BUDAPLAST

PRODUCT GUIDE

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GLASS-FIBRE REINFORCED POLYESTER (GRP) PIPE SYSTEMS

with a wide range of profiles and sizes for waste water disposal and other industrial applications


Bonex
KAG 57
Bonex Építőipari Kft.
Bonex
Kitakarás nélküli
kiszmélyítés

ABOUT THE COMPANY, APPLICATION OF THE PRODUCT

Production of GRP pipes in Hungary began in the second half of the 1970's. According to the experiences of production, reconstruction and operation of pipelines in the past three decades the products known under the trade name Budaplast play a determining roll in the construction and reconstruction of public pipelines.

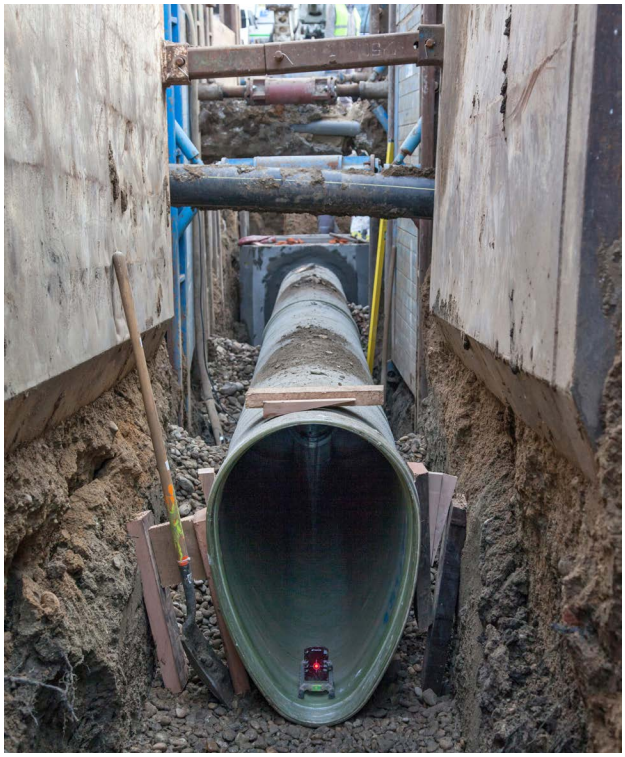
The plant of Budaplast Kft. in Rózsaszentmárton owned by Bonex Építőipari Kft. produces a wide range of GRP products, i.e. various pipes, fittings, tanks, shafts and other types of products. The most current product is the egg-shaped GRP pipe, which is the most important material of the reconstruction of united sewer systems in cities.

The pipes which are of lightweight and have excellent mechanic characteristics and corrosion resistance, are mainly applied for the so-called trenchless (NO-DIG) reconstruction of sewers, using a quick reconstruction method which barely disturbs continuous waste water diversion and the traffic.

Pipelining by GRP pipes of egg-shape

Besides the NO-DIG pipelining method using pipe insertion one by one, the various GRP pipes and fittings are suitable also for the reconstruction or construction of public pipelines by traditional technologies using open trenches.

Besides the diversion of municipal waste water the renconstruction of industrial and technological pipelines mean very important fields of application as well.



Construction of pipelines in open trenches by GRP pipes

RAW MATERIALS, PROCEDURE OF PRODUCTION

The sand-filled, glass-fibre reinforced polyester pipes belong to the group of so-called composite plastics, they will be produced of the combination of different row materials (e.g. polyester resin, glass-fibre materials, silica sand), by filament winding technology.

The applied materials will be chosen with the aim to achieve the required characteristics and quality of the product.

Polyester resin:

The binding material of the product guarantees structural integrity, watertightness and chemical resistance of the components.

Materials containing glass:

Characteristics of strength and mechanical properties will be determined mainly by continuously winded glass-fibres, chopped glass-fibres and glass veil. These are:

- ECR glass-fibre materials,
- C glass-fibre materials.

Silica sand:

Mixed with polyester resin it is the filling material of the pipe, it has got important role in the wall structure and the increase of the pipe stiffness.

