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## **Modern finnish wood architecture – in towns**



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Wood has always played a central role in Finnish architecture, so much so that the history of Finnish architecture could be written to a great degree in terms of the use of wood and the attitude toward wood material. However, during the last few decades the use of wood in construction has been limited to small-scale buildings, such as one and two-story residential buildings and isolated public buildings like day care centers and schools. But, the architectural possibilities of wood have again begun to interest Finnish architects, and in the past few years more and more wooden buildings, from single-family homes to demanding public buildings, have been designed and constructed in Finland.



*Center for the Folk Art, Kaustinen. Architect Rainer Mahlamäki.*

### Modern Finnish wood architecture

Since the Functionalistic period of the 1930s, modern Finnish wood architecture has typically been based on a Modernistic architectural tradition. A distinct characteristic of Finnish wood architecture is that wooden buildings have been constructed with Modernistic features. The appearance of Functionalistic concrete buildings was imitated in Finnish wooden buildings by constructing them with flat roofs and without eaves. Wooden buildings began to take on the look of smooth, plastered surfaces.

Arrangement of building mass in modern Finnish architecture has usually been simple and clear-cut, and window openings and layout has also followed the principles of Modernism. Since the 1930s, Finnish wood architecture has also used simple, modest details in façade decoration, window and door finishing and corners. These details have been too scanty from the standpoint of wood protection and long-term durability. The scanty details give the buildings a bare, albeit timeless appearance.

With the exception of the 1930s, Finnish wood architecture of the 1900s has been characterized by the use of different textures in wood facing. Construction has always used many different kinds of vertical and horizontal boarding textures, with varying board widths and profiles and three-dimensional effects achieved with tongue-and groove boarding, spaced boarding, battens and lapped boarding. Variation in texture from building to building has usually been considerable, giving residential neighborhoods a variation that is characteristic of wood. Especially by using battens and lapped boarding, wood has been used to give the façade a slatted appearance. The most recent wood architecture has also been characterized by the use of wood, in the form of lattices and grates, as lightweight, transparent decorative elements.

Since the Art Nouveau period of the early 1900s, Finnish wood architecture has used material collages in different forms. This collage-type layout of façades is new in Finnish architecture, while in the past buildings were usually made out of either stone or wood. As a part of façade decoration, contrasting materials like brick, plastered surfaces, and increasingly, steel are added to wood. The use of a collage effect is often not intentional, but it has become a characteristic of Finnish architecture. The newest Finnish wooden buildings have successfully achieved rich collage-like applications of different wood materials. The varying textures of horizontal and vertical boarding gives the façades of buildings a sensitive, shimmering appearance characteristic of wood, which contrasts with smooth areas of plywood or bold lattices set off by moldings.

Finland, like the other Scandinavian countries, has a tradition of coating wood surfaces with paint, and this tradition has also been followed in modern construction. Coating wood with paint has not only protected the wood, but has also always had architectural significance. Red paint was used to make log buildings resemble fine brick houses, and the effect was enhanced by painting the corner boards and window boards white to give the appearance of sandstone or plaster. This tradition has continued in all Finnish wood construction; buildings were made to look like stone buildings.



*Modern wooden apartment buildings, Puukotka in Oulu, 1997. Architect: Wood Studio of the University of Oulu's Department of Architecture.*

The period of Modernism has continued this tradition, but it has favored white façades in the spirit of Functionalism. During the last decade, wooden buildings have again emphasized color, which has intentionally been used as a part of the building's architecture.

## Development of multi-story timber apartment buildings

In Scandinavia, especially in Finland and Sweden, but also in Norway and Denmark, effort in the form of research and experimental construction projects has been placed in recent years on wood construction and particularly the possibilities offered by multi-story timber apartment buildings. A strong interest in wood construction that has emerged in Finland in the past few years has created a desire to construct multi-story timber apartment buildings and other large-scale buildings. Multi-story timber apartment buildings are a new alternative to traditional multi-story concrete apartment buildings.



