

**REPUBLIC OF ALBANIA
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**TECHNICAL REPORT
FIRE PROTECTION**

**FOR THE CONTRACT
PREPARATION OF DESIGN AND SUPERVISION FOR REPAIR AND
RETROFITTING OF:**

ISMET NANUSHI JOINT HIGH SCHOOL

**LOT I
MUNICIPALITY OF DURRES**

CLIENT



CONSULTANT



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1. Technical Report of MNZSH

This Technical Report of the project "Graphic Documentation for Fire Protection and Rescue" of the object: "PROJECT PREPARATION AND SUPERVISION FOR REPAIR AND REINFORCEMENT OF" ISMET NANUSHI "HIGH SCHOOL which contains:

- - Part of the report of the urban and constructive architecture project of MNZSH;
- - Part of the report of the mechanical project of Fire Protection;
- - Part of the report of the water project of Fire Protection;
- - Part of the report of the electricity project of Fire Protection;
- - The part of the report on vacuum schemes.

1.1 Legal and normative support

The Project for Fire Protection and Rescue of the building: The Project Preparation and Supervision for the Repair and Reinforcement of the high school "Ismet Nanushi" is realized based on local standards and norms as well as those of European Community countries. The fire protection system respects all legally binding requirements related to the norms / standards that are currently in force in Albania as well as European norms.

The laws, regulations, norms and standards used in this project are presented below:

- - Law no. 152/2015 "On the service of fire protection and rescue";
- - Regulation "On fire protection measures in the design of buildings of any type" Decision no.162 dated 19.4.1965, revised;
- - Instruction of the Minister of Internal Affairs no. 425 dated 24.7.2015 "On the receipt, administration of technical and graphic documentation of the fire protection project and on the rescue and issuance of technical acts";
- - EN 13501 Classification of fire building elements
- - IEC 79-10 Classification of premises according to the instructions in MNZ
- - EN 2 Classification by fires
- - EN 1838 Application of emergency lighting
- - EN 1366 Fire resistance test of elements
- - NFPA 10: standard and portable standard
- - EN 3-7: Fire extinguisher outlet standards

1.1 Part of the report of the ARCHITECTURAL and CONSTRUCTION project

"Ismet Nanushi" high school, Sukth, Durres was built many years ago with structures and building materials of the time which over a long time have become obsolete and have lost their physico-chemical qualities.

The school building fire trucks can approach the external hydrants located in the school yard from the intended entrance. Inside the buildings, the fire and rescue forces have the necessary space to effectively carry out operational actions in resolving situations.

From the constructive point of view, the constituent buildings of this complex are designed with incombustible structural elements.

More specifically, the REI durability of construction structures is presented in the following table:

Structure	Combustibility	Minimum REI degree of fire resistance
Outdoor walls	not Flammable	5 hours
Indoor Walls	not Flammable	1,5 hours
ceiling	not Flammable	3,0 hours

From the above it results that these structures have the minimum REI stability higher than required in such cases by the technical norms of fire protection and rescue.

In order to increase the guarantee for the life of the people present, when they are in the conditions of a fire and to enable a quick and safe evacuation of them from the place of occurrence, it is obligatory that the exits and roads evacuate the passages, especially the spaces. and the passages in them are always kept free. They must be present through phosphorescent and illuminated signboards as provided in the Fire Protection electricity project.

Thus, general fire protection measures include:

- positioning signs in visible places and placing instructions for actions to be taken by personnel in case of fire;
- positioning of signs representing fire extinguishing positions, escape routes and emergency exits;
- removal of flammable materials from the premises of the building and their placement in safe places to prevent the transmission of fire;
- keeping exit routes free;

2.1 Part of the report of the MECHANICAL project of Fire Protection

- In all premises and buildings of the educational complex itself, the degree of fire risk is the same, the level is low. The category of presumed fires is also the same, as everywhere in these environments the fires will be mainly of class "A" and class "E", in solid combustible materials and installations and electrical equipment. In general, taking into account the characteristics of the building and its destination, the following quenching substances are used:
 - a network of outdoor hydrants in the school square;
 - a network of internal hydrants in the school building;
 - portable extinguisher with ABC powder for the internal premises of school buildings and the external building, technical and hydro-sanitary environment.
 - portable extinguisher with CO₂ anhydride in special service facilities (electrical and office environment).

