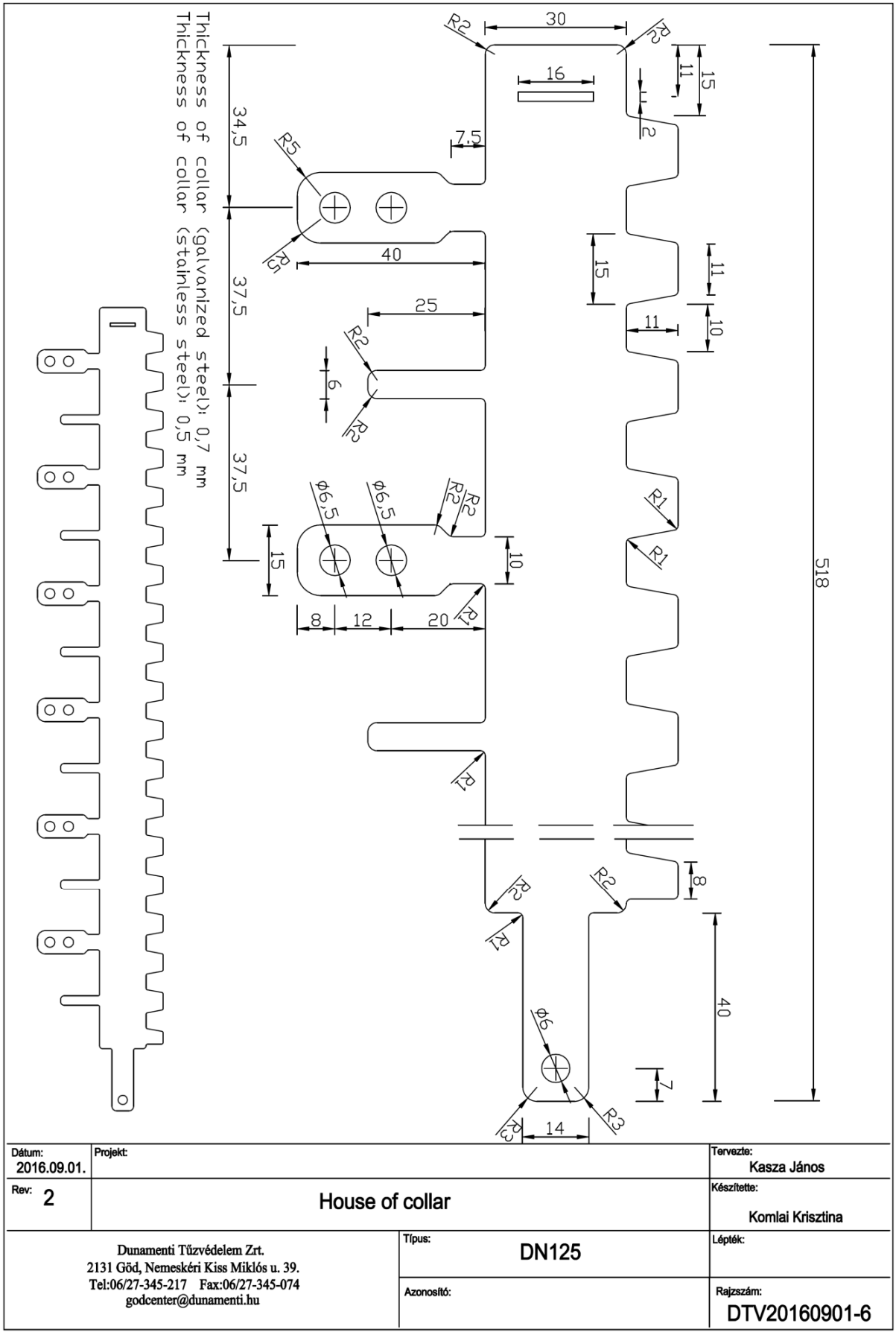
Dátum: 2016.09.01.	Projekt:	Tervezte: Kasza János
Rev: 0	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN63	Lépték:
	Azonosító:	Rajzszám: DTV20160901-2

Housing of collar DN110

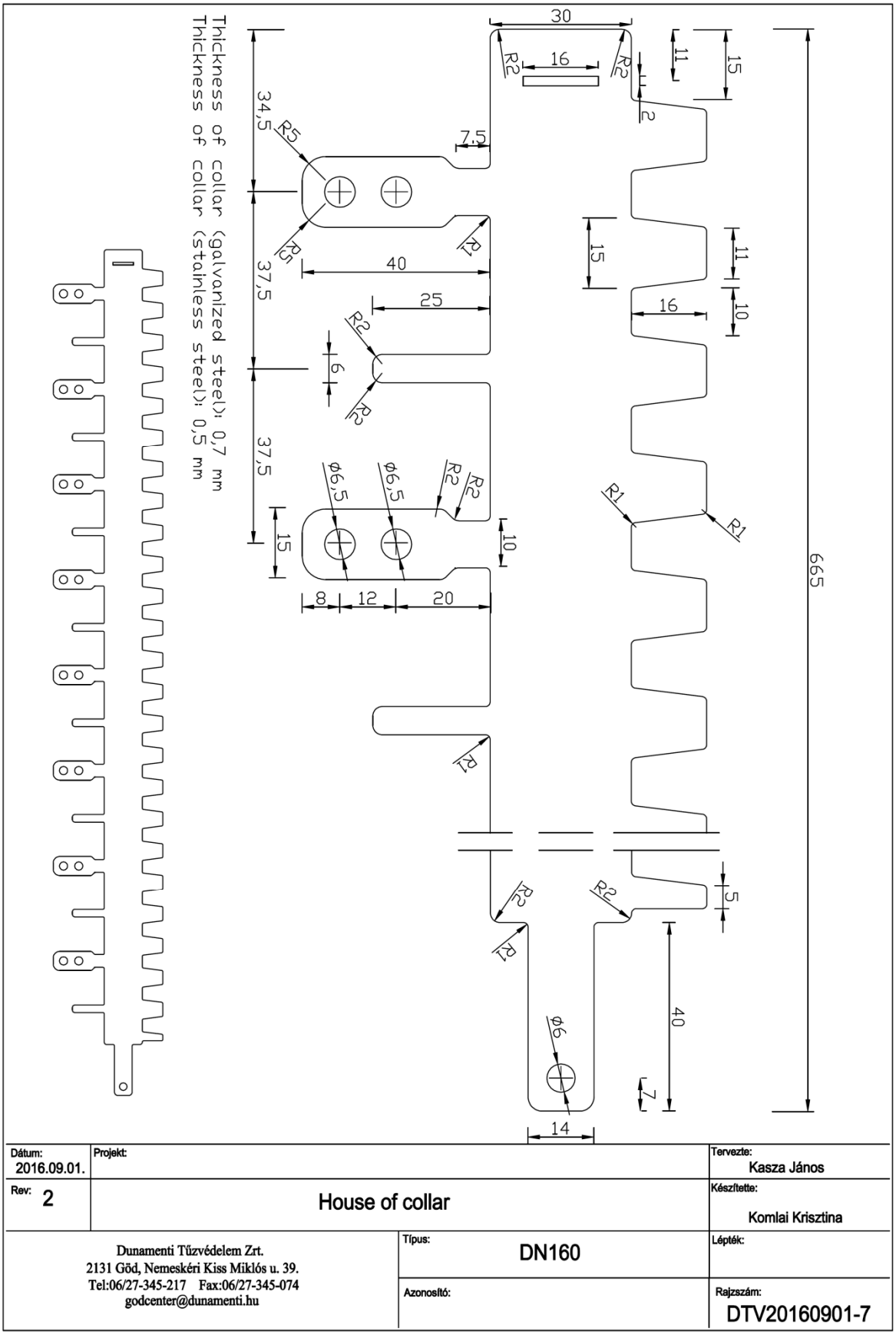


Dátum: 2016.09.01.	Projekt:	Tervezte: Kasza János
Rev: 2	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN110	Lépték:
	Azonosító:	Rajzszám: DTV20160901-5

Housing of collar DN125



Housing of collar DN160



Annex B
Use: rigid floor supporting construction
Maximum dimensions of penetration seal: (2000 x 1200) mm (width x height)

Table No. 3

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	-	—— // ——	-
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	-	—— // ——	-
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	-	—— // ——	-
H	1 pc 16x1 mm copper pipe	-	—— // ——	-
I	1 pc 16x1 mm plastic pipe	-	—— // ——	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	-	—— // ——	-
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	The surface of the pipes, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (widthxdepth)	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	-	—— // ——	-
1/Cu2	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	118 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
2/P7	Plastic pipe PE-HD D= 125 x 4 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
3/S9	Steel pipe D=100 x 2,5 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	100 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
4/Cu6	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	60 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
5/P20	Plastic pipe PE HD D= 125 x 11,4 mm	145 mm	PS-25 wrap from exposed side 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
6/P15	Plastic pipe PE HD 50x3 mm	60mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
9/P4	Plastic pipe PVC-U D= 125 x 7,4 mm	125 mm	PS collar from exposed sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
10/P21	Geberit Silent 20 dB D=56x3,2 mm	56 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
11/S6	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	190 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
12/Cu3	Copper pipe D=89 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	121 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
13/P11	Plastic pipe PP-R D= 125 x 7,1 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
15/ Cu10	Copper pipe D=89 x 2 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 400 mm	90 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
16/S3	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	96 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
17/P3	Plastic pipe PVC-U D= 125 x 3,7 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
18/P17	Plastic pipe PVC-U 125x3,7 mm	145	PS-25 wrap from exposed side 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
19/P16	Plastic pipe PE HD 50x4,6 mm	60mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
20/P14	Plastic pipe PVC-U 50x3,7 mm	60mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides	U/U
21/P5	Plastic pipe PE-HD D= 50 x 3 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
22/Cu5	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	60 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
23/Cu4	Copper pipe D=89 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	180 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
24/G2	Plastic pipe Geberit Mepla D= 75 x 4,5 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	75 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	U/C
25/P19	Plastic pipe PE HD 125x4 mm	145	PS-25 wrap from exposed side 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U
26/S1	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	96 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
27/P6	Plastic pipe PE-HD D= 50 x 4,6mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
28/P10	Plastic pipe PP-R D= 50 x 8,3 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides	U/U
29/S2	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	150 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
30/Cu8	Copper pipe D=89 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	180 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
31/P22	Geberit Silent 20 dB D=110x6 mm	110 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
32/S4	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	150 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides	C/U
33/S7	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
34/S5	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	136 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
35/Cu7	Copper pipe D=89 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	125 mm	PS Bandage (125 x 2) mm one layer form both sides – Polylack Elastic in the corners from both sides	C/U
36/G1	Plastic pipe Geberit Mepla D= 32 x 3 mm with non-com-bustible stone wool insula-tion 20 mm, pipe insulation LI 350 mm	32 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	U/C
37/P18	Plastic pipe PVC-U D= 125 x 7,4 mm	145 mm	PS-25 wrap from exposed side 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
38/P8	Plastic pipe PE-HD D= 125 x 11,4 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
39/S10	Steel pipe D=130 x 4 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 450 mm	130 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
40/Cu9	Copper pipe D=28 x 1 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	30 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides	C/U
41/P2	Plastic pipe PVC-U D= 50 x 3,7 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic (like corner filling) in the corners from both sides	U/U
44/P12	Plastic pipe PP-R D= 125 x 11,4 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides	U/U
	Perforated cable tray: 500 x 1,5 mm	-	Filling with Polylack Elastic in the corners from both sides	-

PS collars types DN50 are fixed to the wall by 3 pieces of steel screw ∅ 6 x 120 mm.
The collars are used for following services No.: 41/P2, 21/P5, 27/P6, 28/P10;

PS collars types DN63 are fixed to the wall by 3 pieces of steel screw ∅ 6 x 120 mm.
The collar is used for following service No.: 10/P21;

PS collars types DN110 are fixed to the wall by 6 pieces of steel screw ∅ 6 x 120 mm.
The collar is used for following service No.: 31/P22;

PS collars types DN125 are fixed to the wall by 6 pieces of steel screw ∅ 6 x 120 mm.
The collars are used for following services No.: 2/P7, 9/P4, 13/P11, 17/P3, 38/P8, 44/P12;

The following plastic pipes are sealed in the aerated concrete floor supporting construction:

- PVC-U pipes in accordance with EN 1326-1, EN 1452-1 or EN 1453-1 with dimensions in accordance with table 3,
- PVC-C pipes in accordance with EN 1566-1 with dimensions in accordance with table 3,
- PE-HD pipes in accordance with EN 1516-1 or EN 12666-1, with dimensions in accordance with table 3,
- PE pipes in accordance with EN 12201-2, EN 1519-1 and EN 12666-1, with dimensions in accordance with table 3,
- ABS pipes in accordance with EN 1455-1 with dimensions in accordance with table 3,
- SAN+PVC pipes in accordance with EN 1565-1 with dimensions in accordance with table 3.
- PP-R pipes in accordance with EN ISO 15874, with dimensions in accordance with table 3.

PP-R pipes in accordance with EN ISO 15874, with dimensions in accordance with table 3, Services No. 24/G2, 39/S10, 40/Cu9, 36/G1, 15/Cu10, 3/S9 are insulated by non-combustible insulation PAROC Hvac Section AluCoat (stone wool with bulk density 80 kg.m^{-3} with reinforced aluminium foil facing). The information of the thickness and length of the insulation is listed in the table 3.

The standard mixed module version A according to EN 1366-3, figure F. 1A contains cable ladders with width:

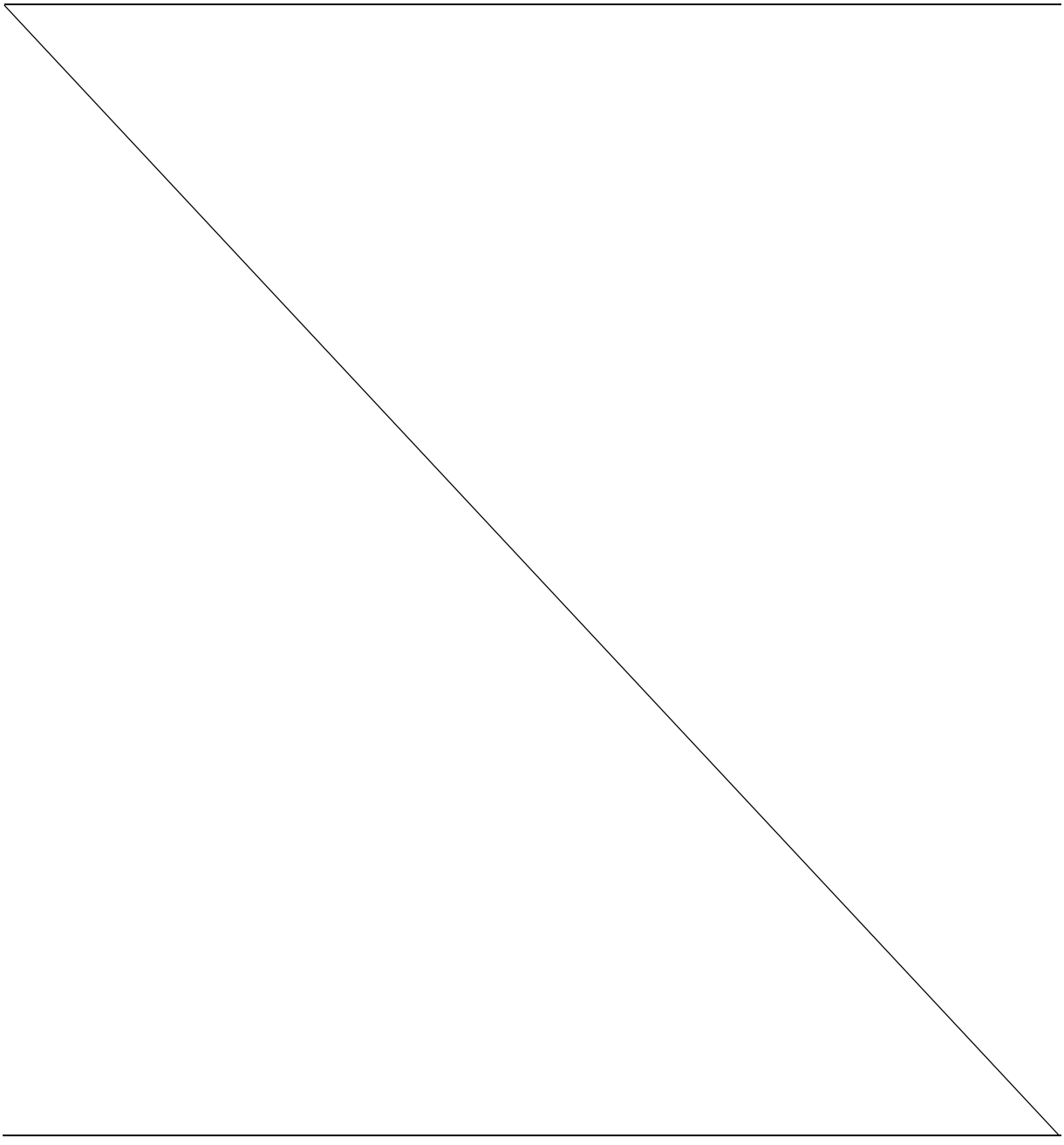
- 200 mm and wall thickness of 1 mm.
- 300 mm and wall thickness of 1,25 mm.

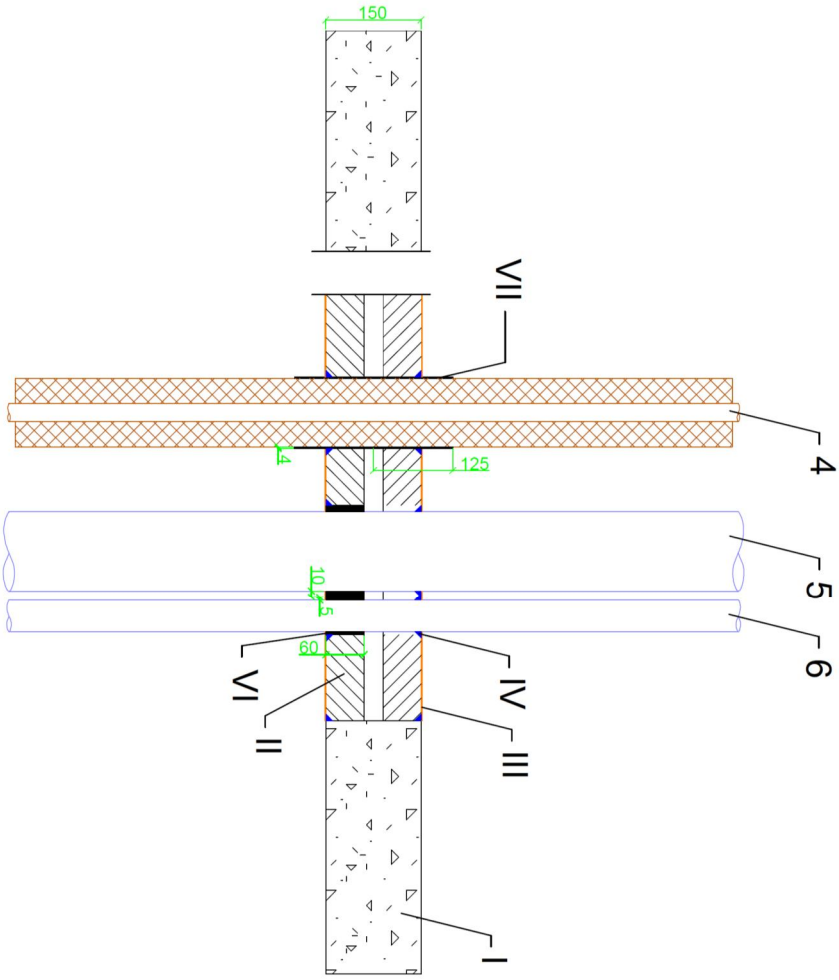
Non-perforated cable tray with width:

- 500 mm and wall thickness of 1,5 mm.

Perforated cable tray with width:

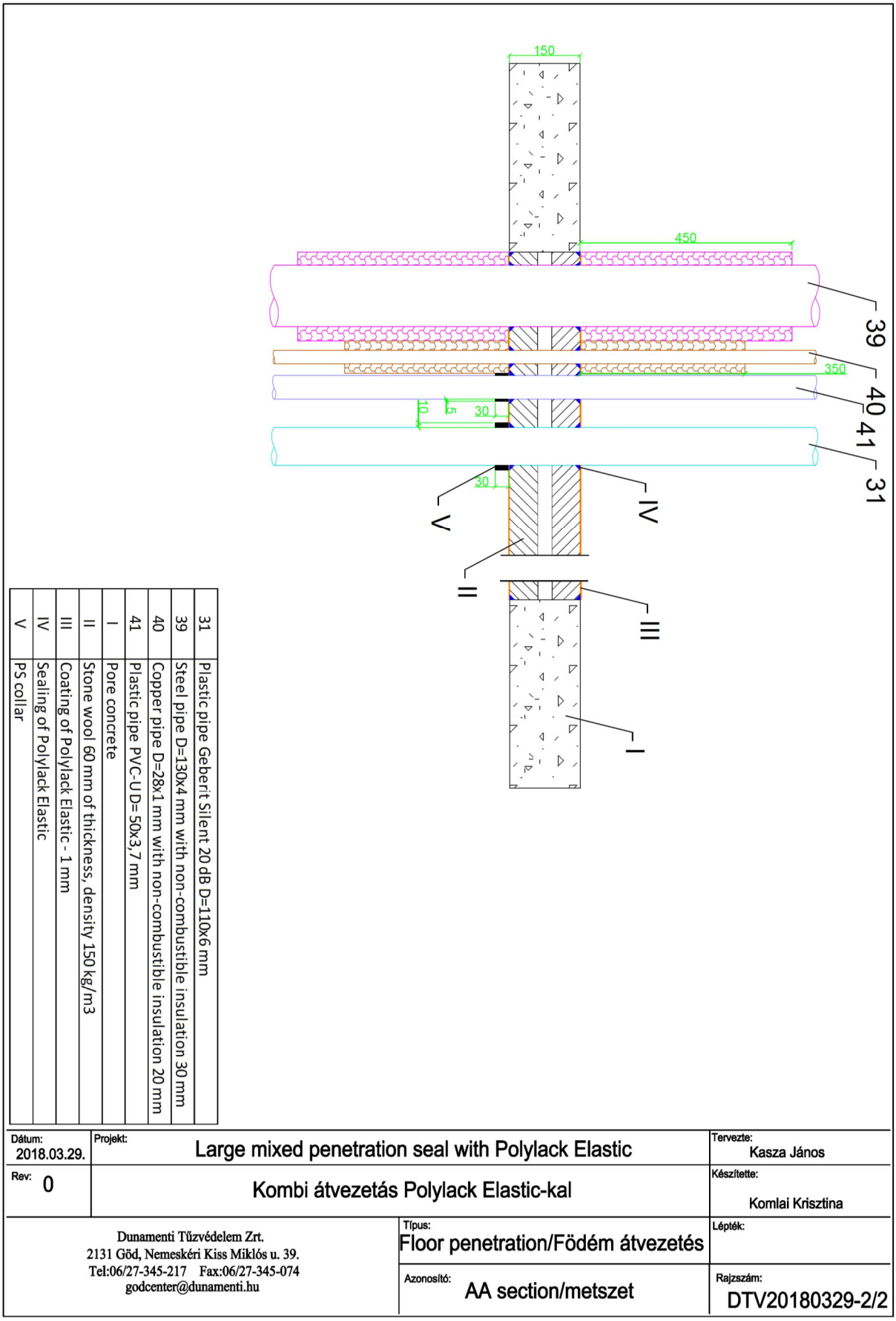
- 500 mm and wall thickness of 1,5 mm.





