

REPUBLIC OF MOLDOVA
ROAD SECTOR PROGRAM



STATE ROAD ADMINISTRATION

ADDENDUM No.1

to the Tender Documents

**RSP/W14/01: Construction of Road M3 Chisinau – Comrat –
Giurgiulesti – Romanian border, sector Vulcanesti bypass (km 0+000
– km 8+580)**

Issued on February 16, 2023

General:

The following amended articles are applicable to the Tender Documents for the following Contracts:

RSP/W14/01: Construction of Road M3 Chisinau – Comrat – Giurgiulesti – Romanian border, sector Vulcanesti bypass (km 0+000 – km 8+580)

Article 1

Tender Documents – Section II: Tender Data Sheet (DS), ITT 8.1

At the end add the following text:

“The original date for submission of Requests for Clarification shall not be modified by virtue of extension of the deadline for submission of tenders.”

Article 2

Section IV: Eligibility and Qualification Criteria, in the Table 2. Financial Situation, the text “The information shall be provided for the period of 2017 to 2022” shall be deleted and replaced with the following text “The information shall be provided for the period of 2017 to 2021.”

Article 3

Bill Of Quantities, BILL 000, the Item 00402, is deleted and substituted with the new Item 00402, as follows:

Item No.	Item description	Unit	Qty	Rate	Cost
00402	Maintain contract office	Month	30.00		

Article 4

Section VI: Requirements, **Technical Specifications – Volume III**, in Chapter 004 Engineer’s Facilities, Measurement, the following paragraph has been deleted:

“

Measurement

The Engineer’s Contract office will be paid for as a lump sum to include all specified furnishing and equipment.

The lump sum for the Contract Office will be paid when the offices are handed over for use to the Engineer, complete and furnished, with all services connected and operational. A part payment may be made in respect of furnishings and if these are supplied for use in temporary offices as foreseen in Sub-Clause 004.06 above. Any such payment shall be not more than 75% of the demonstrated invoiced net cost of the items supplied.

If the office is to be removed at the conclusion of the works then the lump sum shall be split into 70% and 30% elements with 70% to be paid when the office is handed over to the Engineer and the remaining 30% to be paid only when the building has been demolished and the site restored to

its original condition, or, in the case of a brownfield site, when the site has been landscaped and re-vegetated to an acceptable standard.

There will be no separate pay item for the Engineer's Laboratory office. The provision of this office including all specified furnishing and equipment will be deemed to be included in the pay item for the Laboratory.

No separate payment will be made for the maintenance and provision of services to the Engineer's office and laboratory office."

And replaced with:

"

Measurement

The Engineer's Contract office will be paid for as monthly installments to include all specified furnishing and equipment.

The monthly installments for the Contract Office will be paid when the offices are handed over for use to the Engineer, complete and furnished, with all services connected and operational. A part payment may be made in respect of furnishings and if these are supplied for use in temporary offices as foreseen in Sub-Clause 004.06 above. Any such payment shall be not more than 75% of the demonstrated invoiced net cost of the items supplied.

If the office is to be removed at the conclusion of the works then the Contractor must restore the site to its original condition, or, in the case of a brownfield site, when the site has been landscaped and re-vegetated to an acceptable standard.

There will be no separate pay item for the Engineer's Laboratory office. The provision of this office including all specified furnishing and equipment will be deemed to be included in the pay item for the Laboratory.

No separate payment will be made for the maintenance and provision of services to the Engineer's office and laboratory office."

Article 5

Section VI: Requirements, Technical Specifications, the technical specifications for Module Mineral Terramesh System in the Sub-Chapters 901.03 Materials and 901.05 Acceptance of Works, Volume III – Technical Specifications, is modified by adding the following text:

"

901.03 Geosynthetic-reinforced soil and anchor mesh gabions

General

Prior to the performance of the works under this chapter, there shall be prepared a schedule for quality control of the works. All these documents shall be kept on site, as part of Quality Control Documents.