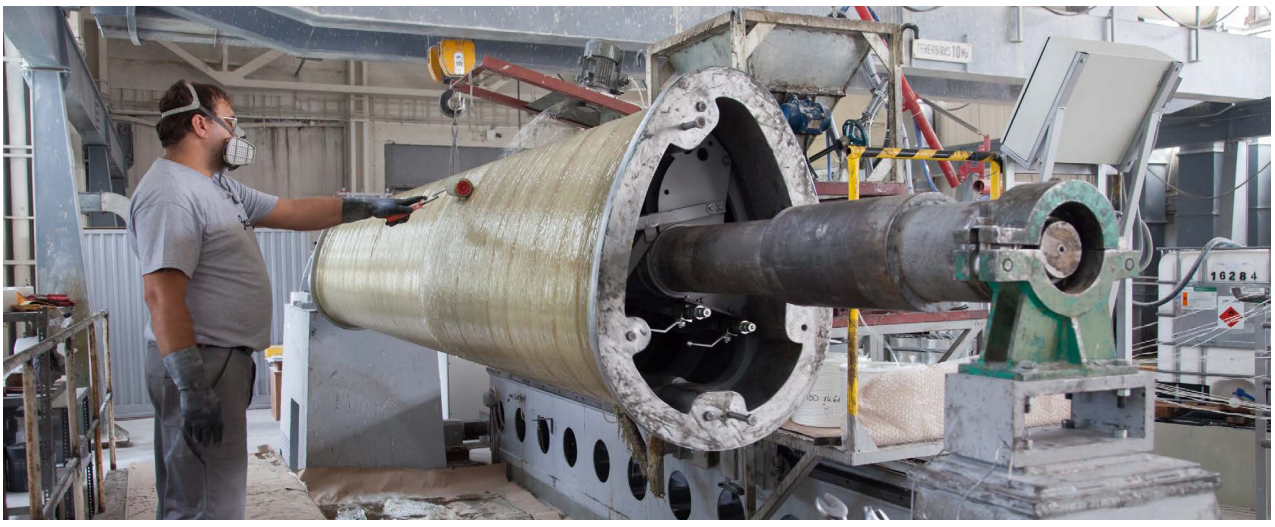
Auxiliary materials:

Further to these materials, some auxiliary materials are also needed for the production of sand-filled pipes. While processing, these (accelerator, initiator, inhibitor) are contained by the polyesther resin. Polyesther resins used by the production result in thermoreactive products, i.e. no softening or deformation are caused by heat.

Continuous filament winding

Sand coating

Unique identification number for every segment



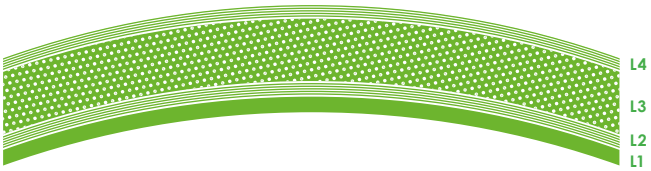
Mould for egg-shaped pipe

TYPICAL WALL STRUCTURES CONSTRUCTRED OUT OF THE RAW MATERIALS

Budaplast pipes will be produced by filament winding procedure on production moulds of profiles and sizes according to the requirements of reconstruction projects. The typical sizes of moulds have been developed on the basis of client orders during many decades, but the manufacturer is ready to widen the range of profiles according to any new and individual requirements.

The wall structure will be built up beginning from the core of the rotating mould to the outside continuously by laying on the row materials one by one. Typical lengths of shape are 1.0 m; 2.3 m; 3.0 and 6.0 meters, which means also the maximals lengths of pipe pieces.