4	Copper pipe D= 28x1 mm with combustible insulation K-Flex 40 mm
5	Plastic pipe PE HD D= 125x11,4 mm
6	Plastic piep PE HD D= 50x3 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VI	PS-25 wrap
VII	PS Bandage

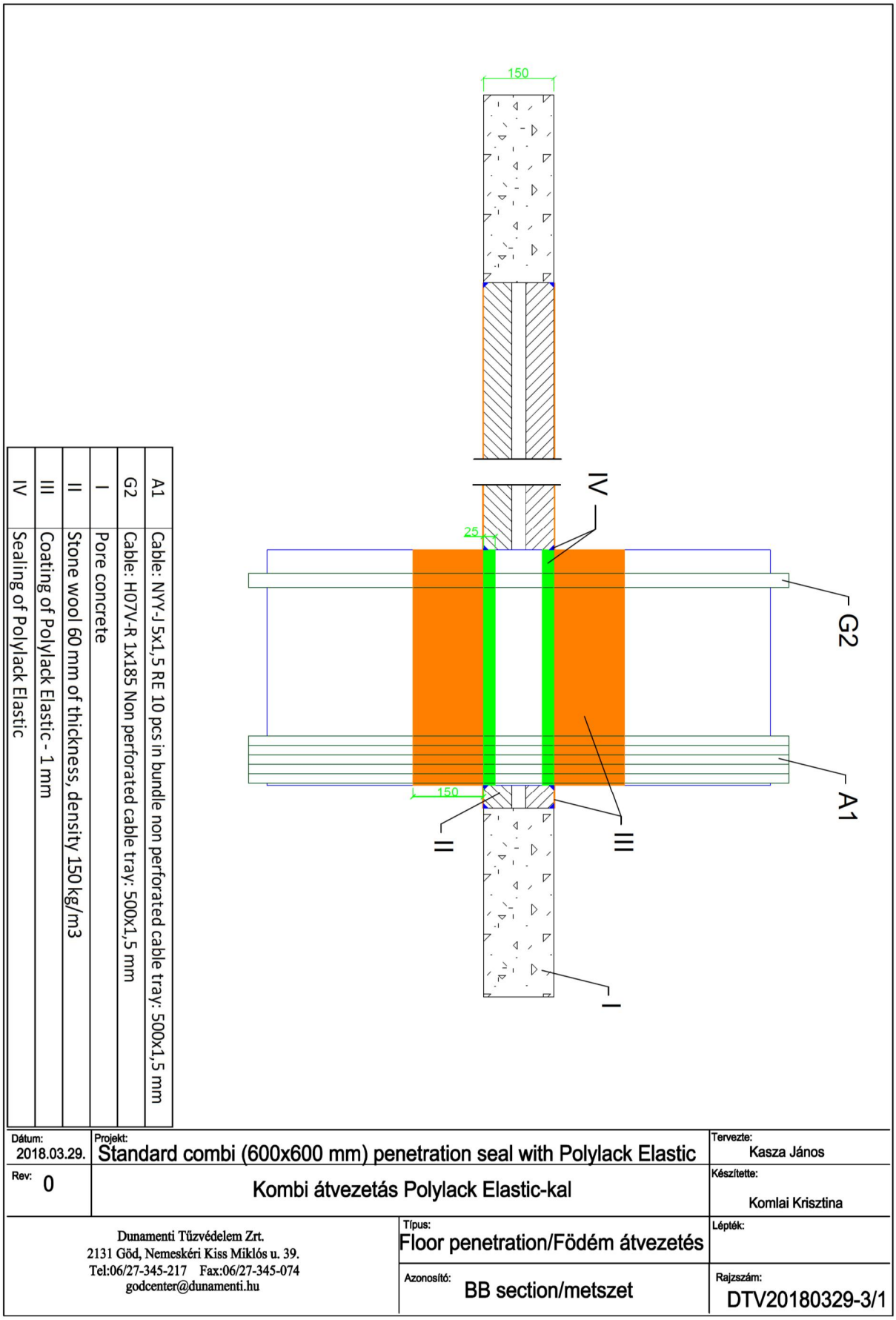
Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: AA section/metszet	Rajzszám: DTV20180329-2/1



31	Plastic pipe Geberit Silent 20 dB D=110x6 mm
39	Steel pipe D=130x4 mm with non-combustible insulation 30 mm
40	Copper pipe D=28x1 mm with non-combustible insulation 20 mm
41	Plastic pipe PVC-U D= 50x3,7 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

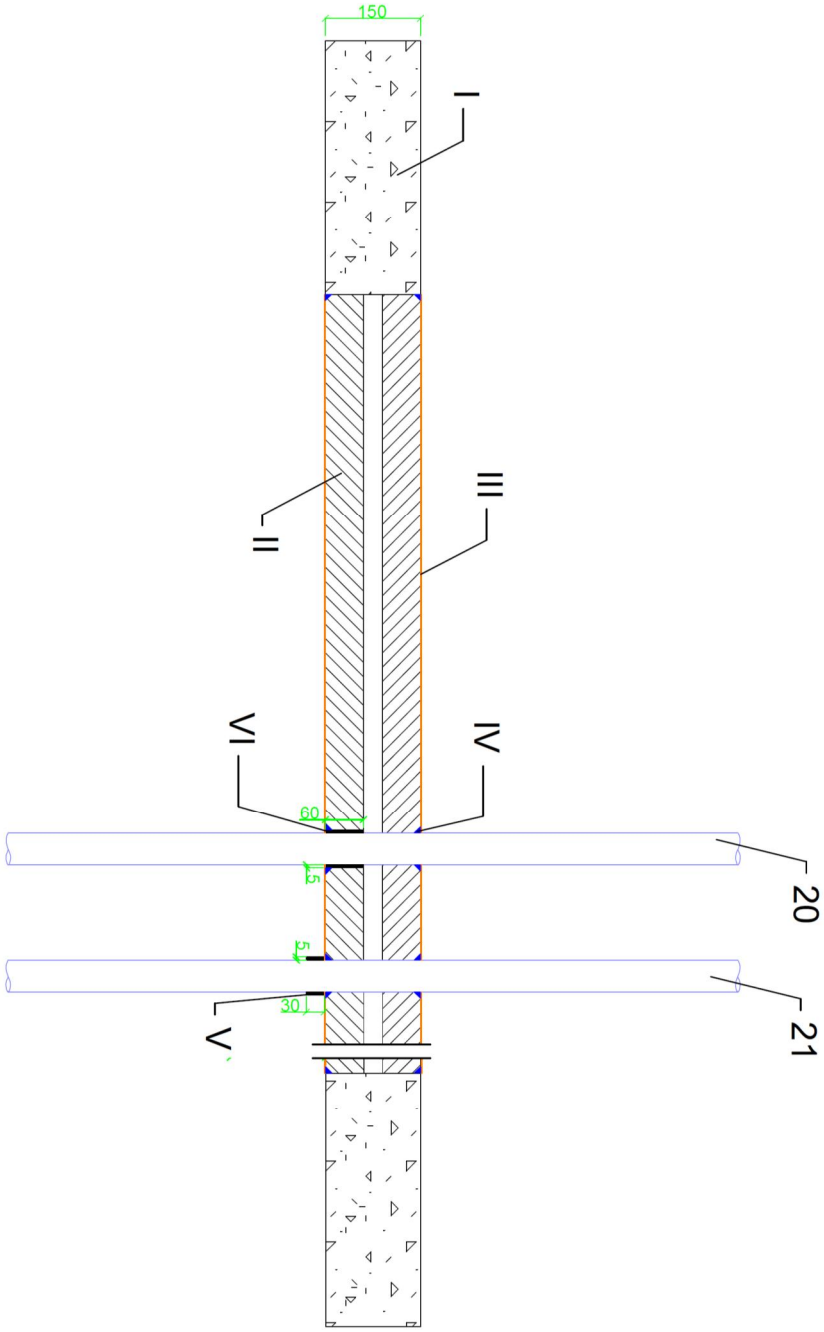
Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: AA section/metszet	Rajzszám: DTV20180329-2/2

No. A1, G2 - services



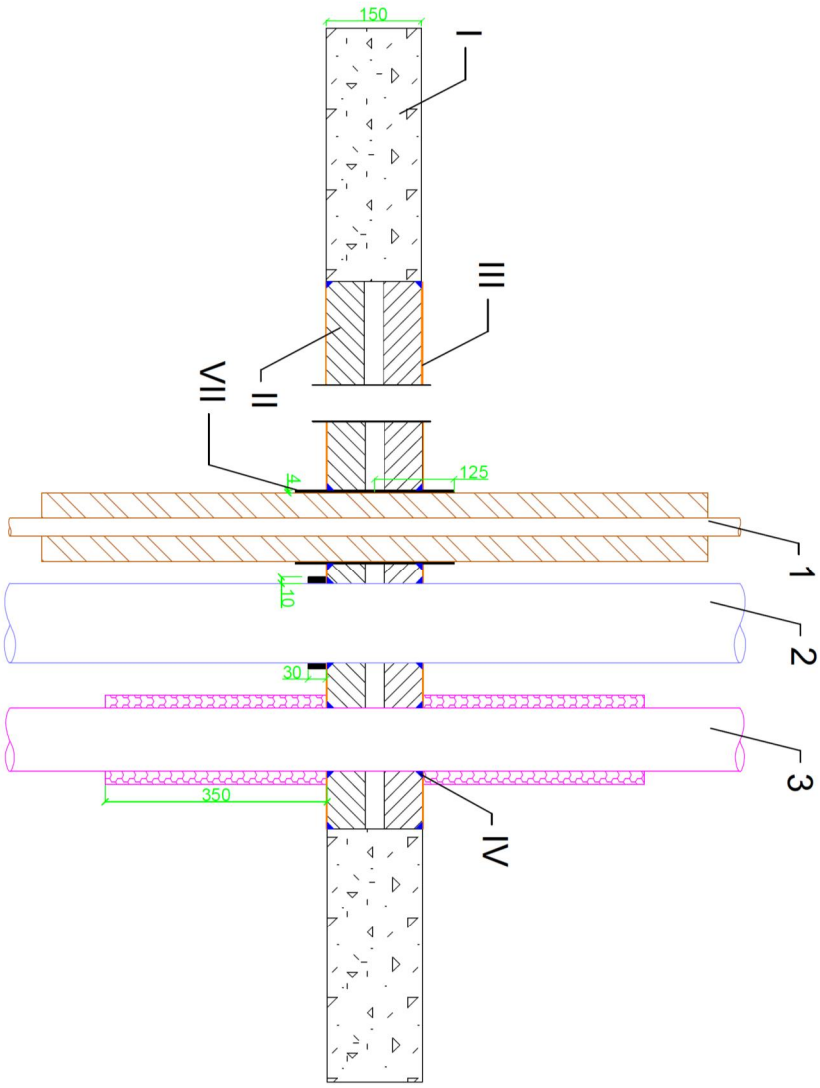
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle non perforated cable tray: 500x1,5 mm
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic

Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: BB section/metszet	Rajzszám: DTV20180329-3/1



VI	PS-25 wrap
V	PS collar
IV	Sealing of Polylack Elastic
III	Coating of Polylack Elastic - 1 mm
II	Stone wool 60 mm of thickness, density 150 kg/m3
I	Pore concrete
21	Plastic pipe PE HD D= 50x3 mm
20	Plastic pipe PVC-U D= 50x3,7 mm

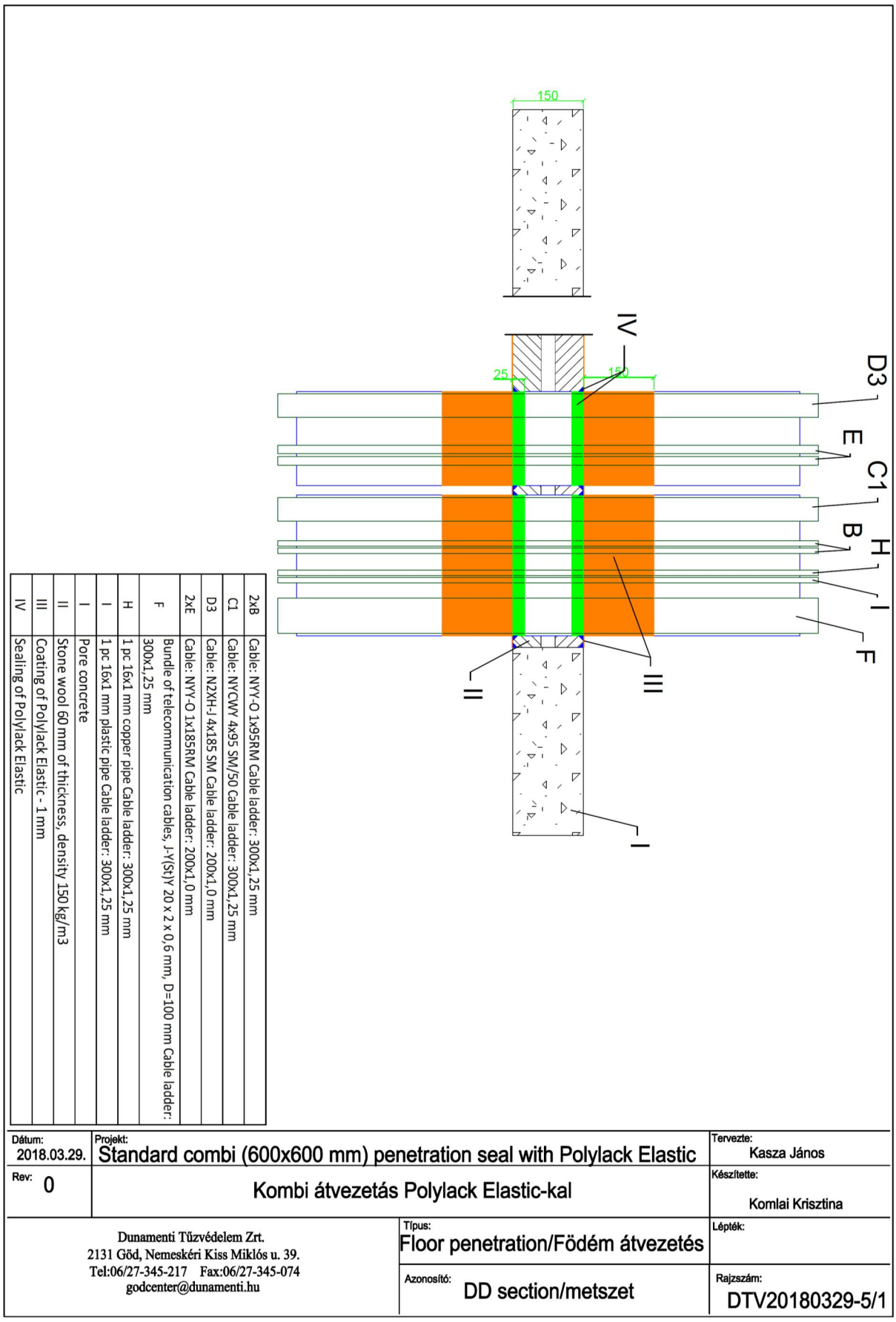
Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: AA section/metszet	Rajzszám: DTV20180329-3/2



1	Copper pipe D= 28x1 mm with combustible insulation Armaflex 40 mm
2	Plastic pipe PE HDD= 125x4 mm
3	Steel pipe D=100x2,5 mm with non-combustible insulation 20 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VII	PS Bandage

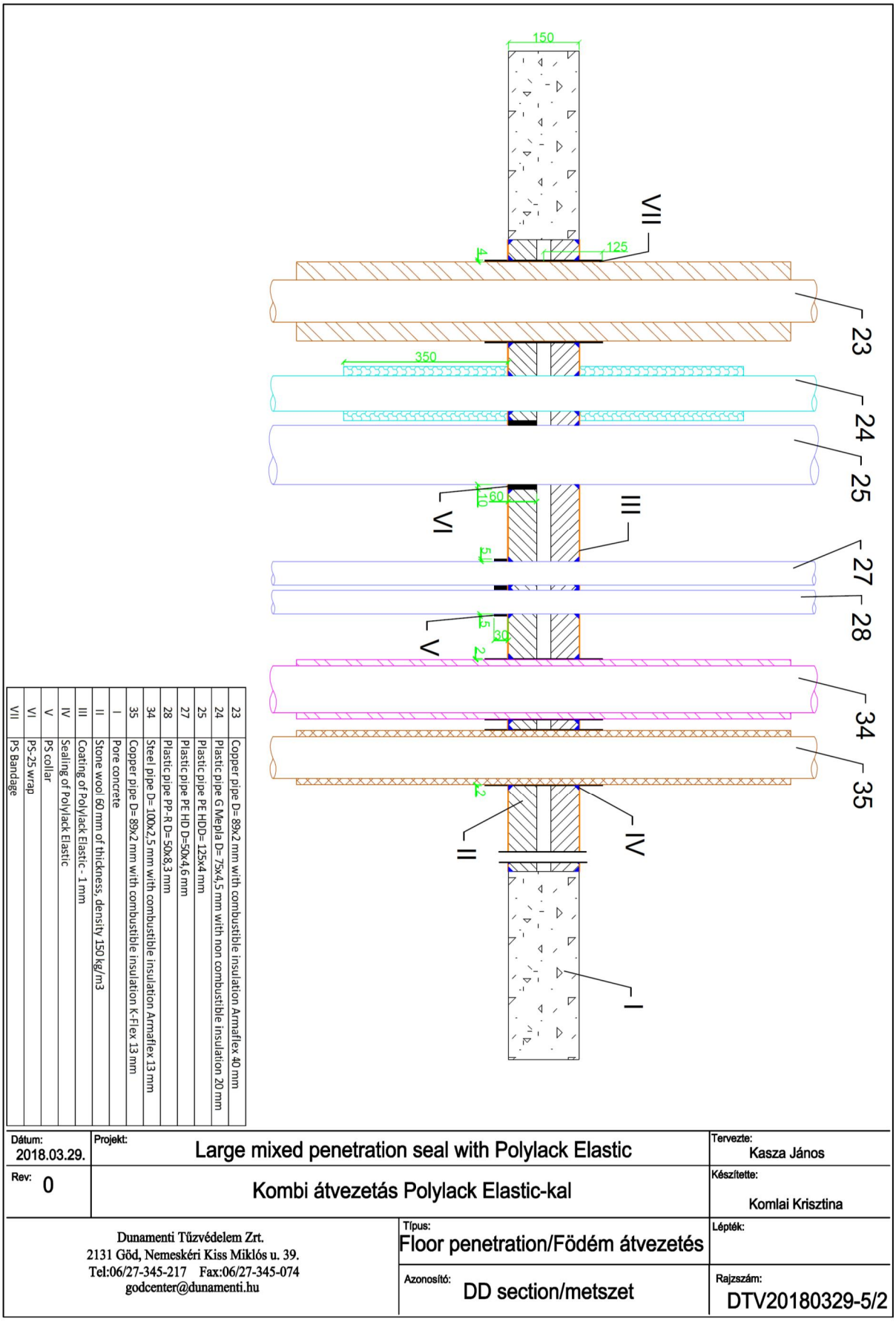
Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: CC section/metszet	Rajzszám: DTV20180329-4

No. D3, E, C1, B , H, I, F - services



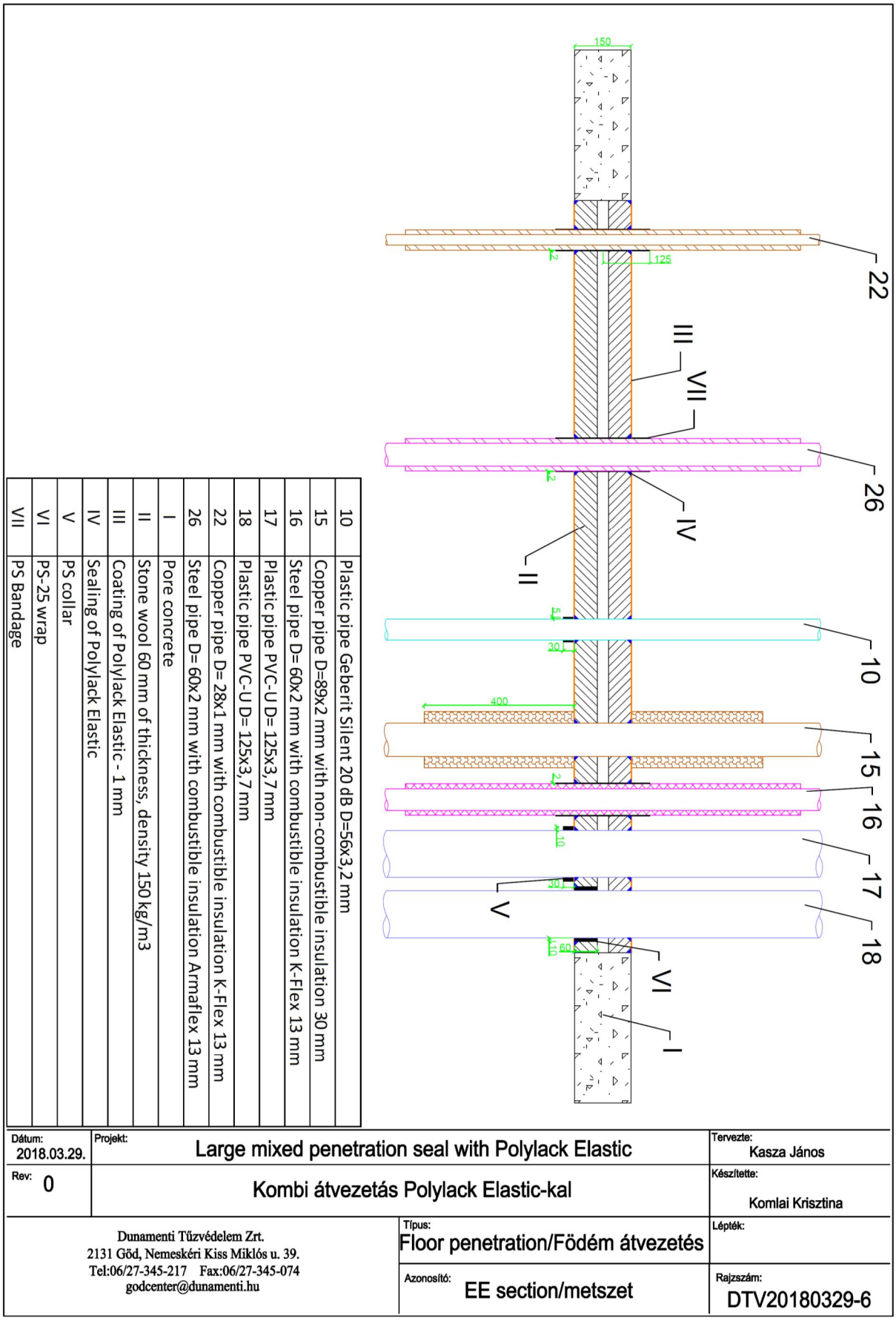
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm
H	1 pc 16x1 mm copper pipe Cable ladder: 300x1,25 mm
I	1 pc 16x1 mm plastic pipe Cable ladder: 300x1,25 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic

Dátum: 2018.03.29.	Projekt: Standard combi (600x600 mm) penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: DD section/metszet	Rajzszám: DTV20180329-5/1



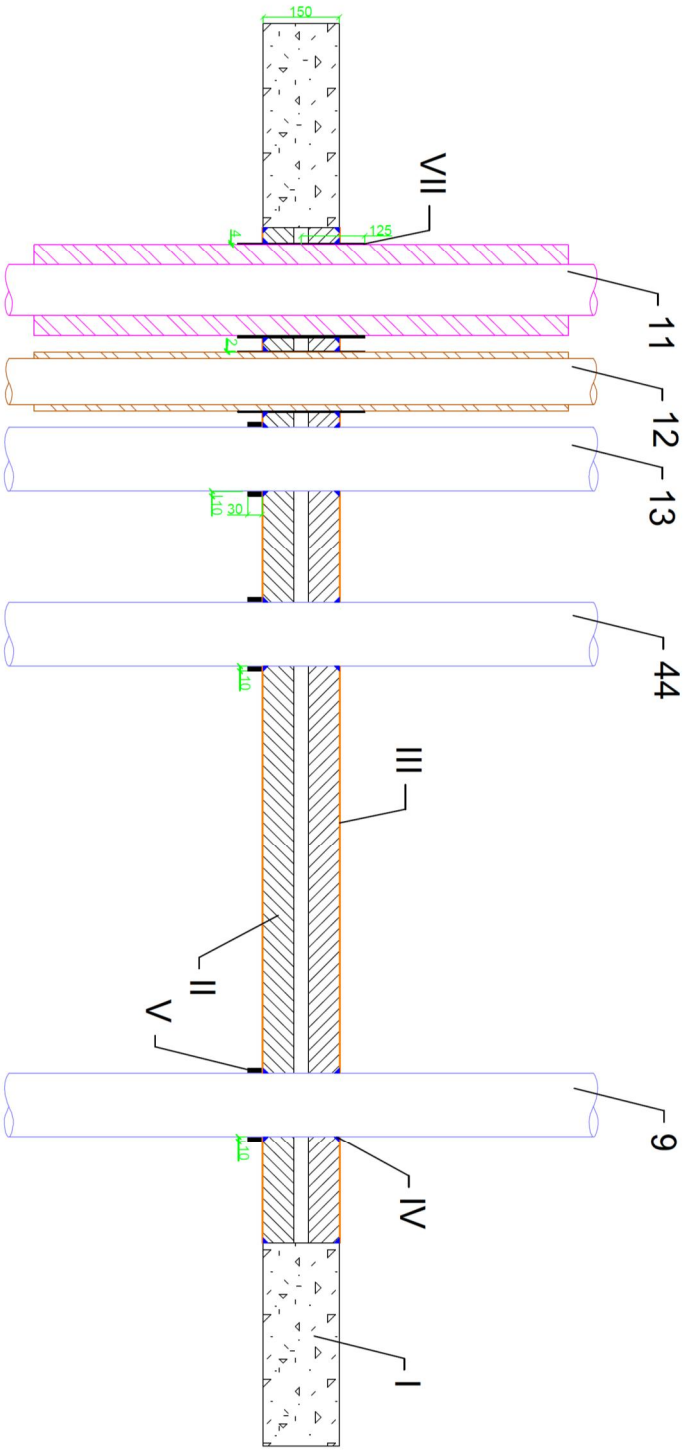
23	Copper pipe D= 89x2 mm with combustible insulation Armaflex 40 mm
24	Plastic pipe G.Mepla D= 75x4,5 mm with non combustible insulation 20 mm
25	Plastic pipe PE HDD= 125x4 mm
27	Plastic pipe PE HD D=50x4,6 mm
28	Plastic pipe PP-R D= 50x8,3 mm
34	Steel pipe D= 100x2,5 mm with combustible insulation Armaflex 13 mm
35	Copper pipe D= 89x2 mm with combustible insulation K-Flex 13 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VI	PS-25 wrap
VII	PS Bandage

Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: DD section/metszet	Rajzszám: DTV20180329-5/2



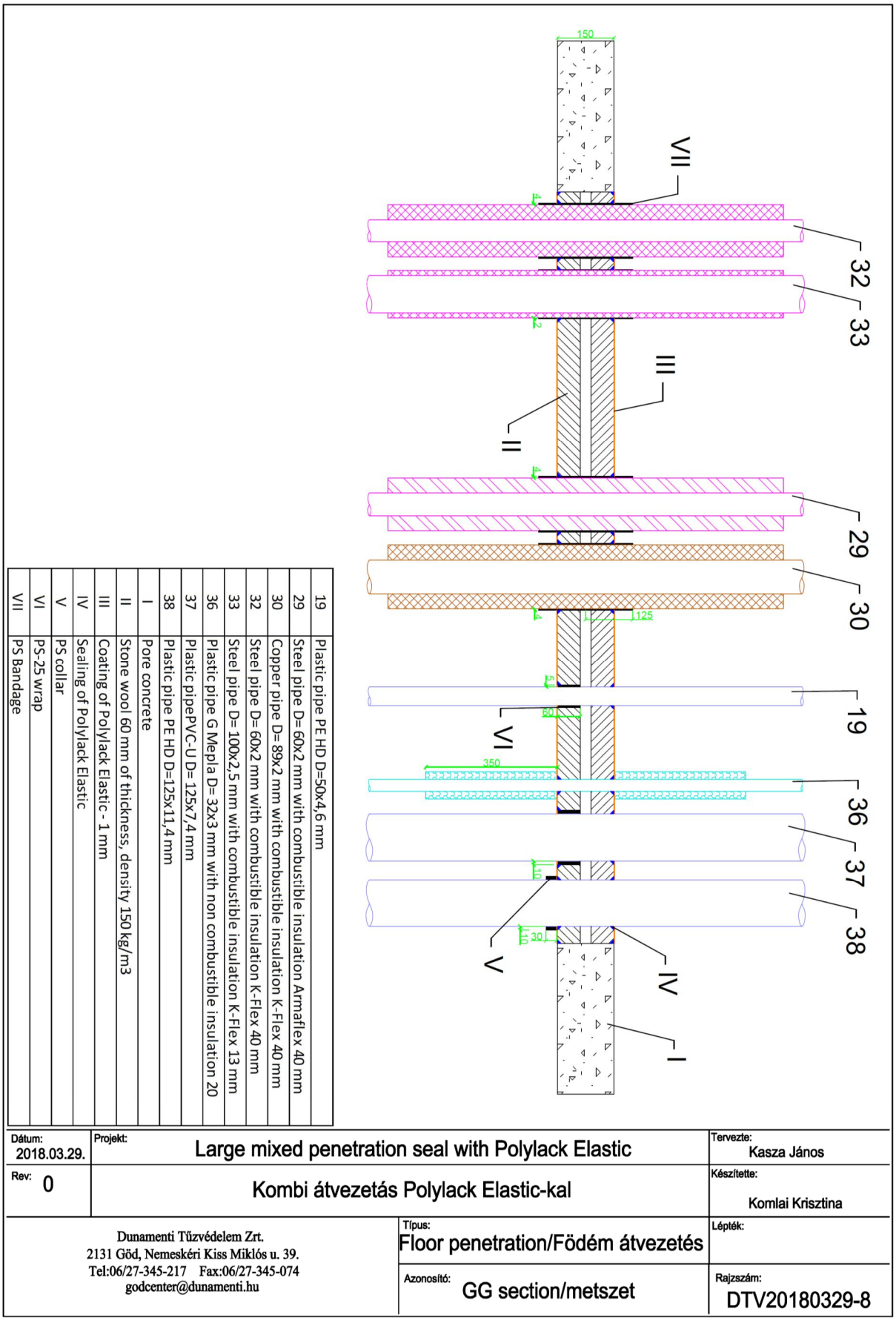
10	Plastic pipe Geberit Silent 20 dB D=56x3,2 mm
15	Copper pipe D=89x2 mm with non-combustible insulation 30 mm
16	Steel pipe D= 60x2 mm with combustible insulation K-Flex 13 mm
17	Plastic pipe PVC-U D= 125x3,7 mm
18	Plastic pipe PVC-U D= 125x3,7 mm
22	Copper pipe D= 28x1 mm with combustible insulation K-Flex 13 mm
26	Steel pipe D= 60x2 mm with combustible insulation Armaflex 13 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VI	PS-25 wrap
VII	PS Bandage

Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: EE section/metszet	Rajzszám: DTV20180329-6



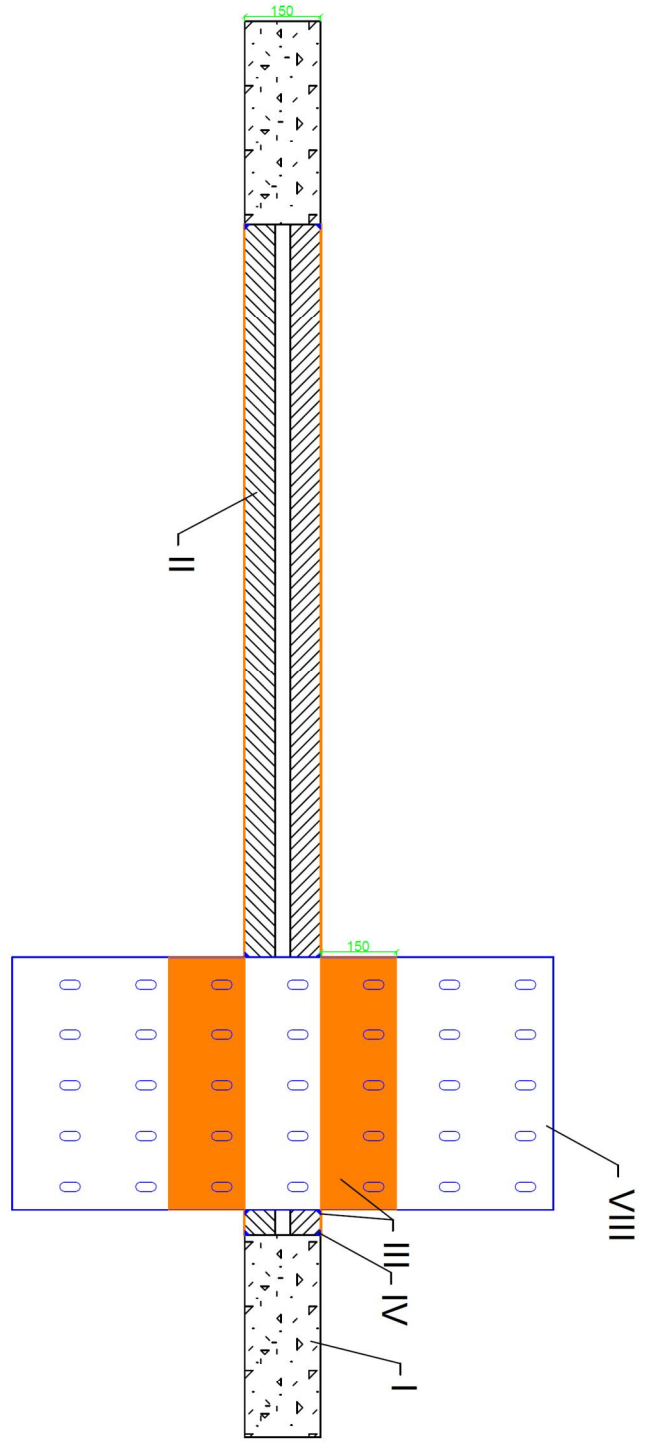
9	Plastic pipePVC-U D= 125x7,4 mm
11	Steel pipe D= 100x2,5 mm with combustible insulation Armafex 40 mm
12	Copper pipe D= 89x2 mm with combustible insulation Armaflex 13 mm
13	Plastic pipe PP-R D= 125x7,1 mm
44	Plastic pipe PP-R D= 125x11,4 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VII	PS Bandage

Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: FF section/metszet	Rajzszám: DTV20180329-7



19	Plastic pipe PE HD D=50x4,6 mm
29	Steel pipe D= 60x2 mm with combustible insulation Armaflex 40 mm
30	Copper pipe D= 89x2 mm with combustible insulation K-Flex 40 mm
32	Steel pipe D= 60x2 mm with combustible insulation K-Flex 40 mm
33	Steel pipe D= 100x2,5 mm with combustible insulation K-Flex 13 mm
36	Plastic pipe G Mepla D= 32x3 mm with non combustible insulation 20
37	Plastic pipePVC-U D= 125x7,4 mm
38	Plastic pipe PE HD D=125x11,4 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VI	PS-25 wrap
VII	PS Bandage

Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: GG section/metszet	Rajzszám: DTV20180329-8



I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VIII	Perforated cable tray 500x1,5 mm

Dátum: 2018.03.29.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: HH section/metszet	Rajzszám: DTV20180329-9

Table No. 4

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
Cables for standard penetration:				
D1	Cable: NYCWY 4x185 SM/95 Cable ladder: 300x1,25 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
2 x E	Cable: NYY-O 1x185RM Cable ladder: 300x1,25 mm	-	=‖=	-
D2	Cable: H07RN-F 4G185 Cable ladder: 300x1,25 mm	-	=‖=	-
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	=‖=	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	The surface of the cable, perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
A2	Cable: H07RN-F5G1,5 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	=‖=	-
A3	Cable: N2XH-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	-	=‖=	-
2 x B	Cable: NYY-O 1x95RM Perforated cable tray: 500x1,5 mm	-	=‖=	-
C1	Cable: NYCWY 4x95 SM/50 Perforated cable tray: 500x1,5 mm	-	=‖=	-
C2	Cable: H07RN-F 4G95 Perforated cable tray: 500x1,5 mm	-	=‖=	-
C3	Cable: N2XH-J 4x95 SM Perforated cable tray: 500x1,5 mm	-	=‖=	-

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
G1	Cable: H07V-R 1x95 Non perforated cable tray: 500x1,5 mm	-	The surface of the cable, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	=‖=	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Non perforated cable tray: 500x1,5 mm	-	=‖=	-
H	2 pcs 16 x 1 mm steel pipe 1 pc 16 x 0,5 copper pipe	-	=‖=	-
I	3 pcs 16 x 1 mm plastic pipe	-	=‖=	-
Cables for mixed penetration:				
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	-	The surface of the cable, cable ladder in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
2 x E	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	-	=‖=	-
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	-	=‖=	-
2 x B	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	-	=‖=	-
H	1 pc 16 x 0,5 mm copper pipe	-	=‖=	-
I	1 pc 16 x 1 mm plastic pipe	-	=‖=	-
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	-	=‖=	-

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	-	The surface of the pipes, non perforated cable tray in length 150 mm are protected by layer of Polylack Elastic 1 mm, gap between wall and cable sealed by Polylack Elastic 10x25 mm (width x depth)	-
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	-	=‖=	-
46/S8	Steel pipe D=100x2,5 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	190 mm	PS Bandage (125 x 2) mm two layer form both sides – Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	C/U
9/P4	Plastic pipe PVC-U D= 125x4,8 mm	125 mm	PS collar from exposed sides 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
31/P22	Geberit Silent 20 dB D= 110x6 mm	110 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
14/P1	Plastic pipe PVC-U D= 50x1,8 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
8/P9	Plastic pipe PP-R D= 50x4,6 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
26/S1	Steel pipe D=60x2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	96 mm	PS Bandage (125x2) mm one layer form both sides – Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	C/U
24/G2	Plastic pipe Geberit Mepla D= 63x6 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	63 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/C
19/P16	Plastic pipe PE HD D=50x4,6 mm	60 mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
7P13	Plastic pipe PVC-U D=50x1,8 mm	60 mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
28/P10	Plastic pipe PP-R D= 50x8,3 mm	50 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
P33	Plastic pipe three-layer soundproof PP D= 125x3,9 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
16/S3	Steel pipe D= 60x2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	96 mm	PS Bandage (125x2) mm one layer form both sides – Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	C/U
17/P3	Plastic pipe PVC-U D= 125x3,7 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
18/P17	Plastic pipe PVC-U 125x3,7 mm	145 mm	PS-25 wrap from exposed side 4 layers of 2.5 mm intumescent strips (10x60) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
38/P8	Plastic pipe PE-HD D= 125x11,4 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
P32	Plastic pipe three-layer soundproof PP D= 40x1,8 mm	40 mm	PS collar from exposed side 2 layers of 2.5 mm intumescent strips (5x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
36/G1	Plastic pipe Geberit Mepla D= 32x3 mm with non-com-bustible stone wool insula-tion 20 mm, pipe insulation LI 350 mm	32 mm	The gap around the wall and service sealed by Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/C
44/P12	Plastic pipe PP-R D= 125x11,4 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U

Service	Type of service	Opening	Penetration sealing	Pipe end configuration
13/P11	Plastic pipe PP-R D= 125x7,1 mm	125 mm	PS collar from exposed side 4 layers of 2.5 mm intumescent strips (10x30) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
25/P19	Plastic pipe PE-HD D= 125x4 mm	145 mm	PS-25 wrap from exposed side 2 layers of 2.5 mm intumescent strips (5x60) mm and Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	U/U
11/S6	Steel pipe D=100x2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	190 mm	PS Bandage (125x2) mm two layer form both sides – Polylack Elastic in the corners from both sides 10x10 mm (width x depth)	C/U

PS collar type DN40 is fixed to the stone wool by 3 pieces of steel screw ∅ 6 x 120 mm.
The collar is used for following service No.: P32;

PS collars types DN50 are fixed to the stone wool by 3 pieces of steel screw ∅ 6 x 120 mm.
The collars are used for following services No.: 14/P1, 8/P9, 28/P10;

PS collar type DN110 is fixed to the stone wool by 6 pieces of steel screw ∅ 6 x 120 mm.
The collar is used for following service No.: 31/P22;

PS collars types DN125 are fixed to the stone wool by 6 pieces of steel screw ∅ 6 x 120 mm.
The collars are used for following services No.: 9/P4, P33, 17/P3, 38/P8, 44/P12, 13/P11;

The following plastic pipes are sealed in the aerated concrete floor supporting construction:

- PVC-U pipes in accordance with EN 1326-1, EN 1452-1 or EN 1453-1 with dimensions in accordance with table 4,
- PVC-C pipes in accordance with EN 1566-1 with dimensions in accordance with table 4,
- PE-HD pipes in accordance with EN 1516-1 or EN 12666-1, with dimensions in accordance with table 4,
- PE pipes in accordance with EN 12201-2, EN 1519-1 and EN 12666-1, with dimensions in accordance with table 4,
- ABS pipes in accordance with EN 1455-1 with dimensions in accordance with table 4,
- SAN+PVC pipes in accordance with EN 1565-1 with dimensions in accordance with table 4,
- PP-R pipes in accordance with EN ISO 15874, with dimensions in accordance with table 4.

Services No.: 24/G2, 36/G1 are insulated by non-combustible insulation PAROC Hvac Section AluCoat (stone wool with bulk density 80 $kg.m^{-3}$ with reinforced aluminium foil facing). The information of the thickness and length of the insulation is listed in the table No. 4.

The standard mixed module version A according to EN 1366-3, figure F. 1A and standard configuration for cable penetration systems according to EN 1366-3, figure A.1. contains cable ladders with width:

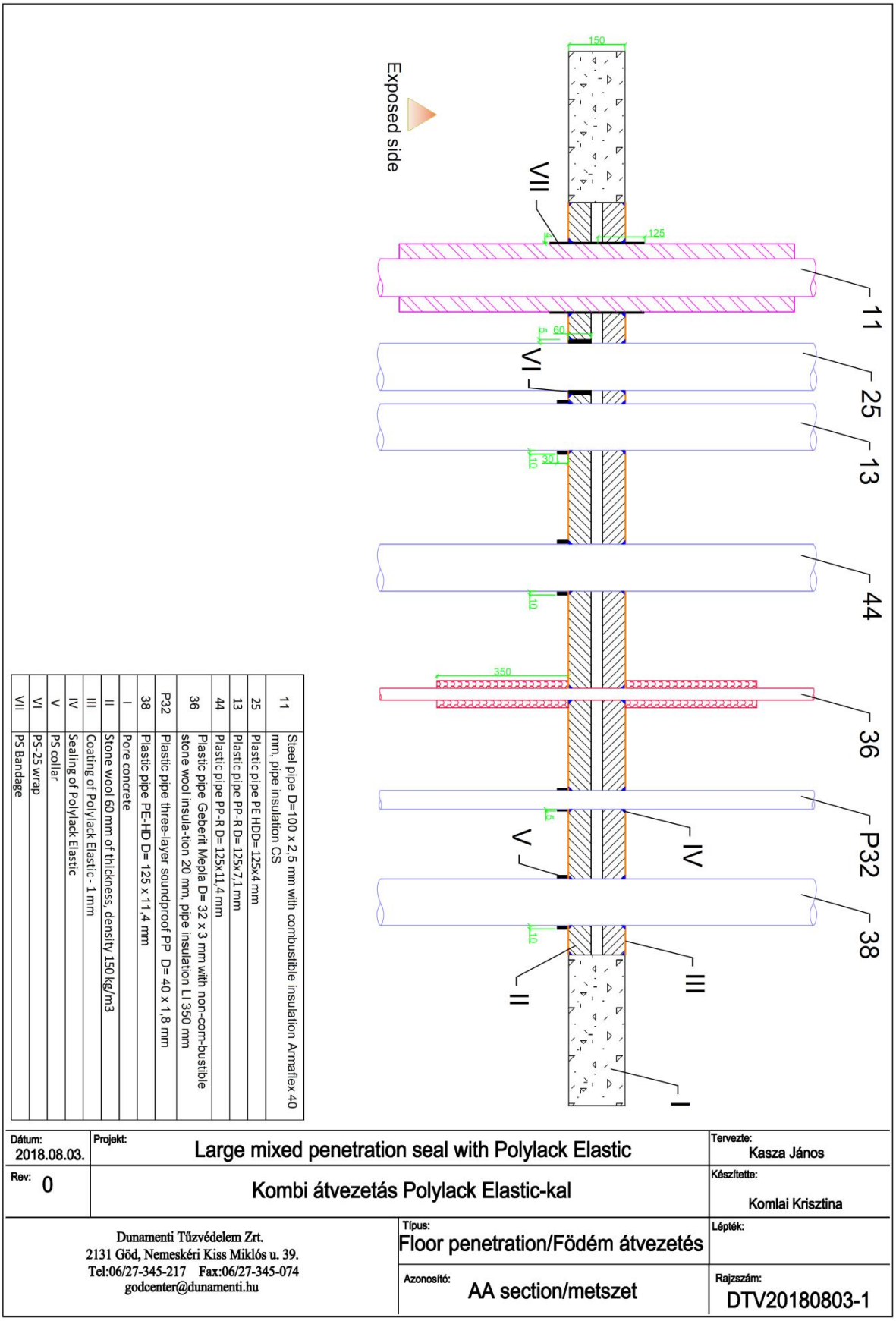
- 200 mm and wall thickness of 1 mm.
- 300 mm and wall thickness of 1,25 mm.

Non-perforated cable tray with width:

- 500 mm and wall thickness of 1,5 mm.

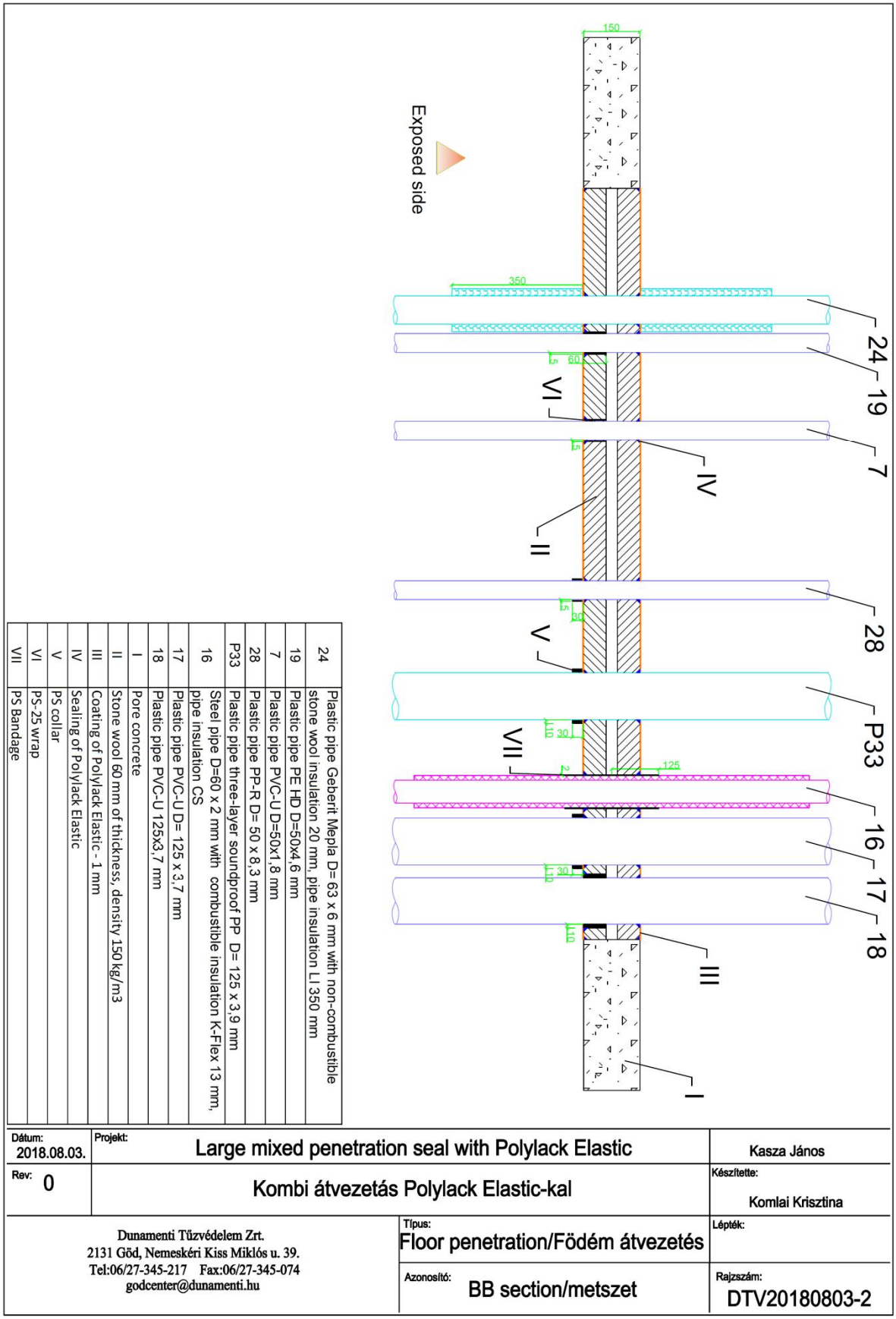
Perforated cable tray with width:

- 500 mm and wall thickness of 1,5 mm.