Ref. No.	REFERENCE	DESCRIPTION
1	GP 093-2006	Design Guidance for Geosynthetic- and metallic-reinforced Soil Structures
2	SR EN ISO 9864:2005	Geosynthetics. Test method for determination of mass per unit area of geotextiles and geotextile-related products
3	SR EN 10223-3:2014	Steel wire and wire products for fencing. Part 3: Hexagonal steel wire mesh products for civil engineering purposes
4	SR EN 10218-1:2012	Steel wire and drawn wire products. General. Part 1: Test method
5	SR EN 10218-2:2012	Steel wire and drawn wire products. General. Part 2: Wire dimensions and tolerances
6	SR EN 10244-2:2009	Steel wire and drawn wire products. Non-ferrous metallic coatings on steel wire. Part 2. Zinc or zinc alloy coatings
7	SR EN 10245-3:2012	Steel wire and drawn wire products. Organic coatings on steel wire. Part 3: PE coated wire
8	SR EN ISO 10319: 2015	Geosynthetics. Wide-width tensile test

Description

The works under this Technical Specification refer to reinforced soil by geosynthetic material used into the fill material, tied up by overlaps to the anchor mesh gabions filled with stone, which constitute the face of the fill.

The soil reinforcement shall be performed using geosynthetic material and anchor gabions of double-twisted hexagonal meshes, made of PVC-protected galvanized steel wire, having different shapes and sizes.

The geosynthetic reinforcement material shall not be subject to corrosion regardless of the chemical nature of the soil.

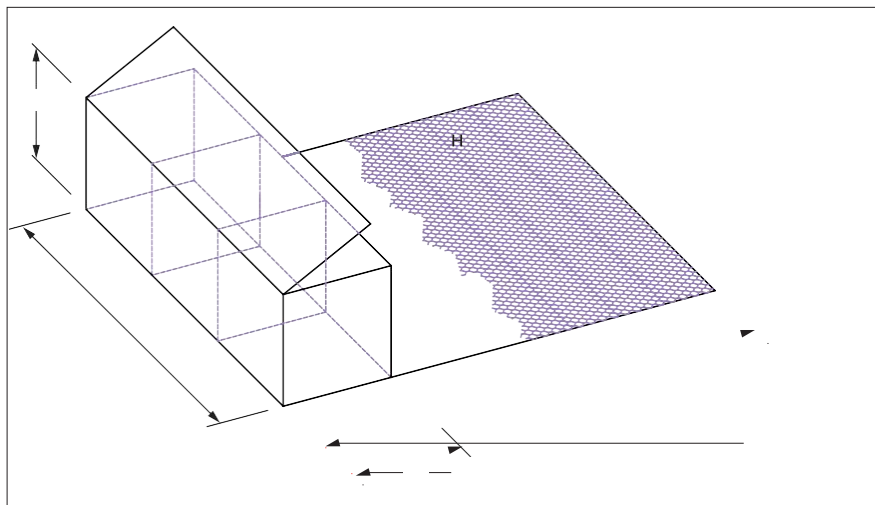
The system has a very good earthquake behaviour and a service life period over 100 years.

Materials

The soil reinforcement system shall consist of the following components:

- Soil reinforcement units (modules) of DT steel wire mesh, of long-term durability in the form of gab-tail gabions according to Figure 1

Figure 1 – soil reinforcement unit (module) of steel hexagonal meshes



- Fill stone for soil reinforcement units (modules)
- Fill material behind the units (modules)
- Reinforcement geogrids of long-term durability
- Filtration or separation geotextile placed behind the soil reinforcement units (modules)

Soil reinforcement units (modules) for embankments (“Gab-tail Gabions”)

The procured soil reinforcement units for embankments shall be prefabricated modules supported by certificates of durability and strength as per standard norm EN ISO 10223-3.

