

# PRODUCT CATALOG

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Crash cushions

Road & bridge guardrails

Lightning poles & masts

Metal corrugated pipes

Hot-dip galvanizing



ZAVOD PRODMASH

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INNOVATIVE SOLUTIONS  
FOR ROAD SAFETY



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## EXTENSIVE PRODUCT LINE

We produce road and bridge guardrails, pedestrian railings, frame metal piers, acoustic shields, including posts and foundation, bus stop pavilions, traffic signs poles and traffic signs for motor roads, lighting poles, masts, including embedded parts and cantilevers, brackets and lighting products, steel spiral corrugated pipes, elements of metal corrugated structures, fasteners and any other constructions on the individual order of the client fasteners made-to-order of the customer.

## QUALITY IMPROVEMENT AND CONTROL

A close attention to innovations assures constant improvement of products. We suggest technological and economical solutions. Continuous monitoring of standards compliance at each production stage, own professional engineering department, use of modern high-performance equipment allow us to remain a market leader, increase productivity, and ensure a long service life of products. The plant is certified according to the Quality Management System and corresponds to the requirements of GOST R ISO 9001-2015 (ISO 9001:2015).

Since August 1, 2007, the company has been included in the list of European enterprises, the works quality and technology of those fully correspond to the high requirements of Doppelmayr group.

## METAL FABRICATION MADE-TO-ORDER

Modern technical equipment allows us to suggest an extensive range of metal processing services and unique high-quality products of any configuration.

## SAFETY AND ENVIRONMENT

Our products are manufactured according to the highest standards, guarantee maximum safety and are produced according to GOST, STO and TU.

The parameters of the products are confirmed by full-scale tests in the conditions of the testing site of the Research Center for Testing and Adjusting of Motor Vehicles (FGUP NAMI).



## INNOVATIONS AND FIERCELY MODERN TECHNOLOGIES

A close attention to innovations assures constant improvement of products, suggesting technological and economical solutions:

- ◆ flame cutting of sheet steel rolled makes it possible to cut metal from 2 to 200 mm with processing accuracy of 0.3-0.5 mm;
- ◆ robotic welding station produces products in an inert gas environment with high quality welds;
- ◆ MEBAxtreme bandsaw machine provides high cutting accuracy of 0.1 mm of large bags or of combined cutting.

## HIGH QUALITY OF ANTI-CORROSION PROCESSING

Advanced technologies and reliable materials guarantee our customers the period of usage of hot-zinc galvanized products for up to 50 years and minimize operating costs.

In our production, 2 zinc-coating lines function successfully, which allow processing of orders of any complexity:

- ◆ Line for large-sized structures galvanizing. Dimensions of the bath 12.5 \* 1.6 \* 2.8 m;
- ◆ Line for small items galvanizing with overall dimensions up to 400 mm in three axes and weighing not more than 5 kg.

## HOT-DIP GALVANIZING METHOD ADVANTAGES:

- ◆ quality guarantee - at least 15 years;
- ◆ high corrosion resistance of galvanized products;
- ◆ economy and short production periods;
- ◆ the ability of the coating to protect the base metal after mechanical damage;
- ◆ the coating thickness – from 40 to 200  $\mu\text{m}$ , but by agreement with the customer and depending on the grade of steel it can be increased;
- ◆ it is used for metal structures made of all soft grades of steel and low-alloy grades, casting from cast iron and steel;
- ◆ the coating does not interact with oil products, solvents, lubricants.





## APPLICATION

It is designed to prevent severe consequences of an accidental collision of a vehicle with various engineering structures on roads.

The crash cushions are installed in the areas of separation of traffic flows in front of massive obstacles, bridge and tunnel supports, and on other dangerous sections of roads, as well as at toll points. The use of crash cushion systems reduces the number of accidents with severe consequences and fatal outcome.

## OPERATING PRINCIPLE

Crash cushions are mounted on a concrete bed with chemical anchors, and can also be installed in the ground with the help of anchor posts.

In the case of a frontal collision with the road crash cushion system, the car runs into a plate that drives the internal parts of the system, deforming them. Due to deformation of the internal parts of the system, the main shock absorption occurs upon impact. The deformation of the inner parts drives the outer beams, folding them telescopically.

The crash cushion manufactured by OAO Zavod Prodmash fully complies with the requirements of EN 1317-3:

- ◆ Parts of the crash cushion did not penetrate into the vehicle.
- ◆ There was no separation of parts of the crash cushion.
- ◆ During and after a collision with crash cushion, the vehicle does not change the trajectory.
- ◆ The degree of collision force of a vehicle corresponds to class "B": passengers of a vehicle leaving the roadway are provided with an acceptable level of safety.

## TESTS FOR EUROPEAN CERTIFICATION

The technical specialists of OAO Zavod Prodmash developed and tested crash cushion, meant for speed limits of 110 km/h, specially for European market.

In February 2018 crash cushion from OAO Zavod Prodmash with speed limit 110 km/h was tested by Transpolis, Lyon. In accordance with the requirements of EN 1317-3 there were seven methods of tests. All tests passed successfully. At the moment, according to the results of the tests, CE Certificate is being formed.

Name of crash cushion	Speed at the moment of a car collision, km/h	Mass of the vehicle, t
APM-100P	110	1



**The construction of the crash cushion is certified in accordance with the requirements of EN 1317-3**

Specialists of OAO Zavod Prodmash are preparing for testing the family of crash cushions designed for speed limits 80, 100 and 110 km/h. The additional tests are planned for the close future.

The design of the crash cushion has the property of restoring after a collision by pulling it along the base and replacing the internal parts with new ones, which confirms the economy of operation.

**The crash cushion of OAO Zavod Prodmash manufacture has the following features:**

- ◆ the possibility of repeated use of construction;
- ◆ simplicity of installation;
- ◆ low maintenance cost;
- ◆ various configurations according to the needs of the customer are possible.



Road safety low unilateral barrier on a post from a rolled channel using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДО-0,75Ш14/2,0-W-200-M2	21 ДО/200-0,75x2,0-0,72 (0,74)	0,72	0,74
11ДО-0,75Ш14/1,5-W-250-M2	21 ДО/250-0,75x1,5-1,2 (1,22)	1,2	1,22
11ДО-0,75Ш14/2,0-W-250-M2	21 ДО/250-0,75x2,0-1,8 (1,82)	1,8	1,82
11ДО-0,75Ш16/1,5-W-300-M2	21 ДО/300-0,75x1,5-1,2 (1,22)	1,2	1,22
11ДО-0,75Ш16/2,0-W-300-M2	21 ДО/300-0,75x2,0-1,8 (1,82)	1,8	1,82



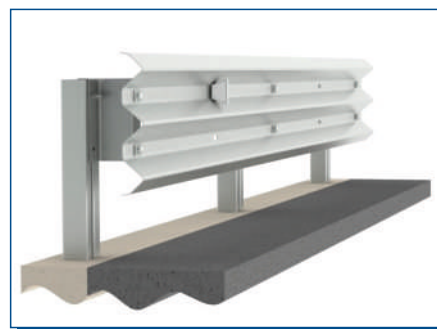
Road safety low unilateral barrier on a post from a sigma-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДО-0,75СБ(2,9)/3,0-W-130	21 ДО/130-0,75x3,0-0,95 (1,12)	0,95	1,12
11ДО-0,75СБ(4,0)/4,0-W-130-M1	21 ДО/130-0,75x4,0-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(2,9)/2,0-W-190	21 ДО/190-0,75x2,0-1,01 (1,15)	1,01	1,15
11ДО-0,75СБ(4,0)/1,0-W-200-M1	21 ДО/200-0,75x1,0-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/1,5-W-200-M1	21 ДО/200-0,75x1,5-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/2,0-W-200-M1	21 ДО/200-0,75x2,0-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/2,5-W-200-M1	21 ДО/200-0,75x2,5-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/3,0-W-200-M1	21 ДО/200-0,75x3,0-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/4,0-W-200-M1	21 ДО/200-0,75x4,0-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/1,0-W-250-M1	21 ДО/250-0,75x1,0-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/1,5-W-250-M1	21 ДО/250-0,75x1,5-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/2,0-W-250-M1	21 ДО/250-0,75x2,0-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/2,5-W-250-M1	21 ДО/250-0,75x2,5-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/3,0-W-250-M1	21 ДО/250-0,75x3,0-1,97 (2,02)	1,97	2,02
11ДО-0,75СБ(4,0)/3,0-W-250	21 ДО/250-0,75x3,0-1,1 (1,18)	1,1	1,18
11ДО-0,75СБ(4,0)/2,0-W-300	21 ДО/300-0,75x2,0-1,05 (1,13)	1,05	1,13
11ДО-0,75СБ(4,0)/1,0-W-300-M1	21 ДО/300-0,75x1,0-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/1,5-W-300-M1	21 ДО/300-0,75x1,5-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/2,0-W-300-M1	21 ДО/300-0,75x2,0-1,28 (1,3)	1,28	1,3
11ДО-0,75СБ(4,0)/2,5-W-300-M1	21 ДО/300-0,75x2,5-1,5 (1,61)	1,5	1,61
11ДО-0,75СБ(4,0)/3,0-W-300-M1	21 ДО/300-0,75x3,0-1,82 (1,93)	1,82	1,93



Road safety low unilateral barrier on a post from a sigma-shaped profile using a beam from a three-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДО-0,75СБ(4,0)/3,0-3N-190	21 ДО/190-0,75x3,0-0,7 (0,92)	0,7	0,92
11ДО-0,75СБ(4,0)/4,0-3N-190	21 ДО/190-0,75x4,0-0,84 (1,06)	0,84	1,06
11ДО-0,75СБ(4,0)/2,5-3N-250	21 ДО/250-0,75x2,5-0,98 (1,08)	0,98	1,08
11ДО-0,75СБ(4,0)/3,0-3N-250	21 ДО/250-0,75x3,0-1,1 (1,2)	1,1	1,2
11ДО-0,75СБ(4,0)/2,0-3N-300	21 ДО/300-0,75x2,0-0,98 (1,08)	0,98	1,08





## Road safety low bilateral barrier on a post from a rolled channel using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДД-0,75Ш16/2,0-W-300-M1	21 ДД/300-0,75x2,0-0,98 (1,3)	0,98	1,3
11ДД-0,75Ш16/2,5-W-300-M1	21 ДД/300-0,75x2,5-1,3 (1,63)	1,3	1,63
11ДД-0,75Ш16/3,0-W-300-M1	21 ДД/300-0,75x3,0-1,3 (1,63)	1,3	1,63