11	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS
25	Plastic pipe PE HDD= 125x4 mm
13	Plastic pipe PP-R D= 125x7,1 mm
44	Plastic pipe PP-R D= 125x11,4 mm
36	Plastic pipe Geberit Mepla D= 32 x 3 mm with non-com-bustible stone wool insula-tion 20 mm, pipe insulation LI 350 mm
P32	Plastic pipe three-layer soundproof PP D= 40 x 1,8 mm
38	Plastic pipe PE-HD D= 125 x 11,4 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VI	PS-25 wrap
VII	PS Bandage

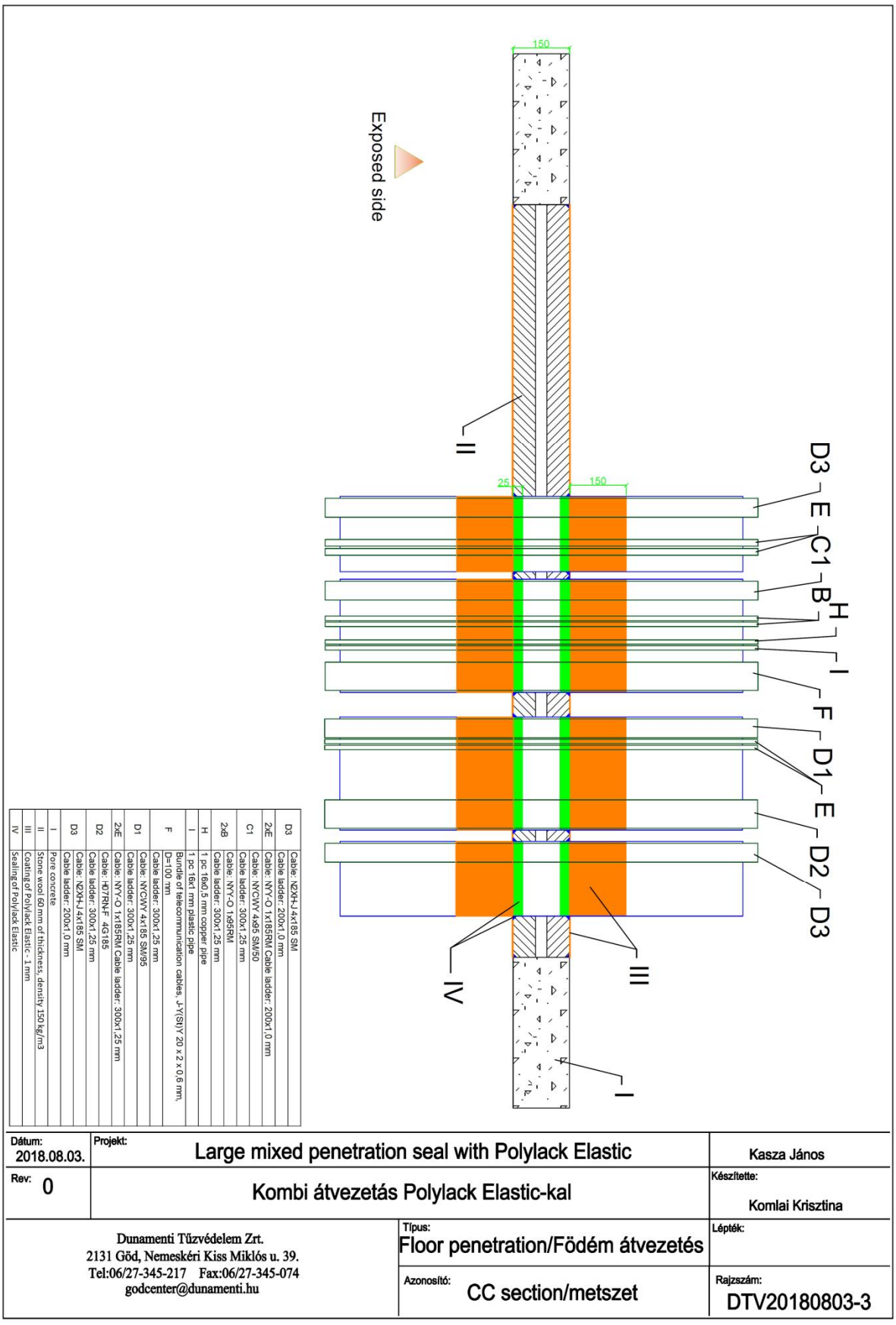
Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Tervezte: Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: AA section/metszet	Rajzszám: DTV20180803-1



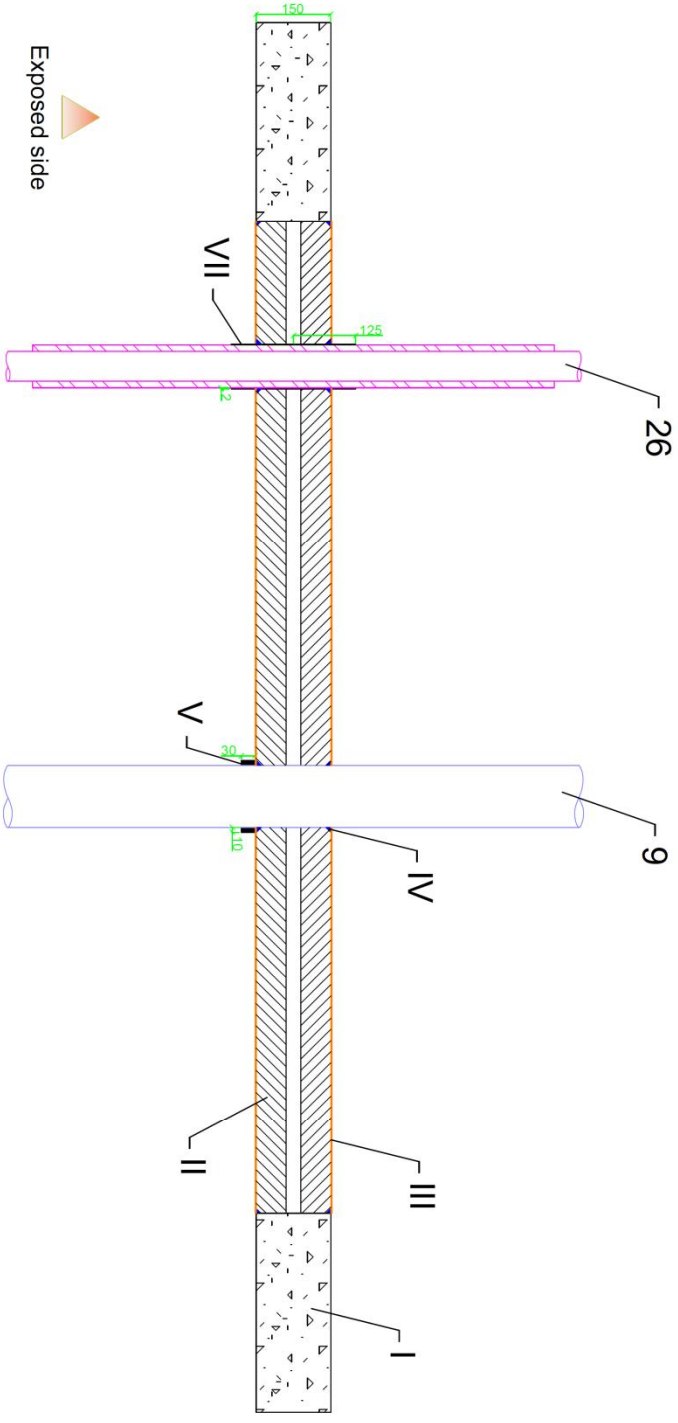
24	Plastic pipe Geberit Mepla D= 63 x 6 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm
19	Plastic pipe PE HD D=50x4,6 mm
7	Plastic pipe PVC-U D=50x1,8 mm
28	Plastic pipe PP-R D= 50 x 8,3 mm
P33	Plastic pipe three-layer soundproof PP D= 125 x 3,9 mm
16	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS
17	Plastic pipe PVC-U D= 125 x 3,7 mm
18	Plastic pipe PVC-U 125x3,7 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VI	PS-25 wrap
VII	PS Bandage

Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: BB section/metszet	Rajzszám: DTV20180803-2

No. D3, E, C1, B, H, I, F, D1, E, D2, D3 - services



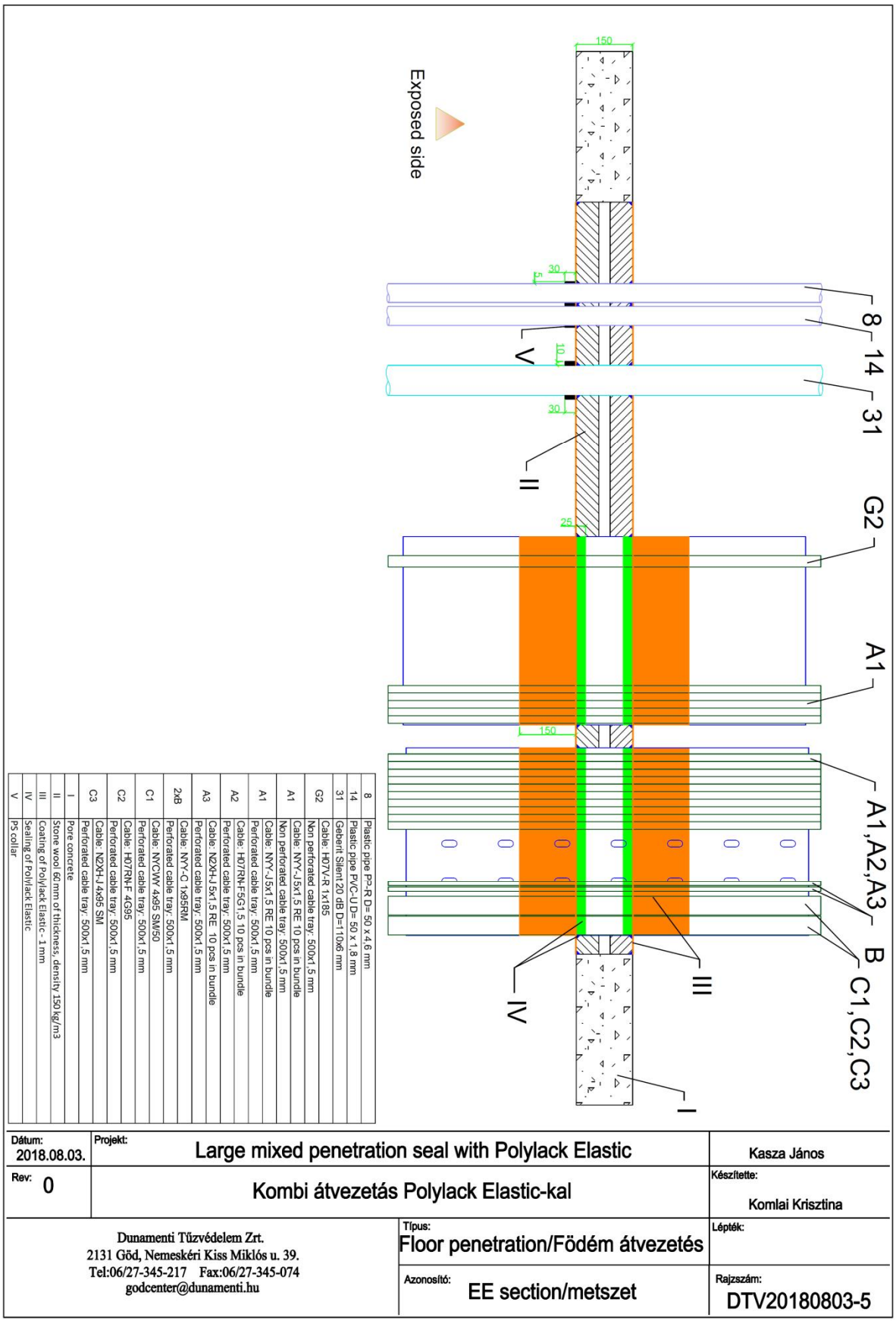
No. 26/S1, 9/P4 - services



26	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS
9	Plastic pipe PVC-U D= 125 x 4,8 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar
VII	PS Bandage

Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: DD section/metszet	Rajzszám: DTV20180803-4

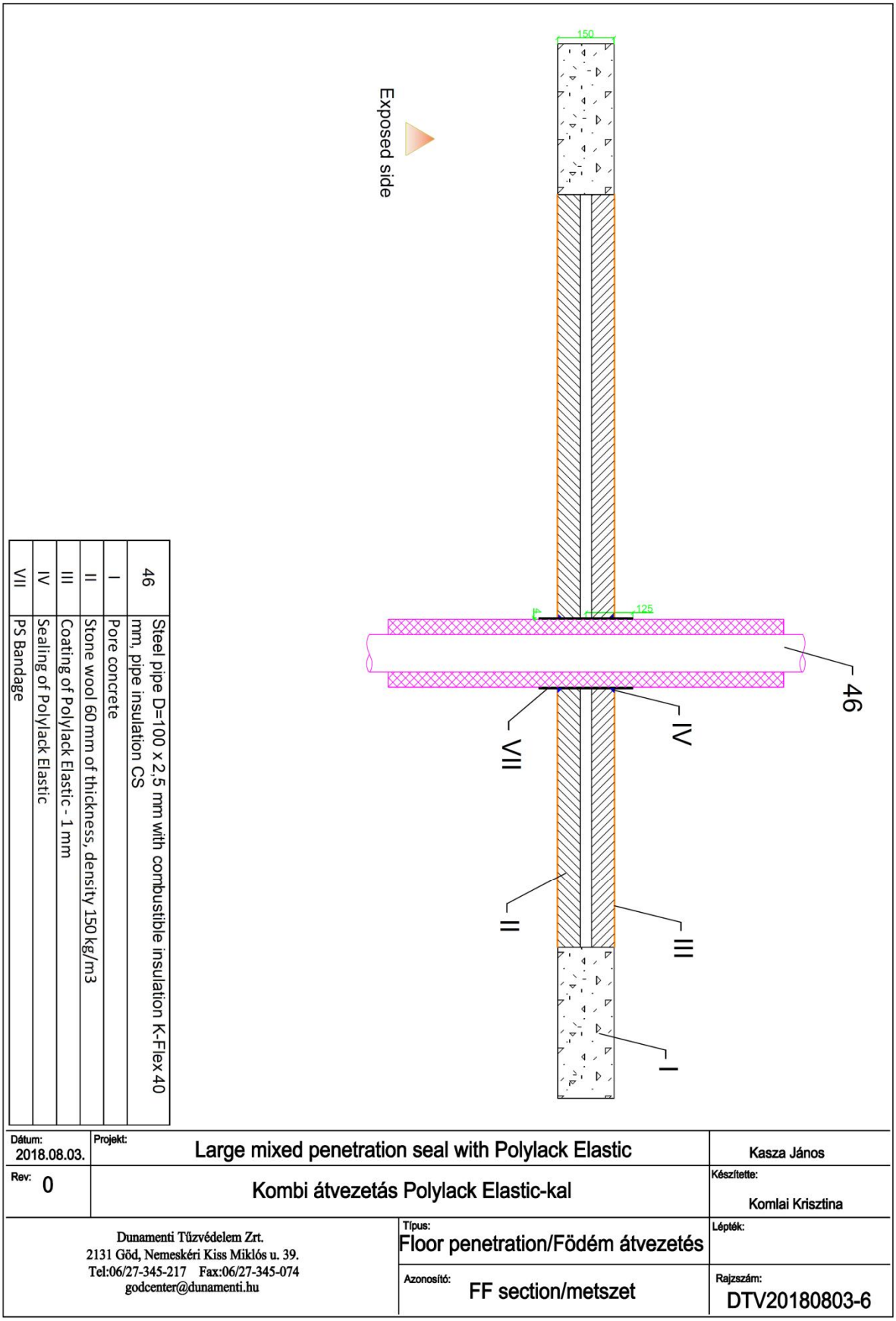
No. 8/P9, 14/P1, G2, A1, A2, A3, B, C1, C2, C3 - services



8	Plastic pipe PP-R D= 50 x 4,6 mm
14	Plastic pipe PVC-U D= 50 x 1,8 mm
31	Geberit Silent 20 dB D=110x6 mm
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm
A1	Cable: NYY-J5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm
A1	Cable: NYY-J5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm
A2	Cable: H07RN-F5G1,5 10 pcs in bundle Perforated cable tray: 500x1,5 mm
A3	Cable: N2XH-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm
2xB	Cable: NYY-O 1x95RM Perforated cable tray: 500x1,5 mm
C1	Cable: NYCWY 4x95 SM/50 Perforated cable tray: 500x1,5 mm
C2	Cable: H07RN-F 4G95 Perforated cable tray: 500x1,5 mm
C3	Cable: N2XH-J 4x95 SM Perforated cable tray: 500x1,5 mm
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
V	PS collar

Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: EE section/metszet	Rajzszám: DTV20180803-5

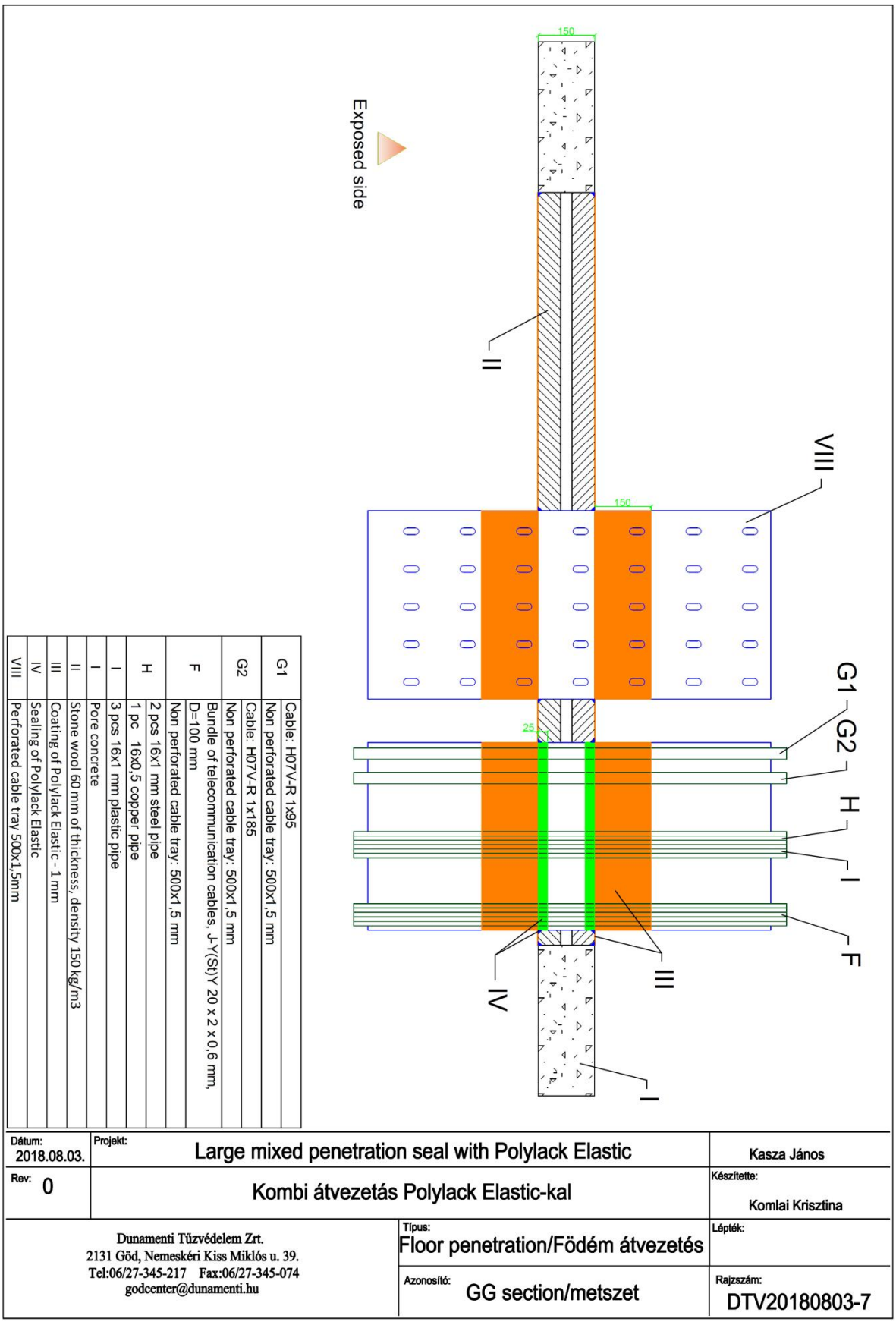
No. 46/S8 - services



46	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 40 mm, pipe insulation CS
I	Pore concrete
II	Stone wool 60 mm of thickness, density 150 kg/m3
III	Coating of Polylack Elastic - 1 mm
IV	Sealing of Polylack Elastic
VII	PS Bandage

Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: FF section/metszet	Rajzszám: DTV20180803-6

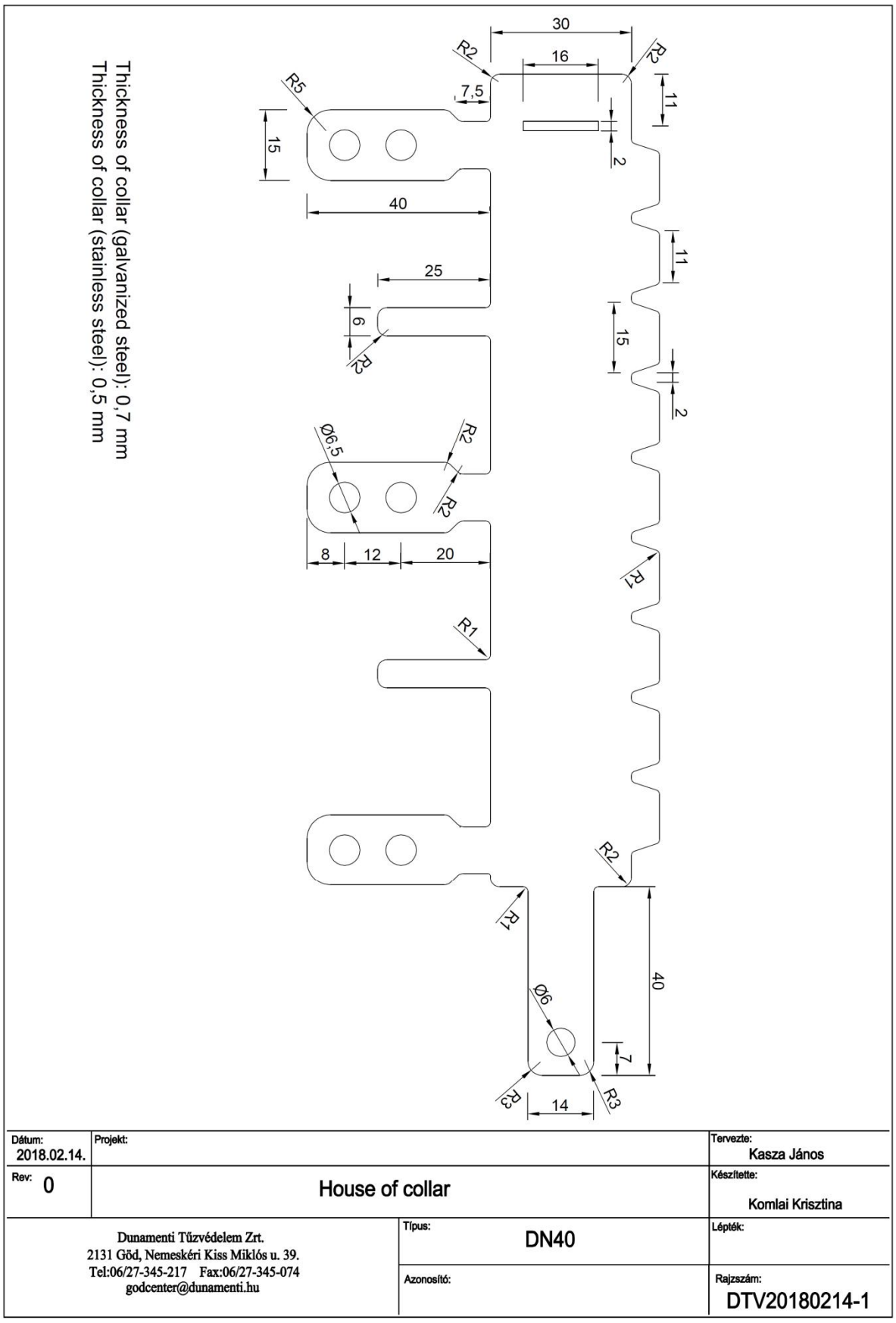
No. G1, G2, H, I, F - services



VIII	Perforated cable tray 500x1,5mm	
IV	Sealing of Polylack Elastic	
III	Coating of Polylack Elastic - 1 mm	
II	Stone wool 60 mm of thickness, density 150 kg/m3	
I	Pore concrete	
I	3 pcs 16x1 mm plastic pipe	
H	1 pc 16x0,5 copper pipe	
	2 pcs 16x1 mm steel pipe	
F	Non perforated cable tray: 500x1,5 mm	
	D=100 mm	
	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm,	
G2	Non perforated cable tray: 500x1,5 mm	
	Cable: H07V-R 1x185	
G1	Non perforated cable tray: 500x1,5 mm	
	Cable: H07V-R 1x95	

