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Design Values

Measuring the economic value of investing in architecture and design.

GETTY IMAGES (MILWAUKEE ART MUSEUM)

MARC A. SALLETTE

Good design may be a difficult topic to discuss in the context of economics and business investment decision making, but it is an accepted fact that the design of our physical surroundings and environment has a major impact on the way we live and work. A new intellectual framework developed in the United Kingdom has made it possible to identify the attributes that constitute good design, as well as the related costs and benefits that accrue from investment in design. For the first time, using this recently developed assessment tool, everyone involved in the design, production, and use of a building can evaluate and benchmark the quality of its design. In addition to aesthetics and style, good design also needs to be judged in the broader sense in terms of construction quality, functionality, and impact.

With this new method of evaluating and discussing design standards, it is now possible to examine the value of good design from the perspective of a financial investment decision. Benefits derived from investment in design then can be isolated and factored into financial models to justify the deployment of increased resources and capital. Finally, evidence from various sources and building typologies demonstrates the value of investing in good design, as well as the growing market demand for well-designed products.

Over the past 30 years, there has been an acknowledged lack of investment in the design and planning of the built environment. As a result, low-quality building has become the accepted market standard for the majority of both public and private projects. However, because every hour of every day people are somehow affected by the disappointing, inefficient, and uninspiring surroundings that have been created, even marginal changes in the architecture and design of buildings and urban spaces will represent an improvement.

Definitions pertaining to the quality of design of the built environment are hard to come by. To begin with, good design is about much more than simply the way things look; it is derived from a complex and creative process encompassing a broad range of activities, elements, and attributes. As a result, the perception is that good design cannot be reduced to a simple set of codes and practices, nor can it be easily measured or assessed in a way suitable for communication across the range of disciplines and stakeholders involved in a typical project. In addition, it seems that where established guidelines do appear to exist, such as in classical architecture, often the best design breaks or transcends the rules. The challenge is how to recognize and define good design.

Two organizations in the United Kingdom, the Construction Industry Council (CIC) and the Commission for Architecture and the Built Environment (CABE), have been building an intellectual framework to determine the key attributes that constitute good design

with respect to both individual buildings and urban spaces. Both groups have published guidelines identifying their criteria and developed methodologies for objective evaluation and assessment of design. In addition, British architect Norman Foster uses some compelling design principles worth examining as a means of improving the production of well-designed buildings.

The CIC Framework

The CIC's intellectual framework includes an assessment tool derived from the ancient themes of Vitruvius, the Roman author from the first century B.C., whose *Ten Books on Architecture* is the earliest surviving theoretical treatise on building in Western culture. He laid out the need for a scientific understanding of materials, and identified three generic attributes that enhance the quality of buildings. Translated into English, they are firmness, commodity, and delight.

Based on this and further analysis, the CIC has developed the design quality indicator (DQI), a method of assessing the quality of buildings based on the following three criteria:

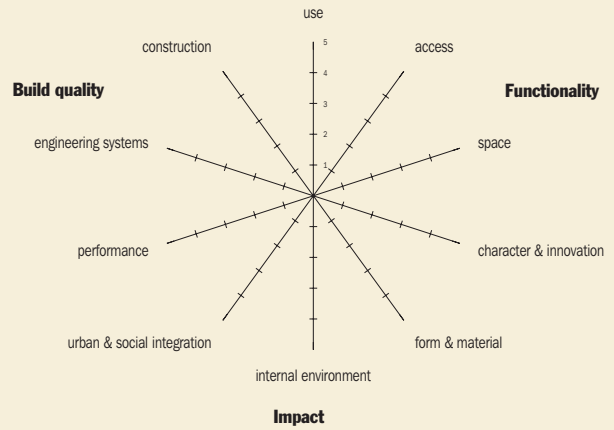
- *Build quality.* This involves the engineering performance of a building, which includes structural stability and the integration and robustness of systems, finishes, and fittings.
- *Functionality.* This concerns the arrangement, quality, and interrelationship of space, and the way in which the building is designed to be useful.
- *Impact.* This involves the building's ability to create a sense of place and have a positive effect on the local community and environment; it also encompasses the wider effect the design may have on the arts of building and architecture.

It is the duality and interplay of each of these attributes that together determine whether a structure is a truly high-quality building.

