

Skyscraper of Future

Towers Taller Than Ever to Contain Variety of Technological Advances

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VANCOUVER, B. C., July 3—The skyscraper of the future, as it shapes up in the vision of the men who will own and operate it, will be a huge technological marvel that will please some people, dismay others and put practically everyone in awe of it.

Not many years ago, it was widely believed that the era of the very tall office building—60 stories and higher—was dead and buried, that there would be no more Empire State Buildings or Chrysler Buildings. The reason was economic: Increasingly stringent zoning restrictions in New York and other large cities made it impossible, it seemed, to obtain enough volume of rentable floor space in structures over 50 or 60 stories to make them profitable.

But times and technology have changed. So have some of the basic concepts of building operations. Thus New York will soon have a 110-story, twin-towered World Trade Center on the lower West Side, chiefly because a governmental behemoth, the Port of New York Authority, has had the financial ability and the political strength to forge a multiblock site on which it can erect eight million square feet of office space and other facilities for public and private tenants.

Similarly, in Chicago, a radical departure in building purpose—the combination of apartment and office space in about equal parts in a single structure—is making possible the 100-story John Hancock Center about to rise on North Michigan Avenue.

There will be other such giants, in the opinion of many of the members of the National Association of Building Owners and Managers, which held its 58th annual convention in Vancouver this week. More than 1,000 owners, managers, mortgage specialists, building suppliers and others in related fields in the United States and Canada attended the sessions.

Both the New York World Trade Center and the John Hancock Center in Chicago owe their feasibility to two major factors—the ability to marshal large amounts of capital to pursue such huge projects, and bold technological advances.

In the case of the Trade Center, the capital will be made available mainly because of the unusual nature of the Port Authority, a supergovernmental agency unbound by shackles of responsibility to an electorate, possessing an impressive record of financial stability, well sit-

Continued on Page 4, Column 1

TOWER OF FUTURE WILL BE TALLER

Continued From Page 1

uated to float bond issues to erect the world's two tallest buildings—and even able to toss in the 50-cent tolls paid by motorists crossing the George Washington Bridge in the event that borrowing becomes difficult.

The John Hancock Center is coming into being because one of the nation's largest insurance companies considers such a project to be worth while from both investment and prestige viewpoints.

The building will house a regional headquarters for the Boston-based company, but most of its office space will be rented for profit, and all of its apartments will compete in the Chicago rental market.

John Hancock will finance the project itself, pointing up the steadily increasing role of insurance companies in major construction projects from coast to coast. These companies are today the largest single source of mortgage funds to support venture capital in new construction.

Important Advances

The technological breakthroughs are no less important. The World Trade Center will employ for the first time in a skyscraper a system of trusses rooted in the outer shell of the building to support the floor loads.

The John Hancock Center will have diagonal structural members, together with the conventional vertical and horizontal members, running along the outside of the building to provide support.

Both of these engineering departures will necessitate daring architectural innovations. Windows in the World Trade Center will be narrow, because the columns on the sheer faces of the tall towers must be close together. People in many of the offices and apartments in the John Hancock Center will have to look through windows that are not square, but trapezoidal in shape, with horizontal tops and bottoms but with sides that are not parallel.

The sponsors of the two projects believe that these seeming drawbacks will be outweighed by other advantages they expect to offer tenants. In the case of the World Trade Center the principal one is an unparalleled location for a company in the foreign-trade field—a single building in which there will be a great variety of associated companies and services.

At the John Hancock Center, the lure will be a prestige location for both business and residential purposes, a stone's throw from the middle of town and in a building that will contain just about everything needed for human survival, from a supermarket to a swimming pool.

Both the trade center and the

Chicago office-and-apartment building have elicited anguished protests, and in both cities the protests have been from the same two sources—competing building owners, who foresee damage to the rental market, and civic-beautification groups, who perceive the structures as monsters invading already cluttered skylines.

So far the objections have been unsuccessful in changing the plans of either project. The Port of New York Authority has fought legal actions against the trade center all the way to the United States Supreme Court, and still has to deal with litigation that has been brought by private realty owners who charge unfair competition in the office-rental market from a governmental body.

In Chicago, assertions that the bulk of the John Hancock Center will help "uglify" the city have been fended off by the sponsors.

Meanwhile, impressive new technology is contributing heavily to the new buildings—as it is to lesser skyscrapers and even to small structures. Among the new developments are:

¶Computerized planning. John

Hancock reports that its 100-story building could not have been planned successfully without the use of an electronic computer at the Massachusetts Institute of Technology.

¶Electronic brains to run building operations. Automatic regulation of air-conditioning, lighting, elevators and virtually all building services has now been centralized in a single control panel serving an entire skyscraper.

¶Single-energy operating plants. Both all-electric and all-gas systems are practical realities today. The all-electric system, which will be used in the John Hancock Center, captures heat from fluorescent light fixtures to air-condition the building. The all-gas system uses natural gas to run a power plant that supplies electricity, air-conditioning, hot water and power for the elevators and other mechanical equipment.

In various combinations, these developments have made possible the resurgence of the true skyscraper that will dwarf those little 50-and-60-story buildings scattered around Manhattan and even found elsewhere on occasion.