RESTORATION OF HUNGARIAN ROYAL FINANCIAL MINISTRY PALACE AND SPA BUILDINGS IN BUDAPEST

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Summary:*The paper shows the general characteristics of restoration of national monument Pesterzsébet Bath, Csillaghegy Árpád Forrás Spa and Palace of finance.*
The article presents the renovation works of the buildings of the Pesterzsébet Iodine Bath, which was partly implemented as a building renovation. The expansion of the spa is also part of the task, during which a permanent wellness department is being built.
The Csillaghegy Árpád Forrás bath started with the renovation of a concrete bunker building with a new modern swimming pool hall. In the old part of the building there is a wellness paradise and a children's adventure bath.
In 2017, the Great Reconstruction of the Palace of the Treasury began, with the building wings demolished after 1945 being rebuilt. The challenge of the renovation task is to place an office function that meets the requirements of today in a palace built in 1903.
The construction work is complicated by the fact that the venue is the Várdomb (Buda Castle and Buda Castle Hill), which is made up of spring water limestone, where the cave system stretches and there are many unexplored cavities and cleft.
The full range of engineering solutions and engineering sciences must be drawn to optimize the design and construction work (a long-lasting technical solution that can be operated and operated safely). The roof structure of the main building was a Melocco slab, the shelving of the archive was the load-bearing structure of the building, and it was "genious" in its own age.

Keywords*:Buda Castle Hill, national monument restoration, Csillaghegy Árpád Forrás Spa.*

1. INTRODUCTION

The three construction sites are compared in the field of waterproofing works. Due to the size of the construction work, it is not realistic to present the entire construction workflow.
The waterproofing of the Pesterzsébet iodine bath is determined by the proximity of the Danube. The waterproofing solutions of the Árpád bath are influenced by the rock

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structure of the Csillaghegy subsoil and the water flowing in it, which originate from the rainwater falling on the Csillaghegy. The Palace of finance on the Castle Hill is vulnerable to rainwater, leaving the cave system inside the mountain.

2. THE PESTERZSEBET IODINE BATH

The water level of the Ráckeve Danube has a significant impact on groundwater. The Danube branch is a regulated water level of 95.5 meters above Baltic. Due to the coastal location, groundwater is also at this level. Based on geological literature, there may be slit and cleft water due to the bedrock near the ground level. Working space boundaries were made with Jet panels [1].
The watertightness on the base of the large basin was realized by the use of waterproof concrete (Figure 1., Figure 2. and Figure 3.) and on the basement wall with two bitumenous layer.

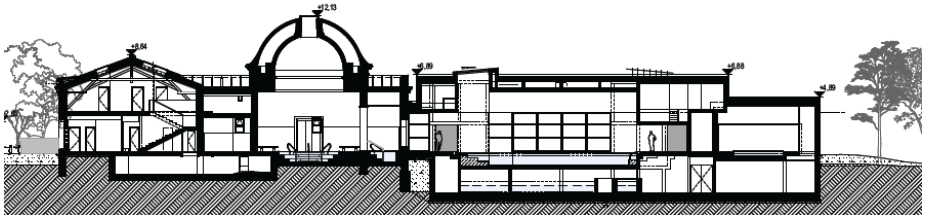

Figure 1. The main building cross section [1]