The DQI assessment is groundbreaking in that it is designed for easy use by anyone involved in the production of a building, including commissioners, financiers, clients, designers, developers, contractors, project managers, facilities managers, occupants, and users. It also is applicable throughout the entire construction process, from inception, design, and construction to the point of completion when the building is occupied and in use. Through the use of a short questionnaire, respondents are asked to score various attributes relating to the design quality of a building on a scale of 1 to 5. Each attribute falls under one of the three primary fields of quality.

DQI responses are aggregated and plotted on axes arranged in a star shape with a scale of 1 (basic) to 5 (excellent) for each attribute (see Figure 1). Each axis corresponds to a different indicator, with points farther from the center having a higher rating for quality. A building considered to exemplify good design will form an overall shape approaching a circle along the outer edge of each axis, while a building with shortcomings in the design will be identified by various portions missing from the optimal rounded shape. Three potential visualizations are shown in Figure 2 (facing page).

FIGURE 1: DESIGN QUALITY INDICATOR



SOURCE: CONSTRUCTION INDUSTRY COUNCIL, *THE SHAPE OF THINGS TO COME*, TRAILBLAZING SCHEME JULY 2002–JUNE 2003.

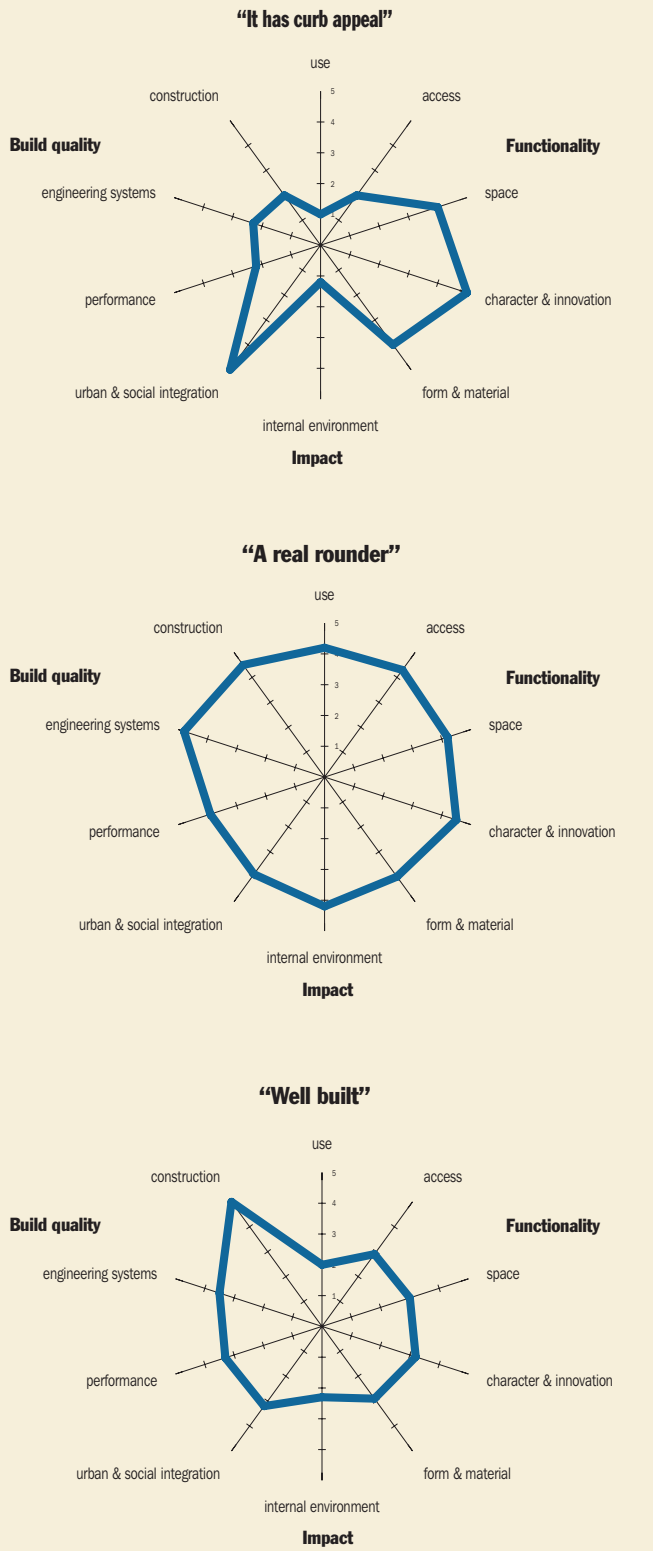
The DQI, the only tool of its kind, allows a quick and objective assessment and evaluation of design quality. The methodology permits a multitude of useful analysis and performance checks, enabling easy comparison of the completed product to the original design requirements. DQI results also can be compared among participants as well as among projects. Thus, an architect can compare his or her response to that of an engineer, property manager, contractor, planning official, leasing agent, building tenant, and others. Likewise, buildings can be compared and contrasted within peer groups: one hospital might be compared with another, for example, by cost, procurement method, and other criteria.

