THÜRNLHOFSTRASSE/ROCHÈGASSE/TREPULKAGASSE – VIENNA 11TH DISTRICT – AN EXAMPLE FOR SUSTAINABLE BUILDING PROCESS

Georg W. Reinberg

Summary

Within the EU-Life venture "RUMBA" (guideline for environmentally sound construction site management) a public subsidizes project was realized in Vienna. The program was used by the architects to create an according architecture. The example gives the proof that architectural strategies have the potential to be by far more effective than just technical strategies.

71 flats, 690m² state-aided Living Space, 194m² Common Rooms
Construction Period: 2005 – 2006
Architects: Reinberg and Thalbauer

Keywords: Environmentally sound construction site management, passiv solar use, building process as a design criteria

1 Starting Position

The main focus of this process was an environmentally sound construction site management (a demonstration project of the EU-LIFE venture "RUMBA, Richtlinien für umweltfreundliche Baustellenabwicklung – Guidelines for environmentally sound construction site management"). In my opinion this is a very expedient project for the further development of my buildings, where, having already reached a very high level of eco friendliness when it comes to operation and climate control, the ecological impact during construction always plays a decisive role. Seeing as this aspect has already been handled successfully in several of my pilot projects (e.g. Gleisdorf, Proj. Nr.75), this construction site offered me the possibility to involve this part in a traditional construction operation and to work with it on a larger scale. It goes without saying that for me, the topic of "environmentally sound construction sites" is a question of architecture and thus to be answered using architecture (and not to be limited to an organisational and environmental level).

This residential building is part of a larger development (approximately 500 flats), which at the same time was carried out as constructions along the streets of a housing block, with the competitors free to choose one out of several sites for their own project. During the first stage of the competition, where solutions for construction site organisation and construction method were asked, not only did we suggest to execute a combined construction management for all components, but we also proposed accomplishing the entire construction site transport via tramway (the so-called "Güterbim"). This approach seemed self-evident, considering that the central workshops of the Viennese tramways are in the immediate vicinity of the construction site. These workshops are connected to the conventional rail tracks (using the same track gauge), and are triple tracked (thus not obstructing passenger traffic) and additionally are only used for passenger transportation on very few occasions.

Only a short section of the track system would have been used for construction site transport, with, according to our suggestion, a short purpose-built trackage leading into the main construction site.

We suggested a steel construction, to be bolted together locally, pre-stressed concrete ceilings with tubular hollow spaces (low weight during transport, hardly any construction site noise) and a pre-cast segment system for construction.

For the actual construction, however, all developers had to agree on a common construction organisation concept. At that point, Viennese tramway and the political environment were not yet ready for our visions and our suggestions could not be implemented. However, alternatives were found that we found acceptable.

Analysing the already existing but not very attractive neighbouring building and the surrounding area revealed the extraordinary view as the site's greatest "richness": looking south, the open space of the Zentralfriedhof (and its buildings), on clear days offering a view over the Goldberg all the way to the Alpine Region. It was these "sights" we wanted to offer our residents:

1.1 Urbanistic Solution

The building site is situated on the southeastern corner of the housing block. Two structures are placed on the corner site, making one of them the eastern façade while the second structure is facing south. The southern structure is made accessible via an access balcony, that continues into the eastern structure at a 90° angle, where it becomes the central corridor. The southern front is particularly advantaged as the road here is rather wide (parallel parking) and the opposite buildings are no higher than one or two floors. Thus, this front has direct sunlight all day long even in winter and the attractive view over the open space Zentralfriedhof to the Goldberg/Laerberg is secured. This is why the southern structure is oriented towards the sun and the unique view, opening up in that direction with a double glass façade, while being largely closed on the northern side. The second structure, having an eastern and a western façade with the front side facing south, completes the housing block. This arrangement of structures allows the block to be open towards the south, with a vertical opening that is of particular urbanistic importance:

Opening of the "inner area" and access to the staircase from the main access route (Simmeringer Hauptstraße).

Continuing the direct walking access from Simmeringer Hauptstraße.

Opening up the inner courtyard towards the South, so direct sunlight can be enjoyed – at least for a short time – from the inner courtyard.

Attractive view south from the inner courtyard (and the loggias facing west), facing the area that remains undeveloped (footpath to Simmeringer Hauptstraße).

Drawing the western inner courtyard façade all the way to the southern façade to make the attractivity of the inner courtyard visible from outside as well.