3.1 Part of the Fire Protection HYDRIC project report

As mentioned earlier, the hydric fire protection plant consists of:

- 1 outdoor hydrant in the square in front of the school that will also serve as a connection point for fire protection.
- internal hydrants in the school building, on its 4 floors.

The determining factors that have been taken into account during the design are the nature and size of the fire, the size of the area to be stamped, the possibility of spreading with the speed of the fire, requirements and norms according to EN12845 and those in force in Albania.

3.1.1 Grupi i pompimit te impjantit kunder zjarrit

The pumping group of the fire protection plant will be located in the technical environment of the building in the basement of the 4-storey school and will be in accordance with the norm EN 12845. This group will serve the internal hydrants. The pump set will consist of 2 pumps:

- 1 electric service pump (400l / min, 5.0bar) as well

The pilot pump will maintain the pressure system by withstanding small pressure losses, preventing the main pump from entering operation again and preventing false alarms. The pilot pump will be checked automatically.

In case of fire, with the pressure drop in the fire protection network below a certain level, the electronic controller will automatically activate the electric service pump as well as transmit a fire signal to the visual alarms. The plants will operate both automatically and manually.

3.1.2 Water Quantity

The amount of water required is equal to the continuous water requirements for extinguishing the fire as well as the time available to eliminate it. This amount determines the necessary

water tank available for fire protection for an autonomy of at least 60 min of the fire extinguishing plant because the school building is located in Sukth about 12 km from the City of Durres will be made available (about 40,000 liters available to the MKZ plant).

This amount of water guarantees to supply the internal hydrants of the school building with a minimum amount of water of 120 l / min, with a pressure of 3 bar or an external hydrant with a minimum amount of water of 400 l / min, with a pressure of 3-4 bar .

Looking at the demand for water from the relevant norms as well as the relatively high number of students. It is considered reasonable to build a concrete storage tank under the ground near the school which will meet the demand for sanitary water 20,000 liters of water and for MNZ 40,000 liters of water. The reinforced concrete tank being under the ground surface in the school yard does not obstruct or block usable spaces and avoids the use of galvanized tanks 5000 liters (12 pieces) which require continuous maintenance during operation. The tank must be equipped with level indicators. These indicators should signal the drop of the water level in the reservoir below a certain value and keep the required quantity for MNZ. Accumulation in a common reservoir also ensures constant water refreshment.

3.1.3 External hydrants

The external hydrant will be of the type "above ground" type 16 bar in accordance with the Albanian and European legislation, with supply from below and will be equipped with valve insulators, adjusting hose and supporting leg. The bottom flanges will be 80-mm diameter, PN16. The external hydrant will also be equipped with the connection to Fire Protection and will be approved by Fire Protection and in accordance with the norm EN 14384. External hydrant will include:

- DN 80 heat-insulated steel column, painted with RAL 3000 synthetic paint for outdoor environment;
- . output for UNI 70 connection, bronze connection, male fillet UNI 810 norm EN1982, bronze cork EN1982;
- connection with motor pump PNMZSH UNI 100
- device for interruption of the main valve in case of damage to the hydrant by shock;
- anti-freeze discharge valve.

The hydrant will be supplied with flanges, bryllin at the bottom, couplings and end flanges and intermediate part that stops water in case of damage.

3.1.4 Internal hydrants

Internal hydrant tapes are placed in a visible position and equipped with the appropriate signage. The outlet and water pipe are continuously connected to the water supply columns.

Hydrants will be composed of:

- bronze hydrant faucet UNI 45 with size 1 ½ "(UNI 811);
- hydrant pipe of the type "extra strong" made of polyester fiber pipe, on impermeable rubber layer with external coating PVC resin against consumption with dimensions 45mm and length 30m;
- 3 galvanized fittings UNI 804 and 811 for connection to the pipeline and the dump;
- copper casting with extruded and extruded brass connections UNI 841, UNI 8478 gasket; the cuffs will be fixed to the pipe with galvanized steel clamps.

The cassettes where the hydrants are placed will be made of galvanized steel and coated with 12/10 spacer with dimensions H 61x37x21cm when holding only the hydrant and H 100x65cm when holding the portable extinguisher.

