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WINTER MARKET
Design of the wooden trade hall in the changing urban environment of Helsinki

Introduction

In the summer semester of the year 2007 I took part in the international students exchange programme and I arrived in the Finnish city of Tampere. I associated my leaving to the North with my personal development as Finland is known for its high level of architecture and professionally prepared projects and designs. After a year of intensive studies, moved to the capital of the country – Helsinki, where I found work at an innovative, ambitious office – ALA Architects. Working for ALA I was a member of project groups working out architectural conceptions all over the world. A lot of projects I worked on characterized with a strong design idea, simplicity of form and a lucid function. While designing, we often reached for wood as a constructing or finishing material. Wooden public buildings are extremely popular in Finland and their quality is one of the best in the world.

The project of the Winter Market is a summary of the last two years spent in Finland and I dedicate it to all good people who have helped me start my professional career.

Historical context

Helsinki received the municipal rights in 1550. Finland was under the Swedish rule then. In 1809, after the war between Sweden and Russia, Finland became a part of the Russian Empire. In those new circumstances Helsinki received a lot of new privileges as the Tsar was interested in increasing the importance of the south-east of Finland and declining the influence of the Swedish west. I noticed a very strong analogy to the history of Poland of that period, which helped me a lot in understanding the culture and philosophy of life of the Finns. After the year 1917 Finland got independent and Helsinki became the capital of the country. Helsinki was the most rapidly developing region of Finland, owing its richness mainly to the trade with Soviet Russia. After the fall of the Soviet Union, in the 1990s of the twentieth century, an economical crisis approached Finland, but it was quickly overcome. Nowadays the city of Helsinki is developing dynamically.
Urban context

The capital of Finland is situated in the south of the country, at the west end of the Gulf of Finland. In this region of the Baltic Sea the snow falls are relatively low in comparison to the other areas of Finland, while the rain falls are quite high. The coast line is irregular and it forms numerous islands. Water takes into the land creating shallow bays.

The city of Helsinki is situated on a peninsula joint to the land in the northern part. The centre of the city is located on the north-east of the peninsula, in the area of the railway station. The city had been developing from the east of the peninsula to the west, and when it embraced the whole land, the expansion to the north and the nearby islands started. Due to the dynamic growth of the west part of the peninsula, I decided to locate my design at the Trade Square at the west port of Helsinki.

The trade square Hietalahdentori is located in the south-west of Helsinki, in the residential-office area. The centre of Helsinki is to the north-west of the square, while the cargo port is to the south-west. Helsinki is a developing city and its population is growing rapidly. The city is expanding to the north, to the mainland. However, the potential sectors to be extended are the former industrial and port areas.
Urban development plan

The area of the West Port will be re-designed to the high standard residential area in the nearest future.

In March 2009 the architect competition (low2no) took place in Helsinki. Architects, ecologists and engineers from the whole world were invited to present their ideas on how to put the West Port into working order. The winners suggested a project of a housing estate with a low level of the emission of greenhouse gases and a very high factor of the use of renewable sources of energy. The advantage of the winning project was also a very high architectural quality of the estate and the use of wood in the building constructions. Wood is a national raw material in Finland and it is in the North where the most innovative and the best finished up designs with its use come into being. Additionally, wood serves the role of an air filter, it absorbs carbon dioxide; that is why the designers decided to use this material in the constructions of the buildings of the new ecological estate in Helsinki.

The project of a high standard ecological estate closely connected to the centre will bring well-off men of intellect into the city. The estate is planned for 50 thousand people; thus it will demand development of infrastructure and creating a public space of high quality. I decided the a whole year’s market hall with healthy fresh food will be an excellent element completing the function of the designed estate.

The project plot is situated near the main street joining the new estate to the centre of Helsinki. I meant to expose the Market maximally so I designed it in such a way that it dominates over the closure of two important streets. I am convinced that after being built the Market would become a characteristic point and a meeting place of citizens of Helsinki.

Project plot

Hietalahdentori

Square borders the tsar buildings in the north, the old Helsinki Polytechnic Institute in the east, the antique Sinebryhoff brewery in the south and the nineteenth-century
estate in the west. Hietalahdentori Square houses an antique brick market hall, which is not in use, though, due to functional causes. The antique buildings ringing the plot create a fascinating environment for the design of the Winter Market.