## Road safety high unilateral barrier on post from a C-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДО-1,1С(5,0)/1,0-W/W-300-M1	21 ДО/300-1,1x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,5-W/W-300-M1	21 ДО/300-1,1x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,0-W/W-300-M1	21 ДО/300-1,1x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,5-W/W-300-M1	21 ДО/300-1,1x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/3,0-W/W-300-M1	21 ДО/300-1,1x3,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/3,5-W/W-300-M1	21 ДО/300-1,1x3,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/4,0-W/W-300-M1	21 ДО/300-1,1x4,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,0-W/W-350-M1	21 ДО/350-1,1x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,5-W/W-350-M1	21 ДО/350-1,1x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,0-W/W-350-M1	21 ДО/350-1,1x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,5-W/W-350-M1	21 ДО/350-1,1x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/3,0-W/W-350-M1	21 ДО/350-1,1x3,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/3,5-W/W-350-M1	21 ДО/350-1,1x3,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,0-W/W-400-M1	21 ДО/400-1,1x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,5-W/W-400-M1	21 ДО/400-1,1x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,0-W/W-400-M1	21 ДО/400-1,1x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/2,0-W/W-400	21 ДО/400-1,1x2,0-0,82 (0,84)	0,82	0,84
11ДО-1,1С(5,0)/2,5-W/W-400-M1	21 ДО/400-1,1x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/3,0-W/W-400-M1	21 ДО/400-1,1x3,0-0,94 (1,05)	0,94	1,05
11ДО-1,1С(5,0)/1,5-W/W-450	21 ДО/450-1,1x1,5-0,82 (0,84)	0,82	0,84
11ДО-1,1С(5,0)/1,0-W/W-500	21 ДО/500-1,1x1,0-0,81 (1,15)	0,81	1,15
11ДО-1,15С(5,0)/1,0-W/W-300-M1	21 ДО/300-1,15x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/1,5-W/W-300-M1	21 ДО/300-1,15x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,0-W/W-300-M1	21 ДО/300-1,15x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,5-W/W-300-M1	21 ДО/300-1,15x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/3,0-W/W-300-M1	21 ДО/300-1,15x3,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/3,5-W/W-300-M1	21 ДО/300-1,15x3,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/4,0-W/W-300-M1	21 ДО/300-1,15x4,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/1,0-W/W-350-M1	21 ДО/350-1,15x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/1,5-W/W-350-M1	21 ДО/350-1,15x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,0-W/W-350-M1	21 ДО/350-1,15x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,5-W/W-350-M1	21 ДО/350-1,15x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/3,0-W/W-350-M1	21 ДО/350-1,15x3,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/3,5-W/W-350-M1	21 ДО/350-1,15x3,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/1,0-W/W-400-M1	21 ДО/400-1,15x1,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/1,5-W/W-400-M1	21 ДО/400-1,15x1,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,0-W/W-400-M1	21 ДО/400-1,15x2,0-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/2,5-W/W-400-M1	21 ДО/400-1,15x2,5-0,94 (1,05)	0,94	1,05
11ДО-1,15С(5,0)/3,0-W/W-400-M1	21 ДО/400-1,15x3,0-0,94 (1,05)	0,94	1,05



Road safety high bilateral barrier on a post from a C-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДД-1,1С(5,0)/1,0-В/В-300	21 ДД/300-1,1x1,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/1,5-В/В-300	21 ДД/300-1,1x1,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,0-В/В-300	21 ДД/300-1,1x2,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,5-В/В-300	21 ДД/300-1,1x2,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/3,0-В/В-300	21 ДД/300-1,1x3,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/3,5-В/В-300	21 ДД/300-1,1x3,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/4,0-В/В-300	21 ДД/300-1,1x4,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/1,0-В/В-350	21 ДД/350-1,1x1,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/1,5-В/В-350	21 ДД/350-1,1x1,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,0-В/В-350	21 ДД/350-1,1x2,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,5-В/В-350	21 ДД/350-1,1x2,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/3,0-В/В-350	21 ДД/350-1,1x3,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/1,0-В/В-400	21 ДД/400-1,1x1,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/1,5-В/В-400	21 ДД/400-1,1x1,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,0-В/В-400	21 ДД/400-1,1x2,0-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,5-В/В-400	21 ДД/400-1,1x2,5-0,73 (0,97)	0,73	0,97
11ДД-1,1С(5,0)/2,0-В/В-450	21 ДД/450-1,1x2,0-0,89 (1,1)	0,89	1,1



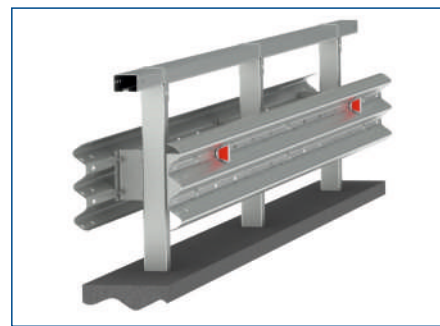
Road safety high bilateral barrier on a post from a C-shaped profile using a beam from a three-wave profile and a beam from a sigma-shaped profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДО-1,12С(5,0)/3,0-С/3N-300	21 ДО/300-1,12x3,0-0,62 (0,91)	0,62	0,91
11ДО-1,12С(5,0)/2,5-С/3N-350	21 ДО/350-1,12x2,5-0,62 (0,91)	0,62	0,91
11ДО-1,12С(5,0)/2,0-С/3N-400	21 ДО/400-1,12x2,0-0,62 (0,91)	0,62	0,91
11ДО-1,12С(5,0)/1,5-С/3N-450	21 ДО/450-1,12x1,5-0,62 (0,91)	0,62	0,91
11ДО-1,12С(5,0)/1,0-С/3N-500	21 ДО/500-1,12x1,0-0,62 (0,91)	0,62	0,91



Road safety high bilateral barrier on a post from a C-shaped profile using a beam from a three-wave profile and a beam from a sigma-shaped profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДД-1,2С(5,0)/4,0-С/3N-300	21 ДД/300-1,2x4,0-1,59 (1,66)	1,59	1,66
11ДД-1,2С(5,0)/3,0-С/3N-350	21 ДД/350-1,2x3,0-1,59 (1,66)	1,59	1,66
11ДД-1,2С(5,0)/2,5-С/3N-400	21 ДД/400-1,2x2,5-1,59 (1,66)	1,59	1,66
11ДД-1,2С(5,0)/2,0-С/3N-500	21 ДД/500-1,2x2,0-0,53 (0,9)	0,53	0,9





# LIGHTWEIGHT AXIAL FENCE FOR SEPARATION TRAFFIC FLOWS



## APPLICATION

Lightweight axial fence is installed on the separating strip with two solid lines and is designed to retain the car on the road surface in the event of an accident, as well as to prevent the vehicle from shooting out onto the oncoming lane. The application of such fences on road facilities minimizes the risk of frontal collisions and reduces the number of road accidents with drastic consequences.

Conventional designation of the grade of guardrail's working section according to STO 07525912-100-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-100-2016)	Dynamic deflection, m	Working width, m
11ДД-0,75С(5,0)/2,0-В-300	21 ДД/300-0,75x2,0-1,82 (2,0)	1,82	2,0



## ADVANTAGES OF INSTALLATION

- ◆ Installation of road fence does not require the reconstruction of the road. The size of the fence is 0.3 m.
- ◆ Lack of economic service expenses.  
An axial fence does not need special maintenance after installation.
- ◆ The safety assurance of drivers - protection against blinding by the headlights of the oncoming vehicle.  
The width of the beam profile of the lightweight axial barrier covers most of the light flow from the oncoming vehicles, preventing the dazzle of the driver.
- ◆ Additional security due to the basic configuration of retroreflectors.  
The lightweight axial fence is completed with retroreflectors installed every 4 meters, providing additional visibility of the lightweight axial barrier in the dark.
- ◆ Installation profitability.  
When installing a crash barrier, there is no need to organize anchor blocks in the initial/end sections, which significantly reduces the final cost of installation of a lightweight axial fence in comparison with a cable barrier. The installation of a lightweight axial fence is also quite simple.
- ◆ The car is not swung around when it collides with an axial fence.  
According to the results of full-scale tests the car isn't swung around after it collides with the barrier. When the car hits the cable barrier, there is a danger of a car turning around within its own line. This is confirmed by both the results of full-scale tests, and in actual operation.
- ◆ When a car hits the fence, it does not slip into the oncoming lane.  
According to the results of full-scale tests with an organized safety lane of 0.5 m when a car hits (weight 1.5 tons, speed 90 km/h), the vehicle is not thrown on the oncoming lane, unlike with the cable barrier, where the working width for such collision is not less than 1.0 m, and in the event with an oncoming vehicle a head-on collision unavoidable.



Bridge safety low unilateral barrier on a post from a C-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-110-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-110-2016)	Dynamic deflection, m	Working width, m
11MO-0,75C/1,5-W-250	21 MO/250-0,75x1,5-0,75 (0,92)	0,75	0,92
11MOЦ-0,75C/1,5-W-250	21 MO/250-0,75(0,15)x1,5-0,75 (0,92)	0,75	0,92
11MO-0,75C/2,0-W-250	21 MO/250-0,75x2,0-0,99 (1,17)	0,99	1,17
11MOЦ-0,75C/2,0-W-250	21 MO/250-0,75(0,15)x2,0-0,99 (1,17)	0,99	1,17



Bridge safety high bilateral barrier on a post from a C-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-110-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-110-2016)	Dynamic deflection, m	Working width, m
11MD-1,1C/3,0-W/W-300	21 MD/300-1,1x3,0-0,75 (0,97)	0,75	0,97
11MDЦ-1,1C/3,0-W/W-300	21 MD/300-1,1(0,15)x3,0-0,75 (0,97)	0,75	0,97
11MD-1,1C/2,5-W/W-350	21 MD/350-1,1x2,5-0,75 (0,97)	0,75	0,97
11MDЦ-1,1C/2,5-W/W-350	21 MD/350-1,1(0,15)x2,5-0,75 (0,97)	0,75	0,97