“Memory tracks”, remembering the original concept of ecologically sound tramway transport (tramway gateway)

1.2 Architecture

The structure is entered via the above mentioned “vertical opening”, leading to the vertical development. This is the “backbone” of both structures – with common facilities both at the bottom (park, garbage, bicycle and car parking and green areas) and the upper end (laundry and common room leading to a common patio offering the best view).

As for car access, the incline of Trepulkagasse is used, allowing cars to enter at the northernmost (and lowest) point into a green canopied inner courtyard and garages.

1.3 Energy concept and environmentally sound construction

Throughout the above mentioned RUMBA-project a common construction logistics centre for all components of the building block was established.

Our unit uses the existing subsidence of the building site (parking spaces on ground floor level under a platform with daylight opening) and the incline of the eastern road to cause a minimum of excavated material.

The load bearing system is made from precast concrete units (less construction noise) and concrete member ceilings. These concrete parts are exceptionally thin (16cm) with a minimised steel structure part (decreased transport volume, minimised production energy). These building units are carried by rail to the Viennese Südbahnhof, with only the last 7 km covered by heavy goods vehicles.

The two structures follow two fairly different concepts, corresponding to urbanistic characteristics: the east-western structure focuses on heat preservation through compactness (large depth of the building), while the southern structure mainly uses the high (passive) solar gains. These gains are possible because of a double glass façade and controlled ventilation: an exclusive exhaust system draws in air from the conservatories (via grooves) and transports the solar gains (also on a very low level, e.g. from diffuse radiation) and the waste heat from the internal glazing (= heat recovery) into the adjacent maisonettes.

The inner courtyard serves as a partially open car parking space. A green space is planned on the canopied part of the courtyard. The green concept is part of an integrated green space concept for the whole building block.

An originally planned façade collector, covering the southern façade of the eastern structure, could not be realised.

1.4 Outlook

Despite the fact that my personal views of environmentally sound construction site management reach far beyond what could be realised here, this construction site nevertheless constitutes a possible future trend at a large scale.

Yet what appears most interesting to me is that this construction site proves one thing: the greatest potential for ecologically sound construction lies within architecture

itself (and not technical organisation or the technical improving of conventional architecture). The architects of this development's other projects were not visibly concerned with the specified topic. Our project, however, attempted to turn this very topic, "environmentally sound construction site management" into architecture – which the "Memory track" commemorates. It also is easily understandable that, for example, alternative solutions to underground car parks, such as our parking space alignment which needed hardly any excavation, lead to better results than neighbouring buildings with two-floor underground car parks. Excavations that do not happen cause less ecological damage than dragging away excavated material with trucks, no matter how environmentally friendly those are. Another example is our creation of a notable view using large scale glazing, which is much more likely to lower heating costs than conventional architecture that doesn't take the extraordinary view into account. Thus, architecture has great environmental potentials that technology alone cannot achieve. And answering these ecological questions offers us the opportunity to create an architecture that has more "to say" than architecture that considers form its only content.

