

Explanatory note

To the Occupational Health and Safety Plan

Project: preventive clearing of the riverbed and reinforcement of the banks of S. Bistritsa River in the common lands of v. Lilyanovo, Sandanski municipality

The Health and Safety Plan for the project has been developed in conformity with:

- The Occupational Health and Safety Act, (amended –Official gazette DV No. 76/ 20.09.2005)
- Regulation No.2 dated 22.03.2004 ref. Minimum requirements for occupational health and safety for construction works, promulgated via DV No.37 dated 04.05.04, effective as from 05.11.2004, and the associated appendices.
- Regulation No. 1-209/22.11.2004 ref. rules and standards for fire safety and accident prevention for operating facilities
- Regulation No. 7 ref. minimum requirements for occupational health and safety and use of professional equipment and tools.
- Regulation No.3 ref. instructions for employees in occupational safety , hygiene and fire prevention

- Rules for performance and acceptance of construction works
- Construction engineering fire safety standards 1994
- The territory development act

Basic documentation from the project developments for the site have been used.

Brief description of the site

Due to deposition of large boulders and drift, the left aperture of the bridge at S. Bistritsa River upstream v. Lilyanovo has been completely obstructed and the river flow has headed only through the right side aperture; high water level caused overflow through the bridge in December 2010, and in the vent of a subsequent flood the bridge will be destroyed. To ensure passability of the river in this section, upstream and downstream of the bridge, we have planned construction of corrective walls of concrete to shape the cross sectional profile of the river, width 12 m. Following the inspection onsite to establish the condition of the riverbed using geodesic survey of the riverbed, we have found four different challenging sections and measures have been suggested to improve the condition of the riverbed and the banks via corrective walls and gabion facilities.

The most endangered section of the banks upstream and downstream of the bridge will be provided with corrective walls; works will include clearing of the obstructed pass of the bridge to ensure flow of high water.

The walls will have different lengths according to the terrain, and with identical cross section and foundation depth, $H=1,5$ m with a base of gravel mixed with large boulders.

Wall No.1 – left side bank (in the direction of flow) – 35 m long

Wall No.2 – right side bank (in the direction of flow) – 47 m long

Wall No.3 – right side bank (in the direction of flow) – 45 m long

Deposits at the left bridge support will be removed, as well as those under the road slab.

The walls have been designed for ground pressure, excluding live load, due to the fact that there is no existing road, and construction of a new road is not intended, since there are other access roads to the river. As per the provisions of article 41 of the rules for support walls, $H=4,0$ m max, seismic design calculations are not required.

The first section of the riverbed has obstructions of the flow and potential hazard of bank erosion downstream the little bridge at the HMS No.51540 point. Only the left side bank is subjected to erosion and we have planned its reinforcement using a line of gabions $2 \times 1 \times 1$ m, 37 m long.

The second section endangered by erosion is 400 m away from the bridge downstream, 20 m long; we have planned its reinforcement using gabions $2 \times 1 \times 1$ m.

The third section endangered by erosion is also situated on the right side bank, 53 m long, to be reinforced with gabions, $2 \times 1 \times 1$ m.

Following inspection of the riverbed and the banks, we found other minor depositions and partially eroded locations, banks covered with small bushes and single trees that can cause new depositions.

The project is in conformity with the currently valid provisions of Regulation No.7 and the Territories Development Act.

Temporary construction facilities.

The site is located in the vicinity of v. Lilyanovo. There is no need of construction of buildings for accommodation of workers or a temporary warehousing facility. Works will be mainly performed using construction machinery, 10 to 12 workers will be required for concrete works and formwork .

2-off wagons will be placed, 1 for construction personnel and 1 for the technical manager; these will be provided with temporary source of power supply and water via branch lines from the relevant systems of v. Porominovo. A WC will be provided onsite for the wagons. The necessary construction materials, mainly formwork will be stored onsite temporarily and therefore construction of temporary warehousing facilities will not be required.

Preparatory works.

The contractor shall perform the following preparatory works:

- Advise the operators of underground and aboveground communications in the subject area;
- Identify the site to be used for transfer of surplus soil and waste materials via a permit to be issued by the municipality for a dedicated disposal site.

Access roads.

During the construction phase, the existing asphalt road from v. Lilyanovo to the site will be used, with a branch from the latter to the wagon site, 120 m long. Onsite roads will be built initially with the routes passing along the walls to ensure access to the riverbed along the full length of the corrective wall section.

Methods of work for the main construction works.

The contractor shall undertake the actions as provided for by occupational safety, hygiene and fire safety, and organization of construction works as per the permit for use and the regulations, as well as the requirements of this project. Specific machinery, equipment and work force as required for the project will be specified by the contractor, depending on work phase, season, time schedules , etc. terms, as specified by the employer.

