A place for the people, Klokkenberg, Breda

MSc Thesis by Evridiki Kiniakou
September 2008
The present booklet is a compilation of a series of corrected topics for the Masters thesis project “A Place for the people: Klokkenberg, Breda”. The reader is advised to refer to the original script of the thesis dated “July 2008” and the relevant Appendices in order to correlate the original form or information of the topic in discussion with the updated or extended one provided in this document. The “errata” are presented in the succession, in which they appear in the original script.

1 Corrections and clarifications

1.1 Image 5.2, paragraph 5.1.2 (A) chapter 5, page 70

The caption of the specific image states that the situation depicted is a result of moisture within the lintel construction above the windows of the corridor.

Such thing is however not necessarily the case. The statement of the image's caption is an assumption, which needs to be confirmed by means of more thorough investigation. The situation depicted by the image also needs to be supported by a more detailed explanation in order to be able to find a suitable solution for the particular defect.

Moreover, it must be highlighted that maybe the spall is not concrete but paint or other aesthetic coating material of the wall. The presence of moisture and condensation was encountered several times in the buildings of the complex and this could be the case as well for an interior part which is above a window. Luckily if this is the case, then the concrete has not deteriorated yet and the reinforcement is not affected.

In any case, with the available information, it is not possible to confirm the root of the problem, not to mention that it may be a combination of events.

1.2 Table 6.6, chapter 6, page 110

The particular table contains a series of incorrect data. The table given in succession provides the correct ones, while the new results do not affect the decisions made based on the table or the development of the rest of the project.

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Score(1) = Rating * Weight
1.3 Image 6.18, paragraph 6.3.5, chapter 6, pages 124 – 125

The interior of the underground parking garages has been designed with main guideline the safety and comfort of the residents. However, some of the features of the resulted layout were derived from an attempt to also pursue the saving of a number of costs. The acute angle of parking was one of these features. The small allowance of the driveway in the proximity of the entrance/exit is another consequence of the philosophy followed in the functional design.

As a result, it is not possible for two drivers to coexist in the driveway in front of the ramp. On the contrary, the driver that wants to exit the garage has to wait the driver that is entering. Such a deficiency of the design may be solved with the use of traffic lights in the area of the foot of the ramp.

Such a solution could be characterised not very appropriate for the safety and comfort of the users. The alternative would be to enlarge the northern driveway (between axes H5 and H6) by 2 to 3 meters. Such an action would make a difference in the total size of the excavation pits and thus to the costs.

1.4 Images 9.18 & 9.19, chapter 9, page 198

The above image (9.18) similar to image 9.19 are not in any case meant to be sophisticated structural drawings. The depiction of the underwater concrete (uwc) floor is a structural feature shown in order to explain the deviations in the minimum depths of excavation needed.

The difference in depth of the underwater concrete floor between the lift shaft pit and the passage is 1 meter. This depth, which is considered large enough, in combination with the difficulty in casting the concrete floor with every accuracy under the water, raise questions about the structural feasibility of the solution suggested. Especially the water tightness between the deeper and the shallower floors is a problematic topic.
1.5 Reference to the appendices within the report

The specific Appendix (1 to 6), to which several section of the text refer to are given below:

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<th>Page of the report</th>
<th>Appendix the section refers to:</th>
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1.6 Table 5.1, chapter 5, page 69

The thickness of the concrete floors within the two wings is not unknown for the levels other than the ground floor. Image 5.9, page 78 and Appendix 3 show the thickness of all the floors in the two buildings.

1.7 Image 6.14, chapter 6, page 121

The given length of each garage on the image is 112 meters. This is the minimum desired length based on the length of the wings, taking into consideration that it was pursued to create two access points close to the two ends of each wing respectively.

However, a length of 114 meters is eventually selected for the two garages. This figure derives from the increase in distance of the passages (between the wings and the garages) from the walls of the existing buildings (the wings).
1.8 Paragraph 8.3.4, chapter 8, page 162

The financial figures presented concerning the cost of the under water concrete and the tension piles were advised by Ing. H.J. Everts, instructor in the department of Geo engineering of TU Delft.

1.9 Section 9.5.2 (Other considerations), chapter 9, page 195

A reference is made to the silent piles, while in brackets it is reminded that an image is provided, which derives from one of the references. However, the image is not given. The image in question is given in succession. This is one type of a number existing and used today. There are different types based on the shape and size of the sheet pile that is selected for a project.

![Image of silent piles](http://www.giken.com/int/st/index.html)


2 Additions and improvements

2.1 The role of the wings' functional analysis in the thesis

The spatial and functional analysis of the wings of the complex comprises an important section in this thesis. It is possible though that the purpose of the specific analysis does not become explicitly clear within the project. The following factors explain why such a large part of the project has been dedicated to the particular topic:

- One of the preliminary objectives of the thesis was to present a detailed structural work-out of a selected alternative concerning the accommodation of a given function within the existing buildings of the complex. The considerations about the distribution of functions within the wings that was being conducted parallel to the research concerning their current structural and aesthetic condition led to the conclusions that the available material is insufficient for further research and moreover, that the work on the specific topic did not provide enough interest and challenge.
The determination of the type of function within the wings and the distribution of apartments were used as a tool in the project in order to define the problem. The big scale of the real project and the lack of essential information due to the early at which it found itself made necessary the strategy that was followed in the thesis. By distributing the several functions within the entire complex, then only its core (the existing buildings) and eventually the apartments within the wings the problem of the thesis was particularised. The focus was on the functions and the needs (for example the number of parking places required) of the two wings and thus it was possible to design the parking facilities meant to serve the specific buildings.