The south-west corner of the square is open to the port and in the future that will be the view to the buildings of the new ecological district of Helsinki - Jatkasaari. There is also a marina there for both yachts and motorboats as a lot of citizens of Helsinki live on islands and they travel by water means of transport to avoid traffic jams in the city. I imagine they would come by motorboats to do the shopping at the Winter Market.

The market square adjoins two parks – Sinebryhoff Park and a small green square among the tsar buildings. In my project I meant to join green areas with a path for pedestrians in front of Helsinki Polytechnic Institute. Such an urban solution would join the space of the square with parks creating an interesting recreational-trading area.

From the west to the east of Helsinki there runs a representative trading street Bulevardi resembling Piotrkowska Street in my hometown Lodz with its function and architecture. Designing the Winter Market at Bulevardi Street I meant to join it to the recreational-trading area of Hietalahdentori Square.

**Location in The city Grid**

The Hietalahdentori square is located in the dense housing area and soon will be in close neighborhood of new ecological residential districts. The projects of a high standard ecological estate closely connected to the centre will bring well-off men of intellect into the city. The estate is planned for 50 thousand people will demand development of infrastructure and creating a public space of high quality. I decided the a whole year’s market hall with healthy fresh food will be an excellent element completing the function of the designed estate.

**Parks and recreation**

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**Working places in the west Helsinki area**

Hietalahdentori Square on the lunchtime all employees are eating in restaurants located in this area. Most of restaurants are fully packed and people are demanding new
restaurants with various offer. The market despite the fresh and natural food has also the restaurant service in its offer. Restaurant located in the first floor despite the great lunches is offering the spatial experience; there is magnificent view to the sea area and through the glazed facade.

**The communication hub**

The Hietalahdentori market square is located next to important communication crossroads. Two roads (form Jatkasaari and Hernesaari) are turning to Boulevard the important and most representative street connecting western Helsinki with city centre. Choosing this plot for designing the Winter Market I was considering the big groups of people who would pass by the new market building while they way to work and way back home. There is also Tram line, bus stop and the water taxi waiting place.
Project ideas

I designed the Winter Market having citizens of the city and tourists in mind. I thought of a public space being vibrant with life all year round. Hietalahdentori Square is occupied in summer and it is an active flea market in the summertime. In winter, however, this activity declines due to severe climate conditions. Designing the market for the citizens of the west part of Helsinki, I hoped to enrich the trading offer of Hietalahdentori Square by additional services such as selling fresh, healthy food. A similar market is located in the east port of Helsinki and it functions perfectly well.

There are numerous offices near Hietalahdentori Square. To vary the offer of the Winter Market, I designed a restaurant on the first floor of the building, with a magnificent view to the nearby parks and to the harbour.

The design is supposed to be the landmark of the west port of Helsinki. The Winter Market has a great chance to dominate the area as it is located at the closure of two important streets leading to the centre of Helsinki. It is also visible from the west port, where ferries from European countries arrive.

While designing the Market I thought of both making use of the smallest area of the square and leaving the view from the square towards the port open. To compensate for building up a part of the square, I would like to underline that is a part for a parking lot now. Thus, the Winter Market takes the present parking space and a new parking lot is placed underground.

Wooden construction – I decided to use wood for constructions and details of the project. Wood is a national building material of Finns; both small-scale architecture and public buildings are created with its use. The quality of wooden architecture in Finland is regarded as one of the best all over the world. Another reason why I chose to use wood is the fact that wooden minimalistic pavilion of the Winter Market will be a wonderful supplement to the composition created by the industrial port architecture and antique buildings surrounding Hietalahdentori Square.

The building is equipped with all the facilities for the disabled. The ways to the main entrances are situated on the level of the street. In the building appropriate lifts are installed and there is a toilet for the disabled on each floor. On each particular floor there are no differences of levels climbing of which would require use of stairs or ramps.
Function and form

Marketing idea – the Winter Market is a place where fresh, healthy food can be bought or where one can make use of the restaurant services. The main purpose of the Market is a quick sale of the short expiry date products, which are so needed in Scandinavian countries. Warehouses and cold storage houses are divided into boxes and refrigerators and each salesman has the possibility to rent a box or a refrigerator as well as a stall. Such a functional division guarantees salesmen appropriate number of equipment or warehouse space rented.