3.1.5 Pipes and fittings (External network)

Pipes outside the building will withstand erosion and changes in temperature and climatic conditions without distortion or damage or stresses left in any part of them and without affecting the strain and stability of each part, during their work. Tuba PE OD

All pipelines will be tested for durability and barriers and impermeability. In case of unsuccessful test results, the contractor will repair the observed defects or dismantle and reconstruct the pipeline sections at his own expense.

3.1.6 Pipes and fittings (internal network)

Pipelines and fittings that will be used in the network inside the building will be in compliance with the following norms:

- steel pipes S235JR and Fe360 according to UNI 10025, UNI EN 10029;
- edges, bends and wall thicknesses according to UNI EN 10024;
- fasteners and screws / bolts CE, according to UNI 5727
- anti-vibrating sleeves with steel flanges according to UNI EN 1092-1;
- Exterior anti-corrosion coating with spray (Catramina HD), with minimum thickness ≥ 150 microns, referred to UNI 12845;

- painting in the area of water against corrosion through spraying of catrame epoxy bituminous epoxy biocomponent, with minimum thickness ≥ 150 microns, referred to UNI 12845;

- MM painting in the technical area with anti-rug and further treatment with epossidoc bicomponent EPOX Galvanized, in accordance with UNI 11292.

The supports will be made of fire-resistant materials and such as to hold without deformation with a minimum load of 100kg over 5 times their weight filled with water.

Their form will be referred to UNI 7145.

Pipeline supports will be studied by the contractor and submitted for approval to the works supervisor along with the constructive drawings.

The size of the supports will take into account:

- the weight of pipes, valves, fittings and in general all self-dependent components;
- stresses generated by seismic vibrations, hydrostatic tests, hydraulic punches and safety valve intervention;
- stresses created by thermal dilatations;

The position of the supporters will be chosen on the basis of:

- size of pipelines;
- their crossing routes;
- presence of concentrated loads (pumps, valves, etc.);
- structure available for gripping;
- thermal dilation movements.

All supports must be studied and realized in such a way that they do not transmit noise and vibration to the structure.

Nominal diameter of pipes (mm)	Vertical Distance (m)	Horizontal Distance (m)
DN20	1.5	1.6
DN25 deri DN40	2.0	2.4
DN 50 deri DN65		2.5
DN80		3.0

Portable fire extinguishers: In the facilities of the school complex provided the positioning of portable fire extinguishers EN3, weight 6 kg, class 34A 233BC and fire extinguishers with CO2 will be of class 113B, EN3 in special environments.

Fire extinguishers are foreseen in the project to be placed in all premises of the buildings in the positions defined in the project. The characteristics of the 34A 233BC portable extinguishers will be as follows:

Dust fixes will be maintained and tested at least annually by licensed authorities for this purpose.

Carbon dioxide fire extinguishers are placed in all premises of the educational complex.

The characteristics of the CO2 fire extinguisher will be as follows:

CO2 fixtures will be maintained and tested every 6 months by licensed authorities for this purpose.

5.1 Part of the report on EVACUATION schemes

Measures to be taken first in the safety of life in buildings are the ways to escape in case of emergency.

Emergency exits from each side of the building are made in a single direction. Permitted emergency evacuation distances, according to BS 9999: 2008 are determined by the risk profile.

Considering the characteristics of the people who use these facilities as class A (persons who are smart and familiar with the building "Occupants who are awake and familiar with the building") for the school "Ismet Nanushi" and class C ("sleeping area or boarding schools") for primary school students as well as the rate of spread of low flame (class 1 - material with limited combustibility materials "Banking hall, limited combustible materials") evolution distances for a single direction result:

- 26m to 30 m for the school building "Ismet Nanushi".

These distances are generally met for (maximum distance to the departure step is 25m although this step is not a protected step)

The width of the doors and evacuation corridors is calculated according to the number of persons and results narrowly but within the required conditions. Thus, the minimum width of the door per person is 0.3m according to BS 9999 from where the minimum width of the class doors (max. 30 persons) results 90cm and the exit door from the building results over 105cm.

Also, minimal but within this norm can be considered the width of the evacuation corridor from the quota +0.00 of the school "Ismet Nanushi", when the number of posts in these facilities is max. 30 people.



planifikim urban, projektim arkitektonik dhe inxhinierik, mbikeqyrje dhe kolaudim

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