CABE Criteria

CABE, the U.K. champion for improving the quality of the built environment, has also developed a substantial intellectual framework used in part to educate various segments of the government in the procurement of new public buildings. The organization also provides a range of services and has issued numerous guidelines and publications that relate to the value of good design, including *Better Civic Buildings and Spaces* and *Design Review*, which address the definition of good design of both individual buildings and urban spaces.

Better Civic Buildings and Spaces provides advice to local authorities on how to manage their responsibilities and improve design quality standards, offering a range of policies to be considered in determining the characteristics of well-designed buildings and places. What makes the document useful is that it is geared toward an audience assumed to have minimal knowledge and experience procuring and managing design. Its characteristics, therefore, are deliberately simple, straightforward, and meant to provide guidance toward choosing optimal design proposals. The document empha-

FIGURE 2: SAMPLE VISUALIZATIONS



SOURCE: CONSTRUCTION INDUSTRY COUNCIL, *THE SHAPE OF THINGS TO COME*, TRAILBLAZING SCHEME JULY 2002–JUNE 2003.

sizes the fact that many design proposals might satisfy a project's requirements; the point is not to find the perfect solution, but to find one that fits the suggested characteristics of good design.

According to CABE, determination of whether a building is well designed should be based on the following five criteria:

- *Appearance.* The building itself should be excellent and appropriate to its surroundings, attracting a favorable response from users, customers, and the wider public.
- *Context.* The project should be seen as a place, not as an isolated building, and should include creation of public space, contribution to the neighborhood and its environment, and consideration of the impact on transportation patterns.
- *Buildability.* The project should involve ease of construction, use of materials from sustainable sources, prefabrication, and use of standard components.
- *Maintenance.* The design should reduce energy use, and cleaning and repair costs—all estimated over the life of the building.
- *Operation.* The design should provide for efficient use of space, ease of navigation around the building, comfort of users, flexibility, effectiveness of service, and accessibility.

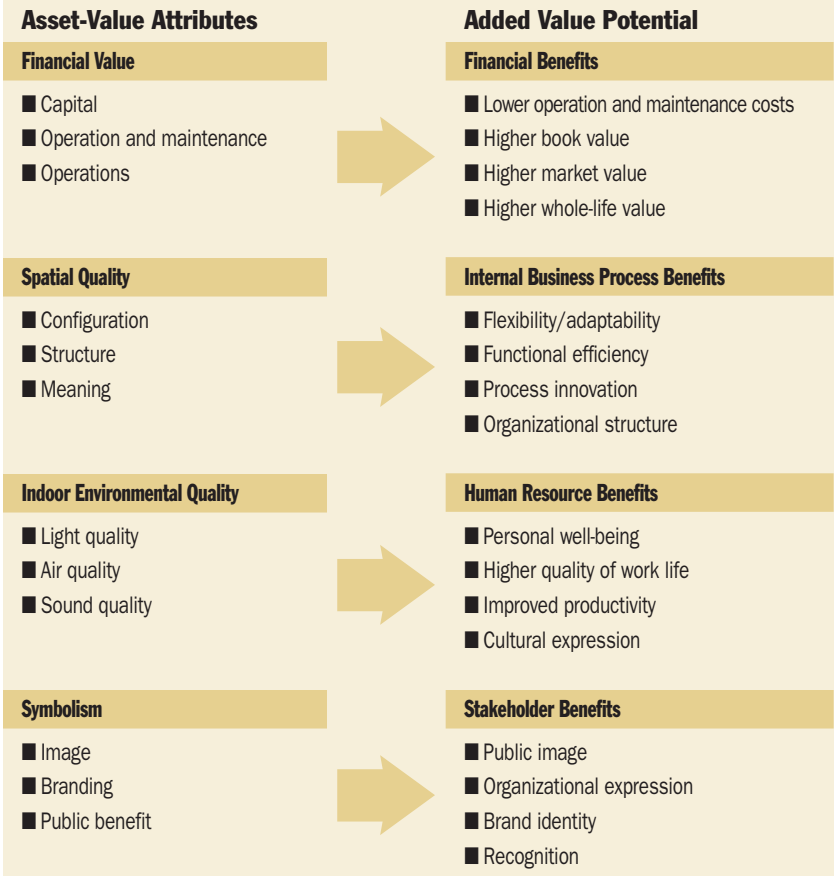
For a place, CABE says evaluation should include the following seven criteria:

- *Character.* Townscapes and landscapes should respond to and reinforce locally distinctive patterns of development and culture.
- *Continuity and enclosure.* Projects should promote continuity of street frontages and enclosure of space through clearly defined private and public areas.
- *Quality of the public realm.* Public spaces and routes should be attractive, safe, uncluttered, and work effectively for all in society, including disabled and elderly people.
- *Ease of movement.* Accessibility and local permeability should be promoted through creation of places that connect with each other and that are easy to move through, putting the emphasis on people rather than traffic, and integrating land uses and transit.
- *Legibility.* Recognizable routes, intersections, and landmarks should be provided to help people find their way around.
- *Adaptability.* Developments should respond to changing social, technological, and economic conditions.
- *Diversity.* Developments should provide choice with a mix of compatible projects and uses that work together to create viable places that respond to local needs.

CABE's objectives, developed through extensive research and debate, have a unique legitimacy because they are now included in official U.K. government guidance protocols. They are useful in defining good design in terms the general public can understand and suggest clear, objective attributes with which design quality can be assessed.

Design Review describes the principles behind one of CABE's advisory services—free advice provided to planning authorities and

FIGURE 3: ASSET-VALUE ATTRIBUTES AND ADDED VALUE POTENTIAL



SOURCE: CONSTRUCTION INDUSTRY COUNCIL, *HOW BUILDINGS ADD VALUE FOR CLIENTS*, 2002, PAGES 46-47.

others on the design of selected development projects in England. The CABE review panel is particularly interested in strategic projects in their early stages—not only projects of national importance, but also those that have a significant impact on a local environment or set standards for future development. Also based on the three principal qualities of well-designed buildings suggested by Vitruvius, *Design Review* evaluates quality by examining the following attributes:

- order;
- clarity of organization, from site planning to building planning;
- expression and representation;
- appropriateness of architectural ambition;
- integrity and honesty;
- architectural language;
- conformity and contrast;
- orientation, prospect, and aspect;
- detailing and materials;
- structure, environmental services, and energy use;
- flexibility and adaptability;
- sustainability; and
- beauty.

Foster's Approach

Architect Foster's method of producing a building follows some well-known principles of industrial design in which the design process fuses aesthetics, function, and technology. This minimizes the risk of designing a building that is wrapped in a style unrelated to its use or function. Although a full-scale prototype of a building cannot be built and tested like an industrial product such as a car or a personal digital assistant (PDA), aesthetics still can be justified in terms of function. The value of architecture and design, like that of an industrial product, therefore can be measured in terms of utility instead of beauty.

Problem solving, innovation, and intensive user input are at the heart of Foster's design methodology. "The designer's task could be summed up as analyzing set problems in the widest sense and organizing the best available resources to achieve the highest-performance solution in the most economical manner," says Foster. His "economy of means" focuses on solving the greatest number of problems using the most minimal means. The architect strives to achieve further savings for clients through innovation and the rejection of consumerism, rather than through the traditional methods of lowering the quality of finishes or reducing the size of the building. Innovation begins by "learning more about the client's needs than the client himself knows," as critic Martin Pawley has described Foster's methods, as well as by paying particular attention to a building's end-user needs and not just those of the client. The rejection of consumerism leads to innovation through the questioning of suppliers about how products are manufactured and working with manufacturers to enhance performance. The result is good design with savings for the client in the form of lower construction and operating costs and long-term flexibility and performance.

What Is Meant by Value?

Having a standardized means of assessing and communicating design quality with a tool such as the DQI is a big step. However, the DQI assessment says nothing about the value of good design with respect to the various stakeholders involved in a project. Arguably, the most important stakeholder is the client or investor, who makes possible the creation of a building by having the ability to secure the necessary resources and capital.