The units (modules) will be produced of double-twisted steel wire with 8x10 cm hexagonal meshes (Figure 1).

All the components of soil reinforcement modules will be protected against corrosion with Zn 95%/ Al 5% alloy according to SR EN 10223-3:2014 and SR EN 10244-2:2009, on top of which a polymeric coat shall be applied according as specified in SR EN 10245-3:2012. The corrosion protection must provide a durability of the product of minimum 120 years under operation conditions of environment aggressiveness of C4 and C5 class as defined in EN ISO 9223.

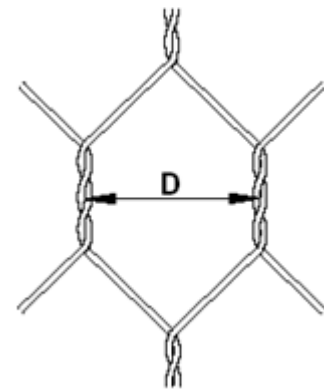


Figure 1

The standard mesh size/wire diameter combination is shown in the table below:

	Properties	Standard norm	Characteristics
TYPE	Type of mesh openings	EN 10223-3	8x10 cm
	Dimensions of mesh openings	EN 10223-3	80 (-0,+10) mm

Properties of wire used for soil reinforcement units (modules)

	Properties	Standard norm	Characteristics
PROPERTIES OF WIRE	Diameter of mesh wire with or without polymeric coating	EN 10218-2	2,70/3,70 (\pm 0,06) mm;
	Tolerances for wire mesh (\pm mm)	EN 10244-2	0,06 mm
	Minimum polymeric coating	EN 10218-2	0,50 mm
	Diameter of terminal wire or without polymeric coating	EN 10218-2	3,40/4,40 (\pm 0,06) mm;
	Tolerances for side wires (\pm mm)	EN 10244-2	0,07 mm
	Minimum polymeric coating	EN 10218-2	0,50 mm
	Corrosion protection of mesh and terminal wire	EN 10244-2	Zn95%+Al 5%, class A
	Corrosion protection of mesh wire	EN 10244-2	Class A, min 245 g/m ²
	Corrosion protection of terminal wire	EN 10244-2	Class A, min 255 g/m ²
	Wire tensile strength	EN 10223-3	350 – 550 MPa,
	Wire elongation at break	EN 10223-3	> 8 %

Properties of mesh used for soil reinforcement units (modules)

	Properties	Standard norm	Characteristics
PROPERTIES OF MESH	Mesh tensile strength	EN 10223-3	55 (±5) kN/m
	Mesh punch resistance	EN 11437	70 (±5) kN
	Deformation of mesh at maximum load	EN 11437	514 (±50) mm
	Corrosion resistance in SO ₂ environment	EN 6988	min. 56 cycles DBR <5%
	Corrosion resistance in saline environment	EN ISO 9227	min 6.000 hours DBR <5%
	UV-protection resistance	ISO 4892-2	min 4.000 hours, TS/E <25%
	Abrasion protection resistance	EN 60229	min 100.000 cycles

Properties of soil reinforcement units (modules)

	Properties	Standard norm	Characteristics
PROPERTIES OF MODULE	Expected durability in dry conditions, low aggressiveness (class C2 - EN ISO 9223)	EN 10223-3	min 120 years
	Expected durability in dry conditions, medium aggressiveness (class C3 - EN ISO 9223)	EN 10223-3	min 120 years
	Expected durability in wet conditions, high aggressiveness (class C4 - EN ISO 9223)	EN 10223-3	min 120 years
	Expected durability in wet conditions, very high aggressiveness (class C5 - EN ISO 9223)	EN 10223-3	min 120 years
	Expected durability in wet conditions, extremely high aggressiveness (class CX - EN ISO 9223)	EN 10223-3	min 120 years

	Sound absorption (EN1793-1)	EN 1793-1	Class A4
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The soil reinforcement modules used for embankments are intended for long-term use; therefore, in the selection process of the materials to be used for works, it is necessary to demonstrate the long-term reduction factors as follows:

- Partial reduction factor due to installation procedures
- Partial reduction factor due to behaviour in operating environment conditions
- Partial reduction factor due to production conditions
- Partial reduction factor due to data extrapolation

Fill stone for reinforcement modules

The stone masonry in gabions shall be performed of rocks of consistent, compact structure. The use of clay or marl rocks is not allowed. For performance of dry masonry, only quarry stone will be used. It is recommended that the stone be quarried before the winter preceding its use.