Creating the pipe ends to be connected



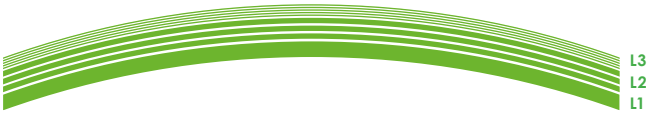
Typical structure of layers

L4 - outer reinforcing layer: a layer consisting of filament winded glass-fibres, with a sand coating outside

L3 - stiffening layer: a stiffening core consisting of resin and silica sand

L2 - inner reinforcing layer: a layer consisting of continuous filament winded glass-fibres

L1 - inner layer resistant to abrasion: a layer rich in resin with a reinforcement of glass veil and chopped glass-fibres



Structure of layers in the case of wall thickness less than 9 mm

L3 - outer reinforcing layer: a layer consisting of filament winded glass-fibres, with a sand coating outside

L2 - inner reinforcing layer: a layer consisting of continuous filament winded glass-fibres and sand

L1 - inner layer resistant to abrasion: a layer rich of resin with a reinforcement of glass veil and chopped glass-fibres

Gravity GRP pipes will be connected usually by a socket and a rubber ring. The socket will be created on the mould parallelly with the pipe production. A slot will be cut on the spigot end of the pipe at the time when the pipe is being cut to size and a rubber ring will be put on in order to guarantee watertightness.

The outer side of the pipewall will be made rough by sand, so the structural integrity of the cement mortar grouted into the annular space between the GRP pipe and the old pipe will be guaranteed.

Joint with rubber ring and socket

Laminated glue joint

Pipes being cut to size and chizelled

PRODUCT CHARACTERISTICS

ACCORDING TO THEIR GEOMETRICAL FORM

- egg-shaped pipes
- circular pipes
- segmented profiles, elliptical, oval and other types of pipe profiles
- pipe fittings and joints for the various pipe profiles

Storage

PIPE CLASSIFICATION ACCORDING TO MECHANICAL CHARACTERISTICS

NOMINAL STIFFNESS (SN) AND NOMINAL PRESSURE (PN)

SN 2500 [N/m2]	generally applied for pipelining
SN 5000 [N/m2]	medium loading, lying depth upto 3 m
SN 10000 [N/m2]	heavy loading, lying depth over 3 m or in case of small coverage under the surface

Gravity pipes will be produced with a pressure rate of PN 1.

Junction of pipes

CLASSIFICATION ACCORDING TO CHEMICAL RESISTANCE

Budaplast pipes will be produced of raw materials which meet the requirements of chemical resistance necessary for end use. The following types of resins are available:

Category	Resin type	Field of application	Joint
N	Orthophtalic acid	Neutral, lightly acidic wastewater (municipal sewage)	Rubber ring
E	Isophtalic acid	Acidic, lightly alkaline wastewater suitable for use in food industry	Rubber ring
I	ISO-NPG	High chemical resistance, high resistance to heat distortion	Rubber ring
D/A	Vinylester	Strongly acidic, alkaline wastewater	Glue joint, sometimes rubber ring
D/B	Vinylester	Strongly acidic, alkaline waste water of high temperature	Glue joint

The inner side of the pipewall is resistant to the abrasion effect of wastewaters and has excellent hydraulic properties.

PRODUCT RANGE

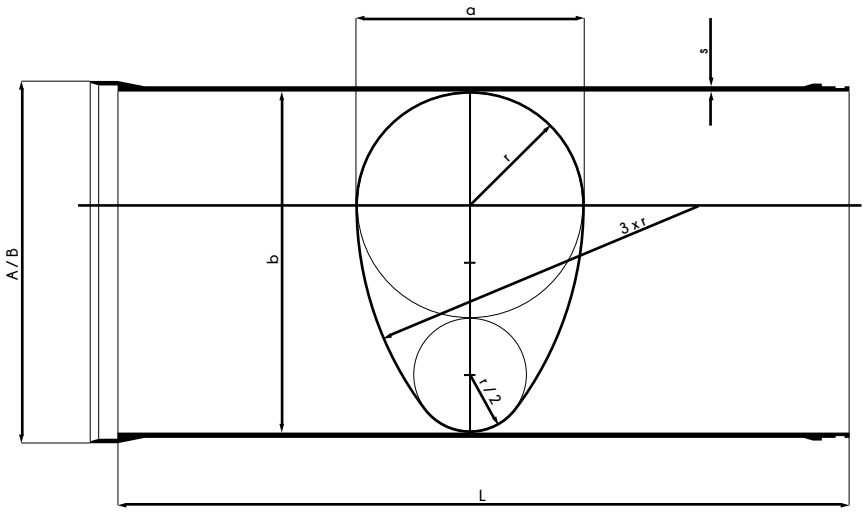
Beside special products manufactured according to individual requirements, standard egg-shaped pipes are a significant part of Budaplast's product range. Generally the pipes are 2.3 or 3.0 m long, in case of individual requirements they can be produced with a pipe length of up to 6 meters.

