



## Preparing for a century of good health

How Takenaka Corporation is meeting the challenges of an aging society

Longevity is something we all strive for. But when society as a whole ages, the cost of medical and social services for an ever-growing number of elderly citizens begins to cast a shadow on the future. It is to mitigate these looming costs that increased attention is now being paid to human health and wellness. In the construction and real estate industries, more and more companies are pursuing WELL Building Standard<sup>1</sup> certification, which evaluates projects from a health perspective. And in Japan—a nation with one of the world's most aged populations—Takenaka Corporation is partnering with the Centre for Preventive Medical Sciences at Chiba University on a new initiative. Called *Kenchiku*<sup>2</sup>, the initiative aims to find fresh, innovative new ways to take a “health-centric” approach to architecture and urban development. Takenaka has long been committed to contributing to society through architecture and urban development, so we asked Masatomo Isono, General Manager of Corporate Strategic Planning, and Atsuo Ishikawa, Senior Manager of Technology Planning, how this initiative fits with the company's “people-centric” approach to architecture.





**Atsuo Ishikawa**  
Senior Manager of  
Technology Planning

## A fresh new look at architecture and health

**Isono:** By one estimate, approximately half of the Japanese born in 2007 will have a lifespan in excess of 100 years. And although the average Japanese lifespan is getting longer, the gap between the average lifespan and a “healthy” lifespan is not narrowing. So medical costs continue to rise.

It is said that we spend 90% of our lives indoors, so over the long term, buildings can greatly influence our health. At Takenaka, it has always been our goal to contribute to society through architecture, and we have extensively studied the influence that buildings and urban environments have on human health. It is to share what we have learned with customers and society that we launched the *Kenchiku* project in partnership with Chiba University’s Centre for Preventive Medical Sciences.

The field of epidemiology has a concept called the “population approach.” In the case of high blood pressure, for example, a traditional high-risk approach focuses only on individuals with systolic pressure over 140. But with the population approach, you expand the focus to include people with a systolic blood pressure below 140. There is also the “life course

approach,” which takes a more holistic view that considers environmental and lifestyle factors from early childhood and throughout life that may cause disease in old age. With the life course approach, we can work to improve the environment that causes people to get sick in the first place. Until now, disease was thought of as something to be addressed only through medical treatment. But with a health-centric life course approach, architecture and urban development are being looked at in fresh new ways. We feel this sort of paradigm shift is necessary if we are to solve these problems. This is really the driving force behind the *Kenchiku* project.

## The WELL Building Standard

**Ishikawa:** The WELL Building Standard is a well-thought-out certification system, and we will continue to work with it. But since the standard applies to buildings at the time of their completion, we also want to pursue our own initiatives to evaluate buildings on an ongoing basis. We believe it is important to understand the long-term effect of architecture on human health, and because the certification system doesn’t track how a building is used after it is completed, that perspective is lost. When considering the relationship between

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architecture and health, we believe it is necessary to analyze how people living in these spaces are affected over the long term.

Also, because the standards are primarily based on research done in Europe and the U.S., some of them do not accurately reflect the public health situation in Japan. Among office workers in Japan, for example, the biggest problem is not obesity, but mental health. While I believe the WELL Building Standard is a useful guide to use as a reference, I also believe we need to develop wellness programs and evaluation standards that are specifically adapted to the needs of Japanese people, society and culture.

## *Kenchiku*—a health-centric approach to space design

**Ishikawa:** The *Kenchiku* project takes a three-pronged approach to health-centric architecture. First, it considers space design from the perspective of human wellness. Second, it develops programs that promote physical activity and stimulate the senses. Third, it feeds back what we learn from evaluating and analyzing the effectiveness of these programs to continually improve our solutions.

The *Kenchiku* project enables us to research three important areas of space design: how to promote human interaction, how to encourage physical activity, and how to improve emotional well-being. Through our research, we are developing better ways to achieve these goals through architectural means.