Figure 2. The main pool baseplate

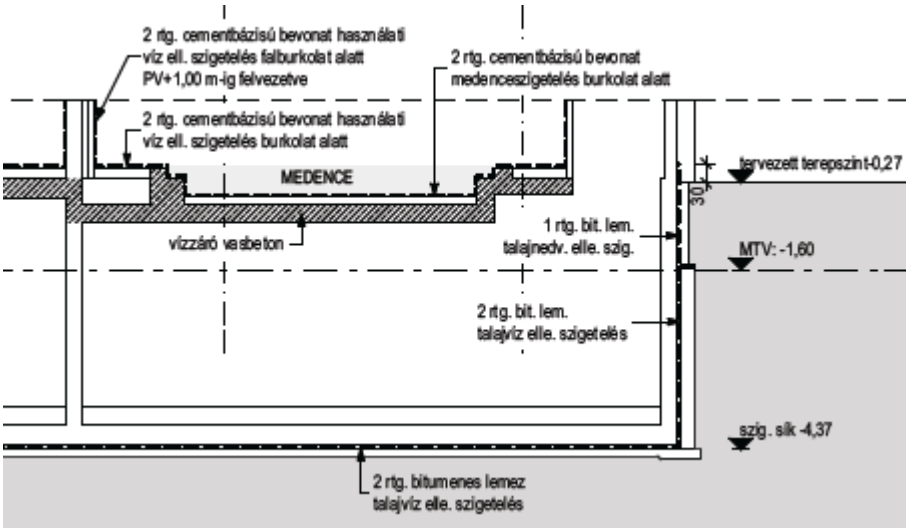

Figure 3. The groundwater insulation

3. CSILLAGHEGY ÁRPÁD FORRÁS SPA

The spa consists of two large units, the remaining upper house, a solid concrete structure and the new hall building, with a modern design.
There is no visible or negative consequence of the implementation of the "two hands" in the connecting areas of the two stages (Figure 4.).
On the existing building, the floor layers were demolished to the structural concrete. The new ceiling of the sauna world - made with pools - and the pool wall was built with Oxydtron nanocement (Figure 5.).

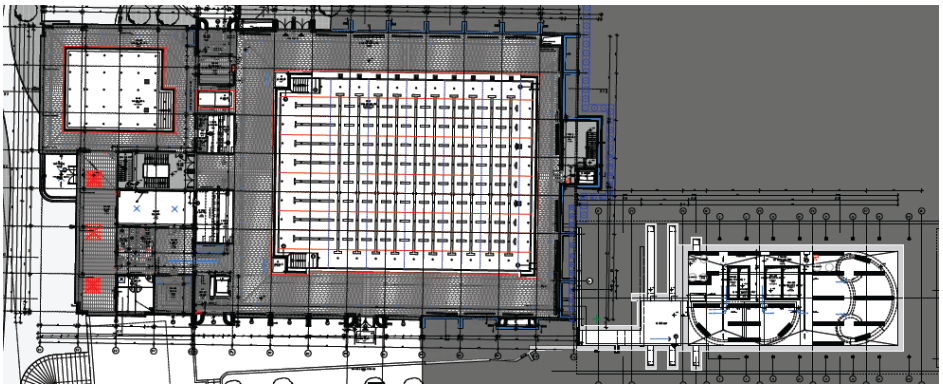

Figure 4. Csillaghegy Árpád Forrás bath ground plan [2]

Insulating the basins, forming the bottom plate:
- 16 mm Haftfest substrate leveling
- Contact ZE + screed ZE20
- 3 mm Aquastop Flex two layers of spreadable insulation
- Unterwasserprimer foundation
- adhesive S1 Flex C2TE
- Pool enclosure.

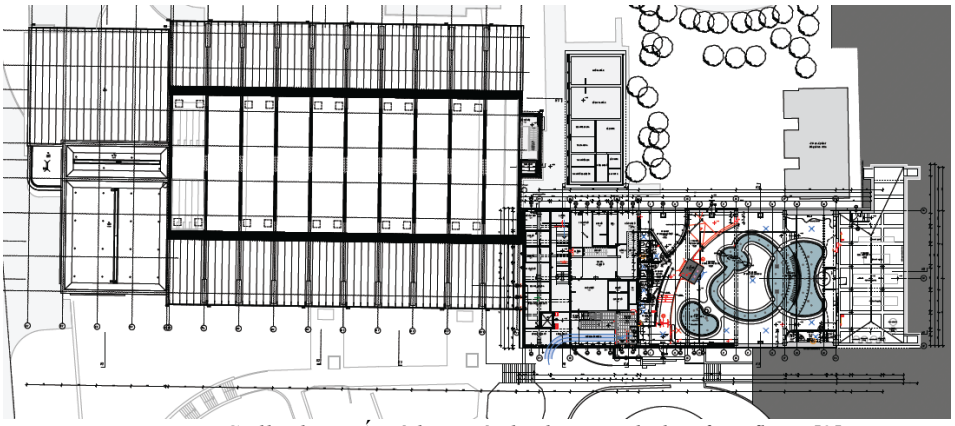

Figure 5. Csillaghegy Árpád Forrás bath ground plan first floor [2]

The waterproofing of the remaining building was a major concern, as the hillside side of the building was 25 m deep on the slope of the Csillaghegy. The best way to collect and safely drain the effluent is to use drilled piles and special drainage systems (Figure 13.). This way of drainage has not been built up due to the lack of technological machine capacity.