The filament winding procedure allows of the production of unique sizes and profiles fitting into a circle shape of max. 3.0 meters.

NO-DIG reconstruction with GRP pipes

Standard sizes of egg-shaped pipes

Pipe details			Socket details	
Nominal size (mm)	**Radius (mm)**	**Max. pipe length (mm)**	**Overall size (mm)**	
a/b	**r**	**L**	**A**	**B**
240/360	120	4600	290	410
300/450	150	4600	362	512
400/600	200	4600	480	680
500/750	250	4600	545	830
508/762	254	6000	548	842
600/900	300	4600	548	980
680/1020	340	6000	770	1110
700/1050	350	4600	790	1140
800/1200	400	3000	900	1300
900/1350	450	2300	1025	1475
1000/1500	500	2300	1135	1635
1200/1800	600	2300	1355	1955



Design theory and size specification of normal egg-shaped pipes

Pipe sizes of long drawn egg-shapes				
Pipe details			Socket details	
Nominal size (mm)	Radius (mm)	Max. pipe length (mm)	Overall size (mm)	
a/b	r	L	A	B
400/1000	200	2300	460	1060
508/1000	254	2000	582	1074
570/1200	285	3000	650	1280
700/1120	350	2300	780	1200
1406/1907	730	2000	1586	2087

Sizes of circular pipes		
Pipe details		Socket details
Nominal size (mm)	Max. pipe length (mm)	Overall size (mm)
d	L	D
200	4000	225
300	4000	355
400	4000	455
500	4000	560
600	6000	660
800	6000	870
1000	6000	1072
1250	6000	1326

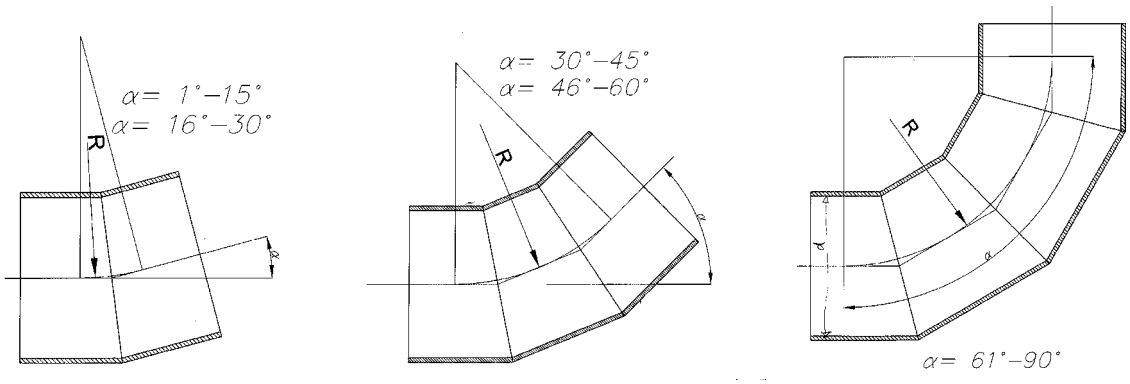
The wall thicknesses belonging to the different nominal pipe sizes, the wall structure and the pipe stiffness category will be determined by the manufacturer according to the circumstances of installation and the requirements of the client.

ADDITIONAL ELEMENTS OF THE PIPE SYSTEM

In order to guarantee a quick installation and precise connection the manufacturer offers for the pipes of various profiles additional elements in a flexible delivery program. These elements make up together with the bends, branches, saddle pieces and shafts a complete system.

PIPE BENDS

The bends will be laminated by pipe segments with an angular displacement determined by the client.



Typical bends with various angles

BRANCHES

Main pipelines and connections of large diameters will be directly connected by individually manufactured branch fittings. When required, the GRP branches can be produced with socket connection which is suitable for PVC pipes to be jointed.