Bridge safety high unilateral barrier on a post from a C-shaped profile using a beam from a two-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-110-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-110-2016)	Dynamic deflection, m	Working width, m
11MO-1,1C/3,0-W/W-300	21 MO/300-1,1x3,0-0,75 (1,1)	0,75	1,1
11MOЦ-1,1C/3,0-W/W-300	21 MO/300-1,1(0,15)x3,0-0,75 (0,97)	0,75	0,97
11MO-1,1C/2,5-W/W-350	21 MO/350-1,1x2,5-0,75 (1,1)	0,75	1,1
11MOЦ-1,1C/2,5-W/W-350	21 MO/350-1,1(0,15)x2,5-0,75 (0,97)	0,75	0,97
11MO-1,3C/2,5-W/W-350	21 MO/350-1,3x2,5-0,75 (1,27)	0,75	1,27
11MOЦ-1,3C/2,5-W/W-350	21 MO/350-1,3(0,15)x2,5-0,75 (1,14)	0,75	1,14
11MO-1,1C/2,0-W/W-400	21 MO/400-1,1x2,0-0,75 (1,1)	0,75	1,1
11MOЦ-1,1C/2,0-W/W-400	21 MO/400-1,1(0,15)x2,0-0,75(0,97)	0,75	0,97
11MO-1,3C/2,0-W/W-400	21 MO/400-1,3x2,0-0,75 (1,27)	0,75	1,27
11MOЦ-1,3C/2,0-W/W-400	21 MO/400-1,3(0,15)x2,0-0,75(1,14)	0,75	1,14
11MO-1,1C/1,5-W/W-450	21 MO/450-1,1x1,5-0,75 (1,1)	0,75	1,1
11MOЦ-1,1C/1,5-W/W-450	21 MO/450-1,1(0,15)x1,5-0,75 (0,97)	0,75	0,97
11MO-1,5C/1,5-W/W-450	21 MO/450-1,5x1,5-0,75 (1,44)	0,75	1,44
11MOЦ-1,5C/1,5-W/W-450	21 MO/450-1,5(0,15)x1,5-0,75 (1,31)	0,75	1,31
11MO-1,3C/1,25-W/W-500	21 MO/500-1,3x1,25-0,75 (1,27)	0,75	1,1
11MO-1,5C/1,25-W/W-500	21 MO/500-1,5x1,25-0,75 (1,44)	0,75	1,44





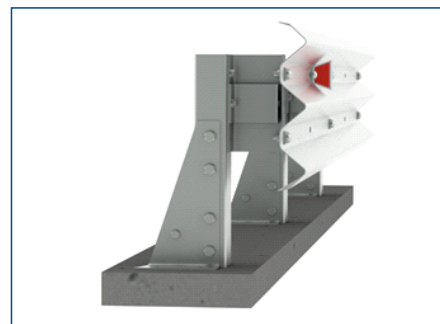
Bridge safety high unilateral barrier on a compound post from 2 bars from a C-shaped profile using a beam from a two-wave profile and a beam from a three-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-110-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-110-2016)	Dynamic deflection, m	Working width, m
11MO-1,1Д/3,0-W/3N-400	21 MO/400-1,1x3,0-0,37 (0,95)	0,37	0,95
11MOЦ-1,1Д/3,0-W/3N-400	21 MO/400-1,1(0,15)x3,0-0,37(0,84)	0,37	0,84
11MO-1,3Д/3,0-W/3N-400	21 MO/400-1,3x3,0-0,37 (1,1)	0,37	1,1
11MOЦ-1,3Д/3,0-W/3N-400	21 MO/400-1,3(0,15)x3,0-0,37(0,98)	0,37	0,98
11MO-1,1Д/3,0-W/3N-450	21 MO/450-1,1x3,0-0,37 (0,95)	0,37	0,95
11MOЦ-1,1Д/3,0-W/3N-450	21 MO/450-1,1(0,15)x3,0-0,37(0,84)	0,37	0,84
11MO-1,5Д/3,0-W/3N-450	21 MO/450-1,5x3,0-0,37 (1,23)	0,37	1,23
11MOЦ-1,5Д/3,0-W/3N-450	21 MO/450-1,5(0,15)x3,0-0,37(1,12)	0,37	1,12
11MO-1,1Д/2,5-W/3N-500	21 MO/500-1,1x2,5-0,37 (0,95)	0,37	0,95
11MOЦ-1,1Д/2,5-W/3N-500	21 MO/500-1,1(0,15)x2,5-0,37(0,84)	0,37	0,84
11MO-1,3Д/2,5-W/3N-500	21 MO/500-1,3x2,5-0,37 (1,1)	0,37	1,1
11MOЦ-1,3Д/2,5-W/3N-500	21 MO/500-1,3(0,15)x2,5-0,37(0,98)	0,37	0,98
11MO-1,5Д/2,5-W/3N-500	21 MO/500-1,5x2,5-0,37 (1,23)	0,37	1,23
11MOЦ-1,5Д/2,5-W/3N-500	21 MO/500-1,5(0,15)x2,5-0,37(1,12)	0,37	1,12
11MO-1,1Д/2,0-W/3N-550	21 MO/550-1,1x2,0-0,37 (0,95)	0,37	0,95
11MOЦ-1,1Д/2,0-W/3N-550	21 MO/550-1,1(0,15)x2,0-0,37(0,84)	0,37	0,84
11MO-1,3Д/2,0-W/3N-550	21 MO/550-1,3x2,0-0,37 (1,1)	0,37	1,1
11MOЦ-1,3Д/2,0-W/3N-550	21 MO/550-1,3(0,15)x2,0-0,37(0,98)	0,37	0,98
11MO-1,5Д/2,0-W/3N-550	21 MO/550-1,5x2,0-0,37 (1,23)	0,37	1,23
11MOЦ-1,5Д/2,0-W/3N-550	21 MO/550-1,5(0,15)x2,0-0,37(1,12)	0,37	1,12
11MO-1,1Д/1,5-W/3N-600	21 MO/600-1,1x1,5-0,37 (0,95)	0,37	0,95
11MOЦ-1,1Д/1,5-W/3N-600	21 MO/600-1,1(0,15)x1,5-0,37(0,84)	0,37	0,84
11MO-1,3Д/1,5-W/3N-600	21 MO/600-1,3x1,5-0,37 (1,1)	0,37	1,1
11MOЦ-1,3Д/1,5-W/3N-600	21 MO/600-1,3(0,15)x1,5-0,37(0,98)	0,37	0,98
11MO-1,5Д/1,5-W/3N-600	21 MO/600-1,5x1,5-0,37 (1,23)	0,37	1,23
11MOЦ-1,5Д/1,5-W/3N-600	21 MO/600-1,5(0,15)x1,5-0,37(1,12)	0,37	1,12



Bridge safety low unilateral barrier on a post from a C-shaped profile using a beam from a three-wave profile

Conventional designation of the grade of guardrail's working section according to STO 07525912-110-2016	Conventional designation of the grade of guardrail's working section according to GOST 33128-2014 (STO 07525912-110-2016)	Dynamic deflection, m	Working width, m
11MO-0,75C/2,0-3N-250	21 MO/250-0,75x2,0-0,7 (0,85)	0,7	0,85
11MOЦ-0,75C/2,0-3N-250	21 MO/250-0,75(0,15)x2,0-0,7 (0,85)	0,7	0,85
11MO-0,75C/1,5-3N-300	21 MO/300-0,75x1,5-0,75 (0,9)	0,75	0,9
11MOЦ-0,75C/1,5-3N-300	21 MO/300-0,75(0,15)x1,5-0,75 (0,9)	0,75	0,9



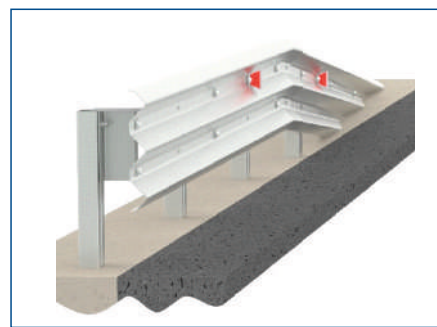
# INITIAL AND END SECTIONS OF BARRIERS

## Road safety metal uni- and bilateral barriers

Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m
11ДО-Н(К)-W-1/10-8	8	8,5
11ДО-Н(К)-W-1/10-12	12	12,5
11ДО-Н(К)-W-1/10-15	16	16,5
11ДО-Н(К)-W-1/10-18	18	18,5
11ДО-Н(К)-W-1/10-25	25	26,5
11ДО-Н(К)-W-1/15-12	12	12,5
11ДО-Н(К)-W-1/15-15	16	16,5
11ДО-Н(К)-W-1/15-18	18	18,5
11ДО-Н(К)-W-1/15-25	25	26,5



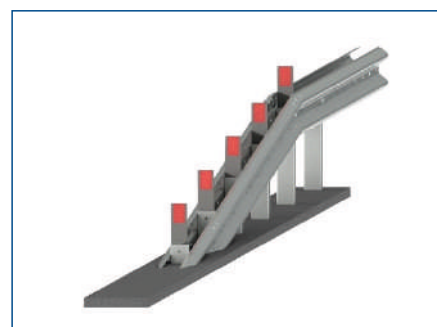
Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m
11ДО-Н(К)-3N-1/10-8	8	8,5
11ДО-Н(К)-3N-1/10-12	12	12,5
11ДО-Н(К)-3N-1/10-15	16	16,5
11ДО-Н(К)-3N-1/10-18	18	18,5
11ДО-Н(К)-3N-1/10-25	25	26,5
11ДО-Н(К)-3N-1/15-12	12	12,5
11ДО-Н(К)-3N-1/15-15	16	16,5
11ДО-Н(К)-3N-1/15-18	18	18,5
11ДО-Н(К)-3N-1/15-25	25	26,5



Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m
11ДД-Н(К)-W-1/10-8	8	8,5
11ДД-Н(К)-W-1/10-12	12	12,5
11ДД-Н(К)-W-1/10-15	16	16,5
11ДД-Н(К)-W-1/10-18	18	18,5
11ДД-Н(К)-W-1/10-25	25	26,5
11ДД-Н(К)-W-1/15-12	12	12,5
11ДД-Н(К)-W-1/15-15	16	16,5
11ДД-Н(К)-W-1/15-18	18	18,5
11ДД-Н(К)-W-1/15-25	25	26,5
11ДД-Н(К)-3N-1/15-25-CA-СБ-2	25	26,5