The boulder stone shall have irregular shape, close to parallelepipedal shape.

The use of 90/250 assortment for stone masonry in gabions is allowed, provided:

- LA crushing resistance (%): ≤ 35 (LA₃₅);
- water absorption WA₂₄ (%): ≤ 2 (WA₂₄ 2);
- resistance to salt crystallization MS (%): ≤ 25 (MS₂₅);
- no cracks, altered, tilted areas or nests of easily disintegrating mineral matter.

Fill material

The fill material must be compliant with the following requirements:

- % of passings through the 80µm sieve: 12%...35%, as per SR EN 14475 :2006
- % of passings through the 20µm sieve: < 10%, as per SR EN 14475 :2006
- $I_P \leq 6\%$, as per GP 093-06
 - the grading curve and envelope must be continuous so as the coefficient of curvature Cc is $1 < Cc < 3$ and the coefficient of grading uniformity Cu is $Cu > 15$, as per GT 067-2014;
- It must not contain particles larger than 200mm; the amount of particles above 100mm shall be less than 15%, in compliance with the requirements of manufacturing plant of geosynthetics;
- $4.0 < pH < 9.5$, in compliance with the requirements of geosynthetic manufacturing plant;
- when used for works, the fill material must be easily compacted so as to achieve the minimum required compaction degree, according to Table 5 of AND530-2012 and the volumetric weight after compaction of more than 19 kN/m³ ;
- The internal friction angle of the material (characteristic value) must be higher than 25°.

The source rock for assortments of granular material used as fill material must be compliant with the following quality requirements:

- it must have a consistent and compact structure. No assortments of clay and marl rocks shall be used;
- LA crushing resistance (%): ≤ 35 (LA₃₅);

- water absorption WA_{24} (%): ≤ 2 ($WA_{24} 2$);
- resistance to salt crystallization MS (%): ≤ 25 (MS_{25}).

It is admissible to use assortments of crushed concrete, provided is compliant with the above quality requirements.

Assembling and installation of soil-reinforcement elements (“Gab-tail Gabions”)

The anchor mesh gabion boxes shall be purchased from the system supplier agreed by the Contractor provided with quality certificate issued by the manufacturer

General assembling and installation requirements:

- a) the folded structure must be placed on a flat, clean ground without vegetation;
- b) after placement, the side, front and back walls and diaphragms shall be raised and tied up. The fastening wire is delivered together with the structure. For a correct joint, the wire must go through each mesh and twisted twice at every second mesh (Figure 2), by means of a manual or pneumatic twisting machine. Instead of fastening wire, Galvan-coated steel rings may be used (Figures 3, 4) having the following characteristics:
 - diameter: min. 3,0 mm;
 - tensile strength: min. 1700 N/mm²

The space between the rings must not exceed 200mm (Figure 3).

The front gabions are fixed, tying the face-to-face walls by means of fastening wire.

- c) The gabions shall be filled with 90/250 stone assortment, manually placed, like dry masonry, as follows:
 - for outer faces, larger stones are used;
 - the stones are arranged in rows across the entire width as horizontal as possible, so that they rest on as large as possible surface, and the volume of gaps is as small as possible;
 - the stones are interlocked, using finer stones of appropriate shape to fill the gaps;
 - laying of stones is carried out in such a way as to ensure weaved vertical joints on 10 cm minimum;
 - the stones used to make the layers should be as uniform as possible by strength and density.