The following types of works will be performed on the site:

- Earthworks and backfilling
- Formwork, reinforcing steel and concrete works
- Gabion positioning
- Water removal
- Re-cultivation and planting of trees for affected terrains

Scope of the health and safety plan

1. Organization plan

- Layout plan, scale M 1:1000 , for the site – general organization plan
- The employer, subject to article 24 of the Occupational health and safety act, shall make a contract with a HES coordinator – article 11- Regulation No.2/22.03.2004 issued by the Ministry of Labor and Social Policy and the Ministry of Regional Development and Public works ref. the minimum requirements for Occupational health and safety in the progress of construction works.

Pursuant to article 25 of the Occupational health and safety act, the employer shall provide health services for its employees via the labor medicine offices.

In view of the project nature and the linear character of the said corrective works, there will be no need to use the side lanes of the road for storage of materials, though if so required, it shall be approved in advance by Sandanski municipality.

2. Construction phase arrangement drawing

The construction site shall be placed within the subject section within the existing flooded area of the river and excluding agrarian land.

A complete time schedule for construction works onsite shall be delivered by the construction contractor, subject to the terms and conditions for completion of works, as specified by the employer. Works will be performed on several sites simultaneously along the route of the section to be corrected.

The estimated period for project completion is 6 months, to be completed in several stages, with no clear-cut milestone in between, due to works performed at several locations.

Stage 1 – clearing of bushes at the base of the corrective dykes, preparing for construction. Delivery of wagons and WC to the site.

Stage 2 – dyke construction, with temporary redirection of the river from the construction point.

Stage 3 – construction of walls and gabions.

Stage 4 – Finishing works, vertical planning and preparation of the section for commissioning.

3. Hazard classification:

Potential injuries arising in the progress of construction as per the risk assessment can be caused by:

- Collapse of soil – stage II and III
- Electric shock and machinery in operation – during all stages
- Other hazards - during all stages

Occupational safety instructions.

The coordinator shall require from the employer written instruction manuals in health and safety for main types of work involving hazards. These instruction manuals shall be subject to approval, with indication of the date, and the contents of these shall be in conformity with the provisions of article 19 of Regulation 2. Prior to commencement of construction, the main contractor shall explain the occupational health and safety rules for all types of construction works, and if required – to provide fencing, safety devices and accessories for all work places. Occupational health and safety measures provided for each stage of construction shall be specified in a HES data sheet.

The contractor shall organize primary and periodic instruction on a monthly basis in occupation hygiene and safety and fire safety as per article 9, clause 2, sub-clause 3 – regulation No.3 (DV No.44/year 1996) and shall maintain a logbook to that effect, plus a logbook of the good functional condition of manual electric devices.

The employer shall develop functional profiles as per article 127, clause 1 sub-clause 4 of the Labor code.

4. Instructions concerning organization and management of hazards by stages

The employer shall ensure that the site is released to the contractor with temporary power supply provided for the project and the main power board and fire cubicle within the site with the wagons. The employer shall provide temporary water supply for the site and positioning of the wagons as temporary construction facilities.

- As required, the employer shall provide temporary fencing, height 1,5 m only at the side of the asphalt road, and along the river bridge. A vehicle cleaning facility shall be installed at the exit of the asphalt road to remove mud, soil etc. from the construction machinery via mechanical means.

Before commencement of construction, all underground communications shall be marked, and provided that these shall prevent works onsite, their relocation shall be considered.

Earthworks and backfilling operations shall be performed at daylight only, or using dedicated lighting system based on the specific project parts.

The HES coordinator and the technical manager shall organize supervision of deep excavations, considering steep design slopes, and reinforcement of these excavations.

Upon completion of earthworks for stage 1 and 2, there will be repeated work cycles in stage 3 – formwork, reinforcing steel works, concrete works and the relevant auxiliary works – ladders, scaffoldings, railings, vibrator use, platforms, etc. special focus shall be given to fixing of formwork. In case of changes required in formwork fixing, instructions can only be provided by the technical manager or design engineer, with recommendations described in the book of orders.

Cables and/or wires shall not be attached to rein bars.

Locations involving specific risks and HES requirements.

Locations involving specific risks for this project:

- Works performed inside or near excavation banks

- Water removal and concrete vibration
- Use of construction machinery

Measures and requirements related to HES have been detailed in appendix 1- 7 of Regulation No.2 ref. minimum occupational safety requirements for construction works, and the Data sheets.