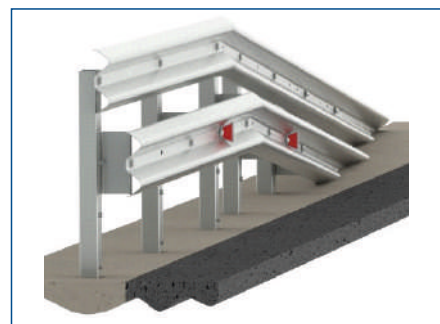
Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m
11ДД-Н(К)-W-1/10-8-C(5,0)	8	8,5
11ДД-Н(К)-W-1/10-12-C(5,0)	12	12,5
11ДД-Н(К)-W-1/10-15-C(5,0)	16	16,5
11ДД-Н(К)-W-1/10-18-C(5,0)	18	18,5
11ДД-Н(К)-W-1/10-25-C(5,0)	25	26,5
11ДД-Н(К)-W-1/15-12-C(5,0)	12	12,5
11ДД-Н(К)-W-1/15-15-C(5,0)	16	16,5
11ДД-Н(К)-W-1/15-18-C(5,0)	18	18,5
11ДД-Н(К)-W-1/15-25-C(5,0)	25	26,5



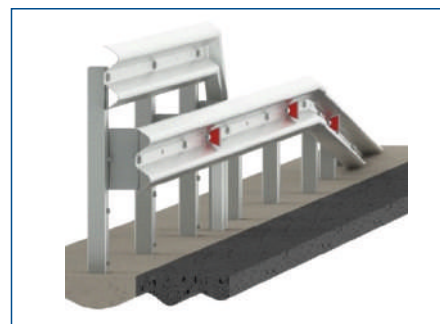


# INITIAL AND END SECTIONS OF BARRIERS

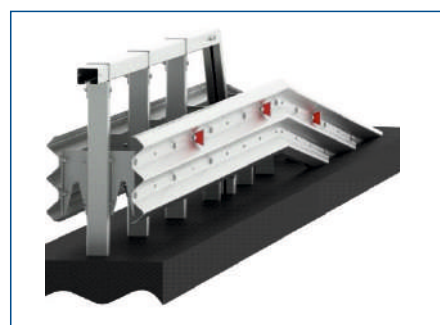
Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m
11ДО-Н(К)-W/W-1/10-8	8	8,5
11ДО-Н(К)-W/W-1/10-12	12	12,5
11ДО-Н(К)-W/W-1/10-15	16	16,5
11ДО-Н(К)-W/W-1/10-18	18	18,5
11ДО-Н(К)-W/W-1/10-25	25	26,5
11ДО-Н(К)-W/W-1/15-12	12	12,5
11ДО-Н(К)-W/W-1/15-15	16	16,5
11ДО-Н(К)-W/W-1/15-18	18	18,5
11ДО-Н(К)-W/W-1/15-25	25	26,5



Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m	using an anchor tie CA-W
11ДД-Н(К)-W-1/10-8-CA-W	8	8,5	
11ДД-Н(К)-W-1/10-12-CA-W	12	12,5	
11ДД-Н(К)-W-1/10-15-CA-W	16	16,5	
11ДД-Н(К)-W-1/10-18-CA-W	18	18,5	
11ДД-Н(К)-W-1/10-25-CA-W	25	26,5	
11ДД-Н(К)-W-1/15-12-CA-W	12	12,5	
11ДД-Н(К)-W-1/15-15-CA-W	16	16,5	
11ДД-Н(К)-W-1/15-18-CA-W	18	18,5	
11ДД-Н(К)-W-1/15-25-CA-W	25	26,5	

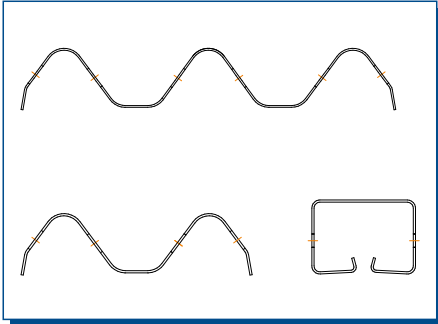


Barrier working area grade according to STO 07525912-100-2016	Dynamic deflection, m	Working width, m	using an anchor tie CA-CБ-2
11ДД-Н(К)-3N-1/10-8-CA-CБ-2	8	8,5	
11ДД-Н(К)-3N-1/10-12-CA-CБ-2	12	12,5	
11ДД-Н(К)-3N-1/10-15-CA-CБ-2	16	16,5	
11ДД-Н(К)-3N-1/10-18-CA-CБ-2	18	18,5	
11ДД-Н(К)-3N-1/10-25-CA-CБ-2	25	26,5	
11ДД-Н(К)-3N-1/15-12-CA-CБ-2	12	12,5	
11ДД-Н(К)-3N-1/15-15-CA-CБ-2	16	16,5	
11ДД-Н(К)-3N-1/15-18-CA-CБ-2	18	18,5	
11ДД-Н(К)-3N-1/15-25-CA-CБ-2	25	26,5	

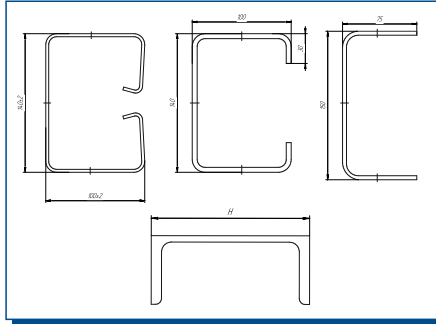


## TYPES OF ELEMENTS

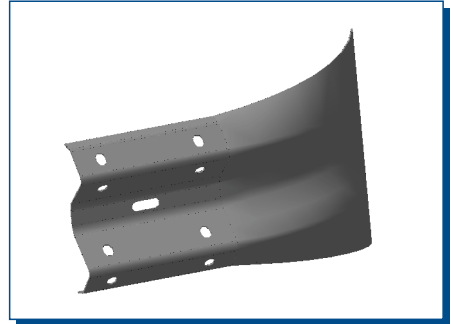
Beam profile



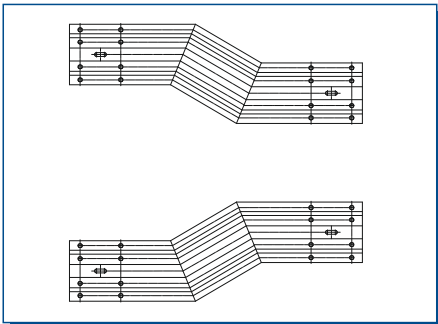
Post profile



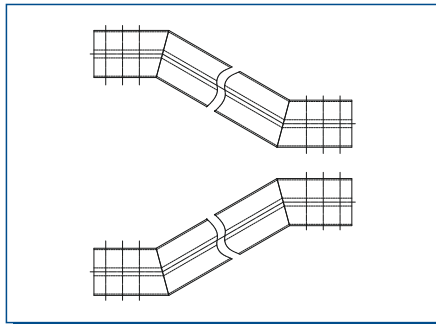
End element



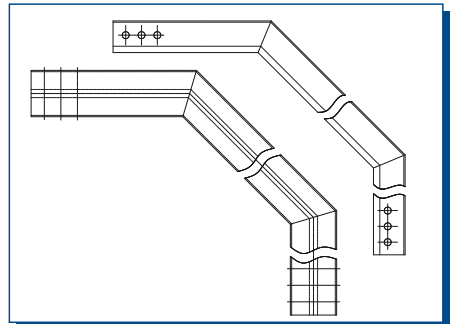
Transitional element for two-wave and three-wave beam sections



Transitional element for a road



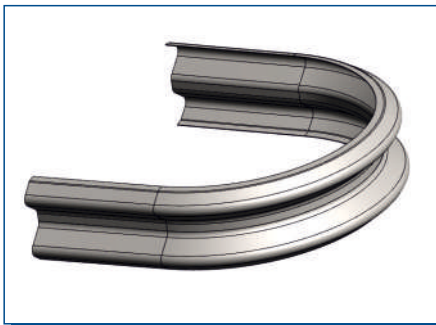
Anchor tie



Transitional element to the parapet



Radial element



Road retroreflector КД-5





## APPLICATION

Railing barrier is meant for organizing the pedestrian traffic through the motor-road, to prevent accidental falls of pedestrians from bridge structures, high embankments and other objects with a significant altitude difference, etc.

## TYPES OF BARRIERS

Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

211-ПУ-1,1-3,0-Φ



Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

310-ПУ-1,1-L-Φ(C)



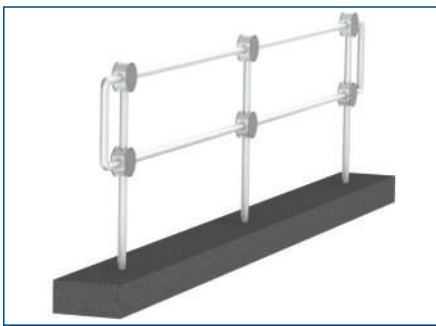
Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

400-ПО-1,1-2,45-Г



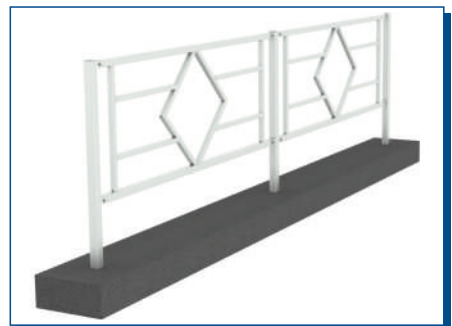
Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

415-ПО-1,1-2,0-Г



Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

420-ПО-1,1-2,0-Г



Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

425-ПО-1,1-2,0-Φ



Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

430-ПО-1,1-2,0-Г



Conventional designation of pedestrian barrier grade according to STO 07525912-110-2016

435-ПО-1,1-2,0-Φ



## ADVANTAGES

In the process of manufacture of railing barriers, we use modern trends in design solutions that make it possible to simplify and speed up the installation of barriers, and also to easily dismantle and replace the barrier sections. Except for the standard solutions, we can offer various solutions for the customer requirements.



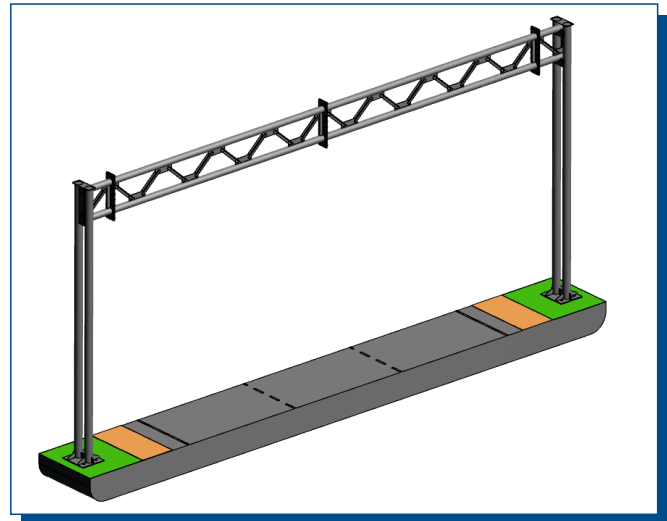


## FRAME METAL SUPPORTS

### APPLICATION

Frame metal supports are used for installation of modern equipment ATCS (Automatic Traffic Control System), which is widely used for monitoring and managing the flows of vehicles in the cities of Russia, as well as for installation on the frame supports such elements as:

- ◆ Electronic display;
- ◆ Traffic lights with normal and reverse traffic;
- ◆ Traffic signs;
- ◆ Video cameras;
- ◆ Weather and motion sensors, etc.