Trading space – I meant to create a hall as transparent and full of natural light as it is possible due to the fact that public building in Finland tent to lack it. The Winter Market consists of three parts: a transparent trading space, a closed technical part and a restaurant on the first floor. The trading space is situated along Bulevardi Street and it views the harbour with the port. The interior construction of the pillars supporting the construction of the roof allows designing a glass curtain wall, which makes the elevation look light. Architecture of the Winter Market is transparent, classical and full of light both in summer and in winter. The advantage of a transparent building is the fact guests are interested in the goods inside while passing it. Thus, there appears a close interaction between the interior and exterior. By this means I avoided the functional problem of the old hall, which is taken to the back of the square and, with the built up façade; it ceased to be attractive to clients.

Description of the building structure of the project

Foundations

The building is based on a girded of continuous footing. Under the foundations there is a layer of thin concrete.

Walls

Foundation walls- thickness of the foundation walls is 50 cm. Outer covering walls – wooden, fireproof walls of thickness of 30 cm, with a layer of mineral wool between the construction pillars made of strengthened plywood. Insulated walls covered with a double layer of steam-insulated foil and finished with planks of birch-tree wood are fixed to the construction pillars. All the exterior walls fulfil the requirements of fire- and thermal-proof standards.
Division walls – thickness of the walls: 12 cm or 20 cm depending on the function of the rooms. Division walls are made of ceramic materials in refrigerating, technical rooms and sanitary facilities and of wooden materials in all other rooms.

**Ceiling slabs**

Over the level of the parking lot, on the grid of the pillars 12m x 10m there are based bridging joists of the height of 35 cm co-operating with the storey slab of thickness of 20 cm. Ceilings/slabs of the underground floors – wooden slabs (bridging joists:25 cm) based on sommers of the height of 90 cm based on pillars made of plywood strengthened with glass fibre. At each wooden slab a suspended ceiling was applied.

**Stairs and ramps**

Interior stairways are made in a steel construction based on interior walls. Sizes of the stairs in the whole building: height of the step 17 cm, width of the step 30 cm. The steps are covered with anti-slide wood. The edges of the steps distinguish with their contrasting color from the floor. The interior staircases of the building play the evacuation role. The entrance ramp to the underground garage has a coating of reinforced concrete. The surface of the ramp is covered with anti-slide floor.

**Lifts**

In the building the lifts KONE TranSys by the Finnish company KONE are designed. These are multifunctional people and cargo lifts without engine rooms. Sizes of the lifts in a personnel part: 2200mm/ 1800mm and in the cargo space: 1900mm/ 1800mm. Interior parts of the cabins are finished off with stainless steel panels.

**Construction of the roof**

Having analyzed constructions of the antique and modern market halls in Europe, e.g. Market Hall in Saint Jean de Luz in France or Santa Caterina mercat in Barcelona, I came to the conclusion that it is the construction of the roof that gives market places their character. Except for its bearing function, the construction plays also the role of an architectural detail. I meant to develop this idea with the use of materials and possibilities of our times. The construction of the roof is based on a system of pillars made of plywood strengthened with glass fiber. Applying this technology allows to minimalise sizes of wooden elements strengthening their resistance and fire resistance at the same time. A plywood lattice is based
on the system of pillars. The construction of the roof creates a non-heated ventilated space of an unserviceable attic.

**Layers of the chosen ceilings and walls**

Layers of roof A
- layer of bituminous felt on grain stone
- boarding of the roof of wooden boards
- anti-wind foil
- roofers 15 cm
- lattice of glued wood shaping the pitch of the roof 1,5 % ventilated roof space

Layers of slab/ceiling B
- lattice of glued wood shaping the pitch of the roof 1,5% ventilated roof space
- roofers 15 cm / rock wool
- steam isolation
- false ceiling of wooden panels of the fire resistance E I 60

Layers of slab/ceiling C (the slab over the 2-nd storey)
- chipboard 18 mm
- thistle board 15 mm
- bed timbers 50 mm
- chipboard 18 mm
- bridging joist 200mm / sound insulation
- elastic grid work
- installation 600mm
- suspended ceiling