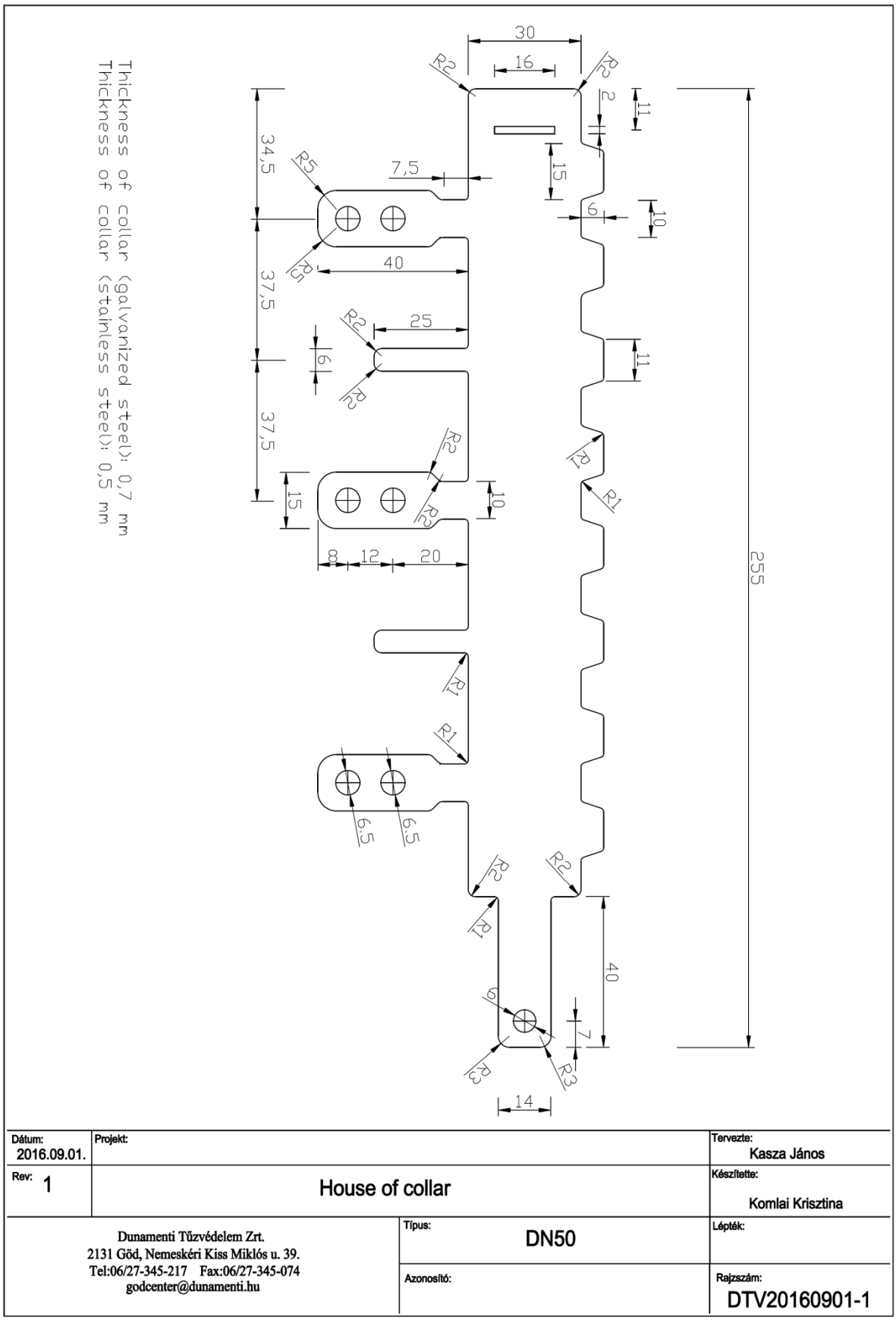
Dátum: 2018.08.03.	Projekt: Large mixed penetration seal with Polylack Elastic	Kasza János
Rev: 0	Kombi átvezetás Polylack Elastic-kal	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: Floor penetration/Födém átvezetés	Lépték:
	Azonosító: GG section/metszet	Rajzszám: DTV20180803-7

Housing of collar DN40



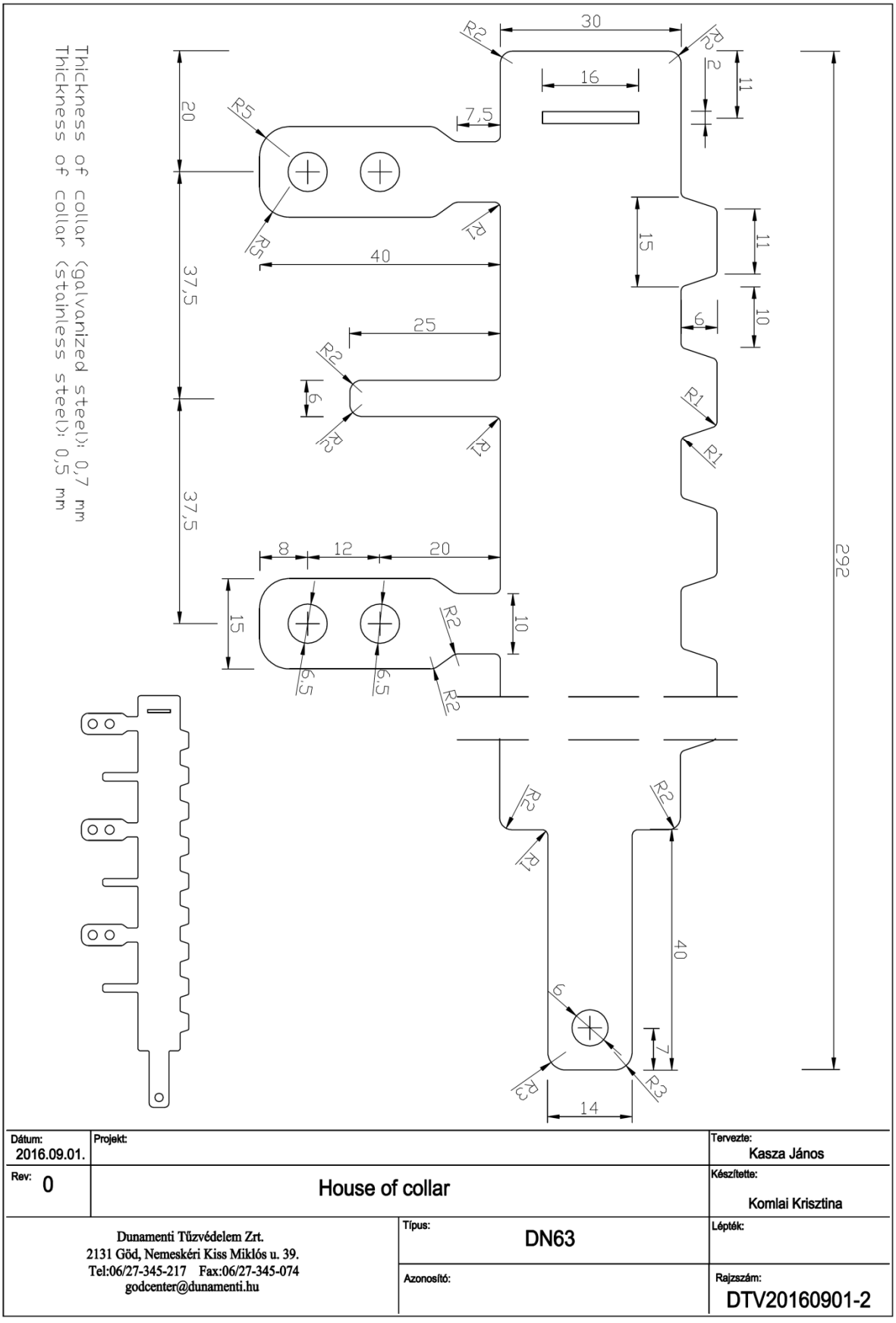
Dátum: 2018.02.14.	Projekt:	Tervezte: Kasza János
Rev: 0	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN40 Azonosító:	Lépték: Rajzszám: DTV20180214-1

Housing of collar DN50



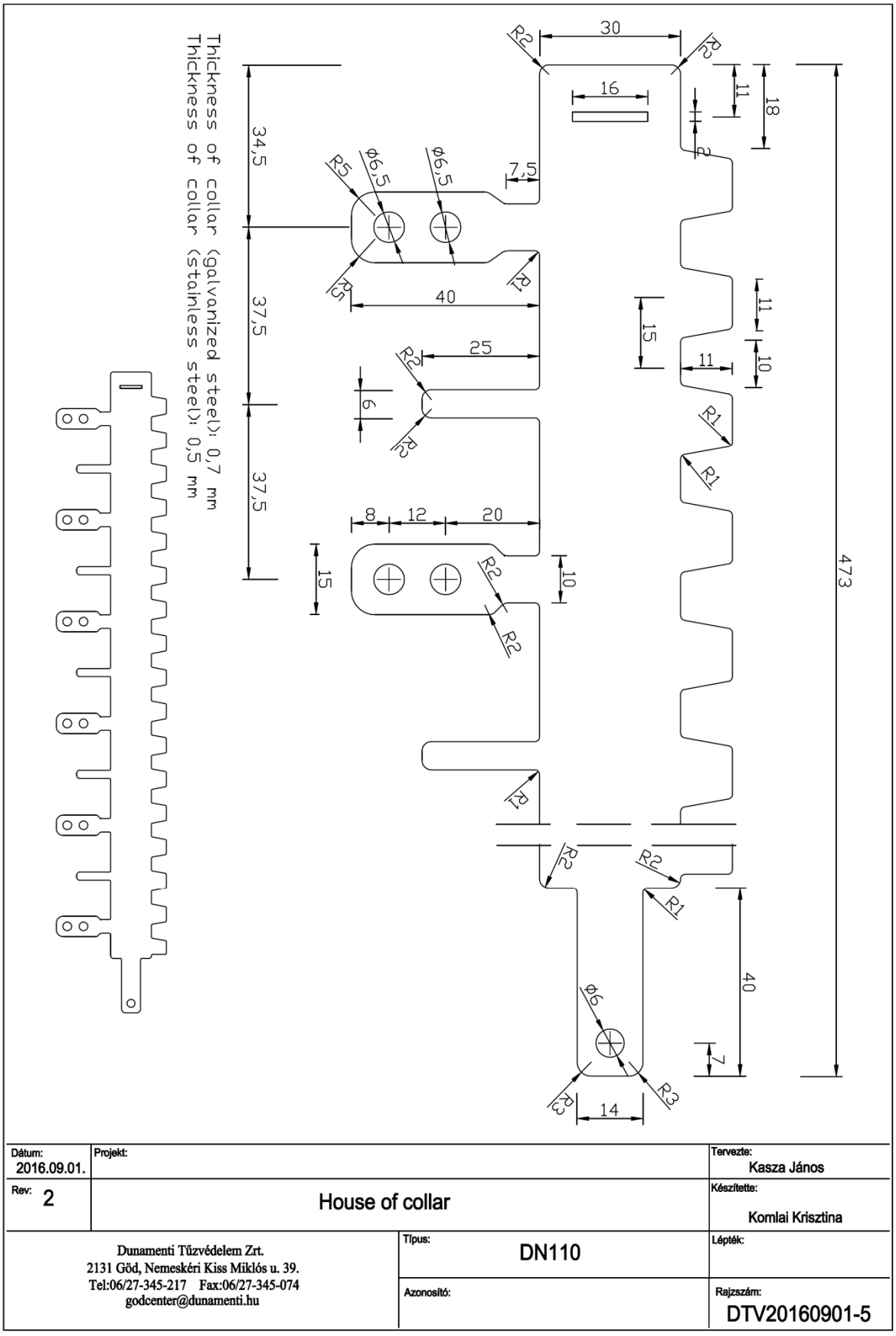
Dátum: 2016.09.01.	Projekt:	Tervezte: Kasza János
Rev: 1	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN50	Lépték:
	Azonosító:	Rajzszám: DTV20160901-1

Housing of collar DN63

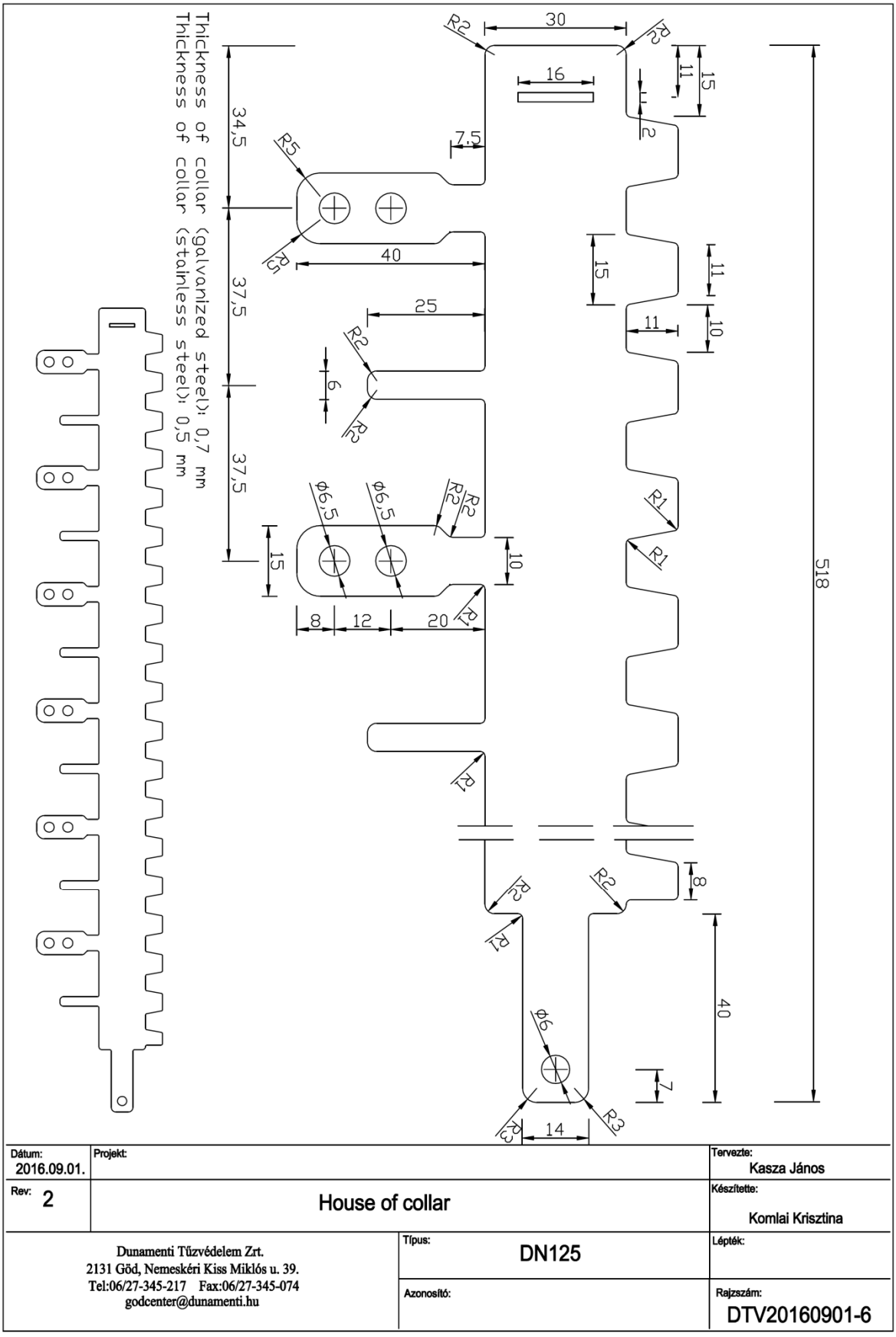


Dátum: 2016.09.01.	Projekt:	Tervezte: Kasza János
Rev: 0	House of collar	Készítette: Komlai Krisztina
Dunamenti Tűzvédelem Zrt. 2131 Göd, Nemeskéri Kiss Miklós u. 39. Tel:06/27-345-217 Fax:06/27-345-074 godcenter@dunamenti.hu	Típus: DN63	Lépték:
	Azonosító:	Rajzszám: DTV20160901-2

Housing of collar DN110



Housing of collar DN125



Annex C
Reaction to fire classification in accordance with EN 13501-1: 2007 + A1: 2009 (classification identical with EN 13501-1: 2018) and field of application

Sealing material: Polylack Elastic	**Reaction to fire classification: E**

Field of application:

This classification is valid for the following final use applications:

i) product used in vertical or horizontal position excluding floorings

This classification is also valid for the following product parameters:

Composition	product composition cannot be changed
Applied quantity	Applied quantity can be in range (1,6 – 1,8) $kg.m^{-2}$

Sealing material: PS Bandage	**Reaction to fire classification: E**

Field of application:

This classification is valid for the following final use applications:

i) product used in vertical or horizontal position excluding floorings

This classification is also valid for the following product parameters:

Composition	product composition cannot be changed
Applied quantity	Applied quantity can be increased only minimal mas per surface area 2,2 $kg.m^{-2}$
Thickness	Thickness can be increased only Minimal thickness = 2 mm PS Bandage can be used multi-layered

Sealing material: intumescent material from: - PS collar - PS – 25 wrap	**Reaction to fire classification: E**

Field of application:

This classification is valid for the following final use applications:

ii) product used in vertical or horizontal position excluding floorings

This classification is also valid for the following product parameters:

Composition	product composition cannot be changed
Density	Density can be in range (1,20 ± 0,25) $g.cm^{-3}$
Thickness	Thickness can be increased only Minimal thickness = 2,5 mm can be used multi-layered

Annex D
Resistance to fire classification in accordance with EN 13501-2: 2016 and field of application

Mixed penetration seal installed in wall

Standard mixed module version B according to EN 1366-3, figure F. 1B. installed in wall is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 90

Standard configuration for cable penetration systems according to EN 1366-3, figure A.1. installed in wall is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 90

Large mixed penetration seal installed in wall is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 90*

Note: * plastic pipes No. P33 and 38/P8 were not included in the evaluation.

Fire resistance classification for individual services according following table:

Service	Type of service	Fire resistance classification
-	Cable ladder: 200x1,0 mm	**E 120 / EI 90**
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
-	Cable ladder: 300x1,25 mm	**E 120 / EI 90**
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	**E 120 / EI 90**
H	1 pc 16x1 mm steel pipe	**E 120 / EI 90**
I	1 pc 16x1 mm plastic pipe	**E 120 / EI 120**
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	**E 120 / EI 120**

Service	Type of service	Fire resistance classification
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
1/Cu2	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
2/P7	Plastic pipe PE-HD D= 125 x 4 mm	**E 120-U/U, EI 120-U/U**
3/S9	Steel pipe D=100 x 2,5 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 120-C/U, EI 120-C/U**
4/Cu6	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
6/P15	Plastic pipe PE HD 50 x 3 mm	**E 120-U/U, EI 120-U/U**
9/P4	Plastic pipe PVC-U D= 125 x 7,4 mm	**E 120-U/U, EI 120-U/U**
10/P21	Geberit Silent 20 dB D=56 x 3,2 mm	**E 120-U/U, EI 120-U/U**
11/S6	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
13/P11	Plastic pipe PP-R D= 125 x 7,1 mm	**E 120-U/U, EI 90-U/U**
15/ Cu10	Copper pipe D=89 x 2 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 400 mm	**E 120-C/U, EI 120-C/U**
17/P3	Plastic pipe PVC-U D= 125 x 3,7 mm	**E 120-U/U, EI 120-U/U**
18/P17	Plastic pipe PVC-U 125x3,7 mm	**E 120-U/U, EI 120-U/U**
19/P16	Plastic pipe PE HD 50x4,6 mm	**E 120-U/U, EI 120-U/U**
20/P14	Plastic pipe PVC-U 50x3,7 mm	**E 120-U/U, EI 120-U/U**
21/P5	Plastic pipe PE-HD D= 50 x 3 mm	**E 120-U/U, EI 120-U/U**
22/Cu5	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
23/Cu4	Copper pipe D=89 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
24/G2	Plastic pipe Geberit Mepla D= 75 x 4,5 mm with non-com-bustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 120-U/C, EI 120-U/C**
25/P19	Plastic pipe PE HD 125 x 4 mm	**E 120-U/U, EI 120-U/U**
26/S1	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
27/P6	Plastic pipe PE-HD D= 50 x 4,6mm	**E 120-U/U, EI 120-U/U**
28/P10	Plastic pipe PP-R D= 50 x 8,3 mm	**E 120-U/U, EI 120-U/U**
29/S2	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
30/Cu8	Copper pipe D=89 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
31/P22	Geberit Silent 20 dB D=110 x 6 mm	**E 120-U/U, EI 120-U/U**
32/S4	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**

Service	Type of service	Fire resistance classification
36/G1	Plastic pipe Geberit Mepla D= 32 x 3 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 120-U/C, EI 120-U/C**
37/P18	Plastic pipe PVC-U D= 125 x 7,4 mm	**E 120-U/U, EI 120-U/U**
39/S10	Steel pipe D=130 x 4 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 450 mm	**E 120-C/U, EI 120-C/U**
40/Cu9	Copper pipe D=28 x 1 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 120-C/U, EI 90-C/U**
41/P2	Plastic pipe PVC-U D= 50 x 3,7 mm	**E 120-U/U, EI 120-U/U**
-	Perforated cable tray: 500x1,5 mm	**E 120 , EI 120**
Cables for standard penetration:		
-	Cable ladder: 300x1,25 mm	**E 120 / EI 120**
D1	Cable: NYCWY 4x185 SM/95 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
2xE	Cable: NYY-O 1x185RM Cable ladder: 300x1,25 mm	**E 120 / EI 120**
D2	Cable: H07RN-F 4G185 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
-	Cable ladder: 200x1,0 mm	**E 120 / EI 120**
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
-	Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A2	Cable: H07RN-F5G1,5 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A3	Cable: N2XH-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
2xB	Cable: NYY-O 1x95RM Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C1	Cable: NYCWY 4x95 SM/50 Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C2	Cable: H07RN-F 4G95 Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C3	Cable: N2XH-J 4x95 SM Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
-	Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G1	Cable: H07V-R 1x95 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**

Service	Type of service	Fire resistance classification
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
H	2 pcs 16x1 mm steel pipe	**E 120 / EI 120**
	1 pc 16x0,5 copper pipe	**E 120 / EI 90**
I	3 pcs 16x1 mm plastic pipe	**E 120 / EI 120**
Cables for mixed penetration:		
-	Cable ladder: 200x1,0 mm	**E 120 / EI 120**
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	**E 120 / EI 90**
-	Cable ladder: 300x1,25 mm	**E 120 / EI 120**
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
2xB	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	**E 120 / EI 90**
H	1 pc 16x0,5 mm copper pipe	**E 120 / EI 120**
I	1 pc 16x1 mm plastic pipe	**E 120 / EI 90**
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	**E 120 / EI 120**
-	Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
14/P1	Plastic pipe PVC-U D= 50 x 1,8 mm	**E 120-U/U, EI 120-U/U**
45/Cu1	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
5/P20	Plastic pipe PE HD D= 125 x 11,4 mm	**E 120-U/U, EI 120-U/U**
34/S5	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
12/Cu3	Copper pipe D=88,9 x 2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
16/S3	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
57/P23	Plastic pipe PVC-U D= 63 x 3 mm	**E 120-U/U, EI 120-U/U**

Service	Type of service	Fire resistance classification
33/S7	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**
7/P13	Plastic pipe PVC-U 50x1,8 mm	**E 120-U/U, EI 120-U/U**
46/S8	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
8/P9	Plastic pipe PP-R D= 50 x 4,6 mm	**E 120-U/U, EI 120-U/U**
P32	Plastic pipe three-layer soundproof PP D= 40 x 1,8 mm	**E 120-U/U, EI 120-U/U**
35/Cu7	Copper pipe D=88,9 x 2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
58/24	Plastic pipe PVC-U D= 125 x 3,2 mm	**E 120-U/U, EI 120-U/U**
59/25	Plastic pipe PVC-U D= 160 x 4 mm	**E 120-U/U, EI 120-U/U**
44/P12	Plastic pipe PP-R D= 125 x 11,4 mm	**E 120-U/U, EI 120-U/U**
-	Perforated cable tray: 500x1,5 mm	**E 120 , EI 120**

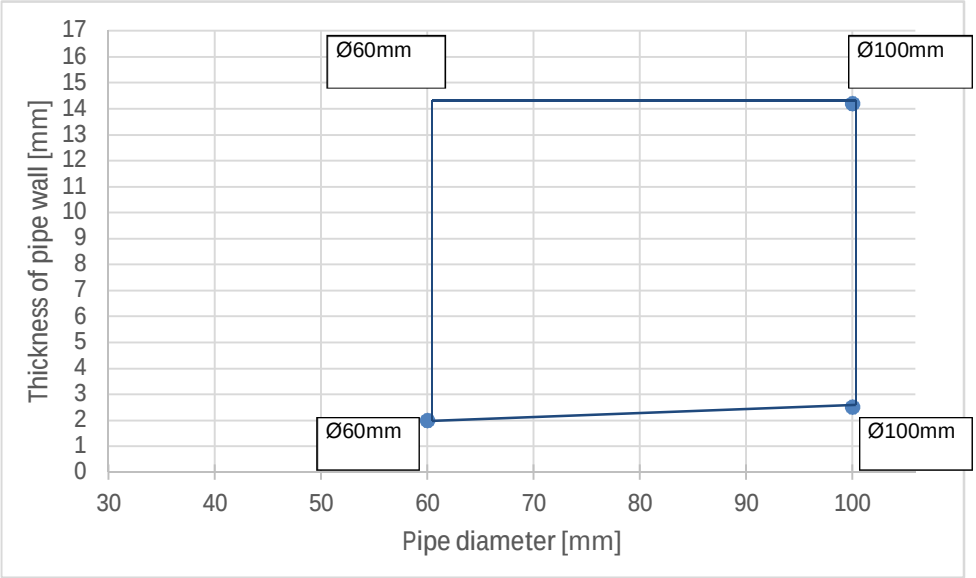
This classification is valid according to EN 1366-3: 2009 for the following end use applications:

Supporting construction	Penetration seal, may be installed in: all flexible wall constructions of the same fire resistance classification as fire resistance of tested flexible support construction described on paragraph 3.2 provided conditions of EN 1366-3, paragraph 13.2.2.1 are met; The standard flexible wall construction does not cover sandwich panel constructions and flexible walls where the lining does not cover the studs on both sides. Penetrations in such constructions shall be tested on a case by case basis. Test results obtained with flexible supporting walls may be applied to concrete or masonry elements of an overall thickness equal to or greater than that of the element used in the tests.
Copper pipes: Pipe diameter and pipe wall thickness	Penetration sealing: **Polylack Elastic** – in case of tested copper pipe Ø 89 x 2 mm with local **non-combustible stone wall insulation** 30 mm, LI 400 mm, wall thickness of the copper pipe can be increased up to 14,2 mm. Penetration sealing: **PS Bandage** – in case of tested copper pipe Ø 89 x 2 mm two layers of (125 x 2) mm PS Bandage from both sides with continued **K-Flex combustible insulation** 40 mm and Polylack Elastic in the corners. – in case of tested copper pipe Ø 88,9 x 2 mm one layer of (125 x 2) mm PS Bandage from both sides with continued **K-Flex combustible insulation** 13 mm and Polylack Elastic in the corners. Wall thickness of the copper pipe can be increased up to 14,2 mm. Penetration sealing: **PS Bandage** – in case of tested copper pipe Ø 89 x 2 mm two layers of (125 x 2) mm PS Bandage from both sides with continued **Armaflex combustible insulation** 40 mm and Polylack Elastic in the corners. – in case of tested copper pipe Ø 88,9 x 2 mm one layer of (125 x 2) mm PS Bandage from both sides with continued **Armaflex combustible insulation** 13 mm and Polylack Elastic in the corners. Wall thickness of the copper pipe can be increased up to 14,2 mm.
Steel pipes: Pipe diameter and pipe wall thickness	Penetration sealing: **PS bandage:** Steel pipe: Ø 60 x 2 mm – two layers from both sides of PS bandage (2 x 125) mm with continued K-Flex combustible insulation 40 mm and Polylack Elastic in the corners. Ø 100 x 2,5 mm – two layers from both sides of PS bandage (2 x 125) mm with continued K-Flex combustible insulation 40 mm and Polylack Elastic in the corners. Ø 60 x 2 mm – one layer from both sides of PS bandage (2 x 125) mm with continued K-Flex combustible insulation 13 mm and Polylack Elastic in the corners. Ø 100 x 2,5 mm – one layer from both sides of PS bandage (2 x 125) mm with continued K-Flex combustible insulation 13 mm and Polylack Elastic in the corners.