For example, we know that people are more likely get along with each other when they are in a space that evokes a sense of warmth. We have also learned that spaces that incorporate natural lighting, ventilation, and materials can reduce the psychological distance between people, and enable them to have a favorable impression of each other even when meeting for the first time. So we are applying these insights to our design and evaluation processes.

In offices, employees need to be able to concentrate on their work without being distracted by things in their line of sight, or conversations happening around their desk. On the other hand, it is also desirable to create an environment that encourages work-related conversations. This makes it necessary to think about trade-offs in office design that can address the needs that arise from this contradiction. So we are researching the influence that the physical environment has on the human psyche and physiology, and leveraging what we learn in our ongoing design initiatives.

The Shinkashiwa Clinic dialysis center is a real-life example of how natural building materials can promote a sense of emotional well-being. Constructed in 2016, the clinic building makes abundant use of wood—even in structural members—and pre- and post-surveys have revealed that patients find their dialysis treatment much less stressful.

## A stairway to better health

**Ishikawa:** Takenaka's main office in Tokyo has an atrium stairwell in the center of the building that was designed to make people feel good about using the

stairs. But when we surveyed employees at our Tokyo and Osaka offices, we found that while people tended to use the stairs on lower floors at a relatively high rate, the rate of stair use dropped as floor levels rose. So we learned that no matter how easy stairs are to climb, architectural design alone cannot always motivate people to use them. If you want to get people on higher floors to use the stairs, you must create mechanisms that motivate people to view stair-climbing as a healthy and fun activity.

To address this problem, we collaborated with the Japanese advertising agency Hakuhodo Inc. on a motivational system to promote stairway use. The system uses smart sensor and projection technology



**Q's Mall in Morinomiya, Osaka, is a prime example of Takenaka's commitment to create shared spaces that encourage physical activity and promote healthier lifestyles.**

to make climbing the stairs more fun. Sensors embedded in the stairs recognize individuals by electronic tags on their employee cards, and based on logged data of previous climbing pace and behavior, the projection system displays images and messages that motivate the individual to utilize the stairs on a daily basis. In tandem with the architectural design of the stairwell, such systems can promote increased stairway use at any floor level.

We are also developing a Sense-Response Wellness System. Aimed at care facilities for the elderly, it is an interactive projection system that captures the silhouette of a person in front of the screen, and combines it with scenes of nature. By making it appear as though the person is interacting with flowers, butterflies, and other elements on-screen, the system





Attractive, well-designed stairways with built-in motivational programs provide office workers with a convenient and enjoyable way to exercise.

encourages physical movement and motivates people to be more active.

## Meeting the challenges of the future

**Isono:** In an office, if you set up desks and computers, people can work. In a city, if you provide basic lifeline services and infrastructure, people can live. But when the health and wellness of employees and residents is your focus, then buildings and cities must meet a higher standard. Factors that seem to be only distantly related to actual productivity—the ability to take breaks, feel refreshed, exercise, and enjoy human interaction—take on much greater importance. As we approach a time when lifespans can reach 100 years, we may need to reconsider how we work in the future. It may also give us an opportunity to reexamine the

roles of education, employment, retirement and old age, and rethink the way we live our lives.

In discussing the challenges we face in space design and urban development with developers, building occupants, and urban residents, it is clear that human health and wellness are a vital part of the equation. If we can meet these challenges head-on, and continue to gather evidence about the role architecture plays in human health, it is my hope that we can make a significant contribution to society as a whole.

<sup>1</sup> International WELL Building Institute certification standards define 105 performance benchmarks in seven areas considered important to occupant health: air, water, nourishment, light, fitness, comfort, and mind.

<sup>2</sup> *Kenchiku*, written with the characters 建築, is the Japanese word for architecture. But when it is written with the visually very similar characters 健康, the nuance becomes “architecting human health”—making it a name that perfectly reflects the initiative’s lofty goals.

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