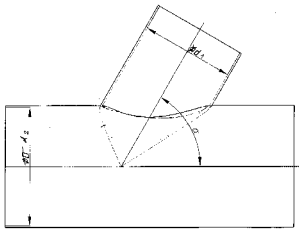
SADDLE PIECES

In case of pipelining and later connections saddle pieces guarantee an accurate connection between the main pipeline of GRP and the PVC connection pipe. The saddle pieces will be installed at the site by using adhesives and local lamination.

SHAFT ELEMENTS

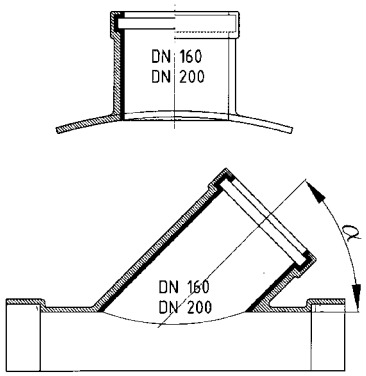
Individually produced GRP shaft elements are suitable for the reconstruction of existing shafts as well for the construction of new shafts. Structurally they can be selfcarrying or GRP shell platings reinforced by circular concreting or grouting. Budaplast shaft elements are of individual character, thanks to their size and technical parameters they are able to comply totally with the local circumstances.

BRANCH



Typical branch

SADDLE PIECES



GRP plate with PVC sockets of DN 160 and DN 200

Certificate

Standard ISO 9001:2008

Certificate Registr. No. 01 100 1524050

TÜV Rheinland Cert GmbH certifies:

Certificate Holder: **BUDAPLAST**
Vállalkozási és Kereskedelmi Kft.
Szabolcs u. 29.
H - 1134 Budapest
Central site:
H -3033 Rózsaszentmárton, Iskola utca 54.

Scope: production and assembly of glass-fibre reinforced, sand-filled sewer pipes, shafts, fittings and tanks.

An audit was performed, Report No. 1524050. Proof has been furnished that the requirements according to ISO 9001:2008 are fulfilled.
The due date for all future audits is 23-03 (dd.mm).

Validity: The certificate is valid from 2015-03-25 until 2018-03-24.

2015-03-25

TÜV Rheinland Cert GmbH
Am Grauen Stein · 51105 Köln

DAkkS Deutsche Akkreditierungsstelle D-ZM-16031-04-00

TÜVRheinland®
Precisely Right.

Certificate of TÜV Rheinland

for the compliance with the requirements of ISO 9001 : 2008

Number of certificate: 01 100 1524050

ÉMI ÉPÍTÉSÜGYI MINŐSÉGELLENŐRZŐ INNOVÁCIÓS NONPROFIT KORLÁTOLT FELELŐSSÉGŰ TÁRSASÁG
H-1113 Budapest, Diószegi út 37. Levélcím: H-1518 Budapest, Pf.: 69.
Telefon: +36 (1) 372-6100 Fax: +36 (1) 386-6794
E-mail: info@emi.hu Honlap: http://www.emi.hu

A-102/2015

NMÉ
NEMZETI MŰSZAKI ÉRTÉKELÉS

A termék megnevezése:	**BUDAPLAST ÜPE csatorna és nyomócső rendszer**
A termék tervezett felhasználási területe:	**Kommunális szennyvizek elvezetése ipari- és csapadékvíz továbbítása, feltárás nélküli (NO-DIG) csatorna felújítások, valamint hagyományos, nyílt feltárással megvalósuló közmű-rekonstrukciók és új vezetéképítések esetén**
Termékkör:	**Emberi fogyasztásra szánt vízzel nem érintkező csövek, tartályok és ezek segédanyagai**
A termék gyártója:	**BUDAPLAST Vállalkozási és Kereskedelmi Kft. 1134 Budapest, Szabolcs u. 29.**
A termék ÉMI Nonprofit Kft. szakrendi jelzete (SZRJ):	1.13.2
NMÉ érvényesség kezdete*:	**2015. 08. 01.**

Budavári Zoltán
műszaki értékelő iroda vezető

A Nemzeti Műszaki Értékelés 7 oldalt és 1 db számozott mellékletet tartalmaz.