On the base of test result of steel pipes Ø 60 x 2 mm and Ø 100 x 2,5 mm, the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with continued **K-Flex combustible insulation** and Polylack Elastic in the corners.

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 1



Field of application of Fire resistance classification **E 120-C/U, EI 90-C/U** *valid for* steel pipes *and range of pipe diameter from* Ø 60 mm to Ø 100 mm *wall thickness from 2 mm to 2,5 mm.*

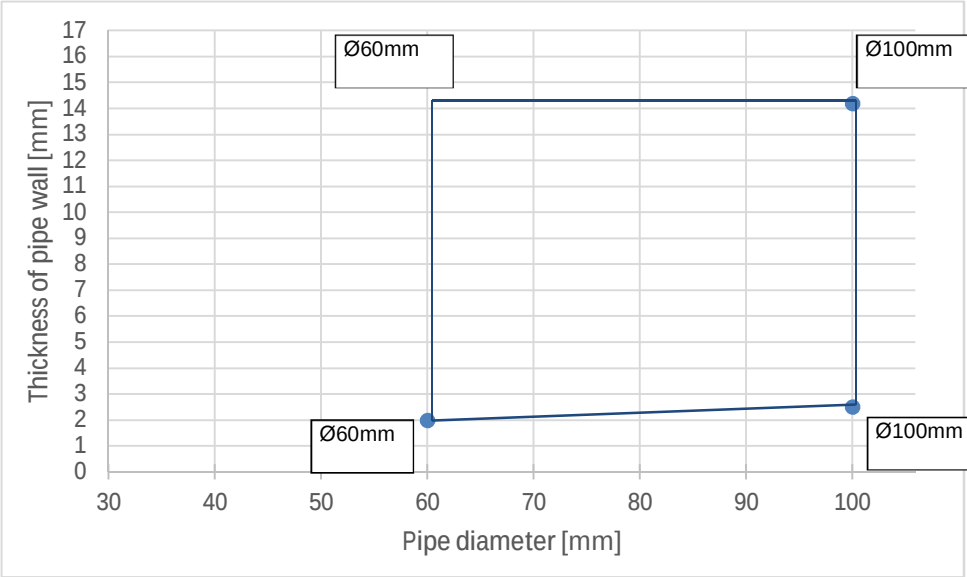
Steel pipe wall thickness can be increased up to 14,2 mm.

Penetration sealing: **PS bandage:**
Steel pipe:
Ø 60 x 2 mm – two layers from both sides of PS bandage (2 x 125) mm with continued Armaflex combustible insulation 40 mm and Polylack Elastic in the corners.
Ø 100 x 2,5 mm – two layers from both sides of PS bandage (2 x 125) mm with continued Armaflex combustible insulation 40 mm and Polylack Elastic in the corners.
Ø 60 x 2 mm – one layer from both sides of PS bandage (2 x 125) mm with continued Armaflex combustible insulation 13 mm and Polylack Elastic in the corners.
Ø 100 x 2,5 mm – one layer from both sides of PS bandage (2 x 125) mm with continued Armaflex combustible insulation 13 mm and Polylack Elastic in the corners.

On the base of test result of steel pipes Ø 60 x 2 mm and Ø 100 x 2,5 mm, the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with continued **Armaflex combustible insulation** and Polylack Elastic in the corners.

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 2



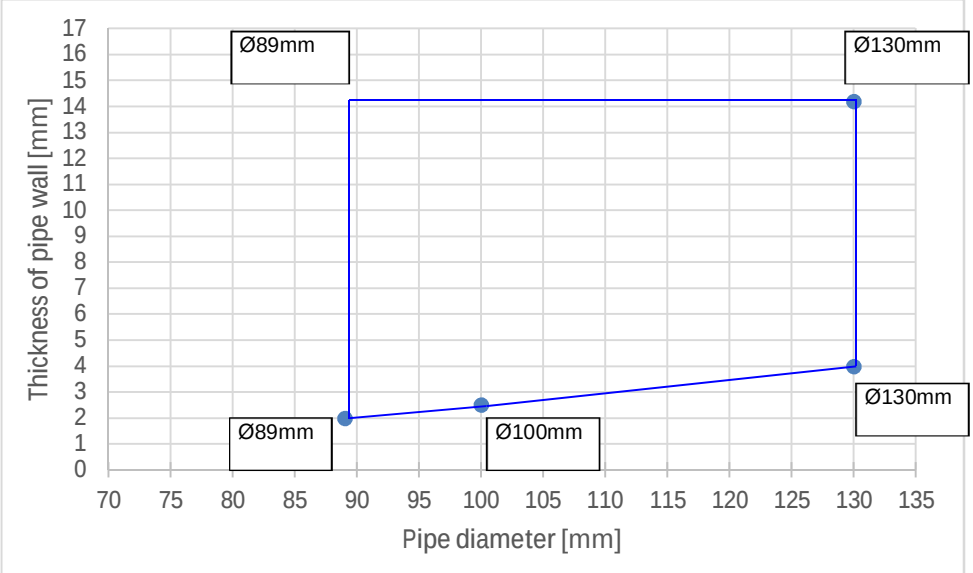
Field of application of Fire resistance classification **E 120-C/U, EI 90-C/U** *valid for* steel pipes *and range of pipe diameter from* Ø 60 mm to Ø 100 mm *wall thickness from 2 mm to 2,5 mm.*
Steel pipe wall thickness can be increased up to 14,2 mm.

Penetration sealing: **Polylack Elastic** and local non-combustible stone wool insulation.

On the base of test result of copper pipe Ø 89 x 2 mm* and steel pipes Ø 100 x 2,5 mm, Ø 130 x 4 mm, the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with local **Non-combustible stone wool insulation**:

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 3



Copper pipe:
Ø 89 x 2 mm – Polylack Elastic and local non-combustible stone wool insulation 30 mm, LI 400 mm.

Steel pipe:
Ø 100 x 2,5 mm – Polylack Elastic and local non-combustible stone wool insulation 20 mm, LI 350 mm.
Ø 130 x 4 mm – Polylack Elastic and local non-combustible stone wool insulation 30 mm, LI 450 mm.

Service	**Polylack Elastic**		**Fire resistance class**
Pipe diameter (mm)	**non-combustible stone wool insulation LI length (mm)**	**non-combustible stone wool insulation thickness (mm)**	
89 – 100	400	30	**EI 120-C/U**
100	350	20	
100 - 130	450	30	

Field of application of Fire resistance classification **E 120-C/U, EI 120-C/U** *valid for* copper pipe and steel pipe *and range of pipe diameter from* Ø 89 mm to Ø 130 mm *wall thickness from 2 mm to 4 mm.*

Steel pipe wall thickness can be increased up to 14,2 mm.

** Note: On the base of EN 1366-3, paragraph E.1.5.2, test results of copper pipe* Ø 89 x 2 mm is *valid for steel pipes* Ø 100 x 2,5 mm and Ø 130 x 4 mm.

Plastic pipes: PVC-U
Pipe diameter and pipe wall thickness

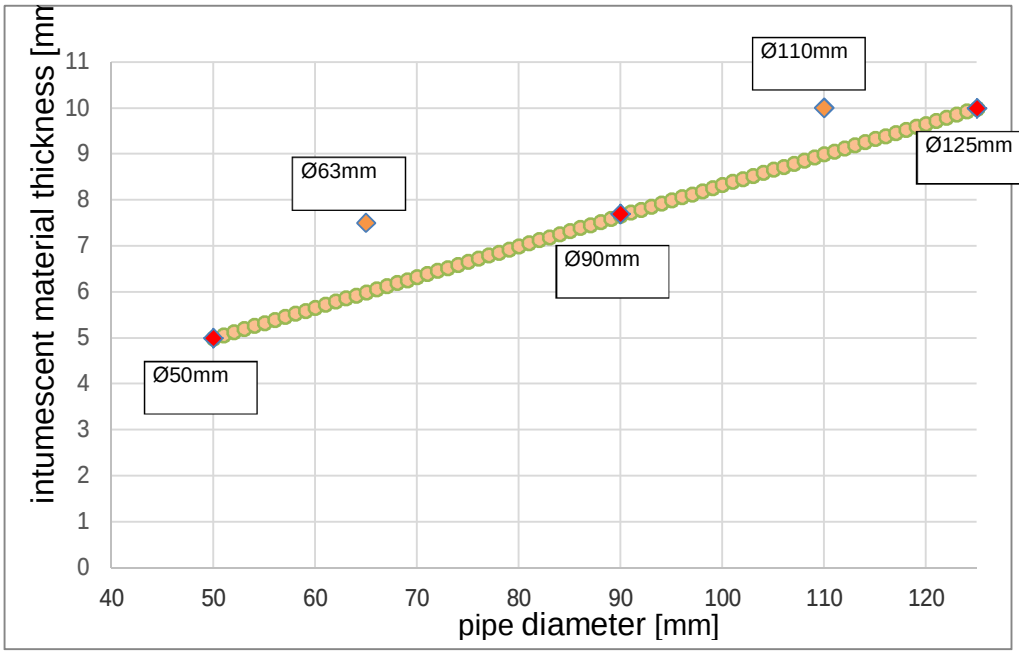
Penetration sealing: **PS collar**

Fire resistance class of PVC-U pipes penetration seal made of PS collar and Polylack Elastic in the corners. For the test was selected (from sponsor intended application to pipes Ø 50, Ø 63, Ø 90, Ø 110, Ø 125) following pipes Ø 50 x 1,8 mm, Ø 50 x 3,7 mm, Ø 125 x 3,7 mm and Ø 125 x 7,4 mm.

Service		PS collar		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm) / collar diameter (mm)**	**Intumescent material thickness (mm)**	
0 - 50	1,8 – 3,7	30 / 50	5	**EI 120-U/U**
50 - 63	2,1 – 4,3	30/ 63	7,5	
63 - 90	2,8 – 5,6	30 / 90	7,7	
90 - 110	3,3 – 6,6	30 / 110	10	
110 - 125	3,7 – 7,4	30 / 125	10	

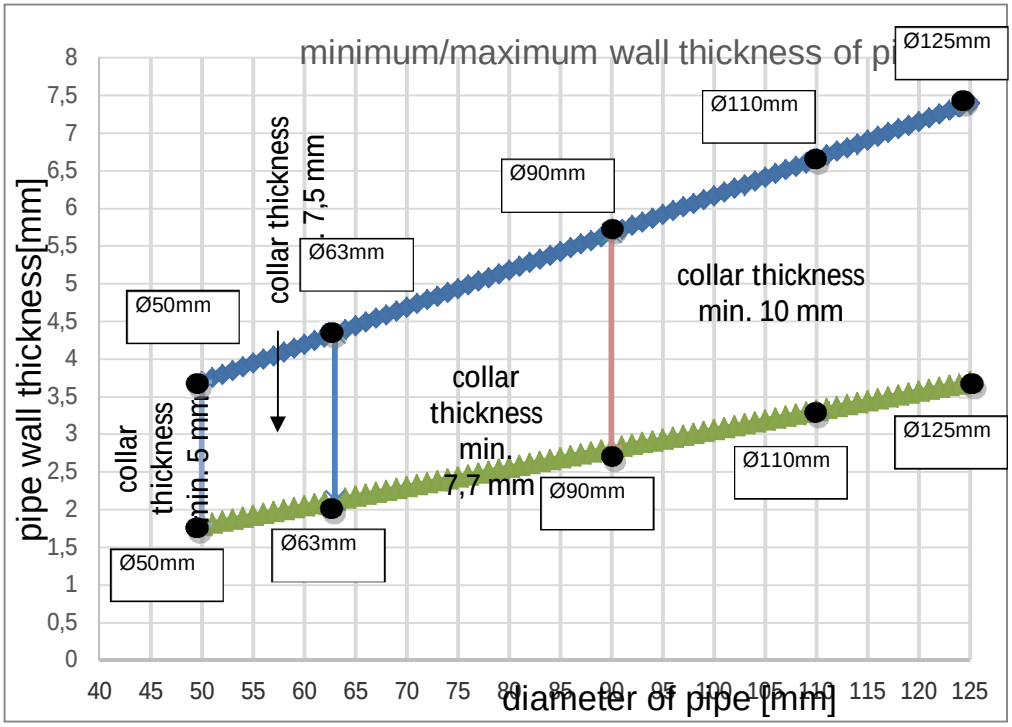
Selection of sizes of pipe closure devices valid for PS collar and PS 25 wrap:

Graph No. 4



Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 5



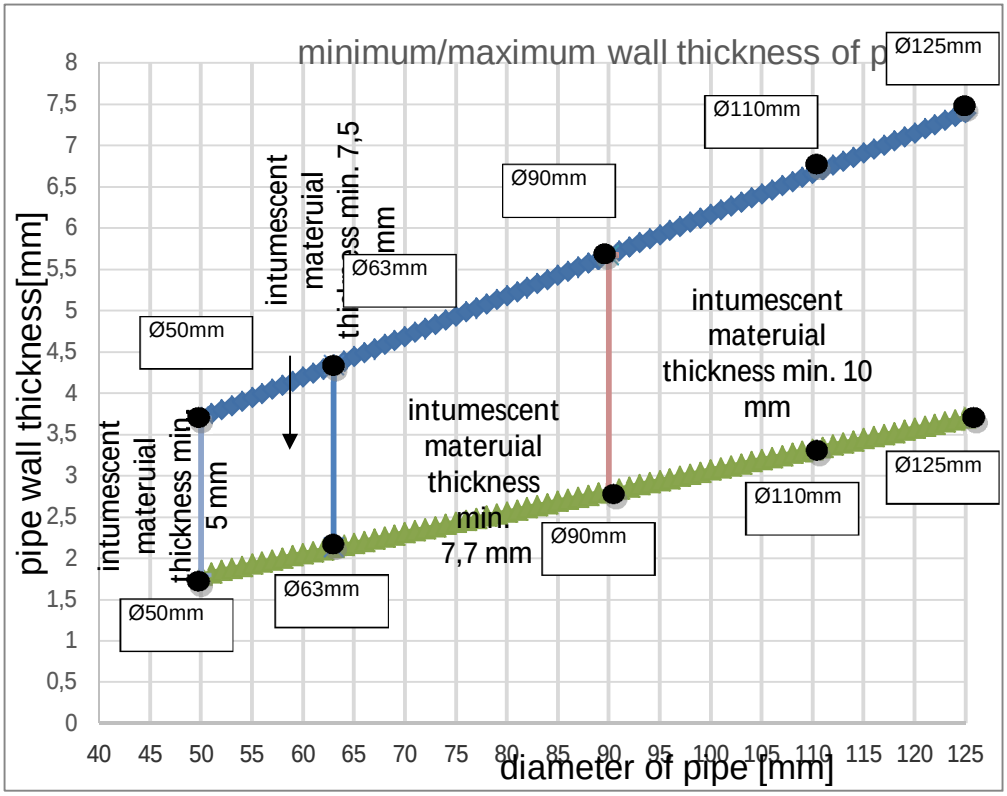
Penetration sealing: **PS 25 wrap**

Fire resistance class of PVC-U pipes penetration seal made of PS 25 wrap and Polylack Elastic in the corners. For the test was selected following pipes Ø 50 x 1,8 mm, Ø 50 x 3,7 mm, Ø 125 x 3,7 mm and Ø 125 x 7,4 mm.

Service		PS 25 wrap		Fire resistance class
Pipe diameter (mm)	Pipe wall Thickness (mm)	Intumescent material width (mm)	Intumescent material thickness (mm)	
0 - 50	1,8 – 3,7	60	5	EI 120-U/U
50 - 63	2,1 – 4,3	60	7,5	
63 - 90	2,7 – 5,5	60	7,7	
90 - 110	3,3 – 6,6	60	10	
110 - 125	3,7 – 7,4	60	10	

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 6



Plastic pipes: PE-HD

Pipe diameter and pipe wall thickness

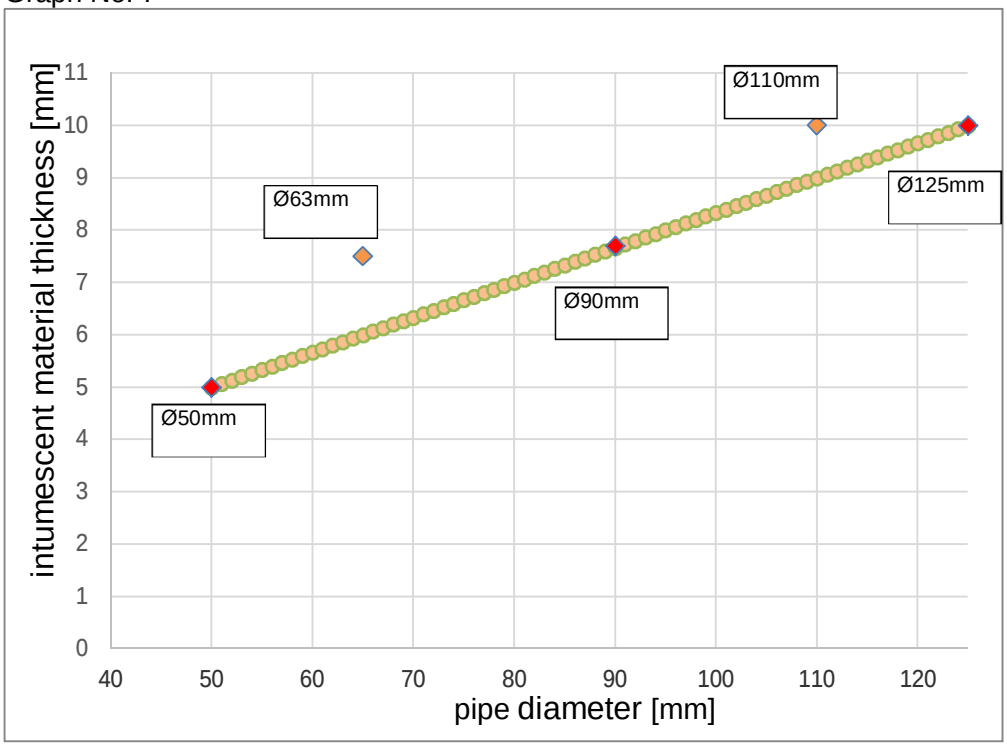
Penetration sealing: **PS 25 wrap**

Fire resistance class of PE-HD pipes penetration seal made of PS 25 wrap and Polylack Elastic in the corners. For the test was selected following pipes Ø 50 x 3 mm, Ø 50 x 4,6 mm, Ø 125 x 4 mm and Ø 125 x 11,4 mm.

Service		PS 25 wrap		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm)**	**Intumescent material thickness (mm)**	
0 - 50	3 - 4	60	5	**EI 120-U/U**
50 - 63	3,2 – 5,2	60	7,5	
63 - 90	3,7 – 7,6	60	7,7	
90 - 110	4,2 – 9,9	60	10	
110 - 125	4,6 – 11,4	60	10	

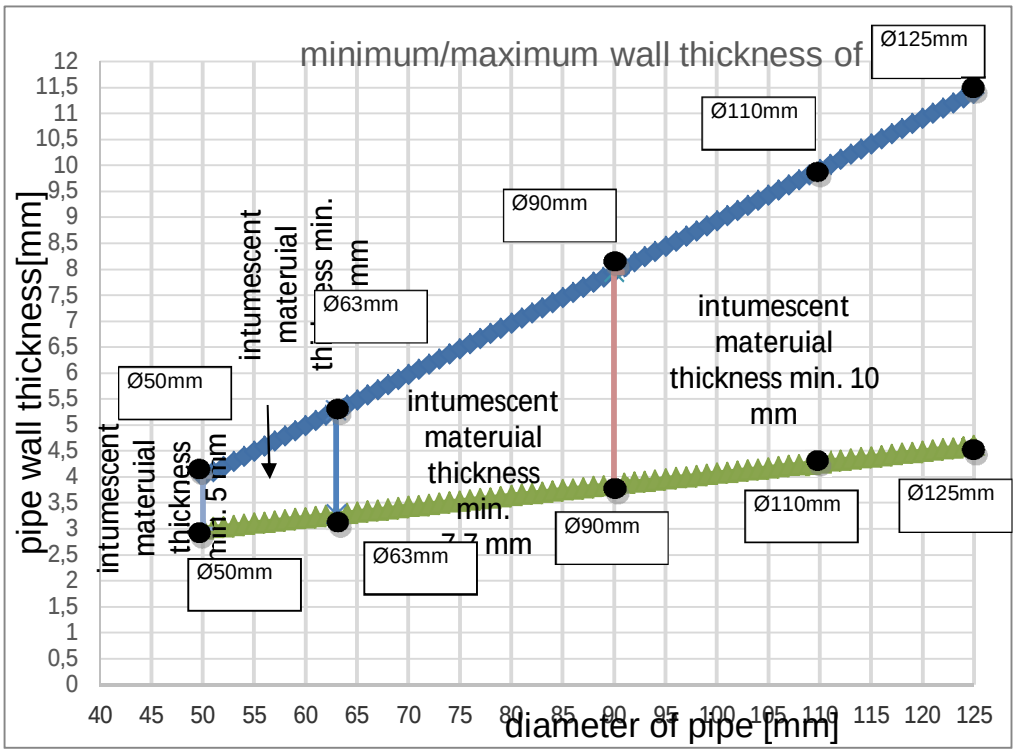
Selection of sizes of pipe closure devices:

Graph No. 7



Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 8



Plastic pipes: PP-R
Pipe diameter and pipe wall thickness

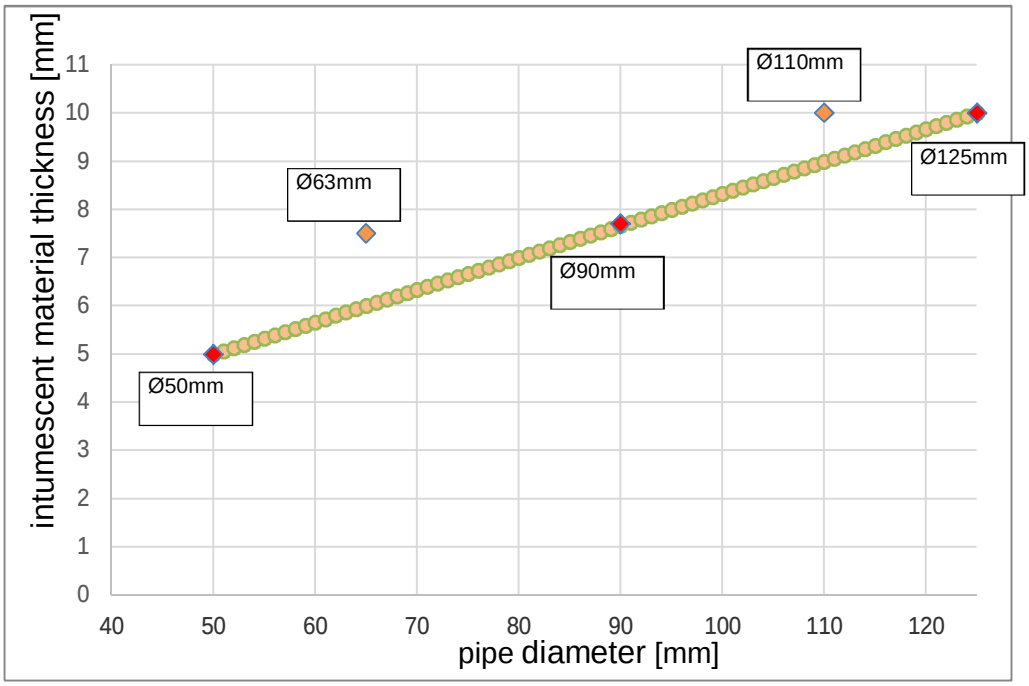
Penetration sealing: **PS collar**

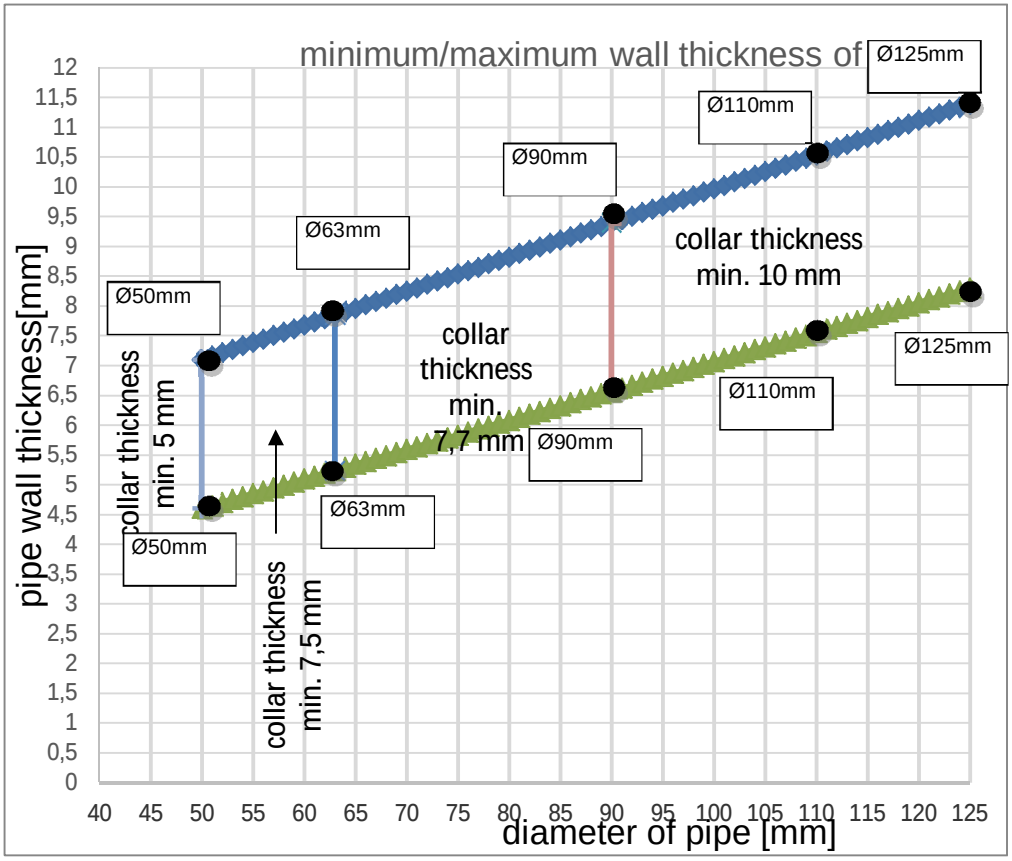
Fire resistance class of PP-R pipes penetration seal made of PS collar and Polylack Elastic in the corners. For the test was selected (from sponsor intended application to pipes Ø 50, Ø 63, Ø 90, Ø 110, Ø 125) following pipes Ø 50 x 4,6 mm, Ø 50 x 8,3 mm, Ø 125 x 7,1 mm and Ø 125 x 11,4 mm.

