



**ENGINEERING  
MANUFACTURING  
CONSTRUCTION**



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## CULVERT AT A GAS PIPELINE. FLOOD PROTECTION

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### ABOUT THE PROJECT:

- **Industry:** oil & gas
- **Construction type:** culvert
- **Region:** Siberia, Russia
- **Construction period:** 2006

### TECHNICAL CHARACTERISTICS:

- **Embankment soil:** fine dusty sand
- **Total area:** 130 m<sup>2</sup>
- **Flow rate during the flood period:** 1m/s

**SAVE ON BUILDING. WITHOUT COMPROMISE.**

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[export.presto](http://export.presto)



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### Reference design:



Culvert to be reinforced with the appliance of flexible concrete slabs UGZBM/PBZGU over a separating layer from non-woven geotextile.

### Challenges:



- 1. The lack of local high quality construction materials
- 2. Easily eroded soils. The soil is washed out through the gaps between the concrete blocks UGZBM / PBZGU
- 3. Permafrost soils
- 4. Construction work is possible only in the winter time when the ground is frozen.
- 5. The pipeline in this place is subject to "floating" in the summer

### Optimized solution of PRESTORUS:



Culvert to be reinforced with flexible concrete slabs GEOSOTY® over a separating layer of non-woven geotextile.

#### Construction materials:

- 1. Flexible concrete slabs GEOSOTY®
- 2. Non-woven geotextile GEOKNIT-N®

### ADVANTAGES OF THE PRESTORUS SOLUTION:

- 1 Total cost reduction by 13,6%**  
substantial savings on construction
- 2 High durability and longevity**  
the soil is not washed out through the gaps between the concrete blocks
- 3 High speed of construction**  
Reduction of the cost on construction
- 4 Pipeline weight**  
Protection against floating up and exposure of the pipeline reduces the risk of accidents



### Comparison of economic indicators \*

(in RUB)

	Reference design	PRESTORUS solution
Construction materials	396 928	334 951
Mounting work	123 830	111 397
<b>TOTAL</b>	<b>520 758</b>	<b>446 348</b>

\*note: the calculation was made in the Grand-Smeta software package

Reference design cost

**4 005,83**  
RUB /sq.m

**3 433,44**  
RUB /sq.m

PRESTORUS solution cost

**RESULT :**  
**74 409,60 RUB OR 14% SAVED**

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