Figure 6. Csillaghegy Árpád Forrás old building

Figure 7. Groundwater insulation

4. RESTORATION of HUNGARIAN ROYAL FINANCIAL MINISTRY PALACE

The rehabilitation of the building block of the former Hungarian Royal Finance Ministry under the number 6 of Szentháromság Square has begun. The goal of the project, as stated in the Government Decree, is the renovation of the monumental facade and roof of the building under the plans of Sándor Fellner 1903, as well as the realization of a modern office working environment for the ministry apparatus. Construction work has been started with structural reinforcement and cleaning demolition work, but the main focus remains on finalizing the plans (Figure 8.- 9.). For a historic building of this scale, this is a very complex and demanding task (Figure 10.).

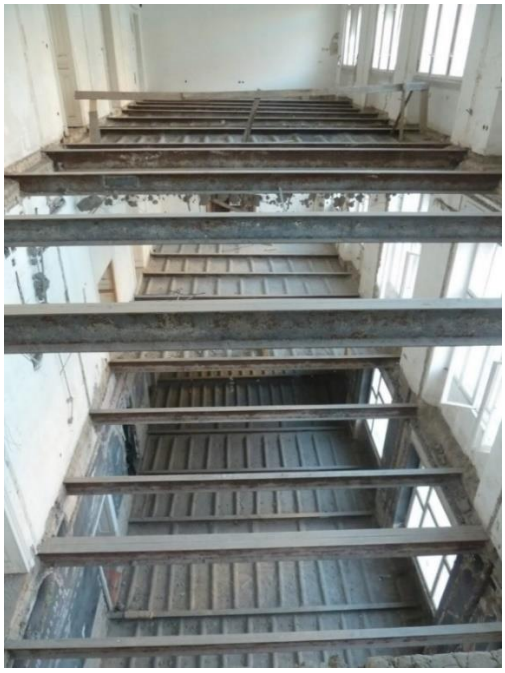

Figure 8. The Melocco type of slab [3]

Figure 9. The old building nowadays

Figure 10. The old-new building after reconstruction [3]

In the design of the renovation works of the building, the complexity of the waterproofing tasks resulting from the rainwater drainage divides the engineering

experts. The smart combination of insulation solutions could only be a good and durable solution (next chapter).

5. THE WATERPROOFING WORKS

The "smart" combination of insulation solutions could only be a good and durable solution.
Here are some good and applicable waterproofing solutions that were built during the great construction works in Budapest.
Waterproofing of basement is made with Sika System because the high level of groundwater level and flood risk on Danube-river.
Sika membrane system is used, which could be characterised as highly flexible membrane system, which protects the concrete structure up to the highest requirements – designed for long-term durability (Figure 10.):

1. first layer was Sikaplan W Felt 500
2. second layer was Sikaplan WP 1100-20 HL,
3. 1,0 mm protecting layer Sikaplan WP Floor Sheet-12H
4. 50 mm thermo-insulation Bauder PIR FA TE
5. 40 mm concrete.

Figure 11. Hydro-isolation work of north-wing of Palatinus bath

Figure 12. Brick basement wall with MC Bauchemie injection work

Figure 13. The street side water insulation

Figure 14. Collecting layer water with drilled gravel leak

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RENOVIRANJE MADJARSKOG KRALJEVSKOG MINISTARSTVA FINANSIJA I BUDIMPEŠTANSKIH TERMALNIH BANJA

Rezime: *U radu su prikazani projekti u Budimpešti, i uporedjene su metode primenjene hidroizolacije.*
Prikazane su Pesterzsebet jodna banja, Csillaghegy Arpad Forras, i Ministartstvo finansije.
Pesterzsebet jodna banja je delimično renovirana, novi delovi objekta su projektovani po evropskim standardima.
Radovi na Csillaghegy Arpad Forras su počeli sa renovacijom stare zgrade, koja je više ličila na podzemni betonski bunker. Po planu je uredjeno na tri nivoa, „wellness paradise“, drugi sprat dečja avantura i „devil sauna“.

Zgradu MadjarskogKraljevskog Ministarstva finansije su delimično srušili posle drugog svetskog rata. Rekonstrukcija i kompleksno rešenje hidroizolacije je prouzrokovao vatrenu diskusiju medju inžinjerima.

Ključne reči: *Pesterzsebet jodna banja, Csillaghegy Arpad Forras, Kraljevsko Ministartsvo finansije*