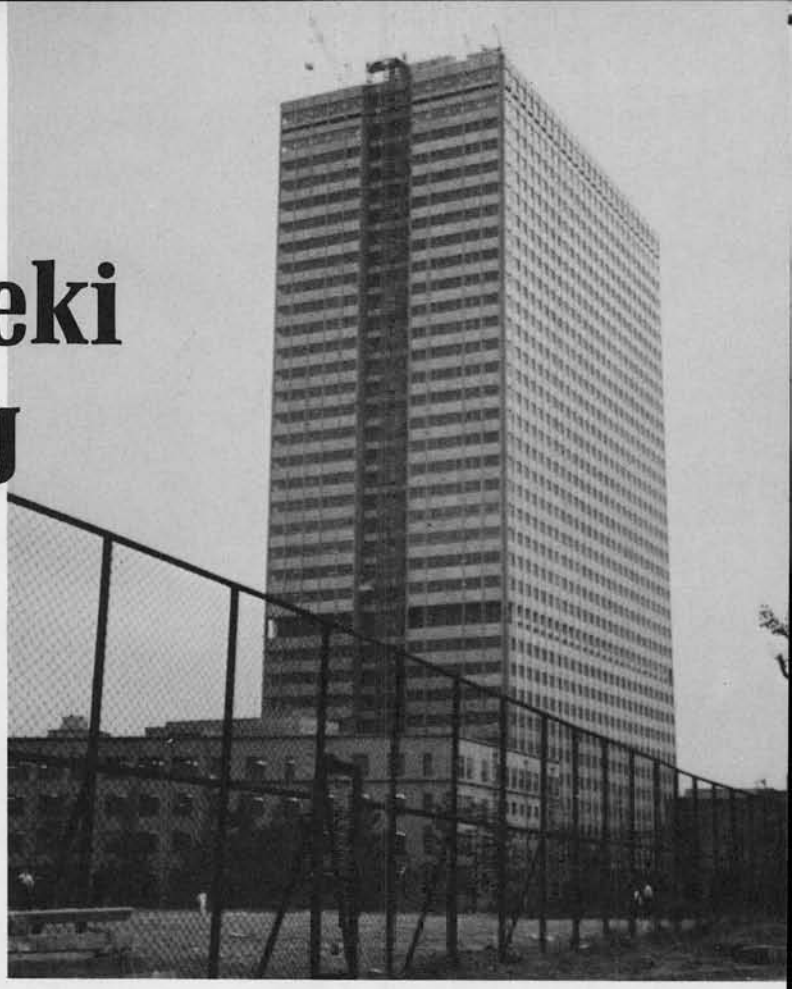
Kasumigaseki Building



Lightweight concrete plays a major role in engineering of Japan's first skyscraper: a 36-story structure designed to withstand massive seismic forces and 183 mph typhoons

"THE best brains and newest techniques have been integrated for application on the basis of numerous test data and precise electronic computations, to create Japan's first skyscraper."

A Japanese engineer has thus described the new Kasumigaseki Building towering on the relatively low-profile Tokyo skyline. This high-rise structure marks a major breakthrough in Japanese construction, where building height has hitherto been strictly limited because of probable seismic activity and severe climatic conditions . . . all compounded by the fact that much of the city is built on former mudflats. The great Kanto typhoon of 1917, with winds of 112 mph, destroyed more than 50,000 houses. And only six years later, in 1923, some 60,000 persons died in an earthquake — and the fires resulting from it. The Imperial Hotel, designed by Frank Lloyd Wright and completed in 1923, was one of the first "modern" buildings to be built in Tokyo, and one of the few major structures to withstand the earthquake.

With this background, the significance of the completion of the 36-story Kasumigaseki Building becomes clear. And second in importance only to the engineering skills that brought the structure into being is the contribution of structural lightweight concrete toward minimizing the seismic and climatic effects peculiar to the area.

In all, some 13,000 cubic yards of structural lightweight concrete were used in the floor systems, roof and walls of the 36-story building, resulting in a significant reduction in dead weight and corresponding savings in foundation and steel costs. Of perhaps even greater importance than these savings, however, is the reduction in whiplash reaction to seismic forces and the sporadic wind effects associated with high storms. In an area where building sites are at a premium — more people live in the metropolitan Tokyo area than in the whole of Australia — the ability to increase vertical space utilization can produce significant increase in return on investment.

Rising 485′ above grade, the structure provides well over one million square feet of floor area, plus three basement and parking levels with a total 500-car capacity. The Kasumigaseki Building also features what are under the circumstances remarkably long spans of over 52′ providing column-free office areas. This added degree of layout flexibility is another important benefit provided by the use of expanded shale aggregate structural lightweight concrete.

With the population of Tokyo increasing by some 200,000 persons annually the completion of the Kasumigaseki Building may well be the engineering landmark solving the increasingly critical problem of space utilization. And it is a particularly dramatic example of the contributions that structural lightweight concrete can make to modern construction technology.

Owner — Mitsui Real Estate Co., Ltd.
Architects and Engineers — T. Yamashita Architects & Engineering, Inc.
General Contractor — Kajima Construction Co., Ltd.
Mesalite expanded shale aggregate supplied by Mitsui Mining & Smelting Co., Ltd.