Service		PS collar		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm) / collar diameter (mm)**	**Intumescent material thickness (mm)**	
0 - 50	4,6 – 7,1	30 / 50	5	**E 120-U/U, EI 90-U/U**
50 - 63	5,2 – 7,8	30/ 63	7,5	
63 - 90	6,5 – 9,3	30 / 90	7,7	
90 - 110	7,5 – 10,5	30 / 110	10	
110 - 125	8,3 – 11,4	30 / 125	10	

Selection of sizes of pipe closure devices:

Graph No. 9



	Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter: Graph No. 10 
Seal size and distances	The test results are valid for any penetration seal size (in linear dimensions) equal to or smaller than that tested (2000 x 1200) mm, provided the total amount of cross sections of the services does not exceed 60% of the penetration area, the working clearances are not smaller than minimum working clearances used in the test. The minimum working clearances between the different service types (a_1 to a_6) and the services and the seal edge (b_1 to b_5) used in the test are given in accordance with clause F.5.2.3 of EN 1366-3. The minimum working clearances between the different service: **Type of service** / **Minimum working clearance [mm]** a_1 / 20 a_2 / 30 a_3 / 20 a_4 / 0 a_5 / 130 a_6 / 20

<table>
<tr><td></td><td>The minimum working clearances between the services and the seal edge:

<table>
<tr><th>Type of service</th><th>Minimum working clearance [mm]</th></tr>
<tr><td>b_1</td><td>25</td></tr>
<tr><td>b_2</td><td>25</td></tr>
<tr><td>b_3</td><td>190</td></tr>
<tr><td>b_4</td><td>25</td></tr>
<tr><td>b_5</td><td>25</td></tr>
</table>

Note: * the cable tray was not installed in the mixed penetration seal.

The minimum working clearances between the different service, services and the seal edge (a_1 to a_5) used in the test are given in accordance EN 1366-3, figure A.1.

The minimum working clearances between the different service, services and the seal edge:

<table>
<tr><th>Type of service</th><th>Minimum working clearance [mm]</th></tr>
<tr><td>a_1</td><td>20</td></tr>
<tr><td>a_2</td><td>20</td></tr>
<tr><td>a_3</td><td>50</td></tr>
<tr><td>a_4</td><td>40</td></tr>
<tr><td>a_5</td><td>160</td></tr>
</table>

The tested standard configuration for cable penetration system cover all cable types currently and commonly used in building practice in Europe.</td></tr>
<tr><td>Service</td><td>Acc. paragraph 2.2. No changes are allowed.</td></tr>
<tr><td>Pipe end configuration</td><td>Metal pipes end configuration - results are valid for pipe end conditions: C/U, U/C and C/C.

Plastic pipes end configuration - for specimens (No.: 2/P7, 6/P15, 9/P4, 10/P21, 13/P11, 17/P3, 18/P17, 19/P16, 20/P14, 21/P5, 25/P19, 27/P6, 28/P10, 31/P22, 37/P18, 41/P2, 14/P1, 5/P20, 57/P23, 7/P13, 8/P9, P32, 58/24, 59/25, 44/P12) results are valid for pipe end conditions U/U, C/U, U/C and C/C.

Plastic pipes end configuration - for specimens (No.: 24/G2, 36/G1) results are valid for pipe end conditions U/C and C/C.</td></tr>
</table>

Mixed penetration seal installed in floor

Standard mixed module version A according to EN 1366-3, figure F. 1A. installed in floor is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 120

Standard configuration for cable penetration systems according to EN 1366-3, figure A.1. installed in floor is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 120

Large mixed penetration seal installed in floor is classified according to the following combinations of performance parameters and classes as appropriate.

Fire resistance classification:
E 120 / EI 120*

Note: * plastic pipes No. 13/P11 and 25/P19 were not included in the evaluation.

Fire resistance classification for individual services from Test [1] and Test [2] according following table:

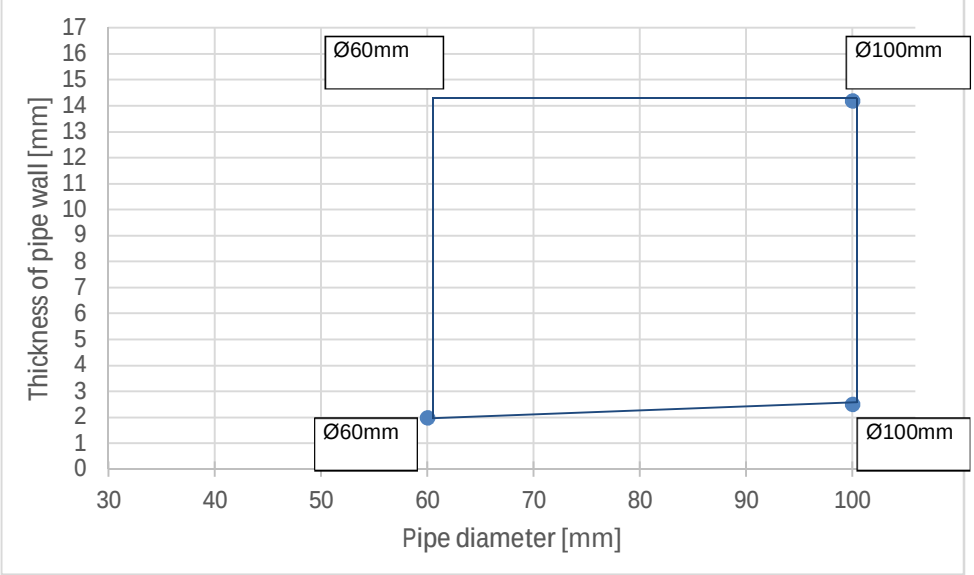
Service	Type of service	Fire resistance classification
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 90 / EI 90**
2xE	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	**E 90 / EI 90**
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	**E 90 / EI 90**
-	Perforated cable tray: 500x1,5 mm	**E 90 / EI 90**
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	**E 90 / EI 90**
1/Cu2	Copper pipe D=28 x 1 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
2/P7	Plastic pipe PE-HD D= 125 x 4 mm	**E 90-U/U, EI 90-U/U**
3/S9	Steel pipe D=100 x 2,5 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 90-C/U, EI 90-C/U**

Service	Type of service	Fire resistance classification
4/Cu6	Copper pipe D=28 x 1 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
5/P20	Plastic pipe PE HD D= 125 x 11,4 mm	**E 90-U/U, EI 90-U/U**
6/P15	Plastic pipe PE HD 50 x 3 mm	**E 90-U/U, EI 90-U/U**
10/P21	Geberit Silent 20 dB D=56 x 3,2 mm	**E 90-U/U, EI 90-U/U**
20/P14	Plastic pipe PVC-U 50 x 3,7 mm	**E 90-U/U, EI 90-U/U**
21/P5	Plastic pipe PE-HD D= 50 x 3 mm	**E 90-U/U, EI 90-U/U**
27/P6	Plastic pipe PE-HD D= 50 x 4,6 mm	**E 90-U/U, EI 90-U/U**
29/S2	Steel pipe D=60 x 2 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
32/S4	Steel pipe D=60 x 2 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
33/S7	Steel pipe D=100 x 2,5 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
34/S5	Steel pipe D=100 x 2,5 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 90-C/U, EI 90-C/U**
37/P18	Plastic pipe PVC-U D= 125 x 7,4 mm	**E 90-U/U, EI 90-U/U**
39/S10	Steel pipe D=130 x 4 mm with non-combustible stone wool insulation 30 mm, pipe insulation LI 450 mm	**E 90-C/U, EI 90-C/U**
41/P2	Plastic pipe PVC-U D= 50 x 3,7 mm	**E 90-U/U, EI 90-U/U**
Cables for standard penetration:		
-	Cable ladder: 300x1,25 mm	**E 120 / EI 120**
D1	Cable: NYCWY 4x185 SM/95 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
2 x E	Cable: NYY-O 1x185RM Cable ladder: 300x1,25 mm	**E 120 / EI 120**
D2	Cable: H07RN-F 4G185 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
-	Cable ladder: 200x1,0 mm	**E 120 / EI 120**
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
-	Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A2	Cable: H07RN-F5G1,5 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A3	Cable: N2XH-J 5x1,5 RE 10 pcs in bundle Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**

Service	Type of service	Fire resistance classification
2 x B	Cable: NYY-O 1x95RM Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C1	Cable: NYCWY 4x95 SM/50 Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C2	Cable: H07RN-F 4G95 Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
C3	Cable: N2XH-J 4x95 SM Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
-	Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G1	Cable: H07V-R 1x95 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
H	2 pcs 16 x 1 mm steel pipe	**E 120 / EI 120**
	1 pc 16 x 0,5 copper pipe	**E 120 / EI 120**
I	3 pcs 16 x 1 mm plastic pipe	**E 120 / EI 120**
Cables for mixed penetration:		
-	Cable ladder: 200x1,0 mm	**E 120 / EI 120**
D3	Cable: N2XH-J 4x185 SM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
2 x E	Cable: NYY-O 1x185RM Cable ladder: 200x1,0 mm	**E 120 / EI 120**
-	Cable ladder: 300x1,25 mm	**E 120 / EI 120**
C1	Cable: NYCWY 4x95 SM/50 Cable ladder: 300x1,25 mm	**E 120 / EI 120**
2 x B	Cable: NYY-O 1x95RM Cable ladder: 300x1,25 mm	**E 120 / EI 120**
H	1 pc 16 x 0,5 mm copper pipe	**E 120 / EI 120**
I	1 pc 16 x 1 mm plastic pipe	**E 120 / EI 120**
F	Bundle of telecommunication cables, J-Y(St)Y 20 x 2 x 0,6 mm, D=100 mm Cable ladder: 300x1,25 mm	**E 120 / EI 120**
-	Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
G2	Cable: H07V-R 1x185 Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
A1	Cable: NYY-J 5x1,5 RE 10 pcs in bundle Non perforated cable tray: 500x1,5 mm	**E 120 / EI 120**

Service	Type of service	Fire resistance classification
-	Perforated cable tray: 500x1,5 mm	**E 120 / EI 120**
46/S8	Steel pipe D=100x2,5 mm with combustible insulation K-Flex 40 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
9/P4	Plastic pipe PVC-U D= 125x4,8 mm	**E 120-U/U, EI 120-U/U**
31/P22	Geberit Silent 20 dB D= 110x6 mm	**E 120-U/U, EI 120-U/U**
14/P1	Plastic pipe PVC-U D= 50x1,8 mm	**E 120-U/U, EI 120-U/U**
8/P9	Plastic pipe PP-R D= 50x4,6 mm	**E 120-U/U, EI 120-U/U**
26/S1	Steel pipe D=60x2 mm with combustible insulation Armaflex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
24/G2	Plastic pipe Geberit Mepla D= 63x6 mm with non-combustible stone wool insulation 20 mm, pipe insulation LI 350 mm	**E 120-U/C, EI 120-U/C**
19/P16	Plastic pipe PE HD D=50x4,6 mm	**E 120-U/U, EI 120-U/U**
7P13	Plastic pipe PVC-U D=50x1,8 mm	**E 120-U/U, EI 120-U/U**
28/P10	Plastic pipe PP-R D= 50x8,3 mm	**E 120-U/U, EI 120-U/U**
P33	Plastic pipe three-layer soundproof PP D= 125x3,9 mm	**E 120-U/U, EI 120-U/U**
16/S3	Steel pipe D= 60x2 mm with combustible insulation K-Flex 13 mm, pipe insulation CS	**E 120-C/U, EI 120-C/U**
17/P3	Plastic pipe PVC-U D= 125x3,7 mm	**E 120-U/U, EI 120-U/U**
18/P17	Plastic pipe PVC-U 125x3,7 mm	**E 120-U/U, EI 120-U/U**
38/P8	Plastic pipe PE-HD D= 125x11,4 mm	**E 120-U/U, EI 120-U/U**
P32	Plastic pipe three-layer soundproof PP D= 40x1,8 mm	**E 120-U/U, EI 120-U/U**
36/G1	Plastic pipe Geberit Mepla D= 32x3 mm with non-com-bustible stone wool insula-tion 20 mm, pipe insulation LI 350 mm	**E 120-U/C, EI 120-U/C**
44/P12	Plastic pipe PP-R D= 125x11,4 mm	**E 120-U/U, EI 120-U/U**
13/P11	Plastic pipe PP-R D= 125x7,1 mm	**E 90-U/U, EI 90-U/U**
25/P19	Plastic pipe PE-HD D= 125x4 mm	**E 90-U/U, EI 90-U/U**
11/S6	Steel pipe D=100x2,5 mm with combustible insulation Armaflex 40 mm, pipe insulation CS	**E 120-C/U, EI 90-C/U**

This classification is valid according to EN 1366-3: 2009 for the following end use applications:

Supporting construction	Test results obtained with rigid aerated concrete floor constructions, thickness 150 mm and bulk density 620 kg/m^3 may be applied to concrete or masonry separating elements of a thickness and density equal to or greater than that of the supporting construction used in the test. This rule does not apply to pipe closure devices positioned within the supporting construction in case of higher thickness of the supporting construction unless the length of the seal is increased by an equal amount and the distance from the surface of the supporting construction remains the same on both sides.
Steel pipes: Pipe diameter and pipe wall thickness	Penetration sealing: **PS Bandage:** Steel pipe: Ø 60 x 2 mm – two layers from both sides of PS Bandage (2 x 125) mm with continued K-Flex combustible insulation 40 mm and Polylack Elastic in the corners. Ø 100 x 2,5 mm – two layers from both sides of PS Bandage (2 x 125) mm with continued K-Flex combustible insulation 40 mm and Polylack Elastic in the corners. Ø 60 x 2 mm – one layer from both sides of PS Bandage (2 x 125) mm with continued K-Flex combustible insulation 13 mm and Polylack Elastic in the corners. Ø 100 x 2,5 mm – one layer from both sides of PS Bandage (2 x 125) mm with continued K-Flex combustible insulation 13 mm and Polylack Elastic in the corners. On the base of test result of steel pipes Ø 60 x 2 mm and Ø 100 x 2,5 mm, the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with continued **K-Flex combustible insulation** and Polylack Elastic in the corners. Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter: Graph No. 1  *Field of application of Fire resistance classification* **E 90-C/U, EI 90-C/U** *valid for* steel pipes *and range of pipe diameter from* Ø 60 mm to Ø 100 mm *wall thickness from 2 mm to 2,5 mm.* Steel pipe wall thickness can be increased up to 14,2 mm.

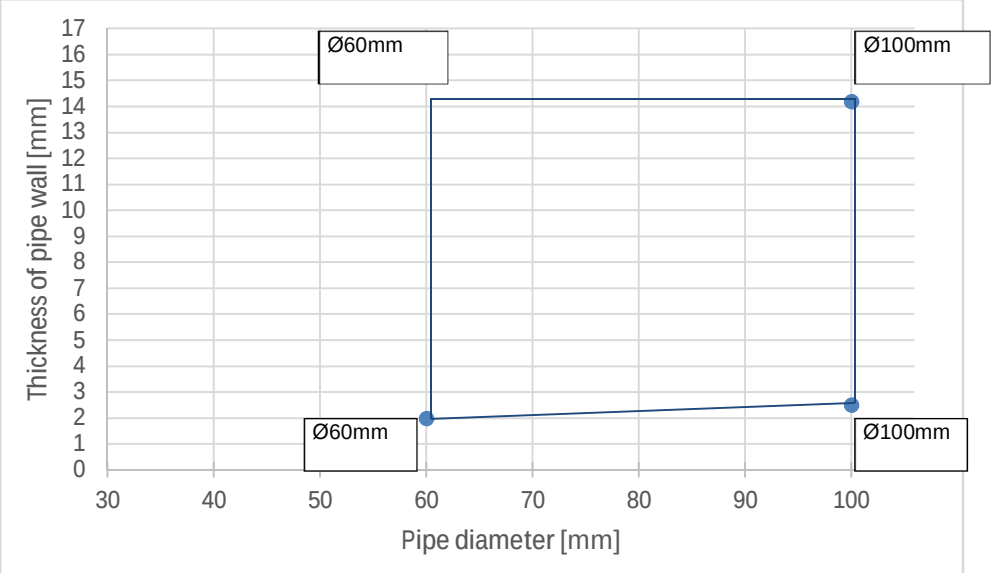
Penetration sealing: **PS Bandage:**
Steel pipe:

Ø 60 x 2 mm – one layer from both sides of PS Bandage (2 x 125) mm with continued Armaflex combustible insulation 13 mm and Polylack Elastic in the corners.
Ø 100 x 2,5 mm – one layer from both sides of PS Bandage (2 x 125) mm with continued Armaflex combustible insulation 13 mm and Polylack Elastic in the corners.
Ø 60 x 2 mm – two layers from both sides of PS Bandage (2 x 125) mm with continued Armaflex combustible insulation 40 mm and Polylack Elastic in the corners.
Ø 100 x 2,5 mm – two layers from both sides of PS Bandage (2 x 125) mm with continued Armaflex combustible insulation 40 mm and Polylack Elastic in the corners.

On the base of test result of steel pipes Ø 60 x 2 mm and Ø 100 x 2,5 mm, the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with continued **Armaflex combustible insulation** and Polylack Elastic in the corners.

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 2



Field of application of Fire resistance classification **E 90-C/U, EI 90-C/U** *valid for* steel pipes *and range of pipe diameter from* Ø 60 mm to Ø 100 mm *wall thickness from 2 mm to 2,5 mm.*

Steel pipe wall thickness can be increased up to 14,2 mm.

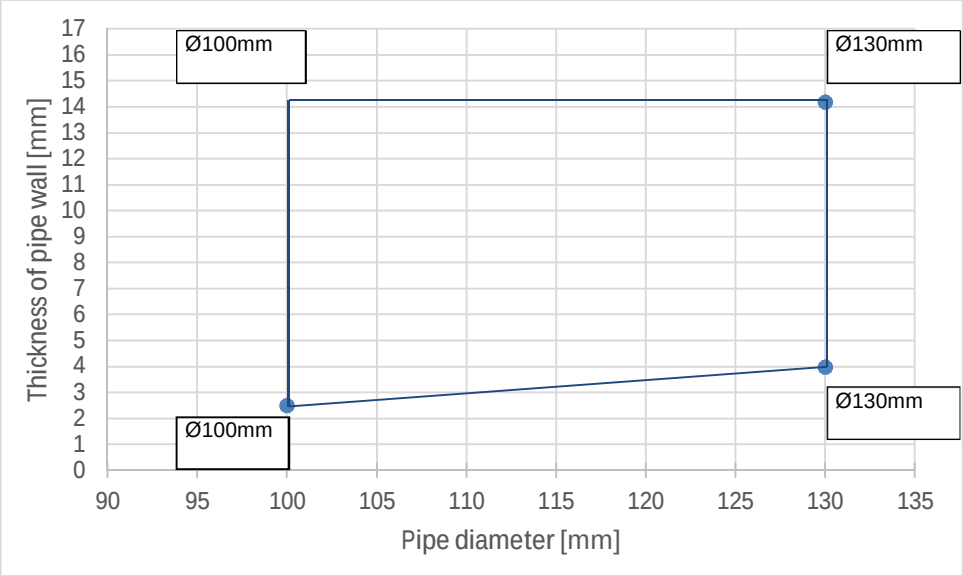
Penetration sealing: **Polylack Elastic:**
Steel pipe:
Ø 100 x 2,5 mm – Polylack Elastic and non-combustible stone wool local insulation 20 mm, LI 350 mm.
Ø 130 x 4 mm – Polylack Elastic and non-combustible stone wool local insulation 30 mm, LI 450 mm.

On the base of test result steel pipe Ø 100 x 2,5 mm and Ø 130 x 4 mm the following combination of pipes wall diameter and pipes wall thickness is valid for steel pipes fitted with continued **Non-combustible stone wool local insulation.**

Service	Polylack Elastic		Fire resistance class
Pipe diameter (mm)	**non-combustible stone wool insulation LI length (mm)**	**non-combustible stone wool insulation thickness (mm)**	
100	350	20	**EI 90-C/U**
100 - 130	450	30	

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 3



Field of application of Fire resistance classification **E 90-C/U, EI 90-C/U** *valid for* steel pipe *and range of pipe diameter from* Ø 100 mm to Ø 130 mm *wall thickness from 2,5 mm to 4 mm.*

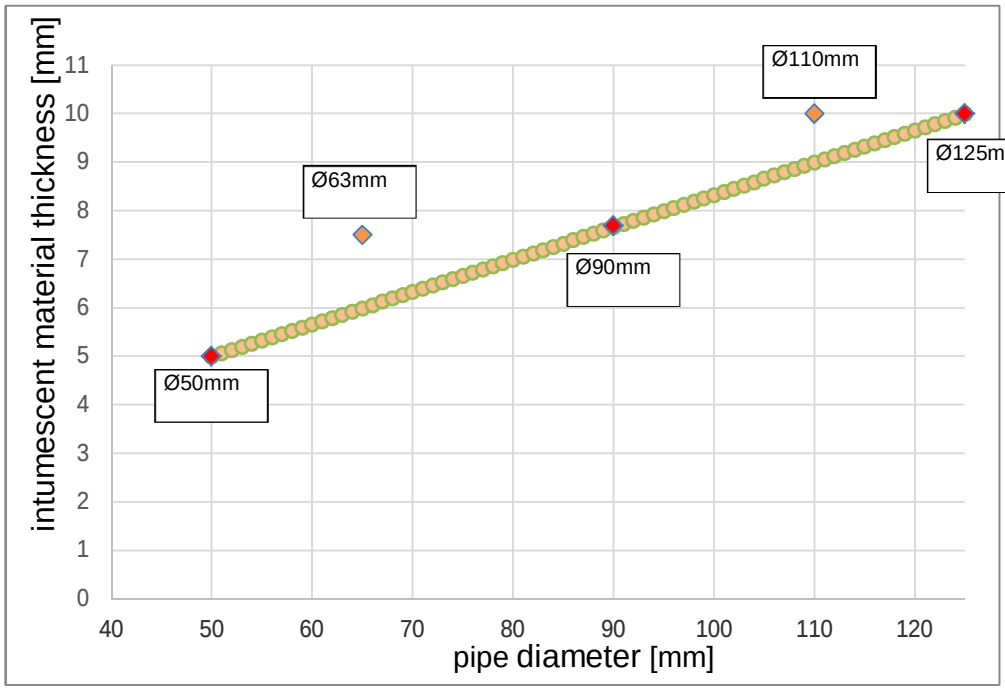
Steel pipe wall thickness can be increased up to 14,2 mm.