* Az NMÉ érvényessége feltételhez kötött. Az NMÉ érvényessége az ÉMI Nonprofit Kft. honlapján (www.emi.hu) ellenőrizendő.
Ez az NMÉ felváltja az A-102/2015 számú, 2015.07.31. érvényességi kezdetű NMÉ-t.

Projektszám: É3-3181K-06283-2015

1/7 KBIA-XXI-04.2-2015.08.17_NMÉ mód

National Technical Assessment

for Budaplast GRP sewer and pressure pipe system

NMÉ: A-102/2015/ÉMI

SERVICES OF THE MANUFACTURER

In accordance with the continuous development of GRP pipe systems and widening its pruduct range, Budaplast Kft. offers its GRP elements as specific products which can be applied economically for the reconstruction or construction of various inspection, cleaning and overpumping shafts.

The manufacturer offers the following services in the frame of its customer service for all products:

- Technical consultancy for design, execution and operation
- Statical and hydraulic calculations, professional support for designers
- Consultancy in case of special ideas of clients, elaborating solutions
- Preparing technical documentation, drawing of products, individual offers, even by special production shapes
- Educations and training of building contractors
- In case of installation of GRP pipe products, local lamination tasks at the building site
- Providing information material to clients
- Support in logistics when required by customers, including storage, transportation and sale of products

Budaplast pipe systems permanently represent a very high quality. The whole procedure of production and development, as well the quality of the products are regulated and guaranteed – further to the own quality assurance department – by independent inspection and auditing institutions.

The quality management system, documents of the technical assessment of the product and its declaration of performance together with the infomation material of the manufacturer are all available at the home page of the company.

Sewer lining by oval GRP pipes

Manufacturing of a cleaning shaft for waste water

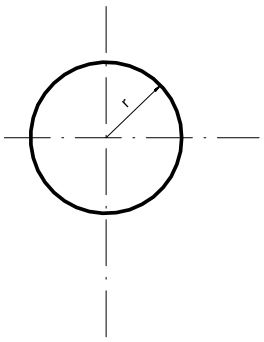
GRP products will be prepared for delivery

Production of tanks

GRP shaft for special profiles

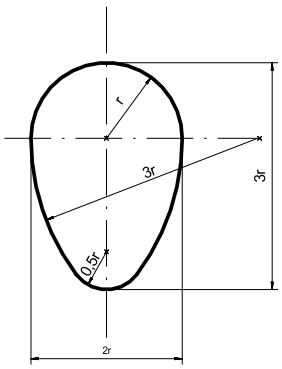
GRP PIPE PROFILES

Circular profile



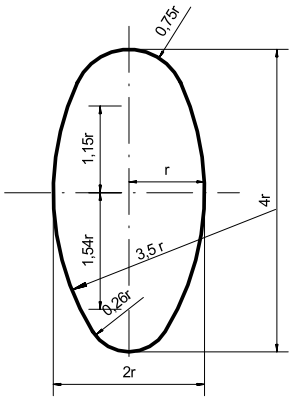
Area	3,142 r^2
Circumference	6,284 r
Hydraulic radius	0,5 r

Normal egg-shape 2:3



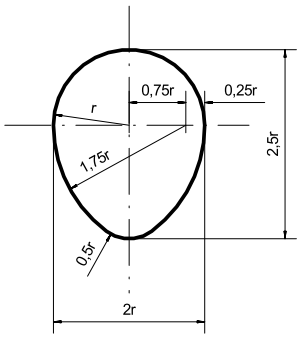
Area	4,594 r^2
Circumference	7,929 r
Hydraulic radius	0,579 r

Drawn egg-shape 2:4



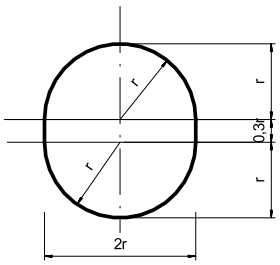
Area	6,279 r^2
Circumference	9,734 r
Hydraulic radius	0,645 r

Pressed egg-shape 2:2,5



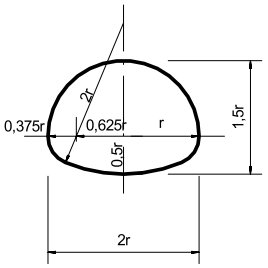
Area	3,822 r^2
Circumference	7,031 r
Hydraulic radius	0,544 r