The HES coordinator and the technical manager shall not permit works to be performed by any personnel prior to instructions held concerning the abovementioned hazards or without use of personal safety equipment , and/or in adverse weather.

5. Firefighting and emergency response actions

5.1 The site shall be provided with a specific Plan for prevention of fire and accidents and emergency response actions plus a personnel evacuation plan. This plan shall be developed as per the requirements of Regulation No.2 dated 22.03.2004 issued by the Minister of labor and social policy and the Minister of regional development and public works, in relation to the minimum requirements for HES conditions in the progress of construction; plus the requirements of Regulation No.1-209/22.22.2004 issued by the Ministry of Home affairs and the Ministry of regional development and public works, ref. the rules and standards for fire safety and accident prevention for operating facilities. The plan shall specify fire response actions onsite. Info signs shall be displayed at prominent locations with the following details:

- Contact number of the Fire and Emergency Response Unit
- Address and contact number of the local medical facility
- Address and contact number of the local rescue team

No explosive deliveries and/or transport or storage have been planned for this project, or materials involving fire hazards or any flammable materials.

Specialized teams performing hot works shall receive written instructions to use warning signs placed at a safe distance when using flammable and combustible materials.

The HES coordinator shall control the availability and awareness of the instructions for safety of work, safe use of heating devices and the condition of the fire cubicle.

5.3 Machinery and systems to be supervised

- Mobile crane
- Concrete pump truck

Temporary power lines to the site.

5.4 Organization of fire safety and accident prevention on the site

The site manager shall ensure communication and phone/mobile communication with the Regional fire safety and emergency response office.

The site manager shall appoint an employee responsible for the onsite fire safety and emergency response actions via an ordinance and shall set up the fire team and fire equipment onsite.

The site manager shall specify, via an order, the heating devices for the onsite wagons and rules for safety and care after use.

5.5 Requirements for fire safety and emergency response actions

Storage /containment in machinery and/or containers of combustible and flammable substances onsite is strictly forbidden.

Engines of machinery shall never be heated using open flame.

Welding works shall be performed away from combustible objects.

No use of self-made heating devices is permitted.

Each wagon shall be provided with a dry powder fire extinguisher ABC, 6 kg.

5.6 Fire response actions

Upon receiving an alarm for fire, the site manager / employee responsible for fire response actions shall promptly advise the regional fire safety department, while suspending works at hazardous locations and organizing fire confinement. All inessential personnel, which is not involved in firefighting shall be evacuated as quick as possible .

6. Responsible employees

- HES coordinator
- Technical manager
- Fire safety team manager

Each of the responsible functions and per each stage shall be issued a personal order stating rights and obligations of each responsible employee.

7. Measures and requirements for safety in the progress of construction works

- Information plate shall be displayed before the commencement of onsite works; the offices of the Executive Agency of Labor Inspectorate and the Regional Directorate of National Construction Supervision – Blagoevgrad shall be notified.
- The site manager shall provide special working clothes and personal safety equipment.
- The site manager shall be in charge of sanitary and hygiene conditions onsite; these shall be specified as per article 16 – regulation no.2/22.03.2004 ref. the minimum requirements for occupational health and safety in the progress of construction.
- The site manager shall provide instructions in relation to the onsite conditions of work; point for collection of household waste; and shall be responsible for periodical transfer of waste to the urban depot, based on the above regulation.

- The site manager shall ensure safe access for all employees to their work places onsite.

8. Use of constriction machinery

The following machinery will be used on the site: bulldozer, excavator, front loader, mobile crane, concrete pump truck, concrete transport truck, heavy vehicles, etc. no works shall be performed onsite in the dark.

Machinery allowed to work onsite shall be provided with technical dossier and shall be in full conformity with the project requirements for construction works.

Operators of construction machinery driven by electric motors shall be qualified and shall hold certificates qualification group II for safety.

All machinery can only be operated by authorized operators, following instruction of the specific conditions of work.

The technical manager of the site shall develop info lists number 1 to 3 (or more) in relation to the stages and sub-projects, as recommendable for the technical manager. These will be used to develop specific lists for the project. These must be signed by the HES coordinator.

Appendix: Arrangement drawing, scale M 1:5000

Info list form

Stamp and signature

Prepared by Eng. K Gotsev /Chamber of engineers in investment engineering; reg. No. 07664 – full scope of engineering competence

Stamp of Tera Konsult – License No.000502 – assessment of conformity for investment projects

Signature

I, the undersigned Blaga Hadzchieva, Personal ID # 7105310010, do hereby certify that the foregoing translation from Bulgarian into English of the attached document, and namely: Explanatory note, is true and correct to the best of my knowledge. The translation comprises 8 (eight) pages.

Translator:

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