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Summary

Jean Duret, Geneva

Prototyp of industrialized architecture for apartment houses

(Pages 47–53)

It is only natural that at the present time the universities as well are showing an interest in pre-fabrication. Thus the Institute of Technology in Hanover is planning to establish a chair for pre-fabrication, this subject having for some years now been an optional field of study.

We are presenting here the diploma project of an architecture student of the University of Geneva. It strikes us as highly interesting and indicative of current trends in the study of architecture. Side by side with the design aspect, purely technical considerations are now beginning to make themselves at home.

The assignment here is a 7-storey apartment house with north-south or east-west orientation.

The author selected a very small module of only 10 cm. Thus, logically, the series are to a great extent restricted in favour of a large number of different element parts. He is not always successful in his handling of the basic scale of 12 m. = 120 cm. (Cf. here our Issue on Pre-fab Part Single-family Houses and that on the planning projects of the University of Marburg in No. 8/1964.)

The elements are envisaged in concrete, that is, foundations, decks, walls and supports of the outer skin, stairs, superstructures, plus an original system of balconies in the shape of "hanging gardens". The plan is good in respect of all the installations.

Plastics and glass are proposed as face materials, and that in three variants: transparent, translucent and opaque.

The author conceives the inside partitions as being in three different widths and of agglomerated panels. The elements are to be tied together by means of cruciform supports and toothed battens. The flat partitions are furnished with special acoustic insulation.

On the ground floor are lounges and installations rooms, and there are possible variant plans with shops, nurseries and hobby rooms.

A. F. Sauter and A. Dirler, Zurich
AG Heinrich Hatt-Haller, Zurich

Three residence towers in Zurich according to a Swedish pre-fab-system

(Pages 54–58)

The largest Swedish construction concern, Skånska Cementgjuteriet, has during years of work developed the semi-prefab system known as "Allbeton". These three houses in Zurich were built under licence, and they are the first examples of this type of construction in Switzerland.

In this system the supporting walls and the decks are poured on the site, monolithically.

Rationalization consists mainly in the employment of unit-sized coffer elements set in position with the crane. The faces can as desired be of pre-fab elements of concrete or brick or light panels. Also Eternit, glass or metal are possible.
The non-supporting partitions are of storey-high Siporex panels 7.5 or 10 cm. thick.

Other structural parts, e.g., stair flights and landings, balcony decks and parapets are pre-fabricated and positioned.

The wall cofferings are storey-high and are prepared corresponding to the dimensions of the finished walls. They consist of squared timbers and a plywood-faced boarding, and are held in place by a number of U-irons. The deck coffering, also of squared timbers, etc., rests on a steel construction, the so-called deck-coffering car. The girders in this construction are fixed to 6 supports adjustable up and down by means of set screws. When the coffering is removed, the cars are lowered about 15 cm. and rolled away by the crane.

The construction firm states the following:

The "Allbeton" system permits the contractor and owner to build in the good old traditional way and not merely as big-scale potterers playing about with factory-made parts. The system makes this possible owing to its combination of pre-fabrication and concreting on the site.

Atmer and Marlow, Hamburg
Associate: Berend Meeuw
Contractors: "Süderelbe" Cooperative Housing Construction Association

Kleinfeld Colony in Hamburg-Neugraben according to a French pre-fab-system

(Pages 59–61)

The Barets building procedure comes from France. All wall and deck elements are manufactured in a field shop, i. e. on the building site, and then assembled, with most of the lines and mains being built in at time of erection.

This system was first applied in Germany in 1961/62 at the Kleinfeld Colony. In construction all external and internal walls were made supporting elements; thus after the devastating floods of February 1962 when the authorities called for short-term construction of housing for homeless families, it was easy to add a fourth storey to the already rough-finished houses.

Erik Ahlin, Eric Fylking, Erik Uppling, Atelier HSB, Ohlsson and Skarne, Stockholm

Two Swedish pre-fab part construction systems

(Pages 62–65)

Years of boom conditions have unleashed an unprecedented migration of people to the big cities in Sweden, giving rise to an enormous housing shortage. The rental offices in Stockholm announce waiting periods of up to six years. Fortunately Swedish municipalities and communes have at their disposal adequate building sites. Stockholm has bought up many sites in the last few years, especially in the outskirts, so that planning and building can proceed on a generous and rational scale. Also in Sweden–in Stockholm, for example–the public transport lines are run out first, and then the houses built.

The Swedish architects and town-planners have at their disposal a number of pre-fab systems. We are describing here the system of the building firm of Ohlsson and Skarne, Stockholm.

There are involved here two different construction systems, the "light" and the "heavy" systems.

The light system:

In this system, first the stairwell with lift shaft as core of the house is rolled onto the site-poured cellar and ground floor. The erection speed is 25 cm. per hour. A climbing crane is mounted on top with a lifting capacity of 1.5 tons.

The decks are poured on the site on plywood cofferings. The power lines are naturally concreted in as are the sanitary mains. Apertures are left where the partitions are to be installed.

Pre-fab concrete parts for the supporting inner walls are produced in a field factory on the site; they are from 7 to 18 cm. thick, are 2 m. wide and 2 cm. longer than the storey height so that they can later be tied in with the deck to be poured later. In both decks and walls all the necessary power lines and ducts are concreted in. After positioning of all the inside walls, the next deck is poured using the standardized plywood cofferings. The pre-fab parts are poured in packets one behind the other in the field factory, separated by lacquered plywood panels, thus producing surfaces which permit immediate application of wallpaper, etc. The outer walls have only an insulating function.

The men required in this system are as follows:

4–5 men in the field factory
4 men for assembly
5 carpenters for the deck coffering
4 men for the pouring of the decks.

This total of 14 men work alternately on three houses, total time only 9 days. No masons are required.

The heavy system:

The "heavy" system works with construction elements that are up to 12 tons in weight. Portal cranes or high derricks are used for buildings of 3 or 4 stories. The houses, entirely of pre-fab parts, are assembled like cardhouses. Cellar floor-, deck- and roof-elements are 19-cm.-thick homogenous concrete units up to 25 sq. meters.

Here again the inner walls are supporting, but of room size, in fact, up to 18 meters in length.

This system is even faster than the light system. 9-storey apartment houses with 56 flats are built in 4 months. The supporting rough construction of one floor is assembled in three days by three workmen, the floor having an area of 600 sq. meters.

Here too wall and deck elements are manufactured in a field factory and moved into position by means of a crane. According to static calculations, buildings of up to 60 stories can be erected with this system. The outer walls serve an insulating function only.

What both systems have in common is that they permit an unlimited number of plans.

H. + G. Reinhard, Lienhard and Strasser, H. Helfer, E. Indermühle, W. Kormann, architects
Emch and Berger, engineers

Residence Towers of the large-scale Tscharnergut complex in Berne, with pre-fabricated elevations

(Pages 66–70)

We are taking up once more this complex, whose shopping centre we have already reported on, in the November Issue of 1963, and that for the following reasons:
Execution of a such a large complex in accordance with a master plan that is well worked out.

Large number and variety of joint installations.

High technical level, especially in the residence towers, whose finish is perfect.

The increase in density from 0.56 (competition) to 1.1 (execution), which is moreover too high, required 8 levels (instead of 6) for the connecting residences and 20 levels (instead of 15) for the residence towers. This appreciably altered the basic principles underlying the volume plan where the volumes were disposed so as to preserve the views over the neighbouring park and the intervals.

The towers, flanking a green zone 100 meters broad, do not disturb the neighbouring houses, for they are situated along two wide thoroughfares.

The ground-floors are not free for technical and economic reasons.
Also the number of passageway buildings is far higher than that of the towers, which are more costly and which get less sunlight.

Organigram:

4 towers, which do not differ one from the other except on their west front (visible in elevation), comprise, aside from the most demanded flats (3 and 4 rooms), 2-room flats. The 5th tower, near the centre, accommodates an invalids' home with apartments and students' rooms.
The 5 towers have been built by private companies on municipal land.

Plan:

2 stairwells with two lifts (economic solution: stops every 3 floors, one lift for the 10 lower levels, the other for the 10 upper ones) serving around 40 to 50 flats in part running through (hence bedrooms on north). Installations (in accordance with fire regulations): emergency exits via balconies, reserve electric power central, mechanically operated opening of upper glass in stairwells, handled from floor, waste water duct, fire walls, etc.

Construction:
Reinforced concrete membranes as wind bracing; pre-fab elevations (no scaffolding): double-coffered concrete, insulation, plating of grey or white artificial stone (no further maintenance required), manufacturer: Element AG. Heating plant remote, hot water and ceiling radiation.

Cost/m³ (SIA): 140.35 to 143.75 francs without heating plant and substation (around 4.50 fr./m³ constructed volume).

Interior appointments:
More comfortable than the passageway apartments. The higher rents are justified mainly by the greater cost of a high-rise building (supplementary installations, more resistant structure, etc.).

Residence:
Can be fascinating owing to the exceptional view from the apartments on top over the city and the Alps.

Tower 5:

Organigram:
Ground-floor: invalids' home with joint premises, administration for home and for students;

1st and 2nd levels: 2 3½-room flats, 18 single rooms (some with two beds), lavatories, ramps for wheelchairs and small kitchen.

3rd to 6th levels: 3 4½-room apartments, 3 3½-room apartments, 3 2-room apartments, 6 1-room apartments, with direct access to ground level via lift.

7th to 20th levels: 13 single rooms (some with two beds) on each level, utility rooms, lounges and kitchens for 210 students. The managers' flat is situated on the top floor. The roof area, which is accessible, comprises a superstructure, a large room with kitchen for the use of the students.

The two basement levels accommodate the utility rooms and the storerooms for the home, the technical installations, the substation, the laundries, drying-rooms, dust-bins, bicycle racks and wheelchair parks.
Cost/m³ (SIA): 180.– francs without substation and heating plant (4.50/m³ constructed volume).

Associate: Dieter Ganns, Helmut Weber, Hanover

Individual Pre-fab Houses from the Assembly Line

(Pages 77–84)

Preliminary Remarks by the Editors

Many of our readers will wonder why BUILDING+HOME in this Issue appears to be publishing reports on single-family pre-fabricated homes.
We should like to clarify the position as follows
1. We are not publishing pre-fab houses, but we are the first architecture journal to present a pre-fab part system for homes with a wide range of variations, a system which avoids the main disadvantage of the pre-fab house now being lauded in all the illustrated magazines, in that it prefabricates only the parts on the assembly line with which the buyer can elaborate for himself 50 and more variants.
2. We are publishing a German pre-fab part system for homes which has years of experience behind it and which can boast of an effective production of more than 1000 units per year, it being the only such system with such a production capacity. A progressive-minded industrialist a decade ago entrusted Dr. H. Weber with the research and tests for this pre-fab part system. Dr. Weber is in charge of the division for pre-fabricated building in the Institute of Technology in Hanover. Only the most intensive research and experimentation make it possible to develop such a system to the point of becoming viable and ready for industrial production. As opposed to the many theoretical investigations and projects published in many organs, which in every case led only to some few test houses, the present system has proved its worth in years of production.