*Multi-story wooden apartment buildings, Viikinmansio in Helsinki, 1997. Architect: Mäki-Marttunen Ky.*

The first three groups of multi-story timber apartment buildings were constructed in Finland as experimental construction projects in 1996 – 1997. They were Kiinteistö Oy Viikinmansio in Viikki, Helsinki, Kiinteistö Oy Ylöjärven Vuokratalot at the Ylöjärvi Building Exhibition and Kiinteistö Oy Puukotka in Kajonharju, Oulu. Since then, 2 – 4-story timber apartment buildings have been constructed in at least ten localities.

## National Modern Wooden Town project

Scandinavian towns have traditionally been wooden towns. This is also true in Finland, where as recently as fifty years ago all the towns, except for Helsinki and the centres of a few other larger towns, were wooden towns. During the period of robust urban development that followed, wooden towns were demolished and reconstructed. New construction in old wooden towns and new suburbs was modelled after the open town structure of Modernism. Concrete was used as the construction material.

Based on an initiative by the Wood Studio of the University of Oulu's Department of Architecture, a national *Modern Wooden Town* project was started up in Finland in 1997. The main objective of the project is to promote urban wooden construction and offer an alternative to the reigning style of planning and building. The goal of the project is to create wooden town areas that provide pleasant, high-quality environments in different parts of Finland. At the same time the project is attempting to boost the status and credibility of timber construction by means of construction that utilises the best characteristics and milieu values of wood material. The intent is to apply the old traditions and know-how of timber construction to new construction, to modernise timber construction to meet the demands of this day and to illustrate and test the latest results of research onto timber construction in new residential areas. The basic idea is that simultaneous projects in different municipalities support each other by developing timber construction in their own areas. This brings out diversified views of the possibilities of timber construction in different types of surroundings and using different solutions. The focus in timber construction has thus been intentionally shifted from technical solutions and individual buildings to more extensive milieus.

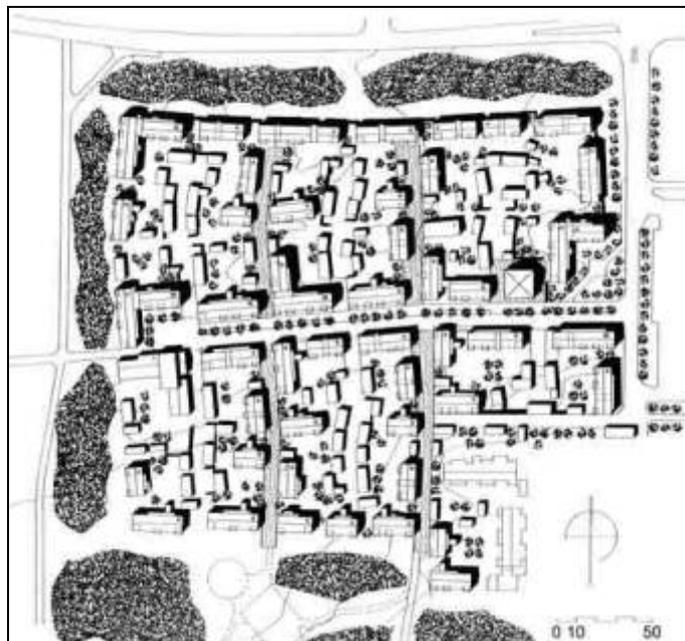
The primary supporters of the project have been the Technology Development Centre (TEKES), the Ministry of the Environment, the Ministry of Agriculture and Forestry, and Wood Focus Oy (Finnish Timber Council). The Wood Studio of the University of Oulu's Department of Architecture has been the national co-ordinator of the Modern Wooden Town project.

