

**TERMS OF REFERENCE (TOR)
FOR ADDITIONAL CONSTRUCTION DESIGN**

Subject: Struma Motorway Lot 1

Section: from km ³⁰⁵+220 to km 322+000

Part: Road

Phase: DETAILED WORKING DESIGN

Location: region of Pernik and Kyustendil

Nature of the terrain: hilly

I. PROJECT GROUNDS AND TARGET

The additional design work is required primarily by the requirement for a stage construction of the facility, as well as due to events related to environmental protection and compatibility assessment.

II. GUIDELINES FOR THE TECHNICAL SOLUTION

1. Basic requirements

The design work should provide all project materials necessary for the successful completion of the construction site. Developed project materials and details should not call forth hesitation or misunderstanding with the contractor.

-For part "Large facilities"

Statistic check of facilities construction components for seismic impact resistance shall be accomplished in accordance with Ordinance № 2, dated 23.07.2007 for design of buildings and facilities in earthquake affected regions. If the check proves necessity of construction drawings revisions, the latter shall be agreed with the Contracting Authority and following its approval the amendments shall be reflected on the drawings. The expenses for statistic check and drawings revisions shall be at the Contractor's account

A. General requirements for the road section

The requirements from the Decision under the updated Report on EIA (Environmental Impact Assessment) and the Decision under the Report on the Environment should be taken into consideration during the development of the designs.

B. Specific requirements for the road section

The additional design works shall cover all parts of construction and assembly works that have not been presented in the investment project.

These are:

The Contracting Authority requirement for stage construction of the site

FACILITIES FOR SUPPLEMENTARY DESIGN

Input in the Report on EIA and the Report on the Environment for Project Struma Motorway coordinated at a working meeting and inspection of the terrain on 01.04.08 by representatives of the National Road Infrastructure Fund and the Green Balkans of the terrain of Lot 1

SECTION LOT 1 from km 305+220 to km 322+000

- **In Section from km 313+850 to km 314+200**, between the village of Delyan and the fork for the village of Topolnitsa, according to item 6.1 of the Decision under EIA an **overpass for bears 1 no.** should be designed above the existing road and the railway tunnel. The engineering requirements for the overpass for bears are indicated in item 7.1 of the Table for Measures under Art. 96, Para. 1 item 6 in Chapter V of the Decision under EIA.
The execution of the following parameters of the overpass should be observed:
 1. The width of the overpass should be 70 meters, with anticipation of noise protective walls with height 2 m, gradient up to 25-30°, entrances behind the partitioning the access to the Motorway facilities, restricted access of people to the facility, planting groups of bushes on the facility, thickness of the soil - 0,60 m, unlit.
 2. Perimeter of 200 m should be provided for from the two sides of the facility where planting of wood and bush vegetation should be anticipated, minimum 30% of open lawns, limited human presence, funnel shaped bringing in via embankments, thickly planted vegetation of small and big animals, absence of lighting fixtures.
 3. During the development of the design for the facility a plot layout should be elaborated as early as in the preliminary phase, including the 200-meter zone around the facility aimed at the fast proceeding and expropriation of the terrains.
 4. For better information see the sites of COST 341- Habitat Fragmentation due to Transportation Infrastructure (2003).
- **In section from km 315+700 to km 316+000**, in conformity with item 6.2 of the Decision under EIA, **2 nos. of underpasses for wolves should be designed** – between the fork for the village of Topolnitsa and Dyakovo dam lake and the fork for the village of Dyakovo. The engineering requirements for the subways for the wolves are indicated in item 8.1 of the Table for Measures under Art. 96, Para. 1 item 6 in Chapter V of the Decision under EIA.
- According to item 7 of the Decision under EIA the needed number of multi-kind passes should be designed below the bridges of the rivers, permanent or seasonal tributaries of the Struma River. The engineering requirements in the construction of the multi-kind passes are indicated in item 9.1 of the Table for Measures under Art. 96, Para. 1 item 6 in Chapter V of the Decision under EIA.
- According to item 8 of the Decision under EIA **pipes should be designed every 200 m below the route for passing of turtles**, if there is no other appropriate multi-functional facility. The engineering requirements for the pipes for turtles and other small kinds of animals are those indicated in item 10.1 of the Table for Measures under Art. 96, Para. 1 item 6 in Chapter V of the Decision under EIA.
- **In a section from km 318+000 to km 322+000**, according to item 9 of the Decision under EIA concrete walls should be designed for the limitation of the passing of turtles with height **0.40 m inclined outside** under the rabbit fencing. The engineering requirements for the partitions for the turtles and other small animals are indicated in item 11.1 of the Table for Measures under Art. 96, Para. 1 item 6 in Chapter V of the Decision under EIA.
- According to item 11 of the Decision under EIA settlement tanks should be designed and built up, which the surface waters from the dewatering facilities of the motorway should be discharged to, in the sections which are zones for protection of the waters – medium belt of a sanitary protective zone of water sources for potable – domestic water supply of the population and mineral waters, aimed at safeguarding against leakage of oil products and other contaminations in event of emergencies.
- According to item 16 of the Decision under EIA, **collector facilities should be designed for the surface waters equipped with appropriate filters and treatment facilities**, which should guarantee treatment of the waters to a degree corresponding to the category of the water intake the Struma River.
- According to item 17 of the Decision under EIA, **noise protective walls should be designed for the populated areas** in the proximity of the design route of Struma Motorway, respectively neighborhood of Gusevtsi, village of Blatino. A noise protective rail should be designed at the village of Dolna Dikanya.