### CHARACTERISTICS

- ◆ Made-to-order and according to the album of series 3.503.9-80 issue 2 of the Research Institute "Soyuzdorproekt"
- ◆ Types of supports - P, G, T-shaped
- ◆ Support span width up to 28 meters
- ◆ Height above the roadway up to 7 meters



## TRAFFIC SIGNS POSTS

### APPLICATION

Traffic signs posts are designed and produced according to the album of series 3.503.9-80 issue 1 "Traffic signs posts on highways. Materials for design and working drawings" developments of the scientific research institute "Soyuzdorproekt" and the requirements of GOST 16350 and are intended for their fastening and placement on the carriageway and adjacent territories.



### CHARACTERISTICS

- ◆ Posts and supports are produced for the album 3.503.9-80 issue 1 of the Soyuzdorproekt Research Institute.
- ◆ Method of posts and signs fixing: using rigid clamps or bolts.



## APPLICATION

Metal corrugated pipes are designed to solve the problems of installation of artificial road structures (pedestrian crossings, cattle passages, tunnels, etc.), and are also actively used in the construction of drainage systems under railways and roads.

## METAL CORRUGATED CULVERT PIPES ELEMENTS

Corrugated metal culvert pipes have several main types of profiles: round, arched, of polycentric section, elliptical section of raised, lowered, vertical and horizontal types.

A distinctive feature of the corrugated tubes is the modularity of the construction, which makes it possible to carry out the installation with minimal costs.

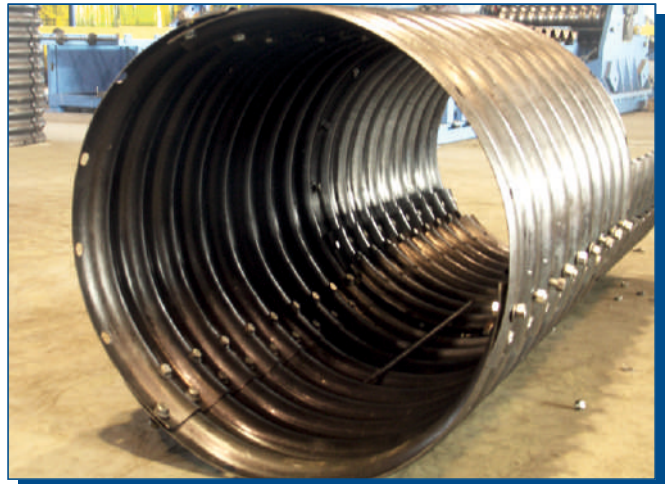
Corrugated metal culvert pipes are designed and manufactured according to STO 07525912-025-2014 (corrugation size 130x32.5 mm, 150x50 mm, 381x142 mm).

## SPIRAL WOUND METALLIC CORRUGATED PIPES

Spiral wound metal corrugated pipes are used in civil engineering and are designed for road and railway culverts, underground passages, hydraulic structures, as well as for strengthening and reorganizing of the existing engineering facilities.

Spiral wound metal corrugated pipes are made according to STO 07525912-028-2015 with dimensions of corrugation 68x13 mm in diameters from 300 to 1000 mm, 126x25 mm for making tubes with diameters from 1000 (inclusive) to 3600 mm. Manufacture from steel with a thickness of 1.5 to 3.5 mm; diameter of spiral coiling from 300 mm to 3600 mm; the maximum length of a piece of spiral wound metal corrugated tube is not more than 13.5 m. Double-side coating with high-strength low-pressure Trenchcoat polyethylene with thickness up to 250 microns.

Round section



Elliptical section



Spiral wound metallic corrugated pipes





## APPLICATION

Acoustic shields are meant for protecting people from harmful sound impact originating from railroads and highways, airports, construction sites and other sources of noise.

## STRUCTURAL FEATURES

The design of all panels of acoustic shields provides for their installation relative to each other using infill beams and gusset plates. This ensures the reliability of the structure and eliminates the formation of gaps between the elements. In this case, the height of the posts and the pacing between them can be any, depending on the tasks assigned.

Acoustic shields include posts and foundations.

All steel load-bearing structures and fasteners have a protective anticorrosive coating, made by the method of hot galvanizing according to GOST 9307-89, which ensures a long service life of the shields.

## CHARACTERISTICS

- ◆ Shield fill - galvanized steel, transparent PMMA 12 mm in aluminum frame
- ◆ Possibility to paint the panel in any color in the RAL catalog
- ◆ Post height, spacing - any

## SHIELDS TYPES

- ◆ **Acoustic shields**, which include special noise-absorbing acoustic perforated panels, which allow reducing of airborne noise from traffic flow or other source.
- ◆ **Noise shields**, used to protect objects from outgoing noise by reflecting it in the opposite direction.
- ◆ **Combined shields** - the combination of structures of acoustic shields and noise reflecting panels) – the shield is combined of several types of panels: the lower part is produced from noise-reflecting panels, the upper one – from noise-absorbing panels (they provide better acoustic protection).
- ◆ **Translucent shields**, which are produced using transparent PMMA, which has the highest transparency (light transmittance - 92%), high resistance to weak acids, solutions of alkalis and salts, has a wide range of temperatures (from  $-40^{\circ}\text{C}$  to  $+90^{\circ}\text{C}$ ), and also characterized by high rigidity (tensile strength - up to 80 MPa), greater than that of other amorphous plastics.





## APPLICATION

Metal lighting poles are intended for installation of lighting equipment, suspension of CIP cables, laying power lines of urban electric transport, installation of billboards and other structures.

## KINDS OF POLES

- ◆ **Tube poles** are made according to the customer's requirements from the material according to JV 16.13330.2011, taking into account the safety factor, to offer the most ergonomic solutions to customers. Depending on the design features and on convenience of transportation, the tube supports can be manufactured in a demountable form.
- ◆ **The faceted poles** are made of high-quality sheet metal, which makes it possible to achieve an optimal combination of support mass and its load-bearing capacity. The material is also selected depending on the climatic area of operation according to SP 16.13330.2011, taking into account the safety factor.
- ◆ **The conical poles** are installed on the flange of the foundation embedded item or directly into the ground. The peculiarity of this type of poles is the high elasticity and flexibility of the structure, minimizing the damage to vehicles in the event of an accidental collision, as well as the low weight compared to the reinforced concrete analogs, which ensures the ease of structure installation and transportation.

## TYPES OF POLES

- ◆ power poles
- ◆ non-power poles

## CHARACTERISTICS

- ◆ Power: FS, PS, FGS
- ◆ Non-power: FGN
- ◆ Purpose-made and decorative
- ◆ Height up to 16 m
- ◆ Permissible load on the top up to 1.8 tons
- ◆ Permissible number of lighting devices up to 6 pcs.
- ◆ The metal supports of the external lighting and the contact network of electric transport are designed and manufactured according to STO 07525912-018-2013, STO 07525912-019-2013, STO 07525912-020-2013.



## POWER POLES

### Straight cylindrical power poles of PS type

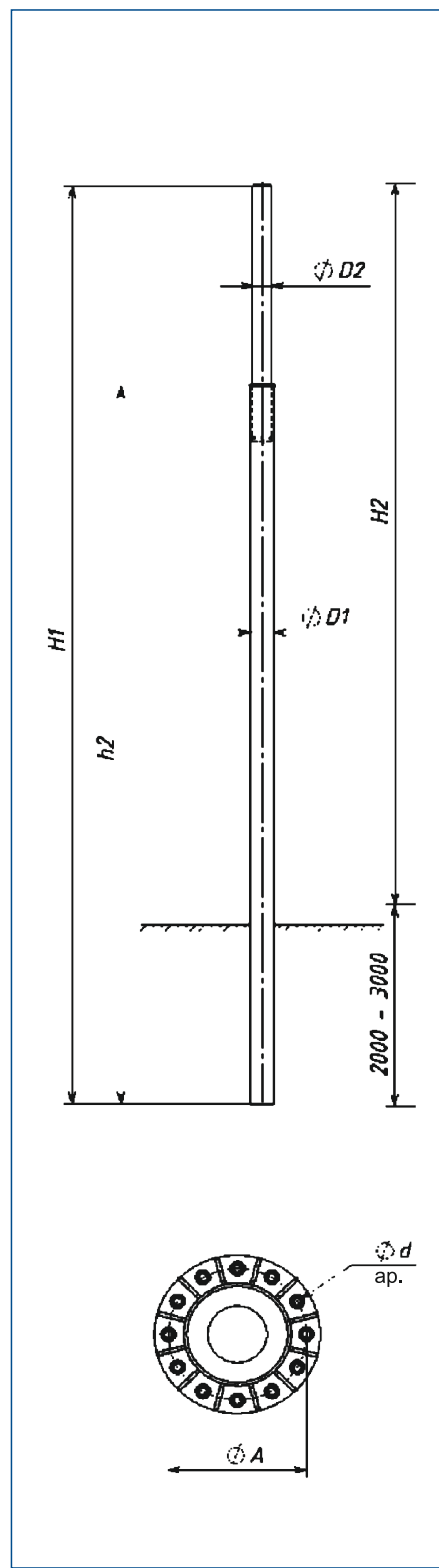
Poles	H2, +/- 20 mm	h2, mm	D1, mm	D2, mm	P, kg	Weight, kg
ПС-300-9,0/11-01-ц	9000	5250	219	159	300	332
ПС-400-8,5/10,5-01-ц	8500	5000	219	168	400	426
ПС-400-8,5/11-01-ц	8500	5000	219	168	400	451
ПС-400-9,0/11-01-ц	9000	4000	219	168	400	462
ПС-600-11/13,5-01-ц	11000	5000	325	219	600	892
ПС-700-8,5/10,5-01-ц	8500	3500	273	219	700	567
ПС-700-8,5/11-01-ц	8500	3500	273	219	700	595
ПС-700-9,0/11-01-ц	9000	4000	273	219	700	590
ПС-800-9,0/11-01-ц	9000	3500	325	219	800	752