The Modern Wooden Town development project has been used to study a new way of guiding planning and construction and to look into questions related to milieu formation in an urban environment, block building and scale, parking solutions, building types, living comfort and fire safety. The Modern Wooden Town project includes numerous timber construction area projects in different parts of Finland. Altogether the areas offer everything from municipal neighbourhoods of single-family wooden homes to efficient urban areas of timber multi-story apartment buildings, the first and most progressed of which is the Modern Wooden Town of Oulu.

## Puu-Linnanmaa, Oulu's multi-story timber apartment building pilot construction area

The Modern Wooden Town of Oulu project is a 12-hectare pilot construction area containing 2 – 3-story timber apartment buildings. The area plan has been made at the Wood Studio of the University of Oulu's Department of Architecture under the supervision of Professor Jouni Koiso-Kanttila. The project has been co-ordinated by Architect Markku Karjalainen. All the buildings in the area have wooden façades and for the most part, timber frames. The total floor area of the buildings in the area is about 20,000 m<sup>2</sup>. The area covers six blocks and will have a total of 45 buildings with 300 apartments for 450 – 500 people.

The area is centrally located in Oulu across from the main building of the University of Oulu near Scandinavia's largest technological park. Construction began in 1998 and the entire area should be ready in the autumn of 2001. Each of the six blocks has different developers, planners and contractors. This way as many different organisations as possible have been able to gain experience in this project. Different structural and structural component solutions have been used in the different blocks, which has made it possible to experiment with different kinds of products and techniques in the buildings. Because each of the blocks also have different architectural designers, the architecture and details of the buildings are diversified, as originally planned.



*Illustrative diagram of the plan of Oulu's Modern Wooden Town area.*

*Drawing: Wood Studio of the University of Oulu's Department of Architecture.*

Development of a new type of close town structure was the main objective of Oulu's Puu-Linnanmaa project. The intent has been to find out if it possible to employ modern architecture and construction technology to create a residential area that has the best characteristics of old Finnish wooden towns, such as sheltered yards in the residential blocks, a more intimate, closed off streetscape than has been customary during the last few decades, and hierarchical variation in the streetscapes. Background studies of wood milieus conducted by the Wood Studio of the University of Oulu's Department of Architecture and tests of alternative plans paid special attention to street and yard spaces, building and block sizes, and the human scale of the townscape. New types of parking arrangements, the aesthetics and details of wooden façades, the language of form and possibilities of design in wood architecture, long-term durability of wooden façades, and fire safety have also been studied and tested in the different blocks as an important part of the wood milieu.

Right in the beginning the following basic goals were set for Oulu's Puu-Linnanmaa Modern Wooden Town project:

*A. Streets and alleys:*

- Diversified street spaces: the area contains streets, alleys and squares.
- Streets and alleys are as narrow as possible.
- Street spaces are closed off, building ends and fenced spaces between buildings also face the street.
- Building heights vary along the alleys.

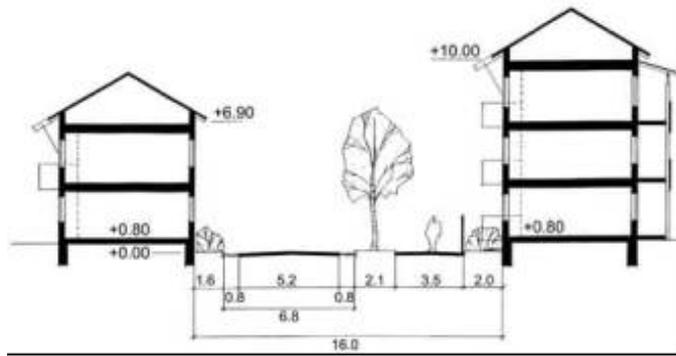
*B. Blocks:*

- Internal structure of the blocks varies (open, closed off, spacious, intimate).
- Access to entryways from yards and alleys, not from the main street.
- At least 2/3 of the cars are in closed off carports, no extensive open parking areas.
- Access from the street to the yards not only through the carports.
- Storage rooms, laundry rooms and other similar auxiliary spaces mainly located in out-buildings.