Oval profile 2:2,3



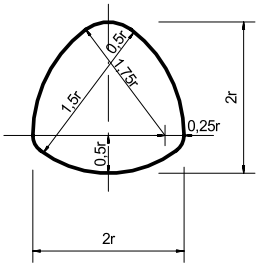
Area	3,742 r^2
Circumference	6,883 r
Hydraulic radius	0,544 r

Profile of circular segments 2:1,5



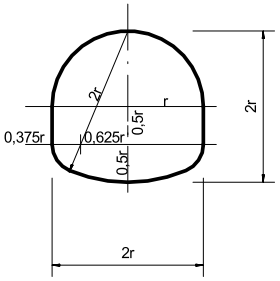
Area	2,378 r^2
Circumference	5,603 r
Hydraulic radius	0,424 r

Parabolic profile 2:2



Area	3,007 r^2
Circumference	6,283 r
Hydraulic radius	0,479 r

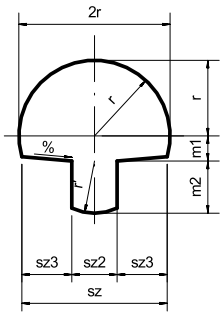
Special profile 2:2



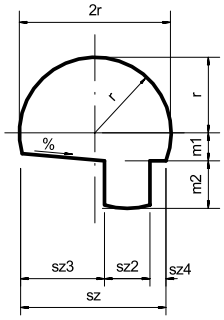
Area	3,378 r^2
Circumference	6,603 r
Hydraulic radius	0,512 r

Special accessible profiles assembled of prefabricated elements on the site

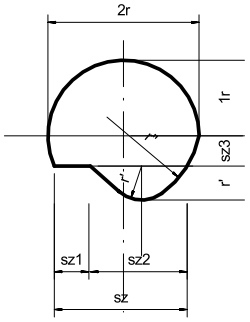
Parisian profile normal



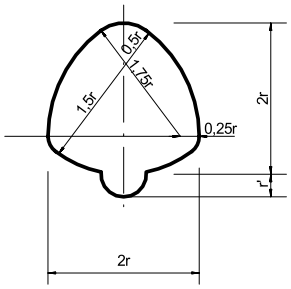
Parisian profile drawn off



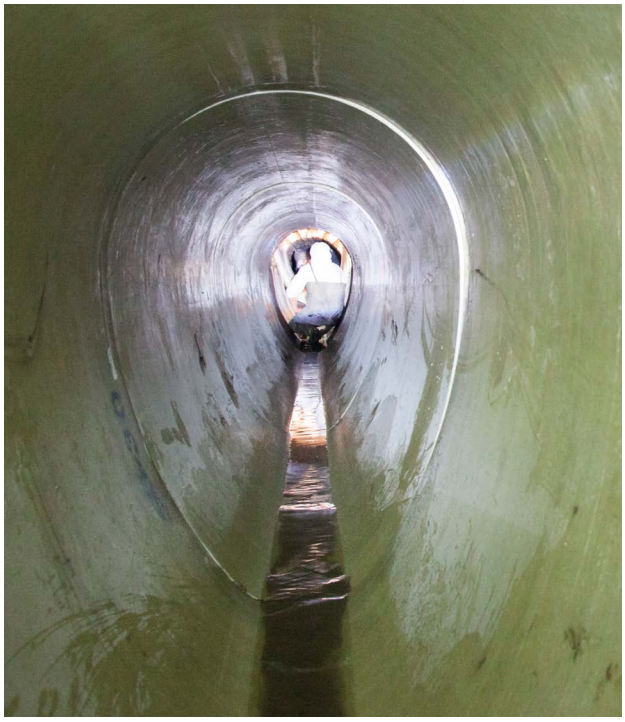
Parisian profile arched



Parabolic profile with shoulder



Producing any other special profiles on the basis of preliminary agreement is also possible



NO - DIG

the clean solution

Budaplast Vállalkozási és Kereskedelmi Kft.

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