### Flange cylindrical power poles of FS type

Poles	H2, +/- 20 mm	h3, mm	D1, mm	D2, mm	Б, mm	d, mm	n	P, kg	Weight, kg
ФС-300-8,5-01-ц	8500	4000	219	168	360	20	8	300	308
ФС-400-8,5-01-ц	8500	4000	219	168	360	20	8	400	367
ФС-400-9,0-01-ц	9000	4500	219	168	360	20	8	400	389
ФС-400-11-01-ц	11000	5250	219	168	360	24	8	400	421
ФС-700-8,5-01-ц	8500	4500	273	219	372	20	12	700	468
ФС-700-9,0-01-ц	9000	4000	273	219	372	20	12	700	489
ФС-700-11-01-ц	11000	5250	273	219	360	30	8	700	533

### Flange faceted power poles of FGS type

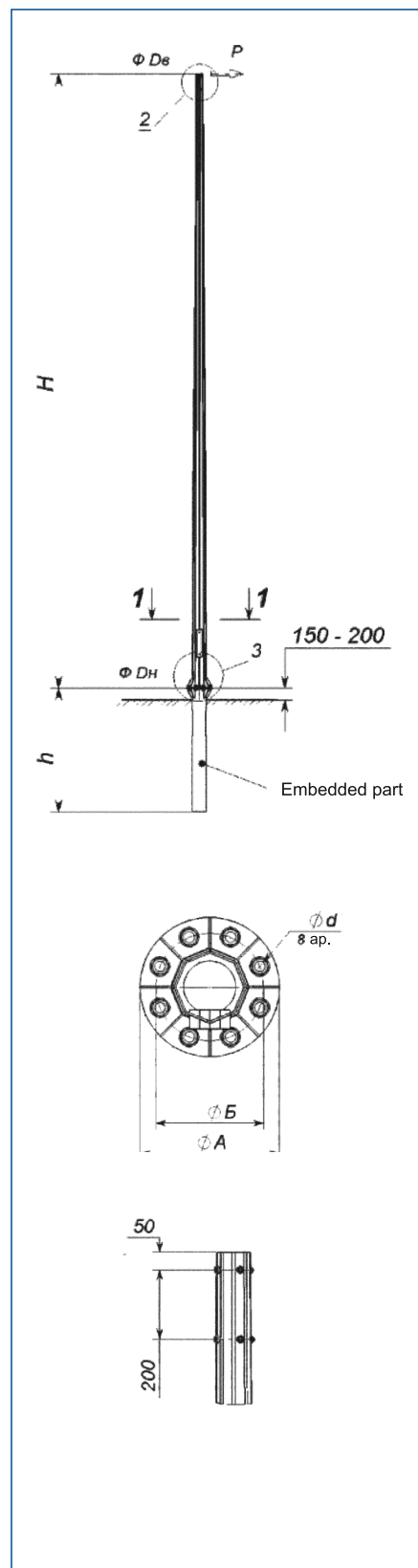
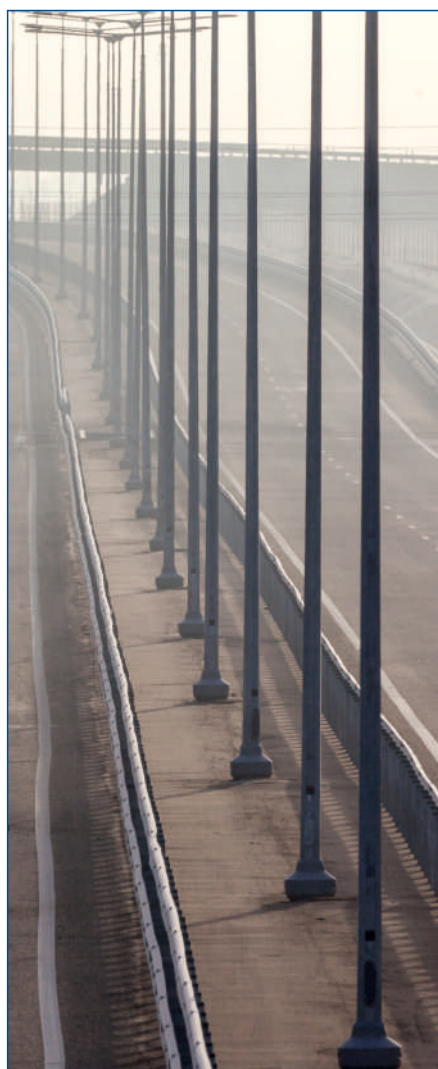
Poles	Size, +/- 20 mm		Size, mm							P, kg	Weight, kg
	H	H	Db	Dh	s	d	n	A	Б		
ФГС-400-8,0-01-ц	8	2,5	90	207	4	24	8	400	310	400	140
ФГС-400-9,0-01-ц	9	2,5	90	210	4	24	8	400	310	400	158
ФГС-400-10-01-ц	10	2,5	90	220	4	24	8	400	310	400	178
ФГС-700-8,0-01-ц	8	2,5	90	230	5	30	8	495	380	700	191
ФГС-700-9,0-01-ц	9	2,5	90	250	5	30	8	495	380	700	223
ФГС-700-10-01-ц	10	2,5	120	250	5	30	8	495	380	700	275
ФГС-1000-8,0-01-ц	8	3,0	120	275	6	30	12	540	440	1000	288
ФГС-1000-9,0-01-ц	9	3,0	130	300	6	30	12	540	440	1000	344
ФГС-1000-10-01-ц	10	3,0	130	320	6	30	12	540	440	1000	396
ФГС-1300-8,0-01-ц	8	3,0	120	320	6	30	12	540	440	1300	313
ФГС-1300-9,0-01-ц	9	3,0	150	340	6	30	12	580	470	1300	392
ФГС-1300-10-01-ц	10	3,0	150	364	6	30	12	610	500	1300	457
ФГС-1800-9,0-01-ц	9	3,0	180	395	6	36	12	650	520	1800	448
ФГС-1800-10-01-ц	10	3,0	180	420	6	36	12	670	540	1800	511
ФГС-2000-9,0-01-ц	9	3,0	180	420	6	36	12	670	540	2000	476
ФГС-2000-10-01-ц	10	3,0	180	445	6	36	12	690	560	2000	546



## NON - POWER POLES

### Flange faceted non-power poles of FGN type

Poles	Height of support, m, +/- 20 mm	D1, mm	D2, mm	A, mm	B, mm	d, mm 4 ap.	Weight, kg
ФПН-3-02-Ц	3	60	96	190	140	16	22
ФПН-4-02-Ц	4	60	108	190	140	16	30
ФПН-5-05-Ц	5	60	110	190	140	16	48
ФПН-6-05-Ц	6	60	126	190	140	16	63
ФПН-7-05-Ц	7	60	135	320	230	20	83
ФПН-8-05-Ц	8	60	146	320	230	20	100
ФПН-9-05-Ц	9	75	160	320	230	20	125
ФПН-10 (75)-05-Ц	10	75	170	320	230	20	142
ФПН-10 (100)-05-Ц	10	100	210	320	230	24	178
ФПН-11(75)-02-Ц	11	75	200	400	300	30	190
ФПН-11(100)-02-Ц	11	100	232	400	300	30	223
ФПН-14-02-Ц	14	100	254	490	400	36	317

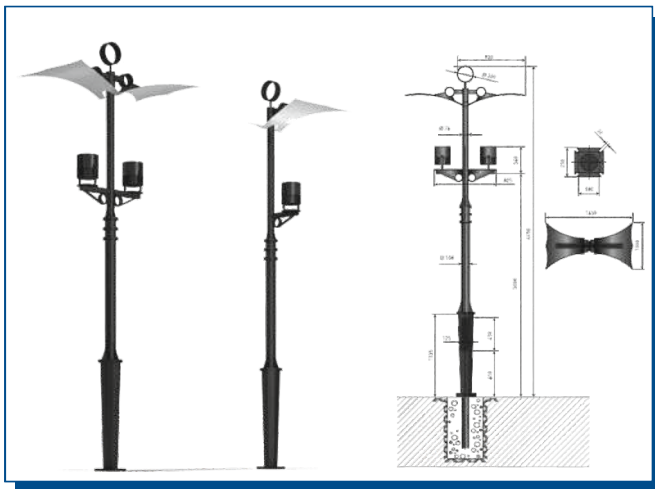




## ORIENTAL SUPPORTS

### Garden support №1

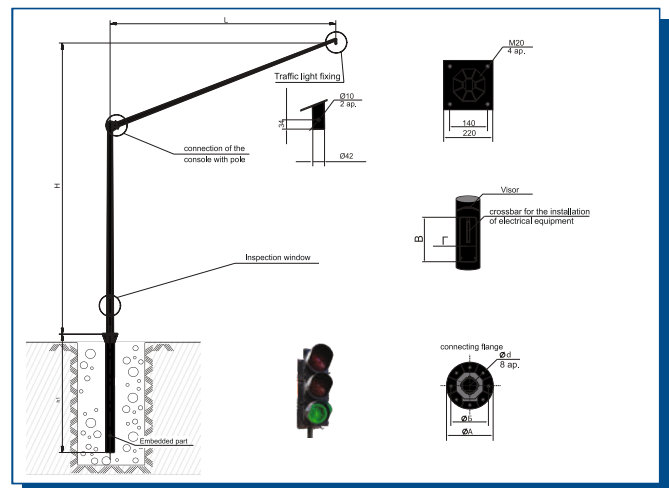
Name of the embedded element	Weight of support*, kg	Number of lighting devices, pcs.
3Φ-20/4/K180-1,3-6	140	1
3Φ-20/4/K180-1,3-6	146	2