*C. Buildings:*

- Load-bearing frame, floors and facades mainly of wood.
- Controlled variation of roof slopes and façades, no overly long, continuous façades.
- Buildings have eaves, no flat roofs.
- Possible loft walkways closed off or sheltered.
- Structures must be durable.

The alleys built in the area are a new element in modern Finnish construction. The purpose of the alleys is to create differences in hierarchy between different types of travel routes. All the streets and alleys are narrower than usual; the distance between buildings along the main street is 16 meters and along the alleys, 8 – 10 meters. The street spaces and alleys are closed off and framed by buildings and high fences. The fences also contain gates and other details that enrich the streetscape. The spaces within the blocks are defined by closed off carports and outbuildings, which contain storage rooms, laundry rooms and other auxiliary rooms. As a supplement to the area plan, a very detailed construction guideline was compiled and approved with the purpose of achieving controlling variation of building masses and façades. The residential buildings have traditional ridge roofs.



*Cross-section of the main street of Oulu's Modern Wooden Town area.*

*Drawing: Wood Studio of the University of Oulu's Department of Architecture.*

Special attention has been paid to fire safety in the area. Sufficient routes and space have been reserved on the lots for modern fire-fighting and rescue equipment. The area is planned so that a ladder truck can be driven to the balcony façade of all the residential buildings over two stories high. The minimum width of rescue routes is 3.5 m, the height is 4.0 m and the turning radius is 12.0 m.

A new type of planning procedure has also been experimented with in Oulu's Puu-Linnanmaa multi-story wooden apartment building area. The permitted building volume is specified on the basis of living area, which includes the total floor area of the apartments. The permitted building area of entryways, storage rooms and other auxiliary rooms is specified separately. This prevents degradation of living comfort caused by reducing the size of entryways and other traffic and common spaces. This is often the case in conventional construction, where the goal is to build rentable floor areas as large as possible within the limits of permitted building volume.

Multi-story timber apartment building construction opens possibilities for constructing apartments less expensively than before. This manner of construction also permits more arrangement of building mass more economically than concrete construction. This benefit can be utilised as richer building shapes or by dividing residential apartment buildings into smaller buildings. Small wooden apartment buildings allow smaller-scale, richer space formation similar to that of old wooden towns than does conventional apartment building construction. Perhaps new timber construction shouldn't even attempt to produce cheaper buildings than earlier concrete construction did. Instead, the economy of timber construction should be exploited by constructing better quality buildings and more beautiful surroundings for the price of concrete buildings. The high aesthetic quality of multi-story timber apartment buildings and new wood milieus will be most important for the success of multi-story apartment building construction. On the other hand, beauty is not a factor of success unless it is a part of durable timber construction, as it was in the best traditional construction.



*View from a street in Oulu's Modern Wooden Town.*

Encouraged by Oulu's Modern Wooden Town project, there are now numerous wooden town areas under construction or in the planning stage in Finland, and several towns have decided to start new projects. The issue is current, because the Modern Wooden Town project in a natural way also provides answers to the goals mentioned in Finland's strategic housing policy for 2000 – 2003, which include, life-cycle thinking, eco-efficiency, healthiness, new rural construction and vitalisation, increasing people's choices by means of new types of single-family and apartment buildings, ease of repair, increasing independent construction and facility maintenance, improving the prerequisites of land use and construction in a manner that promotes sustainable development and decreases environmental hazards, innovation and the capacity for renewal in the field of housing and construction, and urban living in small buildings.

Old Finnish wooden towns are valued and admired. The old towns cannot be copied, but they contain many features that we can learn from. Milieu, scale and wood details do not depend on architectural styles. Thus, the objective of the Modern Wooden Town project is to construct a residential area using modern construction techniques and architecture with features borrowed from old wooden towns. The first completed areas have already indicated that a modern wooden town is possible