It shall be checked the completeness of corner fills

- d) the cover shall be tied through an usual operation
- e) the geotextile shall be placed to separate the frontal structure from the back fill behind it
- f) it shall be performed the back fill behind the structure. Compaction must be done carefully near the frontal side so as to avoid its deformation
- g) it shall be placed the next structure as previously described.

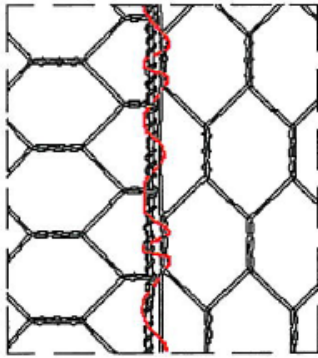


Figure 2

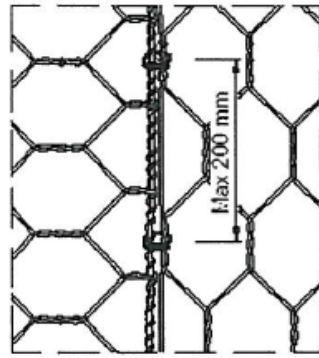


Figure 3

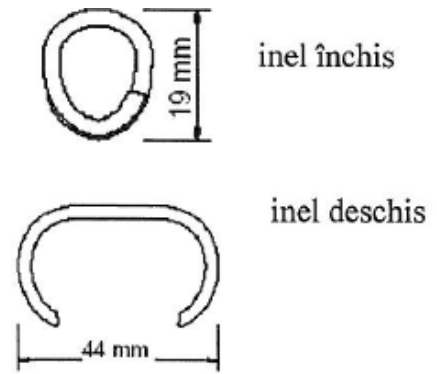


Figure 4

Equipment

The equipment used for the works shall be suitable equipment for lifting, excavation, transportation, and spread and compaction operations compliant with requirements for necessary capacity, reliability, efficiency and technical characteristics

All the materials, equipment and performance procedures shall be approved by the Engineer.

Quality requirements

The following tests shall be performed for materials used for works:

- a) fill material
 - quality of material
- b) reinforcement
 - type of mesh
 - wire diameter
 - resistance at break
 - elongation
 - adhesion of coating
- c) geogrid
 - type of geogrid
 - longitudinal tensile strength of geogrid
 - transverse tensile strength of geogrid
 - elongation in both directions
- d) check control of fill compaction
 - material compaction degree
- e) check control of reinforcement correct position

901.05 Acceptance of Works

Measurement

Geotextile, geogrid and geocomposite fabrics shall be measured in square meters of placed material. The Geosynthetic-reinforced soil and anchor mesh gabions (Module Mineral Terramesh System) shall be measured in installed pieces. No allowance will be made for overlaps, cutting, wastage, etc. and no additional payment will be made for any special handling, storage or transport requirements; all such shall be included in the basic rate.

There will be no special measurement and payment Geocomposite Type used as a SAMI for road pavement or for the Drainage Geocomposite used for filter subdrains. These materials will be included in the general measurement for SAMI layer according to Chapter 303, and Filter Subdrains according to Chapter 605.

Payment

The works measured as indicated above and confirmed by the Engineer will be paid at the rates provided in the contract against those items that are shown in the bid schedule. The payment under these items shall be the whole of the payment due for the completion of all works indicated in the present chapter.

Payment will be made under the items below:

No.	Item	Unit of Measure
90105	Geotextil 16/16 kN/m	Square meter
90107	Protection of slopes with geocells 40/15	Square meter
10002.10	Geogrid	Square meter
10002.9	Module Mineral Terramesh System	Pcs

Article 6

Section VI: Requirements, Technical Specifications, Sub-Chapter 201.13 Formation of Embankment Upper Layer (Subgrade), the following text has been deleted:

“The embankment upper layer (subgrade) shall be performed, using non-cohesive soil and cohesive soil stabilized with hydraulic binder.”