- **All culverts should be designed with dry wings /pathways/** of their section from the two sides for passing of small animals without the need of their entering the water.

The measures related to the preservation of the envy are formulated and described in detail for the individual phases for the implementation of the project in the decision of the Ministry of Environment and Water No 1-1/15.04.2008 in conformity with an environmental impact assessment, which constitute an integral part of the Terms of Reference.

The needed design developments in the built up part of Struma Motorway from km 305+020 to km 305+220 on the left should be made, for reached needed expansion at the lane for casting a road connection Dolna Dikanya – Sofia, from km 305+215 to km 305+220 and for laying the needed asphalt layers.

III. Volume and contents of the project

The design project shall be in the volume and contents of documentation including:

1. Text part - shall include an explanatory note enclosed to the Terms of Reference (TOR), detailed bills of quantity, registers (payrolls), agreement letters, etc

2. Drawings:

The drawings shall contain all the details ensuring the implementation of different types of construction and assembly works

All texts and figures on the drawings shall be typed in appropriate size, so in transforming them into A3 format they shall be clear and legible.

3. Project data

The design projects shall be recorded on electronic media – 2 CDs, including: explanatory notes, drawings in DWG format, calculations, tables, bills of quantity, registers (payrolls), title pages, labels and entry information. The text part of the design project shall be in Word and Excel format

IV. Drawing and submission of project materials

1. Drawings

Originals of drawings should be of A₂ and A₃ size - in Bulgarian. All drawings to be submitted in reduced A₃ format

2. Text Part

The text part of the project should be drafted in Bulgarian language and shall contain:

- Explanatory note;
- Quantitative and registers (payrolls) (detailed and summary)
- Proper plan for bears's overpass at Delyan village
- Agreement letters;
- Tables;

3. Copies

3.1. Two sets of files, comprising the entire project in A₃ format shall be submitted to the Contracting authority for reviewing.

3.2. The project design materials, after being reviewed and approved by the Contracting authority shall be submitted:

- In original, in Bulgarian, in hard cover folders
Drawings in format A₂ and A₃ and text part in format A₄,
Easy to be copied - 2 copies.
- Four copies of design project documentation in Bulgarian

2 CDs with the entire information, easy to be copied, drawings – in DWG format, text – in Word and Excel.

V. Restrictions in project design

The candidate is obliged to comply with the requirements as set out in the Terms of Reference (TOR) for additional design, but in no case the following parts of the approved technical design should be re-worked:

1. Situational decisions of the direct alignment, cross roads, road junctions.
2. Leveling decisions.
3. Transverse profiles.
4. Road pavement and road basement.
5. Pipe culverts with openings up to 1.5 m can be replaced with facilities of the same or larger opening and height. The materials to be used for building of these facilities shall meet or have longer exploitation life than the ones, proposed with the basic design
6. The materials for construction of the facilities as set out in the basic design may be replaced only with ones complying with the approved technical specifications, having the same or longer exploitation life and not requiring higher costs for maintenance during the operation thereof.
7. Structural components of facilities, guaranteeing the water streams hydraulic mode shall not be modified.
8. All project, which shall possibly lead to modification of the motorway and roads range and are subject of the technical project and consequently may require additional land expropriation.
9. Any additional project designs shall be authorized by the Contracting Authority and agreed thereof.