LUŠTICA BAY

MONTENEGRO

RECOMMENDATIONS FOR TRANSFORMER STATION DESIGN

LB ELECTRICITY COMPANY

May 2025

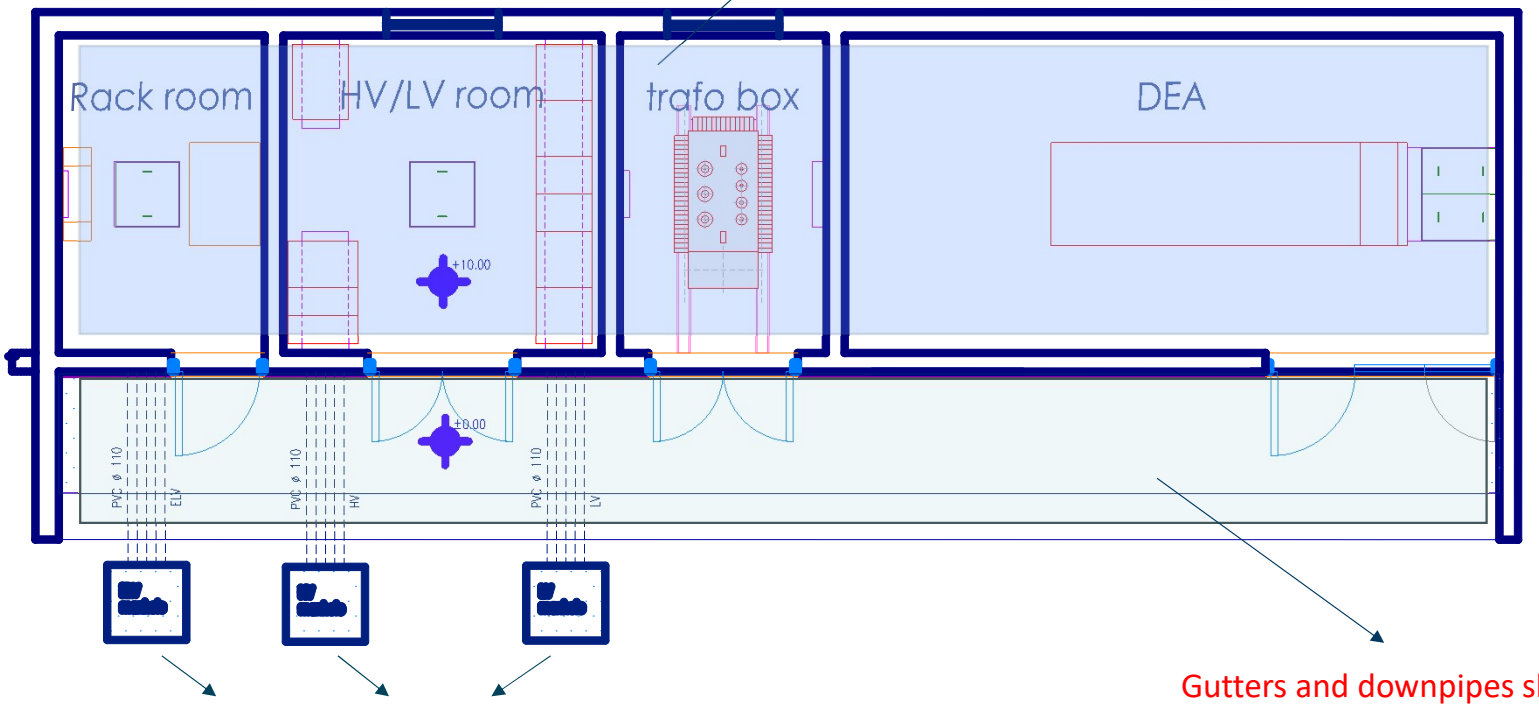
Selection of the location

- Substation must be placed above ground
- Surrounding area must be designed in such manner which prevents water penetration in the substation
- If substation is located in the building, the substation must be easily accessible from outside
- Substation must not be located under the pools
- Substation must not be placed under a deep layer of soil
- In exceptional cases, a substation could be located in the garage
- If located in the garage, location must be close to the entrance

Selection of the location

- Roofs and wall must have thermal insulation
- Only aluminum doors and grills shall be used
- Substation floor must be at least 10cm higher than the surrounding pavement
- Lower edge of ventilation openings must be at least 20 cm higher then the substation floor
- Ventilation louvers must be designed in a way which disables rain penetration
- Rain gutters must not be placed above transformer or HV or LV equipment
- Substation roof must be accessible for maintenance
- No water or sewage pipes, irrigation or rainwater pipes and gutters are allowed above the substations
- Floors should be smooth, with epoxy coating

No gutters or down pipes are allowed above or in the equipment area

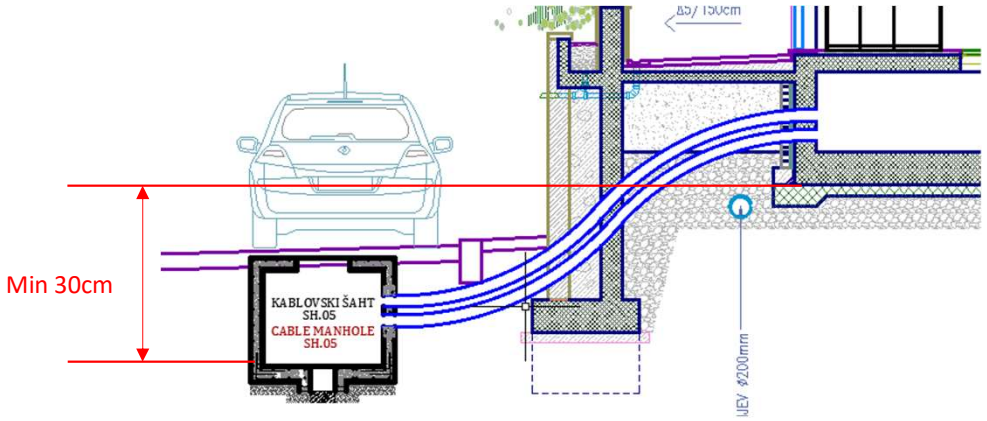


10kV, 0.4kV and fiber optic cable must be placed in separate manholes and separate cable ducts

Gutters and downpipes should be placed in this area

Cable ducts and manholes

- Manholes must be made of concrete, with drainage and heavy iron cover
- Bottom of the manholes, located near the entrance of substation, must be 30 cm lower than the transformer station cable compartment floor
- The cable ducts and manholes must be designed in a manner which disables water penetration
- It is not allowed to mix 10kV, 0,4kV and fiber optic cables in the same cable ducts or manholes



Transformer box, HV and LV room

- No other installation or equipment, except those ones which are part of the transformer station must be placed in the transformer station
- All switches, thermostats, etc. must be located next to the entrance
- A mash with gravel must be installed in the oil pit under the transformer
- All substations must be equipped with AC units
- Cameras should be installed in font of the entrance in and in the generator room. Installation in the transformer box is not allowed
- Doors should be equipped with e-click



Transformer box, HV and LV room

- No distribution board, with exception to self consumption DB, should be installed in the HV/LV room
- Distribution boards for IT consumption, public lighting and similar should not be located within HV/LV room
- If installation of diesel generator is foreseen, it should supply self consumption in the substation, Rack room and public lighting, as well
- All distribution boards, with exception to self consumption DB, must be equipped with a smart electricity meter (prior approval of LBEC is needed)

Equipment for substations and diesel generators

- **Main LV switch must be equipped with Micrologic 5.0E**
- **The equipment should be of the same manufacturer in all substations (Schneider electric equipment has been installed in most substations, due to which equipment of this manufacturer should be used for future substations)**

- **All generators must have housing, even if they are installed in the generator room**
- **One preferable manufacturer of diesel generators should be selected**
- **Generators must be equipped with EMERGENCY STOP pushbutton, with glass protection, installed on the façade next to the entrance to the generator room**
- **All generators must have bypass**

