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ques de type sandwich «Aeroplac» de 48 mm d'épaisseur sont composés de laine minérale comprimée entre deux plaques d'Eternit de 5 mm avec double barrière de vapeur; les faces d'Eternit sont enduites d'une couche de peinture émaillée résistant aux acides. Les éléments d'acier sont traités au jet de sable et enduits de peinture zingués à froid de 2×200 gr sur fond au chrome de zinc et émaillés au pistolet. Le coefficient de passage thermique k des éléments de façades comprenant le bâti d'acier et les panneaux sandwich, mais sans le verre, est de 0.61.

Les éléments des cloisons amovibles de 120 cm et de 60 cm de largeur et de 350 cm de hauteur sont collés en plusieurs couches: Ces panneaux sont montés sur profils d'anrage en acier noyés en plafond et ils sont vissés au sol. Les joints verticaux sont fermés de part et d'autre par des profils d'ancrage qui servent à la fixation de consoles, de conduits divers, etc. La mensuration de l'isolation phonique de la cloison, y compris les passages secondaires (canaux d'allèges et gaines d'installations) indique un indice de 46 db; ce chiffre est de 40 à 43 db pour une cloison butant latéralement sur des canaux et des montants vides; is est de 39 à 41 db dans le cas d'une cloison équipée d'une porte de la hauteur du vide d'étage.

La séparation entre les locaux de travail et les couloirs est faite de divers éléments interchangeables: portes, armoires, chapelles (digesteurs), niches de lavage, cabines pour le travail au jet. Au-dessus de ces éléments sont placés les supports de câbles et les raccordements aux canaux des installations de ventilation et de climatisation accessibles de deux côtés. Cette accessibilité diminue considérablement le freinage acoustique: l'indice d'isolation phonique est à ces endroits de 34 db environ; les plafonds d'absorption phonique des zones de circulation ont cependant permis de réduire cet inconvénient de telle sorte que les locaux de travail ne sont pas perturbés par le bruit des couloirs et des halls.

A part les piliers, le premier œuvre est entièrement en béton coulé sur place. Il fut cependant prévu en système de montage avec dalles orthotropes qui fut abondonné en faveur de la méthode conventionnelle plus économique. Ce changement n'a cependant entrainé aucun inconvénient d'exploitation puisque les éléments constructifs porteurs sont de toute façon inamovibles. L'amovibilité est par contre extrêmement importante en ce qui concerne les éléments d'équipements et d'installations. Ces éléments sont réglés selon un système modulaire (M=10 cm) avec des dimensions de 30, 60, 120, 240 et 720 cm, auquel obéit également le premier œuvre: section des piliers: 30×30 cm; distance entre piliers: 720 cm.

Les changements de disposition dépendent des besoins ainsi que du coût qui sont causes de modification. Il est extrêmement difficile de définir l'optimum de flexibilité dans le cadre de l'utilisation et du coût. Les locaux à forte densité d'installations sont peu modifiés, même si le besoin en est évident, à cause du coût élevé du changement. On ne fit cependant aucune différence entre les locaux à modification coûteuse et les locaux à modification bon marché, car une réduction du nombre des éléments d'une même série aurait eu un renchérissement comme corollaire, ce qui tout compte fait aurait eu des conséquences défavorables au plan de l'économie. On renonça, en revanche, aux possibilités de l'amovibilité dans certains locaux du noyau des bâtiments qui exigent de toute façon une conception et une exécution spéciales: grands auditoires, locaux sanitaires, cages d'escaliers, puits d'installations et les locaux de distribution d'énergie et de fluides.

Summary

On this issue

As in a previous edition, No. 2/69 in which the child's environment was examined, this edition is also occupied with an aspect of tenement building – its changing character, flexibility and varying form. The adaptability to changing demands, the design of the apartment to satisfy these requirements is viewed as a problem in need of thorough examination in order to be solved.

We do not think it is right that the tenant must adapt himself to the apartment – a fixed idea resulted from authoritive stipulations, from rendit aspects of building societies or from ideologies of architects. Environmental changes must be nothing more than adaptation to the mutation of man, to his constitution and his conditions. We must, therefore, view lodgings as man's most important environment, as his "third-skin" and give due consideration in the design to changing living requirements and diverse notions of the very conception of habitation. Important here, as will be initially explained in some detail, are the furnishing possibilities in a limited volume as well as the possibilities of expansion and reduction corresponding to the life cycle.

Flexibility, internal varying form and external varying form are defined and explained by various examples. Economy is here understood to mean that optimum adaptive capacity to changing requirements for initial usage or with an eye to long term changes still to be defined or unable to be forecasted – even at the cost of increased construction costs – makes itself paid.

Within the scope of the building planning training and research of the University of Dortmund these problems associated with tenement building are thoroughly examined. Harald Deilmann

Harald Deilmann, Herbert Pfeiffer, K. Jürgen Krause

The adaptable apartment

(Pages 77–85)

The situation in which the planning architect for apartment units finds himself today can be characterized as follows:

1. The planning architect is not aware of the future tenants at the time of his plans. Research, as carried out by Meyer-Ehler's inquiries "Living experiences" for the Interbau, indicates that the basic layout planned by the architect often fails to agree with the basic layouts organized by the user or that the user is forced to adapt himself to the ideological ideas of the architect.

2. Even when the requirements of the tenants are momentarily satisfied by the features of the existing apartment units, a static structure can never be assumed for the users and their requirements. The size of the groups and the various ages of the tenants must always be looked upon as variables. "The family cycle within a generation is a continual change of the family structure. Any stage of development corresponds to specific living habits with quite distinct requirements on the apartment. The process of socialisation of the child illustrates this especially. During his development, the child has to take on various positions which are accompanied by certain behavioural expectations which must be respected on the one hand by the carrier of the position and on the other hand by the other members of the group and environment.

Where the behavioural expectations attributed to the positions are a function of the total social environment, they bear an important relation to the living quarters since the process of the socialisation as a basic mechanism of society still happens to a major extent within the family today."

3. The relative long-term amortization period of the apartment building (approx. 40 to 60 years) requires a forecast of future social development and the technical progress made in applicances and household expedients, to guarantee a useful life of the building corresponding to the period of amortization. The average living area in West Germany during the period 1950–1968 has increased from 55 squ. metres to approx. 80 squ. metres. "Stuttgart County Council is forced to use council flats built prior to 1950 as living quarters for destitute persons since they are unable to be rented."

Basic Research Requirements with respect to Tenement Buildings

To solve the problems mentioned above, precise basic research into the requirements with respect to tenament buildings is required. This must, among other things, also include:

1. Tenant inquiries, but with due consideration of the questionable value of such interviews, e.g. the fact that today's living requirements, valid as a matter of course, are natural prerequisites of that which is expected from the apartment and is not expressed as special demands placed on the apartment but, at best, in the form of criticism.

2. Requirements research with the aid of psychoanalytical practice.

3. Comparitive experimentation with alternative plan organization to clarify the relationships between living behaviour and possibilities and impossibilities of apartment utilization.

4. Drawing up a framework of all behaviour and requirements relative to apartment living resulting from Nos. 1 to 3.

5. Prognosis evaluation for social and technical changes and continual up-dating of the framework mentioned in No. 4. The questionable nature of all attempts at prognosis can be best characterized on the basis of the following opinions: Haseloff writes in his article "How shall we Live?": "Doubtlessly it would be exciting for the social psychologist to be able to forcast a design for the city of the future and to conceive a sceptical or encouraging vision of man's future environment. A forecast of this kind must be based on a prognosis of the total social structure. This is, however, thwarted with great risks and considerable methodic problems. A great many reasons indicate that also the city of the future together with building, living and social habits can only be forecasted and planned in alternatives." Also of interest in this connection is the opinion of Hentig in his article: "To make a forecast means toformulateassumptions.Whenonemakes a prognosis, one must have reasons for assuming that the probable will occur, should these reasons not be absolutely valid, one must also have reasons for it not being so. Some form of causality is always present; including the possibility of chance."

6. Characterization of the opposing relations and functions between the influencing factors with the aid of simulation technique.

Jean Pythoud, Freiburg, and Franz Füeg, Solothurn

Institutes of Naturel Sciences at the University Fribourg/Switzerland

1964–68

(Pages 105–112)

The University of Freiburg, with 3000 students (1969/70), is small. It is bilingual (French and German) and the number of foreign students is exceptionally high (33%). The recent institution buildings constitute a first step in the extension of the faculty of mathematics and natural sciences. Required was accommodation for the institutes for mathematics, theoretical physics, physiology and biochemistry as well as for the laboratories of the Swiss Radioactive Control Commission (Fig. 1/2). The first stage of planning included the general plans for four institutes of Chemistry, institutes for Anatomy, Zoology, Geology, Geography, Petrography and Mineralogy as well as the Administration Building for the faculty of Natural Sciences. Planning was begun in 1961. The aim was to accomodate the five institutes not in a single but in two buildings. Small traffic areas of approx. 20% and a façade area as small as possible as compared with the basic area were planned. The result were plan elevations in squares or near squares, the core being rooms which require no daylight, such as auditoriums, darkrooms, machine and storage rooms, power and WC rooms. This square plan elevation is probably the optimal solution for utilizing the triangular site.

Constructions

The supporting columns are square with 750 cm spacing. The prefabricated reinforced concrete columns with 30×30 cm cross section support an on site concrete ceiling with a permissible working load of 800 kg/squ.m in the physics building and 500 kg/squ.m in the building for physiological studies.

PVC stripes were selected for the floor covering, partly with an antistatic layer. The workshops have a vinyl-asbestos slab floor covering. The stalls for the animals have a Steinit covering and in the halls Terrazzo is used. The ceilings have an insulation index for airborne noise of 58 dB and with PVC covering an insulation index for tread noise of 75 dB.

The steel framework of the facing elements of 750×350 cm are mounted between the columns and ceiling. All steel frames have identical folding measurements, so that glass or sandwich blocks of the same dimensions can be used alternatively. The 48 cm sandwich blocks type "Aeroplac" comprise a mineral wool core laminated between steam traps and 5 mm Eternit slabs with an acid resistant stove-enamel finish. The steel parts were sand blasted, coated with a 2×200 gr. cold zinc paint and provided with a zinc chromate primer and spray enamel finished. The heat transfer constant k of the facing wall with steel frame and sandwich system (without glass) measured 0.61 on site. The removable intermediate wall elements with widths of 120 cm and 60 cm and 350 cm long are laminated: reed type pressboard, air spaces, mineral wool with 3.5 cm Eternit on both sides finished with acid resistant stove enamel. The ceiling slabs are mounted on another rails and bolted above the floor. Anchor rails hide the joints of the slabs on both sides and serve to mount ledges, pipe runs, switches, etc. The airborne noise insulation index la was 46 dB for the wall with noise conducting byways, 40 to 43 dB in the side of enclosures with ducting and cavities, and 39 to 41 dB with a full height door element.

Room separation between the workrooms and the corridors are made up of various interchangeable elements: doors, cabinets, work corners (digestories), wash places, spray booths. Above this are the cable runs and ducting supports of the air condition system, which are accessible from both sides. The facilitated access complicates the acoustical screening considerably: the insulating index for airborne noise in this room separation is approx. 34 dB; using noise damping ceilings in the traffic areas enabled the echo to be reduced to an extent that the work rooms were not disturbed by the noise in the corridors and halls.

Suspended ceilings were provided in every room which is air conditioned or which contains a high number of pipe runs. The remaining ceilings are of exposed concrete.