Layers of slab/ceiling D (the slab over 0 level)
- parquet floor 20mm
- thistle board 18 mm
- bed timbers 50 mm
- chipboard 18 mm
- bridging joist of glued wood 250 mm/ sound insulation
- elastic grid work
- sommers of glued wood 900 mm / installations
- suspended ceiling 30 mm

Layers of slab/ceiling E (the slab over the parking lot)
- anti-slide stone floor
- foil
- sound insulation
- foil
- ferro-concrete slab 20mm
- installations 60 cm
- suspended ceiling fixed to the slab

Layers of floor F (the floor on the level of the parking lot)
- concrete floor
- foil
- thermal insulation
- foil
- ferro-concrete board 30 cm
- sand layer

Window ironwork and door woodwork

In the glazed part of the market section of the building I applied curtain walls with moldings with insulating straps. Glazing is fixed with shaped silicon gaskets. It is an optimal solution giving the elevation an exclusive, smooth, light view.

The interior door woodwork consists of wooden moldings. The exterior door ironwork consists of steel moldings filled with safe fireproof glass.

Interior and exterior finishing

I chose light birch wood of a higher fire resistance as the main finishing material. It is also used as a mantle of exterior walls and a trimming element of a tectonic construction of the roof. Thanks to the use of the homogeneous wooden material in the whole building, the architecture of the Winter Market gained a calm, classic character. Birch wood is also used in the construction of the safety railing and exterior walls covering.
I used elegant, brushed steel in the details of the construction of the railings of the entrance doors, knobs, buttons and panels. It created an interesting contrast with warm birch wood.

Because of the big glazing of the curtain walls by the firm Reiners CW 60 –DRL, I used fire-proof double-glued glass in the building. I also applied the technology of electric darkening of glass surfaces, which is employed in sports cars but is beginning to be used in architecture as well.

**Installations**

The building of the Winter Market has air-conditioning, water, sewage, fire-control, electric and heating installations applied.

The utility room, including hot and cold water, central heating and electric system, is placed on the level of the underground parking lot.

Mechanic ventilation is planned for the whole building. The Winter Market is equipped with the system of fire-control sprayers and a fire alarm.

**Heating/shading**

In the short warm period, when the hall is subjected to overheating, it is protected against extensive sun rays by the foliage of the trees planted along the southern façade of the building. In winter, however, when any amount of the natural light is desired, deciduous trees do not limit light access.

Additionally, a central heating system was installed in the whole building.

**Fire safety**

The building is qualified to the high category of danger to people and the standard of fire resistance is accomplished. The elements of the main supporting construction have long time of the fire resistance. The standard of fire resistance of slabs/ceilings, exterior walls and interior walls is also fulfilled.

There are three vertical evacuation ways from the level of the parking lot (-1) to the surface. On the level 0 there are four evacuation ways and I designed one evacuation way from the level of the restaurant. All the ways are marked with the light system LED and finished off with inflammable materials.
Detailed programme of the Winter Market

Storey -1               Level -3,50 m
0.1 Parking space
0.2 Technical room - water
0.3 Ventilation plant
0.4 Technical room - electricity
0.5 Security rooms
0.6 Store space/ air raid shelter
0.7 Toilets
0.8 Technical room – heating system

Storey 1                 Level 0,00 m
1.1. Trading space
1.2. Selling fish and meat
1.3. Communication, personnel/ staff zone
1.4. Cleaning store
1.5. Dry products store
1.6. Fruit and vegetables store
1.7. Technical room/ space
1.8. Dairy products store
1.9. Extra store
1.10. Delivery zone
1.11. Waste material room
1.12. Personnel/ staff zone
1.13. Meat preparation
1.14. Meat freezer
1.15. Toilets
Storey 2
Level 4,50m
1.1. Restaurant
1.2. Waiters zone
1.3. Kitchen
1.4. Washing-up room
1.5. Meat preparation
1.6. Vegetables preparation
1.7. Small store
1.8. Dry products store
1.9. Technical room/ space
1.10. Waste material room
1.11. Staff zone
1.12. Chef office
1.13. Dairy products freezer
1.14. Meat freezer
1.15. Vegetables freezer
1.16. Toilets