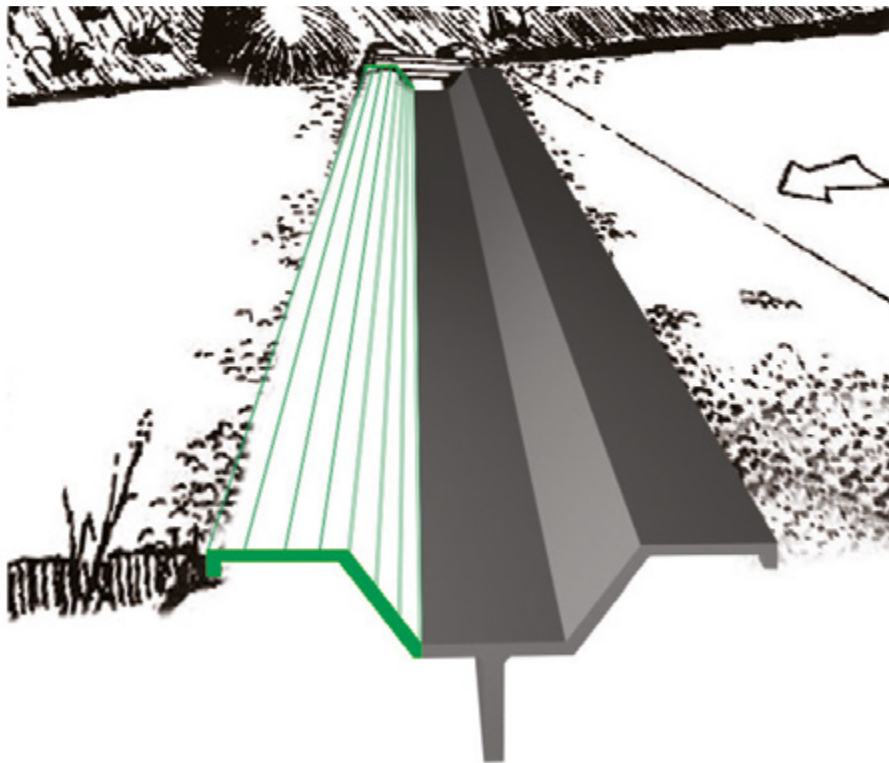




**Pietrucha**  
Established 1960

## Vinyl open-top road culverts

A lightweight, economical and maintenance free alternative to the traditional solutions enabling water runoff from road surface



- **Unique solution developed by Polish engineers**
  - **Patented technology no P. 422428**
- **Quality supported with 25 years' experience**
  - **Made in Poland**

## The Pietrucha Group

### **PROUDLY POLISH, TRULY INTERNATIONAL**

The Pietrucha Group is a Polish family company specializing in the manufacturing and distribution of highest-quality and advanced building materials used broadly in the construction and civil-engineering sector.

We deliver our products to nearly 3500 customers in 34 countries on 5 continents. For over 55 years, the name Pietrucha has been associated with a reliable and honest family business managed by the third generation of entrepreneurs.

We are the global leader in the manufacturing and distribution of advanced PVC solutions broadly used in the civil engineering sector in land and water infrastructure investments. Our products are an environmentally friendly, light-weight and costs efficient alternative to the traditional materials such as steel, wood or concrete. PVC solutions are used in construction projects more and more broadly because of their excellent parameters and the possibility of lowering investment costs.



## Prevention of surface runoff on forest roads

Because of the necessary density of their surface layer, which enables bearing high unit pressure exerted by vehicle wheels, forest roads are prone to form the surface runoff. Even though the surface of forest roads is not water-tight, because of the density, their capability to absorb water is considerably limited. In terms of hydrological conditions and the user quality, the impact of this phenomenon may be additionally enhanced when a trench is necessary to build the road. The scarps of the trench may additionally overload the underground waterflow channels and the water retained in the ground will intensify the road surface runoff.



Open-top road culverts, i.e. shallow ditches installed across the road to enable road drainage help prevent the surface runoff. When built on roads which incline 2% vertically and 30% horizontally from the axis, they are angled down slope, not straight across the road.



## Types of open-top road culverts available on the market

### Wood

The most popular type of open-top culverts. The average lifetime of wooden culverts is three years and in case of mountain roads bearing load of 40-50 tons, two years. Destroyed three year old wooden open-top road culvert



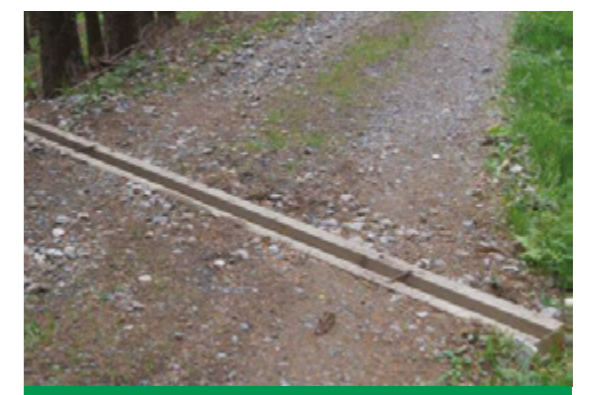
### Stone

Because of the cost and complexity of installation, stone open-top culverts may not be universally used.



### Concrete

They exclude the traffic load of over 3.5T.



# The vinyl open-top road culverts: durable, maintenance-free and easy to assemble



The vinyl open-top road culverts are the result of cooperation of the Pietrucha Group R&D Division, academics from the Forrest Faculty of the Warsaw University of Life Sciences - SGGW and the representatives of the State Forests. The vinyl open-top road culverts are a durable and maintenance-free alternative to the traditional road drainage solutions. The vinyl open-road culvert is installed 15 cm deep in the road structure. In case of roads reinforced with geogrids or geocells, vinyl open-road culverts do not breach the load-bearing layer of the road. In case of wooden solutions, geogrid or geocell must be cut at the edge of the culvert. In case of vinyl open-top culverts, the reinforcement runs beneath the vinyl profile.



## Technology protected by a patent

- Patented technology P. 422428
- Average length of the vinyl open-top culvert – 6 meters
- Maximum length – 13 metres



# Advantages of road culverts

## The GlideWax® hydrophobic shield

The vinyl open-top culverts are covered with the GlideWax® shield using specially selected metal oxide nanoparticles, to enhance the hydrophobic properties of the profile surface. Thanks to the GlideWax® shield the open-top culverts clean themselves of sand, small stones and other material carried by the rainwater or vehicles wheels.



Wooden culverts cleaned one month ago



Vinyl culvert covered with GlideWax® shield

## Four reasons to choose the open top vinyl road culverts:

- Do not require maintenance, impregnation and cleaning.
- Durable and resistant to mechanical pressure.
- Resistant to biological and atmospheric factors.
- Assembly does not require large interference into the load-bearing road structure.

Vinyl vapors are the result of cooperation of the Pietrucha Group Research and Development Department, academics Faculty of Forestry, Warsaw University of Life Sciences and representatives of the State Forests.

## The Pietrucha quality: 25 years' experience, high precision and systematized manufacturing processes.

The vinyl open top road culverts are made from tough vinyl polychloride. Thanks to the use of this closed-cycle recycling method, vinyl sheet piles are an environmentally friendly solution. Application of the ISO 9001:2015 standard has enabled us to provide and maintain high quality products, while introduction of specially designed procedures has systematized our operations in the company, which are now an integral part of it





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