

Krister Berggren
Byggkonsult AB
Wittstocksgatan 16 A
115 27 STOCKHOLM
Tel: 08-665 40 75
Fax: 08-665 40 95

Datum:
2004-10-19

South Gate of the City wall Kotor, Montenegro

The city wall consists of a cavity wall of natural rock. The upper part of the port is a round arch lined with massive hewn stone blocks.

On the inner side of the port above the opening there is a parapet on a shallow vault of stone and tiles. The parapet, above the opening, has two layers of embrasures, the parapet continues to the side towards the water with one layer of embrasures. The adjacent walkway is carried by a series of shallow vaults on massive stone consoles protruding from the stone wall.



The porch and the walkway from the inside of the fort.

The beautiful walkway adjacent to the parapet is a thin and elastic, almost as hanging free of support, structure. The whole structure has a patina and an ongoing deterioration, which has to, in my opinion, be considered and protected as much as possible. That means that the interventions should be minimized. These values must be evaluated with the security risks, for instance the risk of collapse, if the interventions are not sufficient.



The hanging walkway.

Visible damages

The part of the wall above the porch has diagonal cracks. The stones of the crenulation of the parapet have partly disappeared. One stone block of the vault above the opening has slid down a couple of centimetres.



Defective crenulation and cracks.

The vault on the inner side of the porch has rather wide cracks in the lower edge. The under-side of the vault is moss- and alga-covered. The stone covering on the upper part of the walkway is damaged and seems to have largely disappeared. At the moment there is some vegetation on the walkway.



The under-side of the porch.



The upper part of the walkway.

Damageanalysis

The cracks and the slided stone block above the opening indicates that the wall towards the waterside is inclining outwards.

Alga and moss on the under-side of the walkway shows that the vault is very humid and that water protection is missing.

The vegetation on the walkway indicates that there for some reason is earth. It could be from an earlier, old mud protection/packing or from degradation products from the walls.

Preliminary proposal for intervention/program

Not to risk further damages and an eventual snap through of the vault the possibility to stabilize the wall must be studied. One proposal is to anchor a steel tie in the wall towards the rock or directly into the rock and connect it with the wall on the water side. This tie must be places close to the porch, and on the inner side. The placement and the design of such a tie must be done with great care, both from esthetical and technical point of view. The tie should perhaps be of stainless steel.

Walls and the vault should be pointed with mortar. The ragged crenellation should be restored in order to protect and stabilize the parapet.

A humidity barrier should be introduced on top of the walkway. It could be made of mud because the risk of freezing is minimal. The vegetation can indicate that there used to be a mud packing, but this should be analysed further. A possible mud packing should be covered with stone coating in mortar to delay vegetation to root. Another solution to obtain some kind of moisture barrier is to lay stone coating in mortar, with or without, for instance, lead sheets.

The slender forge iron banister should probably be replaced. The banister is far from safe for children. It is probably not very old. It should rather be considered as a decoration in this case.

The walkway should be more efficiently blocked for unauthorized usage. It is of great importance that this blocking is done in a way, concerning the design and placement, that it will not harm the experience of the place.

Krister Berggren