Last but not least, the spatial analysis within the two buildings was a very important tool for the determination of the position and the function of the links (the underground passages) to the underground garages. Should the two wings and main building have a different program of functions and distribution of spaces, not only could the position and form of the passages have been different but even these of the parking facilities as well.

2.2 Reference to conservation issues

The items discussed in section 10.3 of the script are a composition of personal views on the subject and in no case they reflect readings from considerable number of literature sources. The stimuli that contributed to the formation of the particular views are mainly courses undertaken during studies.

Additional references for the particular topic are:
- Lectures and reader of the course: CT 4201, Architecture and building engineering, TU Delft, 2005
- Lectures and reader of the course: AR1Ar080, Conservation techniques, TU Delft, 2006
- Lectures and reader of the course: AR1A040, Techniques and construction, TU Delft, 2006
- Lectures and reader of the course: CT 5220, Conservation of historical structures, TU Delft, 2006
- Lectures and reader of the course: AR1Ar060, Architectonic design, TU Delft, 2008

2.3 Additional conclusions

The selected function, i.e. apartments, to be accommodated in the two existing wings of the complex is ideal for both functional and structural reasons. The value of the complex is directly linked to its monumental character and the acquisition of an apartment in the existing historical buildings is expected to challenge and attract a potential buyer and resident. In a functional way of speaking, other alternative services that could be accommodated in the wings would be either entertainment or medical functions. The two buildings are however too big to host the medical care facilities no matter how important these are for the complex.

In a structural point of view, the existing structure of the two wings is designated for apartments as a new function since they lead to loading smaller (1.75 kN/m^2) than the one that the buildings are designed for (3 kN/m^2). The same is valid in the case of the medical facilities as a new function (2.5 kN/m^2).
On the contrary, in the case of selecting functions relevant to entertainment (cinema, cafeterias and so on) the current structure should be modified in order to withstand the additional loading (corresponding loading: 5 kN/m^2).

The selection of apartments as a new function for the two wings is ideal since it enhances the end value of the complex, while, in parallel, costs are saved due to the fact that major structural modifications are not essential.

The original cellular layout of the two wings also support the selection of the apartments as a new function. However, there is not much freedom in the available possibilities of arranging the apartments within the buildings. At least there is not much freedom unless the costs of the project are not an issue. The current structural situation of the two buildings, which almost does not differ at all from the original, is composed by cellular spaces formed by load bearing walls. Moreover, a corridor with load bearing walls is crossing the whole length of the wings, dividing longitudinally the plan of two of their floors (ground and first) in the middle. Thus structurally, the expenditure of significant amounts of money would be required in order to alter the current load bearing frame of the buildings should someone adopt a different design philosophy than the one presented by this project.

Finally, but equally important, are the monumental features of the buildings that restrict the choices of their interior layout. The length of the corridor mentioned above should be preserved, even if the position itself of the corridor is changed. Concluding, the remaining alternatives entail either a corridor in the middle of the plan or a corridor that “blocks” the northern façade. The latter is not even feasible in a structural manner (because of the transverse load bearing walls) but also entails the obstruction of the natural daylight from the dwellings.

Section 7.4.2 referring to the type of the existing foundations of the three southernmost buildings of the complex states, among other information, that a depth of -5m NAP will be accepted for the piled foundations of the men’s wing, for the purposes of this thesis in the borders of a conservative philosophy. However, the use of the specific information in the thesis was particularly limited in the assessment of its relationship with the suggested solution for the underground passages.

However, it is even more critical to highlight the importance of this information of the stability of the wing itself in relation to the accommodation of a new function.

The most straightforward manner in which the suitability of the foundations may be assessed is the one used earlier. The loading that is to be applied by the new function on the existing foundations will be less or equal to the one originally carried by the structure. Thus, theoretically, the piles of the eastern wing – as well as the footings of the western one’s – are suitable for the new development.

Nevertheless, it must be reminded that according to the quick scan of the complex a problematic area has been detected at the rear (southernmost) side of the men's wing which could be related to defect foundations. Thus, although theoretically the piles are suitable to carry the new loadings of the structure, on a practical level, there must be an alert for their essential further investigation.

The redevelopment of the sanatorium of Klokkenberg into a luxurious village that provides accommodation and 24-hour care to elderly people is deemed an excellent opportunity to give a chance to the historical complex to be revitalised. The situation of the complex and its former function offer an ideal scenario for the new design, which after suitable implementation will offer with its turn a comfortable and pleasant environment to the residents.

There is no doubt however, that this is to be a very costly project all in all. The financial expenses will
not be a result of the degree of luxury that the client wishes to achieve but a consequence of the fact that this has to be achieved with significant respect towards the preservation of the monumental characteristics of the complex. The 55 year-old composition of buildings has been respected through its life till today but it is soon to be radically – in a functional way of speaking – changed. It is however a municipal monument and since October of 2007 a national one. Thus, no flexibility in design would be easily granted from now on.

Not only the architectural and functional design but also the structural tasks within the project will lead to additional costs. Driven by the desire to preserve the existing premises, the various structural stages ought to be implemented with delicacy and care so that no damages are caused. The example of the underground parking garages is characteristic but mostly this of the underground passages suggested by chapter 9. Nothing is impossible but everything could have serious financial consequences based on the decisions taken.

The redevelopment of Klokkenberg is a worthwhile project that needs to be sophisticated considered. The construction of luxurious provisions within the terrain must be brought to a balance with smart and efficient structural solutions. On the other hand, expenditures should be made in cases where the integrity of the existing buildings is in risk. In this way, the discussion is about a feasible, in structural and financial terms, project that satisfies the key requirements, such as the degree of luxury and the monumental preservation.