## SUPPORTS OF SPECIAL PURPOSE

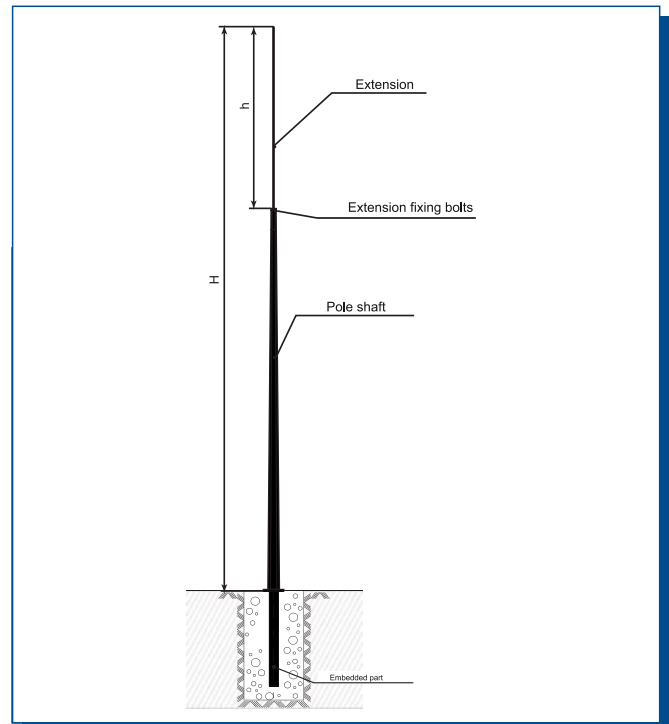
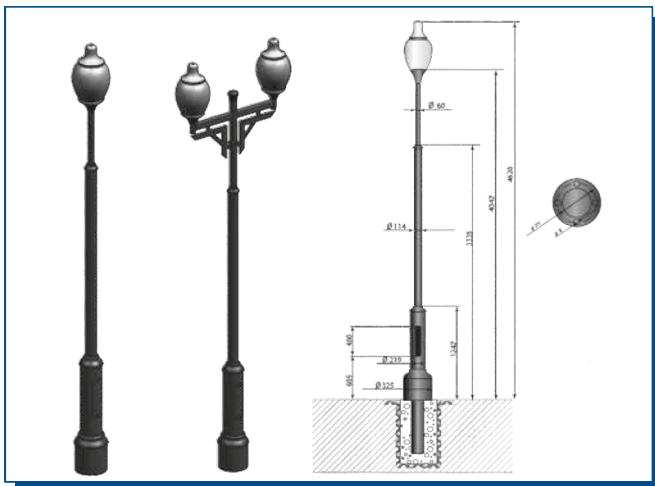
### APPLICATION

They are meant for safety of traffic by installing traffic lights, either directly on the post, or with a shift above the roadway to increase visibility. It is possible to install video surveillance systems, lightning rod, light-signal signs, luminous panel, road signs and other items, as well as decorative elements on these supports.



### Garden support №2

Name of the embedded element	Weight of support*, kg	Number of lighting devices, pcs.
3Φ-20/4/Д270-1,5-6	120	1
3Φ-20/4/Д270-1,5-6	143	2



\* The weight of support is indicated approximately, not considering the type of coating, design features and attachable equipment.

## APPLICATION

Lighting masts are used to illuminate infrastructural objects (traffic junctions, airports, railway stations, seaports, etc.) and sports facilities. They fundamentally differ from the metal lighting poles by the ability to install communication switching equipment on them and the possibility of installing masts with spacing of 60-70 meters.

The lighting mast is a high barrel (up to 50 meters), on which additional structures are located: mobile and stationary crowns, stairs, rest areas. It is worth noting that each lighting mast is manufactured according to an individual project, so it is always possible to provide special structures and equipment for solving the most important customer's tasks most effectively.

## CHARACTERISTICS

- ◆ With a fixed or mobile headframe
- ◆ Height up to 50 meters
- ◆ Permissible load on top of supports up to 2.1 tonnes
- ◆ Permissible number of lighting devices up to 35 pcs.

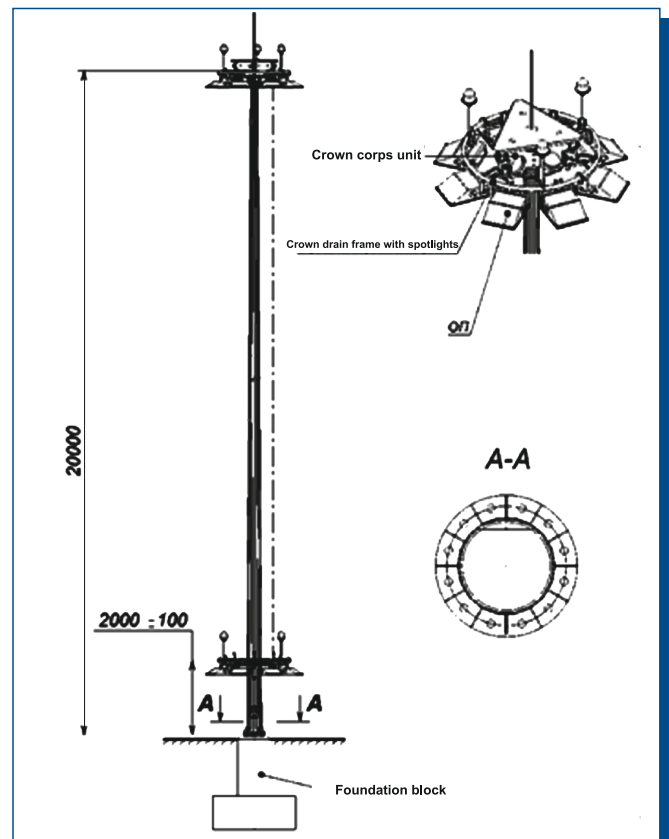
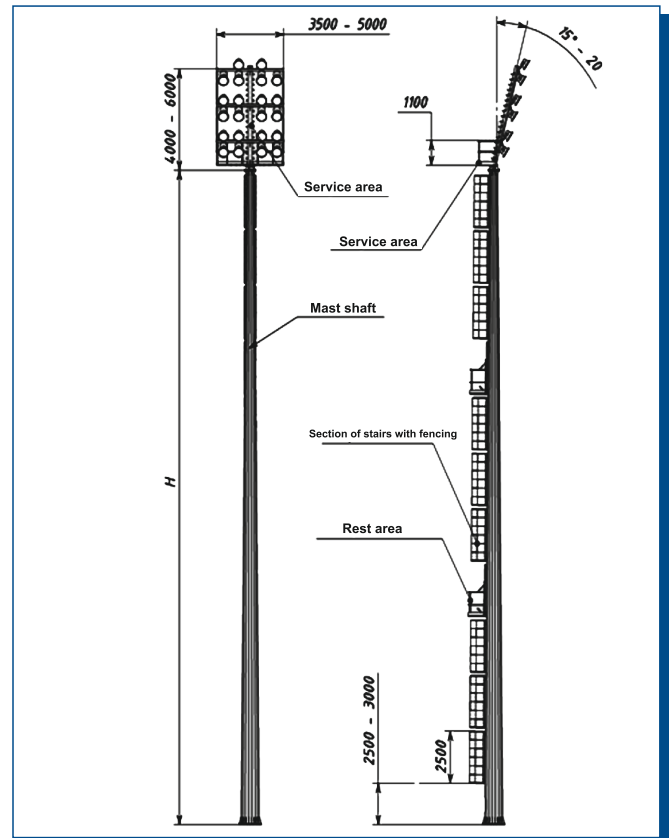
## MASTS WITH A STATIONARY HEADFRAME

Masts* with a stationary headframe	Barrel height, m	Weight-carrying capacity, kg	Number of lighting devices, pcs.	Wind district
type 1	16-40	5000	12-35	from II to V
type 2	16-50	5000	6-12	from II to IV

\*\* It is installed on the anchoring embedded elements. The mast is a complex technical product, which is designed for each object individually.

## MASTS WITH MOBILE HEADFRAME

Masts with mobile headframe do not require special equipment to maintain the equipment installed on them. Mast headframe consists of a head and a descending frame, which is meant for installation of the lighting equipment. Due to the design features, the frame with the equipment can easily be lowered to a convenient height of 1.5-2 m above the ground. Masts can have a barrel height of 16 to 50 meters and are meant for installation of up to 18 floodlights.



## APPLICATION

Multi-purpose metal lighting brackets are meant for installation of lighting products on lighting poles.

## STRUCTURAL FEATURES

Brackets represent welded structures. Brackets have different types of fastening, so they can be installed on a variety of outdoor lighting supports (tubular and conical), and on various surfaces of walls of structures and buildings.

The bracket structure is fixed on the upper end of the lighting pole. The structure can be completed with fasteners, which are located either on the shell of the bracket, or on the top of the lighting pole, proceeding from the maximal operation convenience of the structure.

The main material in the manufacture of multi-purpose lighting brackets is a high-quality rolled tubular products of the leading Russian manufacturers according to GOST 10704-81, which allows to ensure high quality of manufactured steel structures. And still, an important condition for choosing the material of manufacture is the consideration of the climatic region for the operation of lighting structures.

## CHARACTERISTICS

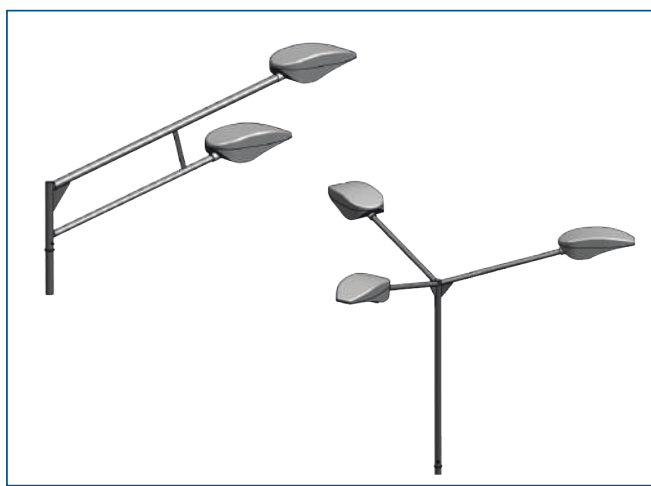
- ◆ Produced according to STO 07525912-022-2013, STO 7525912-023-2013
- ◆ For installation on pole of lighting products
- ◆ Single and multi-unit brackets



