

Translation from Bulgarian

REPUBLIC OF BULGARIA
State Enterprise "National Railway Infrastructure Company"

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Ref. No ЖИ-20038/15.10.2012*

R E F E R E N C E

State Enterprise "National Railway Infrastructure Company" (NRIC) - city of Sofia, issues the present reference to **AVIS ENGINEERING LTD** - city of Plovdiv, in confirmation of the fact that the company was **SUBCONTRACTOR** of RVP КОЕХНЕ АД for site "general repairs of Tunnel No.3 on third main railway - research, design and construction/engineering/" - parts: Electrical - Contact network and telecommunications, with **employer NRIC**.

Period of execution:

- September 2009 - November 2009
- July 2010 - September 2010

The cost of the executed construction and assembly works is 1,721,318 BGN, VAT excl.

The following types of works were executed:

1. Part Contact Network:

- Dismantling of existing overhead system and its tunnel fixtures;
- Mounting of new anticorrosive tunnel fixtures for the overhead system and fixed bolting with stainless steel anchors;
- mounting of special tunnel insulators, contact cables, suspension strands, fixed and compensated anchors for the chain system;
- Mounting of new anticorrosive operating grounding clusters along the whole tunnel, connected to the rails in compliance with "Instructions for grounding of facilities in the electrificated sections of NRIC dated March 2009.
- Testing and commissioning of reconstructed overhead system in the tunnel.

A new technology was implemented for the first time for determining the design position of suspension points of the overhead system - by means of geodetic placing for nonexistent new railway. The mounting of the new overhead system was carried out from ground level and prior to building the new rail way. Only the final zig-zag

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regulation and the height of overhead system were after the railway was built. This new technology and methodology for building an overhead system in tunnels facilitates the simultaneous construction of overhead system and rail way, which reduces the time for completion of the whole project.

2. Part Telecommunications:

- mounting of low voltage power cables 380V – three-phase back-up and 220V mono phase operating voltage, low voltage distribution boards, operating and back-up lighting in the tunnel;
- mounting of radio cable RY 114 for continuous communication between train dispatchers and train operators;
- mounting of protective subduct (HDPE with diam 32 mm) for optical lines;
- relocation and reconstruction of existing main cable;
- mounting of Mast transformer stations for power supply from catenary with transformer facility 27kV/ 0,22 kV – 5kW.
- grounding installation;

The contracted construction and assembly works were executed according to approved technology and schedules, and with excellent quality. The used materials were in accordance with the operative regulations and the requirements of the Employer.

AVIS ENGINEERING LTD has well-qualified personnel and special machinery, which enables it to carry out quick and quality installations, in compliance with technical, technological and statutory requirements.

The present **Reference** is issued to **AVIS ENGINEERING LTD** in order to serve for participation in auctions, competitions and procedures for assigning and execution of sites.

Eng. Milcho Lambrev

General director

SE NRIC

/signature/ /seal/

I, the undersigned Iliana Hristeva Levi, in my capacity of official translator, hereby certify that the above instrument, consisting of 2 pages is a true and complete translation into the English language of the attached official document, originally composed in the Bulgarian language. In testimony thereof I have hereunto set my hand and affixed the official seal of the company.

Translator:

Iliana Hristeva Levi:

