

LOT SIZE 13 679
TOTAL m² above ground 19100 U-FACTOR 1.4

The UMB-System (Universal Modular Building System)

IKEA the world-wide furniture company, has placed its formula of success on making simple-to-assemble, flat-packed furniture kits, one kit for each piece of furniture.

UMBS is similar, - in that it is "flat-packed" and simple to assemble, but it differs from the IKEA norm, in that it is one kit from which an enormous amount of different buildings can be constructed. These can be one storey or multi-storey buildings, they can be residential buildings and commercial buildings, school buildings and office buildings to name a few. UMBS is an environmentally sound system, saving on energy and embodying a large percentage of recyclable material.

The UMBSystem is so simple to assemble that unskilled apprentices can do it, they will acquire the necessary skills quickly under skilled supervision.

SHORT DESCRIPTION:

It is a modular building system with pre-manufactured components which fix together either in situ or in a factory. Only a few of the framing-components make up about 90% of construction frames. The system is equally suited to the construction of upper market architecturally styled homes particularly on difficult and wooded terrain, inner city apartments or low cost remote area construction. When completed, a UMBS building is superior in quality to a same style construction built in-situ by experienced tradesmen.

The UMBS construction system is capable of accommodating an infinite variety of floor plans using only four main frame spans, and any or all of six auxiliary add-on frames (outriggers).

The module-components are pre-fabricated steel components that slot and bolt together on site. The system lends itself to future extensions with ease. A variety of roofs forms can be achieved.

An especially attractive use of this system is in combination with CSR-HEBEL (Aerated Concrete) Powerfloor Panel (reinforced 75mmthick, 600mm wide and 1800mm long T&G panel) and aerated concrete wall panels fixed to the inside of an external wall-panel of composite FC(Fibrous Concrete)-PU(polyurethane)-FC-sheet.

Floors are tiled straight on top of the Hebel in order to benefit from the unique heat sinking qualities of aerated concrete, where the composition being 20% concrete and the 80% equal sized "mini-air-cells" make both become heat-sink batteries. Aerated Concrete will always heat up to the ambient local temperature and, being exposed only to inside temperatures, due to a superb external insulation, be little influenced by external fluctuations thereafter.

It takes a long time for Hebel to acquire the location's ambient temperature because concrete is a slow working conductor and all air-filled cells absorb or radiate heat along the way. This further means that once ambient temperature has been reached there is going to be little variation in the heat of the floor and wall. Since human feeling of temperature is influenced in three ways only; by radiation, convection and sweating and mostly in only two ways by radiation and convection (since sweating only occurs in extreme temperatures), the importance of surface temperature is self-evident.

All UBS houses are further designed for controlled ventilation and for maximal outdoor/indoor living; radiation is therefore the primary target for regulating body temperature. Since the floors and walls retain close to ideal inside temperature the need for heating and cooling is obviously minimized.

This will save enormously on the heating and cooling load as explained above.

The combination of a steel frame and Hebel floors and walls is lightweight and a completely dry construction method. It is both a speedy and at the same time a very economical way of building "masonry housing" today.

After footings and "in ground plumbing" have been provided, a UMBS-house manufactured to Australian standards can be constructed to an enclosed finish in a matter of a few days. In fact a demonstration house constructed by one carpenter and two labourers on Macleay Island in Moreton Bay Qld. was assembled from virgin ground to an enclosed structure in one week using helical screw in foundations. (At that stage electrical wiring, plumbing (straight through floors), plastering and painting were yet to be finished, however the structure was weather-proof and lockable).

PRESERVATION OF FLORA AND FAUNA:

When using either the Surefoot or screw-pile footing systems, which provide greater pulling capacities than conventional footings, the buildings can be placed on virgin ground right beside trees and fixed in place without damaging any vegetation.

Since the consequent building system is a Mechano-assembly only, the completed structures will not damage the existing vegetation. The existing Flora and Fauna can remain in place regardless of the building activities thus enriching the overall development.

MANUFACTURING FLEXIBILITY:

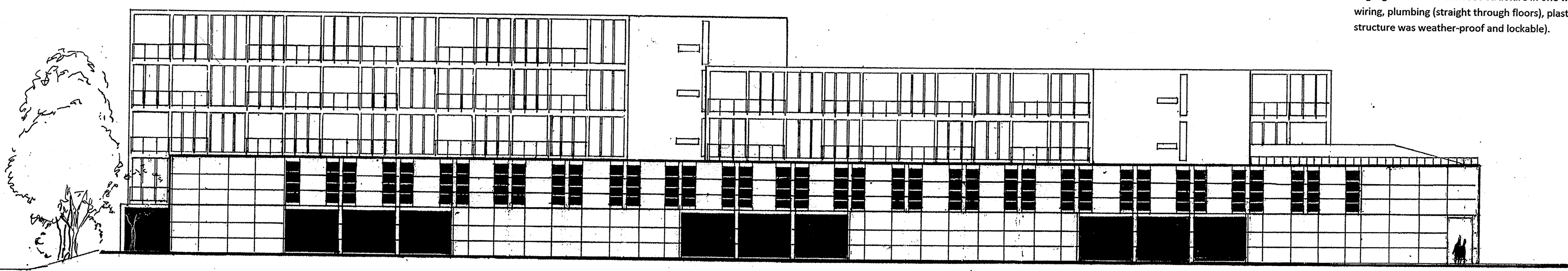
The UMBS is not only a modularized system; the number of structural components has also been cut to a minimum. Foundations can be either "instant foundations" (i.e. Surefoot-foundations or helical and counter-helical screw-in foundations), concrete posts, block walls or slab. Since all structural building materials come pre-cut, all consequent building activity is an assembly only and waste is cut to an absolute minimum.

Further evidence of the simplicity of the system is demonstrated by the requirement of only semiskilled or unskilled workers under licensed supervision, without diminished quality of the final product. Workers quickly gain the necessary basic skills required due again to the simplicity and repetition of tasks.

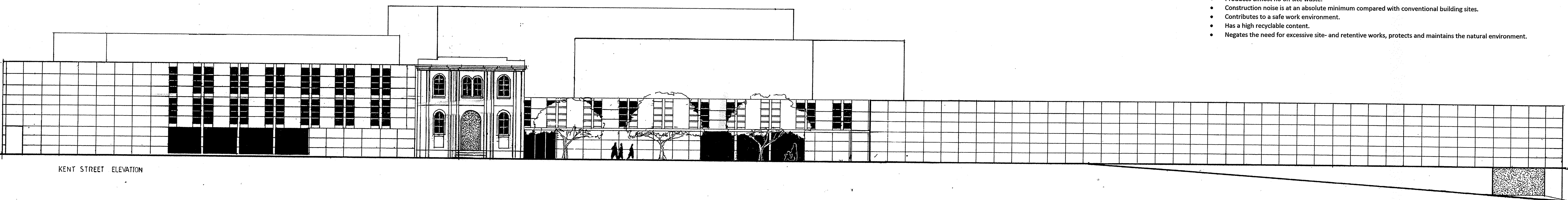
In spite of the deceptively simple system and the restricted number of structural components, it lends itself to an incredible design-flexibility in skilled hands, and the architectural effect of the finished project can look most impressive.

SUMMARY OF BENEFITS:

- Inherent value in using UMBS:
 - For the developers: short building duration, easy construction, fast profit, less employees to manage i.e. less red tape.
 - For the users: quake resistance, healthy environment, comfort, energy saving.
 - For the owners: quality assurance, long life, easy maintenance.
 - For the city: Wastes are cut to absolute minimum, minimal construction garbage, no dust pollution, and little public resource demand.
 - For the earth: low heating and cooling requirements i.e. low-carbon environmental pollution, large recycling content.
 - The UMBS construction system is capable of accommodating an infinite variety of floor plans.
 - The module-components are pre-fabricated steel components that slot and bolt together on site or in a factory to be assembled on-site in volume-units. They are "floored and skinned (or clad)" with standardized panel components that provide superb insulation and internal temperature modification.
 - A unique feature of the system is that the heaviest parts weigh only around 100 kg allowing construction to progress with a manually transferable hoist i.e. no large scale building cranes are necessary either on-site or in a factory.
 - Floors are tiled straight on top of aerated concrete floor elements to benefit from the heat sinking characteristics inherent in aerated concrete.
 - With the external skin of external walls being made with composite polyurethane components, a superb thermal insulator, and the inner skin of external walls also employing aerated concrete panels, the inside is going to be little influenced by outside temperature fluctuations. --- It takes a long time for aerated concrete to acquire the location's ambient temperature because concrete is a slow working conductor and all air-filled cells absorb or radiate heat along the way. This further means that once ambient temperature has been reached there is going to be little variation in the heat of the floor and wall.
 - Since the floors and walls retain close to ideal inside temperature the need for heating and cooling is obviously minimized. This will save enormously on the heating and cooling load.
 - The combination of a steel frame and aerated concrete floors and walls is lightweight and a completely dry construction method. It is both speedy and at the same time a very economical way of building "masonry housing" today.
 - An evidence of the simplicity of the system is demonstrated by the requirement of only semiskilled or unskilled workers under licensed supervision, without diminished quality of the final product.
 - Still another advantage of the system is that the above explained construction of external walls is also a superior sound-insulator as well as being virtually fire proof.
 - In spite of the deceptively simple system and the restricted number of structural components, it lends itself to an incredible design-flexibility in skilled hands, and the architectural effect of the finished project can look most impressive.
- IN SHORT: UMBS is unique because it:**
- Is flexible with regard to design and architectural flair.
 - Builds extremely fast.
 - Is very strong and at the same time light weight.
 - Provides excellent insulation efficiency with regard to both noise and energy efficiency.
 - Uses less labour and one may substitute skilled labour with unskilled and semi-skilled labour.
 - Is cost competitive.
 - Produces precise constructions.
 - Produces almost no on-site waste.
 - Construction noise is at an absolute minimum compared with conventional building sites.
 - Contributes to a safe work environment.
 - Has a high recyclable content.
 - Negates the need for excessive site- and retentive works, protects and maintains the natural environment.



MARCH STREET ELEVATION



KENT STREET ELEVATION

PROPOSED DEVELOPMENT FOR LOTS 119- 255 KENT ST.
MARYBOROUGH

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