Bracket of series №1



Bracket of series №2



Bracket of series №3



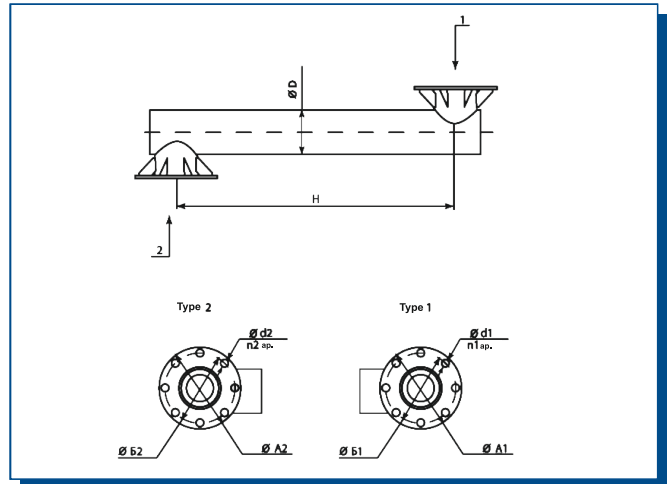


## APPLICATION

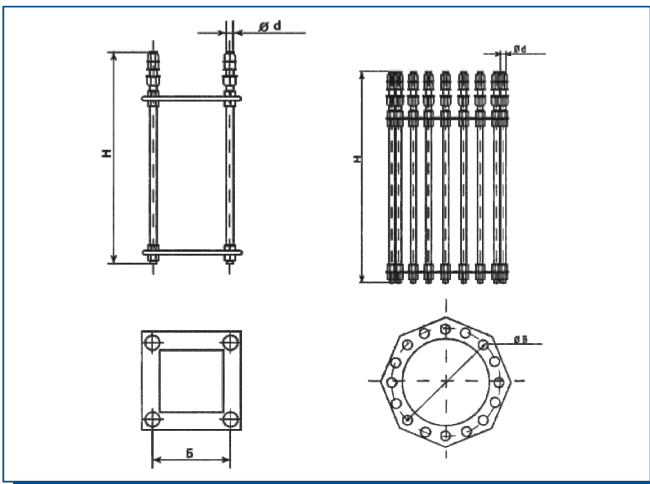
Embedded foundation part serves to transfer loads from the installed lighting poles to the foundation metal block. Depending on the type of perceived load, the embedded parts are made with square flanges with 4 apertures, or with round flanges with more than 4 apertures.

Cantilever and embedded parts serve to transfer loads from the installed pole to the foundation block. They have a bearing part intended for installation into the foundation block, and a horizontally shifted flange for installing metal lighting pole. The straight cantilever elements have two spaced attachment points and are meant for installation together with the embedded element.

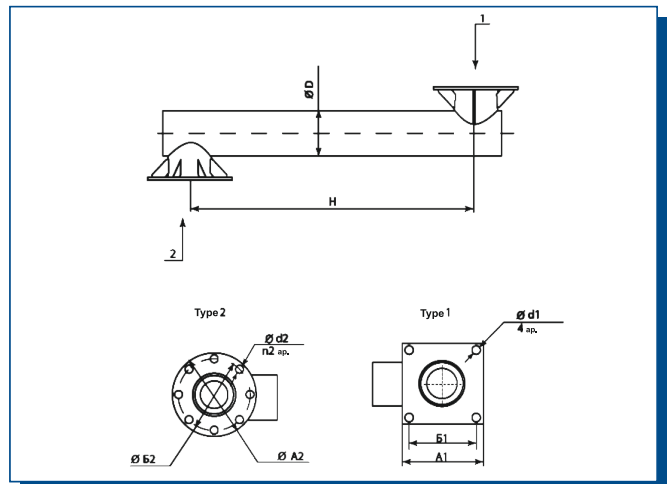
Cantilever. Cantilever design version No.1



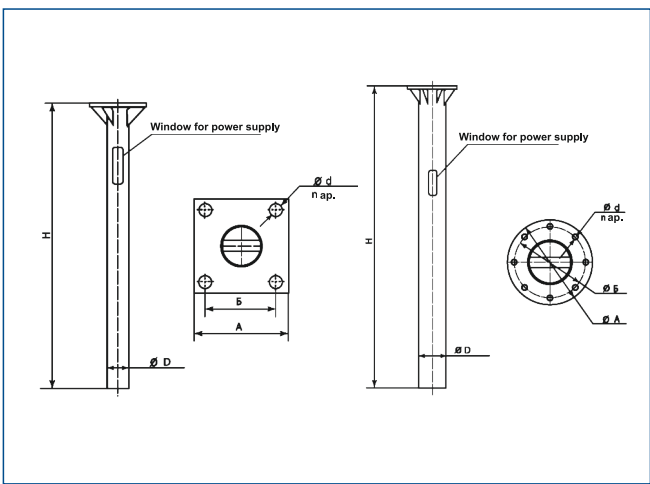
Anchor embedded element of the foundation



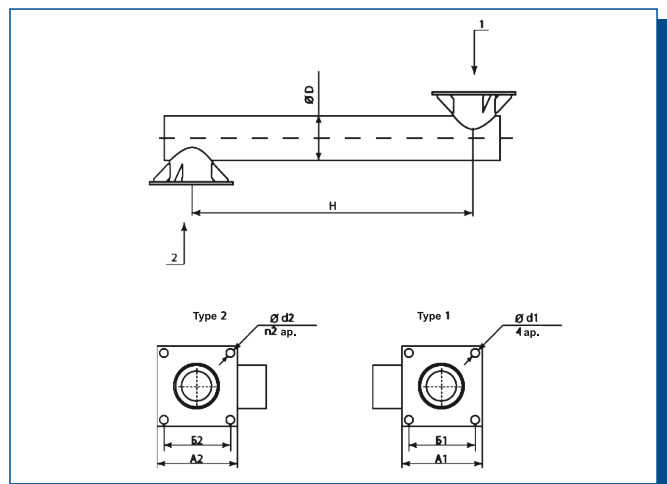
Cantilever. Cantilever design version No.1



Embedded part of the foundation



Cantilever. Cantilever design version No.3



# BUS STOP PAVILIONS

## APPLICATION

Bus stop pavilions are an important part of the road infrastructure and are designed to provide comfort and safety to passengers while waiting for the public transport.

## COMPLEMENT WITH ADDITIONAL EQUIPMENT

Bus stop pavilions can be completed with litter bins (including those with unusual design), benches and light boxes.

## TYPES OF BUS STOP PAVILIONS

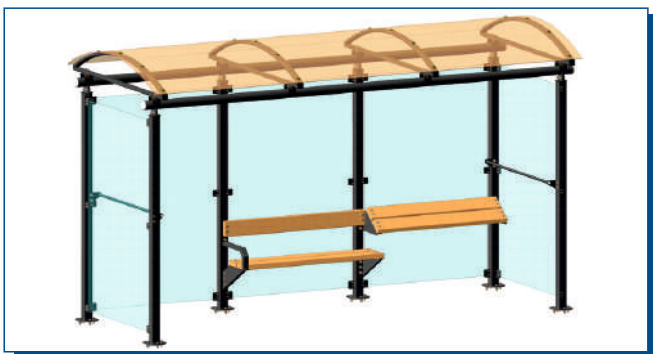
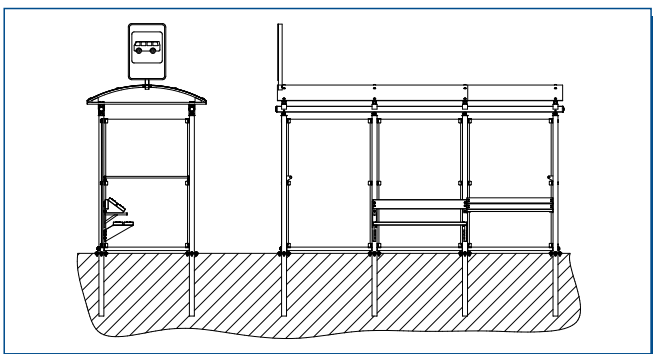
**Pavilions of urban type** are made of metal tubes and are sheathed with tempered glass, cellular or cast polycarbonate (or other material at the request of the customer). On request, production of stop pavilions with advertising boards is possible.

**Pavilions of anti-vandal type** are in demand for installation remotely from residential objects and are made entirely of metal. For convenience of transportations it is possible to make stop pavilions in a modular form.

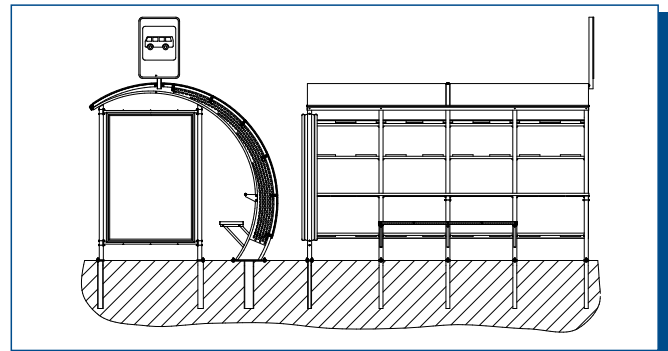
## KINDS OF BUS STOP PAVILIONS

### Bus stop pavilion “Accessible environment”

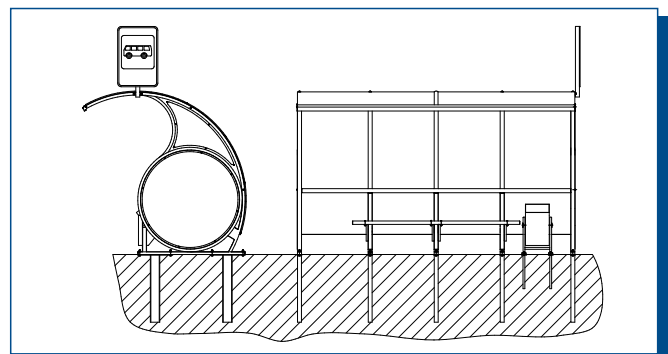
It was developed taking into account the recommendations of the Public Organization of wheelchair users SGOOIK “Association Desnitsa” in Samara.



### Bus stop pavilion “Light-box with side wall”



### Bus stop pavilion with one side wall





## DELIVERY EXPERIENCE

OAO Zavod Prodmash manufactured and delivered metal structures to the following objects:

- ◆ ZSD (Saint Petersburg)
- ◆ KAD (Saint Petersburg)
- ◆ Highway M-2 "Krim"
- ◆ Highway M-3 "Ukraina"
- ◆ Highway M-4 "Don"
- ◆ Highway M-5 "Ural"
- ◆ Highway M-8 "Holmogory"
- ◆ Highway M-9 "Baltiia"
- ◆ Highway M-10
- ◆ Highway M-11 (SPAD Moscow – Saint Petersburg)
- ◆ Highway M-18 "Kola"
- ◆ Highway A-149 "Adler–Krasnaya polyana"
- ◆ Replacement of Kurortny prospect in Sochi
- ◆ Planned replacement of safety barrier in Moscow
- ◆ Transport overpass in Moscow on the Profsoyuznaya street
- ◆ Transport overpass in the area of the Perkhushkovo platform (Moscow region)
- ◆ Transport overpass through railways in the city of Stupino (Moscow region)







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