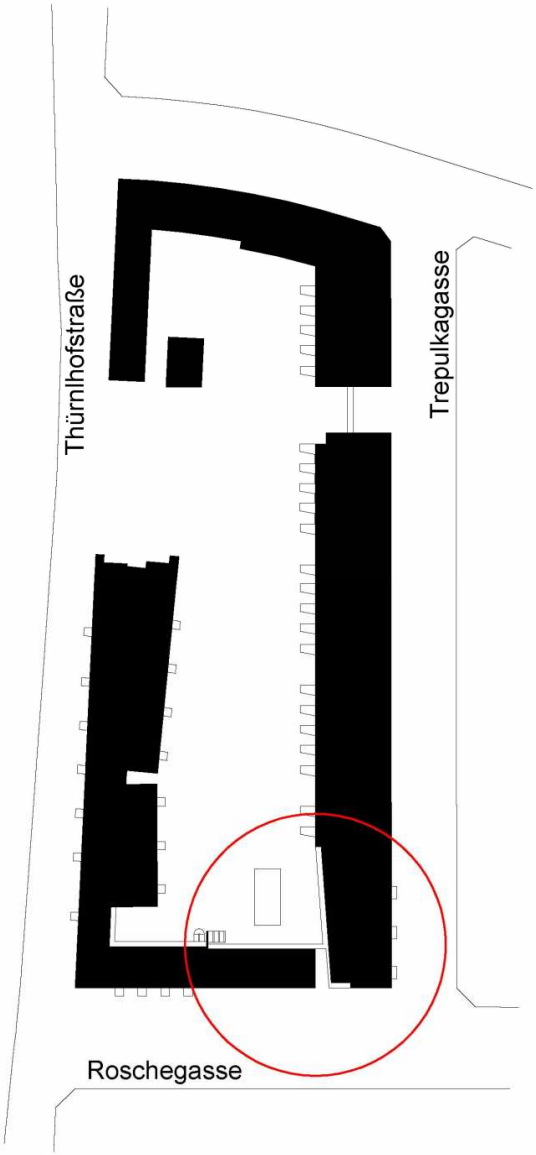

Fig. 1 Position of the building

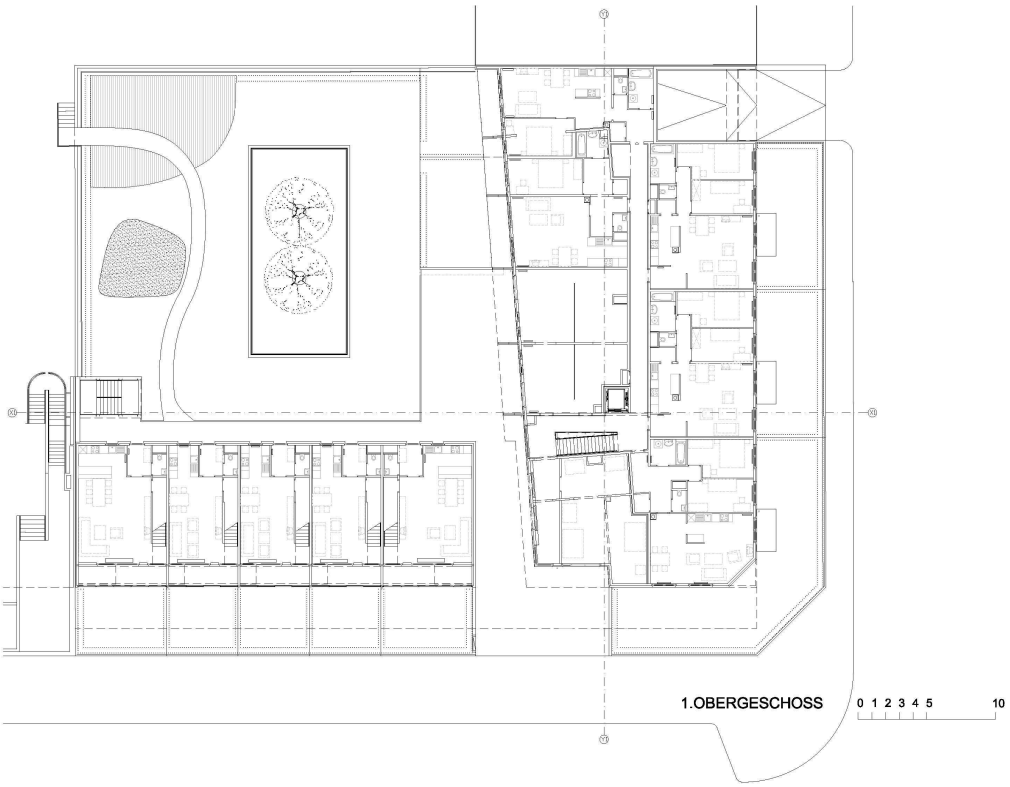

Fig. 2 First Floor

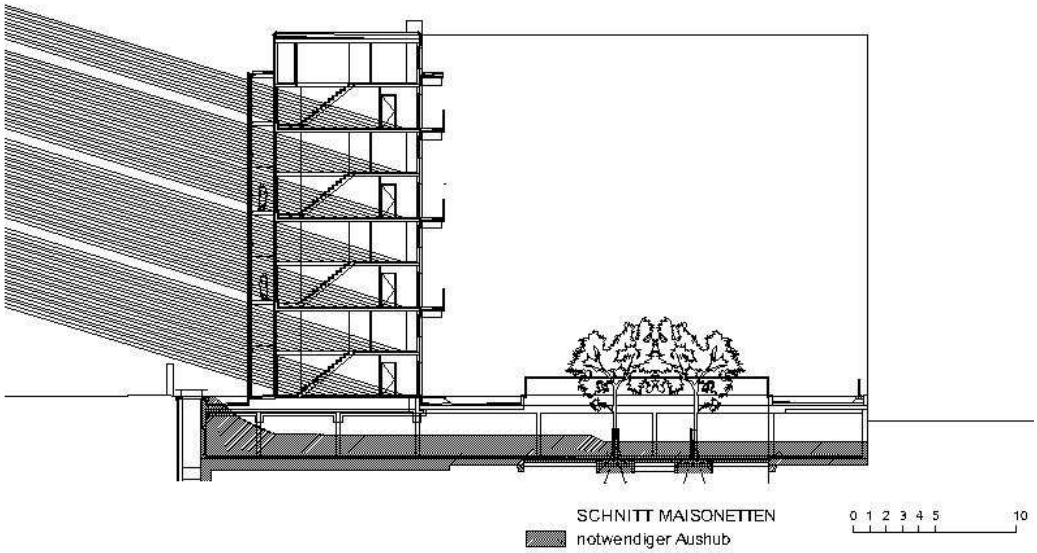

Fig. 3 Sectional drawing Maisonette

Fig. 4 Fifth and Sixth Floor

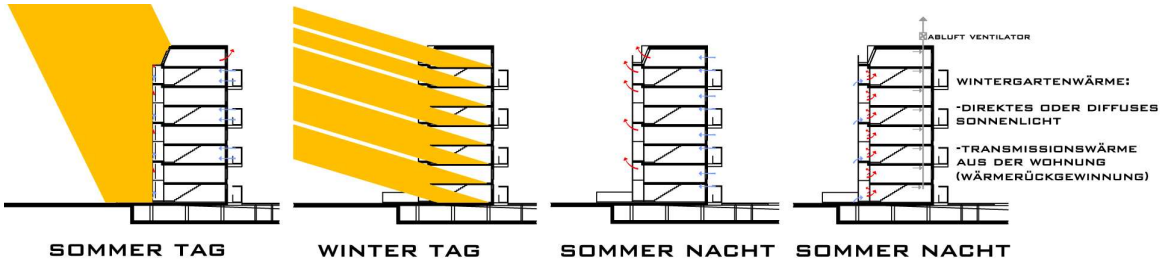

Fig. 5 Solarisation in summer and winter and ventilation concept