And replaced with the following text:

“The embankment upper layer (subgrade) shall be performed, using non-cohesive soil and cohesive soil stabilized with hydraulic binder, in accordance with SM SR EN 14227-5”.

Article 7

In Section V: Forms, Form FIN-1: Financial Situation, the figures “2018, 2019, 2020, 2021, 2022” shall be replaced with “2017, 2018, 2019, 2020 and 2021”, and the words “Projected 2023, Projected 2024” shall be replaced with the words “Projected 2022, Projected 2023.”

Article 8

In Section II: Data Sheet (DS), the text of ITP 15.3 shall be deleted.

Article 9

Section VI: Requirements, Technical Specifications, Sub - Chapter 703.05 Works acceptance, the following paragraph has been deleted:

“

Measurement

Works will be measured (at design thickness of pavement courses or by actual thickness accepted, whichever is the lower) by surface area, in accordance with the pay items included in the bid schedule. Works relating to construction of stairways will be measured by length of stairway

Payment

The works measured as indicated above and confirmed by the Engineer will be paid at the rates provided in the contract against those items that are shown in the bid schedule. The pay items include all the preparatory works and construction of the capping layer and subbase, concrete layer and regulating layer of sand mixed with cement, the asphalt concrete layer will be paid according to item 30701.

The payment under these items shall be the whole of the payment due for the completion of all the works under this chapter.

<i>No.</i>	<i>Pay Item</i>	<i>Unit of Measure</i>
70302	Construction of new sidewalks	Square meter

“

And replaced with the following text:

“

Measurement

Works will be measured (at design thickness of pavement courses or by actual thickness accepted, whichever is the lower) by linear metre, in accordance with the pay items included in the bid schedule. Works relating to construction of stairways will be measured by length of stairway.

Payment

The works measured as indicated above and confirmed by the Engineer will be paid at the rates provided in the contract against those items that are shown in the bid schedule. The pay items include all the preparatory works and construction of the capping layer, subbase, asphalt concrete

layer, kerbs installed on cement concrete foundation, etc., according to the Design requirements, Drawings and Specifications and receive the Engineer's approval.

The payment under these items shall be the whole of the payment due for the completion of all the works under this chapter.

No.	Pay Item	Unit of Measure
70302	Construction of new sidewalks	Linear meter

The item No. 70302 "Construction of new sidewalk" of Bill 700, Bill of Quantities, has been changed as follows:

Item No.	Item description	Unit of measure	Quantity
1	2	3	4
	SIDEWALKS		
70302	Construction of new sidewalk	linear metre	290,00

The payment item 30701 "Wearing course of asphalt concrete BAPC16 50/70 h-30 mm" of Bill 700, Bill of Quantities, has been deleted.

The payment item 30701 "Wearing course of asphalt concrete BAPC16 50/70 h-30 mm" of Chapter 307. Various Asphalt and Sett Paving Works, Technical Specifications – Volume III, has been deleted.

The payment item 50801.2 "Precast concrete kerbing and backing – type 1 (100x20x8)" of Chapter 508 KERBS, Technical Specifications – Volume III, has been deleted.

The item No. 50801.2 "Precast concrete kerbing and backing – type 1 (100x20x8)" of Bill 500, Bill of Quantities, has been deleted.

The item No. 50801.1 "Precast concrete kerbing and backing – type 1 (100 x 30 x 18)" of Bill 500, Bill of Quantities, has been changed as follow:

Item No.	Item description	Unit of measure	Quantity
1	2	3	4
	KERBS / BORDURI		
50801.1	Precast concrete kerbing and backing – type 1 (100 x 30 x 18)	L.m	33,00

Article 10

The updated BoQ and Technical Specifications may be downloaded following the link below:

http://files.asd.md/Directia_investitii/Vulcanesti_Bypass.zip