Plastic pipes: PVC-U Pipe diameter and pipe wall thickness	Penetration sealing: **PS collar** Fire resistance class of PVC-U pipes penetration seal made of PS collar and Polylack Elastic in the corners. For the test was selected (from sponsor intended application to pipes Ø 50, Ø 63, Ø 90, Ø 110, Ø 125) following pipes Ø 50 x 1,8 mm, Ø 50 x 3,7 mm, Ø 125 x 3,7 mm and Ø 125 x 4,8 mm.

Service		PS collar		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm) / collar diameter (mm)**	**Intumescent material thickness (mm)**	
0 - 50	1,8 – 3,7	30 / 50	5	**EI 90-U/U**
50 - 63	2,1 – 3,8	30/ 63	7,5	
63 - 90	2,8 – 4,2	30 / 90	7,7	
90 - 110	3,3 – 4,5	30 / 110	10	
110 - 125	3,7 – 4,8	30 / 125	10	

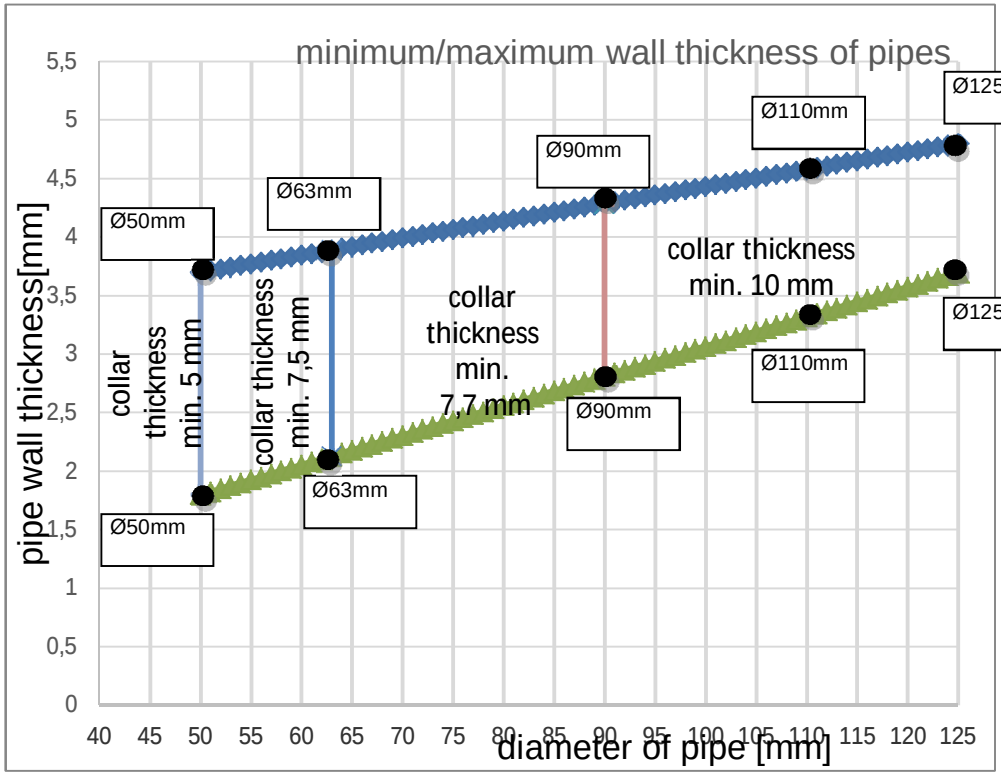
Selection of sizes of pipe closure devices valid for PS collar and PS 25 wrap:

Graph No. 4



Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 5



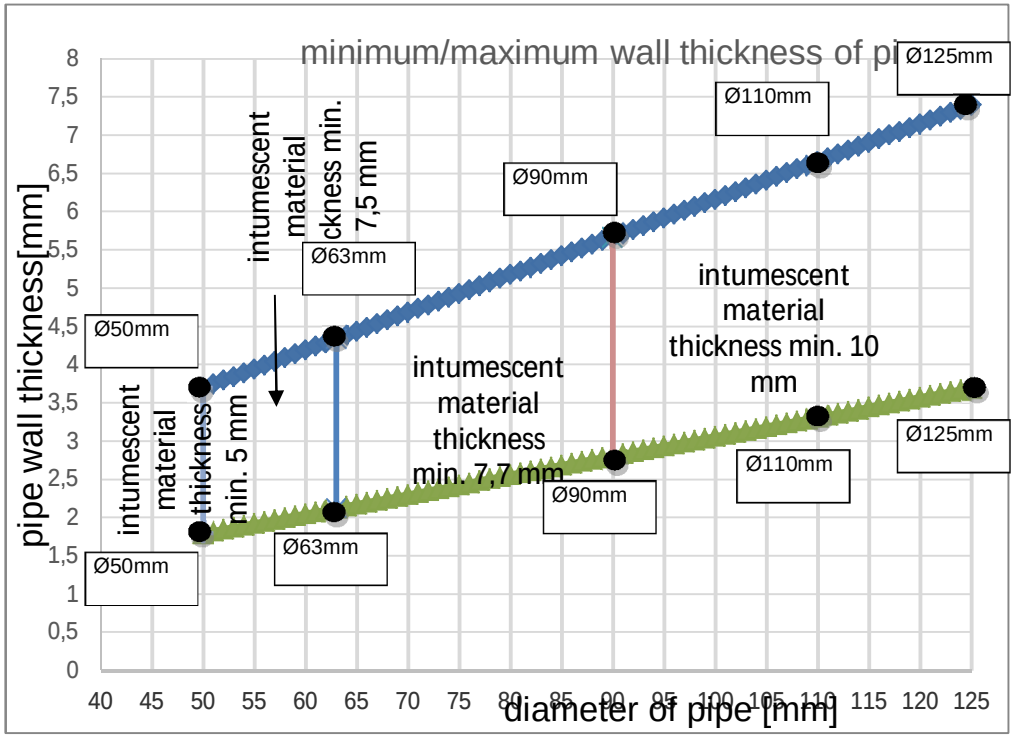
Penetration sealing: **PS 25 wrap**

Fire resistance class of PVC-U pipes penetration seal made of PS 25 wrap and Polylack Elastic in the corners. For the test was selected following pipes Ø 50 x 1,8 mm, Ø 50 x 3,7 mm, Ø 125 x 3,7 mm and Ø 125 x 7,4 mm.

Service		PS 25 wrap		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm)**	**Intumescent material thickness (mm)**	
0 - 50	1,8 – 3,7	60	5	**EI 90-U/U**
50 - 63	2,1 – 4,3	60	7,5	
63 - 90	2,8 – 5,6	60	7,7	
90 - 110	3,3 – 6,6	60	10	
110 - 125	3,7 – 7,4	60	10	

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 6



Plastic pipes: PE-HD

Pipe diameter and pipe wall thickness

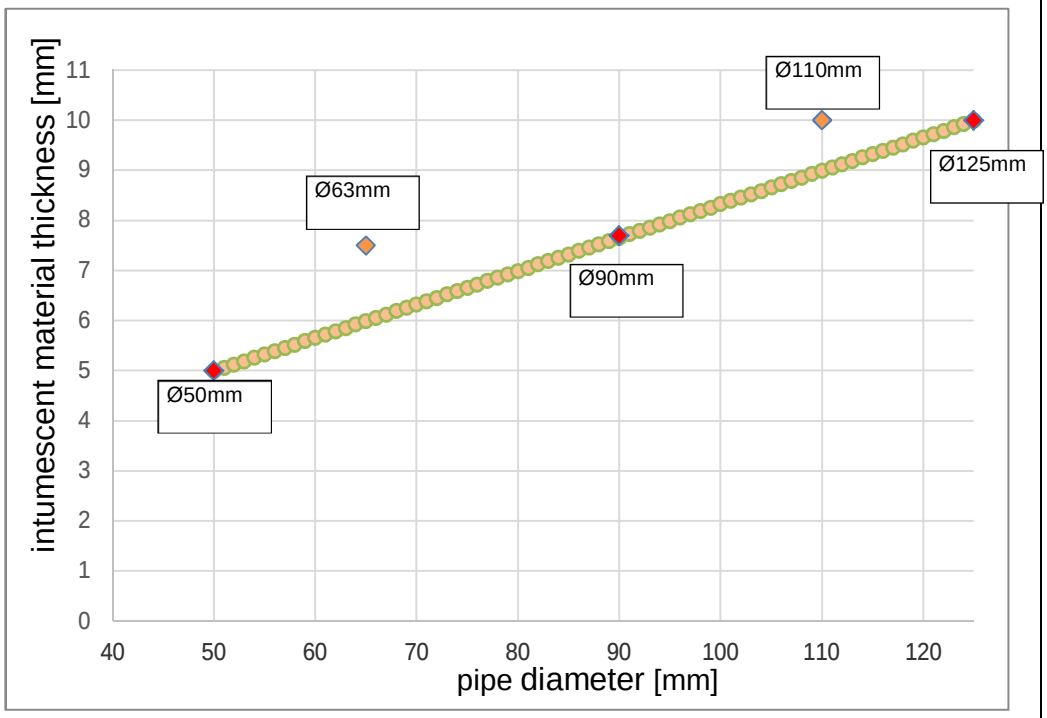
Penetration sealing: **PS collar**

Fire resistance class of PE-HD pipes penetration seal made of PS collar and Polylack Elastic in the corners. For the test was selected (from sponsor intended application to pipes Ø 50, Ø 63, Ø 90, Ø 110, Ø 125) following pipes Ø 50 x 3 mm, Ø 50 x 4,6 mm, Ø 125 x 4 mm and Ø 125 x 11,4 mm.

Service		PS collar		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm) / collar diameter (mm)**	**Intumescent material thickness (mm)**	
0 - 50	3 – 4	30 / 50	5	**EI 90-U/U**
50 - 63	3,2 – 5,2	30/ 63	7,5	
63 - 90	3,8 – 7,9	30 / 90	7,7	
90 - 110	4,2 – 9,9	30 / 110	10	
110 - 125	4,6 – 11,4	30 / 125	10	

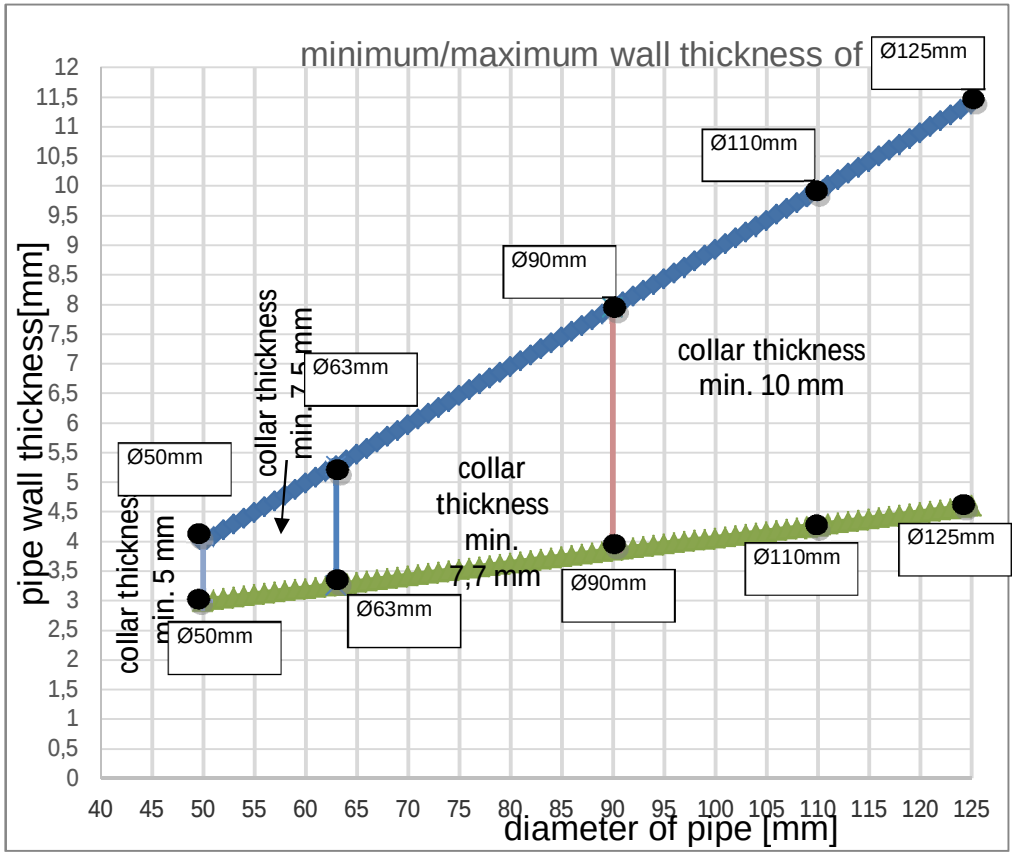
Selection of sizes of pipe closure devices valid for PS collar and PS 25 wrap:

Graph No. 7



Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No.8



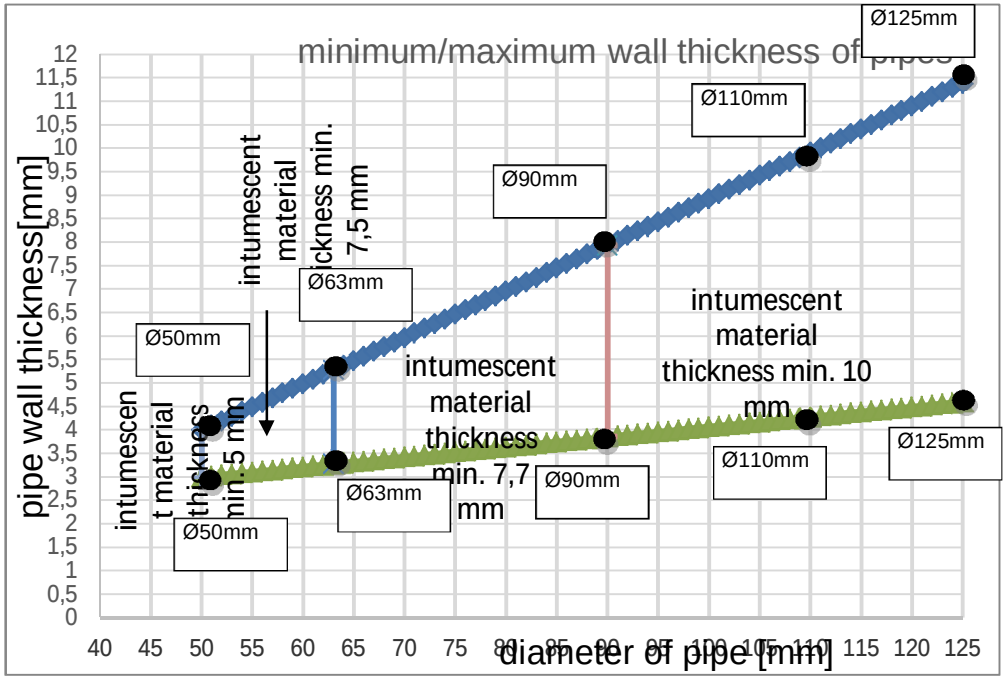
Penetration sealing: **PS 25 wrap**

Fire resistance class of PE-HD pipes penetration seal made of PS 25 wrap and Polylack Elastic in the corners. For the test was selected following pipes Ø 50 x 3 mm, Ø 50 x 4,6 mm, Ø 125 x 4 mm and Ø 125 x 11,4 mm.

Service		PS 25 wrap		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm)**	**Intumescent material thickness (mm)**	
0 - 50	3 - 4	60	5	**EI 90-U/U**
50 - 63	3,2 – 5,2	60	7,5	
63 - 90	3,8 – 7,9	60	7,7	
90 - 110	4,2 – 9,9	60	10	
110 - 125	4,6 – 11,4	60	10	

Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 9



Plastic pipes: PP-R
Pipe diameter and pipe wall thickness

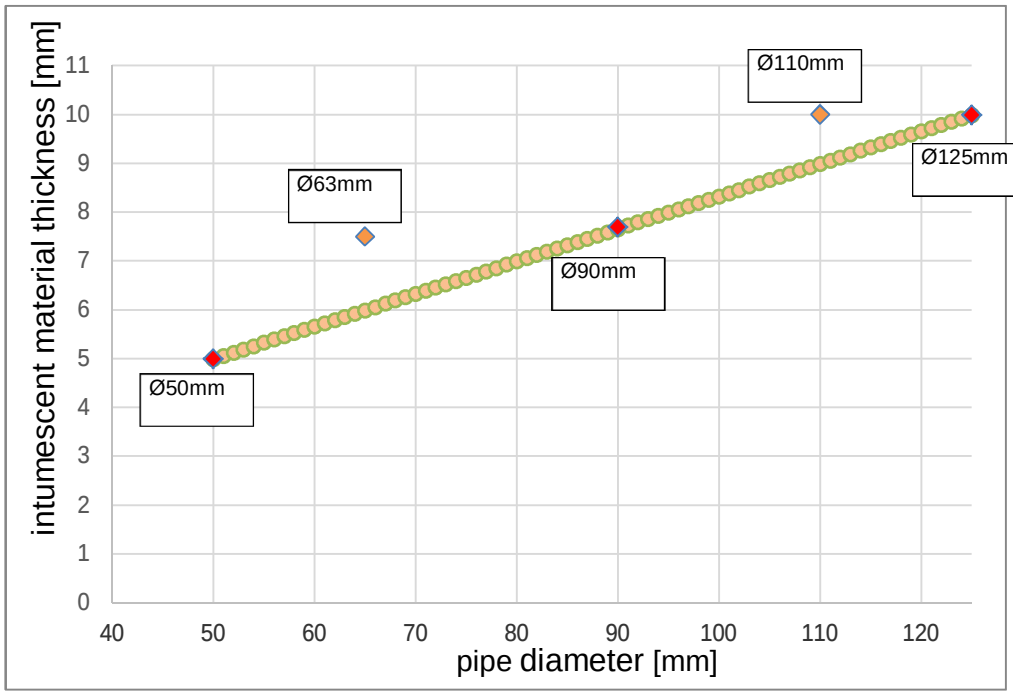
Penetration sealing: **PS collar**

Fire resistance class of PP-R pipes penetration seal made of PS collar and Polylack Elastic in the corners. For the test was selected (from sponsor intended application to pipes Ø 50, Ø 63, Ø 90, Ø 110, Ø 125) following pipes Ø 50 x 4,6 mm, Ø 50 x 8,3 mm, Ø 125 x 7,1 mm and Ø 125 x 11,4 mm.

Service		PS collar		Fire resistance class
Pipe diameter (mm)	**Pipe wall Thickness (mm)**	**Intumescent material width (mm) / collar diameter (mm)**	**Intumescent material thickness (mm)**	
0 - 50	4,6 – 7,1	30 / 50	5	**EI 90-U/U**
50 - 63	5,2 – 7,8	30/ 63	7,5	
63 - 90	6,5 – 9,3	30 / 90	7,7	
90 - 110	7,5 – 10,5	30 / 110	10	
110 - 125	8,3 – 11,4	30 / 125	10	

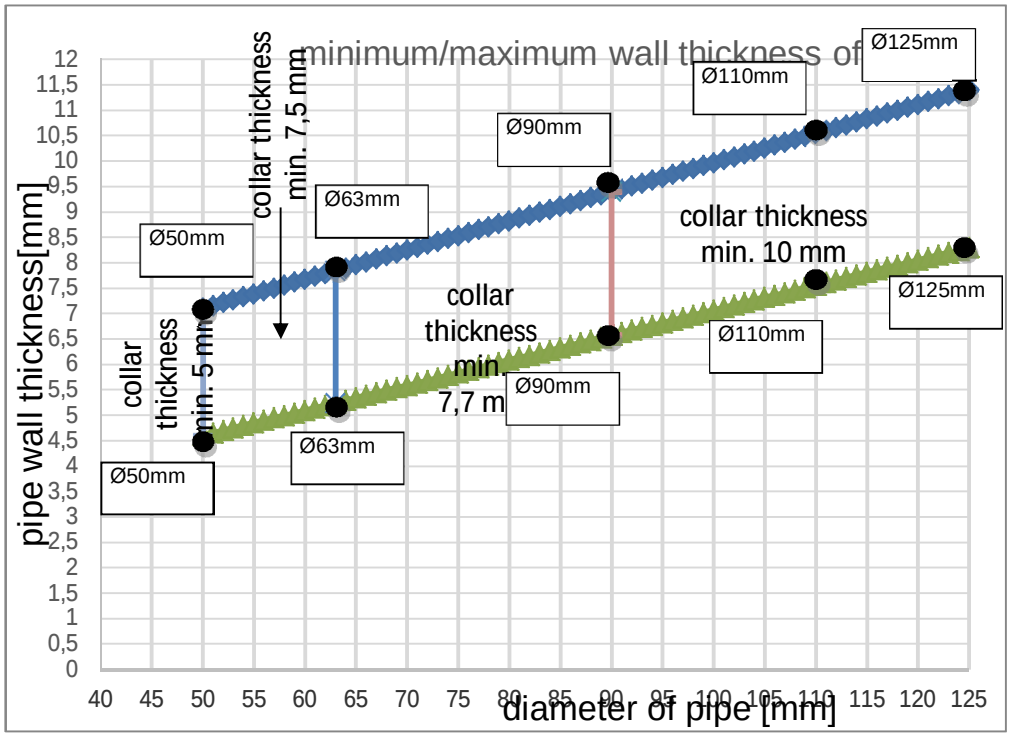
Selection of sizes of pipe closure devices valid for PS collar:

Graph No. 10



Range of pipe diameters and pipe wall thickness – selection of pipe wall thickness for appropriate pipe diameter:

Graph No. 11



<table>
<tr><td>Seal size and distances</td><td>The test results are valid for any penetration seal size (in linear dimensions) equal to or smaller than that tested (2000 x 1200) mm, provided the total amount of cross sections of the services does not exceed 60% of the penetration area, the working clearances are not smaller than minimum working clearances used in the test.
The minimum working clearances between the different service types (a_1 to a_6) and the services and the seal edge (b_1 to b_5) used in the test are given in accordance with clause F.5.2.3 of EN 1366-3.

The minimum working clearances between the different service:
<table><tr><th>Type of service</th><th>Minimum working clearance [mm]</th></tr><tr><td>a_1</td><td>20</td></tr><tr><td>a_2</td><td>40</td></tr><tr><td>a_3</td><td>20</td></tr><tr><td>a_4</td><td>0</td></tr><tr><td>a_5</td><td>40</td></tr><tr><td>a_6</td><td>20</td></tr></table>
The minimum working clearances between the services and the seal edge:
<table><tr><th>Type of service</th><th>Minimum working clearance [mm]</th></tr><tr><td>b_1</td><td>25</td></tr><tr><td>b_2</td><td>25</td></tr><tr><td>b_3</td><td>30</td></tr><tr><td>b_4</td><td>55</td></tr><tr><td>b_5</td><td>80</td></tr></table>
Note: * the cable tray was not installed in the mixed penetration seal.

The minimum working clearances between the different service, services and the seal edge (a_1 to a_5) used in the test are given in accordance EN 1366-3, figure A.1.

The minimum working clearances between the different service, services and the seal edge:
<table><tr><th>Type of service</th><th>Minimum working clearance [mm]</th></tr><tr><td>a_1</td><td>20</td></tr><tr><td>a_2</td><td>20</td></tr><tr><td>a_3</td><td>50</td></tr><tr><td>a_4</td><td>40</td></tr><tr><td>a_5</td><td>160</td></tr></table>
The tested standard configuration for cable penetration system cover all cable types currently and commonly used in building practice in Europe.</td></tr>
<tr><td>Service</td><td>Acc. paragraph 2.2. No changes are allowed.</td></tr>
<tr><td>Pipe end configuration</td><td>Metal pipes end configuration - results are valid for pipe end conditions: C/U, U/C and C/C.

Plastic pipes end configuration - for specimens (No.: 2/P7, 5/P20, 6/P15, 10/P21, 20/P14, 21/P5, 27/P6, 37/P18, 41/P2, 9/P4, 31/P22, 14/P1, 8/P9, 19/P16, 7P13, 28/P10, P33, 17/P3, 18/P17, 38/P8, P32, 44/P12, 13/P11, 25/P19) results are valid for pipe end conditions U/U, C/U, U/C and C/C.

Plastic pipes end configuration - for specimens (No.: 24/G2, 36/G1) results are valid for pipe end conditions U/C and C/C.</td></tr>
</table>