Fig. 6 RUMBA concept and buiding system

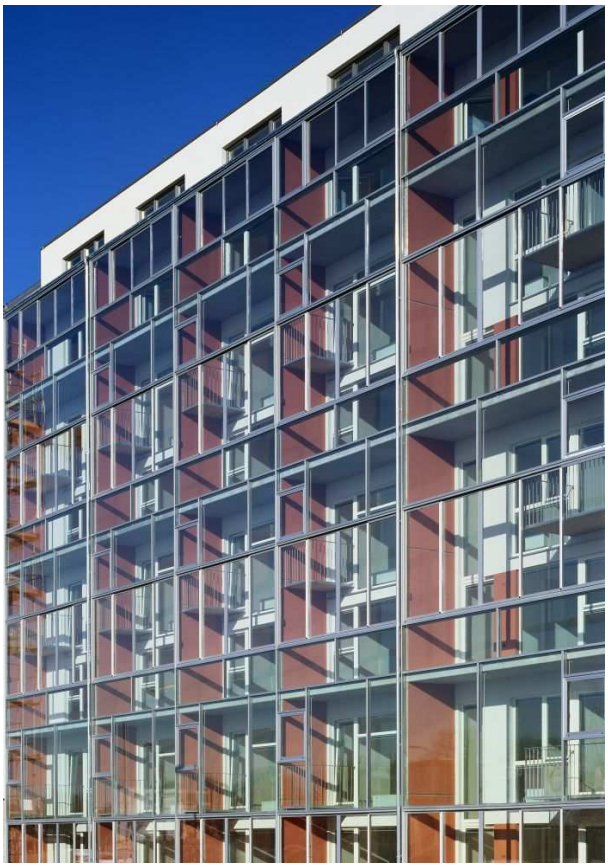

Fig. 7

Fig. 8

Fig. 9

Prof. Arch. DI Georg W. Reinberg
✉ Architekturbüro Reinberg ZT GmbH.
Lindengasse 39/10
1070 Wien, Austria
☎ +43 1 524 82 80
🗐 +43 1 524 82 80-15
☺ architekt@reinberg.net
URL www.reinberg.net