Value as it relates to design can be sorted into the following five general categories:

■ *Commodity, or exchange, value.* This is the value that can be priced and realized in the market. It is a common form of value added by product design, packaging design, etc., where the excellence and appeal of the design are two aspects acknowledged in higher market share and/or market returns.

■ *Operational value.* This is value enhancement related to business operations and the criteria that define their viability, such as quality of life and/or increased productivity; removal of risk, hassle, and sources of dissatisfaction; housing of new enterprises or processes; reduction of operating and life-cycle costs; and help for a business to grasp business opportunity.

■ *Aesthetic value.* This is a subjective value, such as the perception of poetic qualities or a cultural and heritage content of a building, or resolution and harmonization of what is experienced. It also includes esteem value. Like operational value, aesthetic value can be transformed into commodity value, but it also can be perceived as a negative when it constrains other values, such as in the case of added costs involved in dealing with historic preservation laws.

■ *Social value.* A value that accrues to the public at large, this is characterized by broader public objectives such as a higher quality of life, increased cultural vitality, and greater civic pride. Other examples include accessibility to facilities, more inclusive public space, better security, less stress, and reduced travel costs.

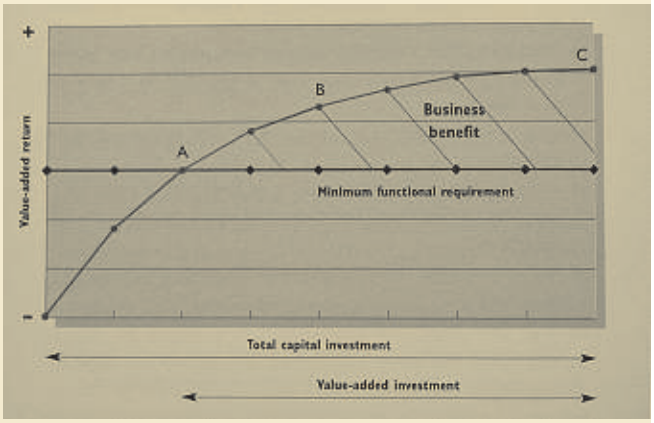
■ *Environmental value.* Another value that accrues to the general public, this is characterized by benefits such as reduced energy consumption, reduced resource and land consumption, less pollution, and improved ecological diversity and sustainability.

A well-designed building will incorporate as many forms of value into a whole, generating increased market value for the investor.

Value from the client/investor perspective can be understood by considering the construction of a building as creating two types of value: the market value of the completed building itself (commodity value), and the value that can be added to an organization through certain benefits provided by the building. By using design to create more benefits for businesses and organizations to exploit, the market value of a building can be increased significantly. According to CIC, investment in design relative to the four attributes of financial value, spatial quality, indoor environmental quality, and symbolism can create economic value. The added value potential is summarized in Figure 3 (facing page).

Financial value. The financial value of a building influences the amount of capital and resources available for investment in good design. Owning or occupying a building often involves a large amount of capital, which must be justified in terms of a financial valuation. While a focus on minimizing capital costs is understandable, it can lead to flawed decision making by ignoring the potential to realize additional value creation from good design—that is, to recognize the dollar value that good design ultimately creates and then making a decision as to how much can be spent to achieve a given return on investment. Design investment, therefore, can be realized by factoring in the additional return on investment from various added benefits. For example, design investment can result in a reduction of operation and maintenance costs over the lifetime of the building, which can be passed through to the building's users and factored into a financial analysis, and can reduce personnel and staff operating costs by increasing occupant labor productivity.

FIGURE 4: DEFINING VALUE-ADDED INVESTMENT



SOURCE: CONSTRUCTION INDUSTRY COUNCIL, *HOW BUILDINGS ADD VALUE FOR CLIENTS*, 2002.

Spatial quality. The quality of a building's interior space affects the internal business processes of its occupants. Size, shape, and configuration of space are known to affect social behavior and performance. For example, in a retail project, space designed so as to maximize the flow of consumers leads to higher sales. In an office environment, the design of open-plan space is known to lead to increased communication and sharing of ideas. Design, therefore, can increase productivity through the use of interior space planning.

Indoor environmental quality. Improved design of the indoor environment can add value by reducing tenant turnover and improving occupant productivity. Through proper design, the indoor environment can be made to meet the specific needs of an organization. Although environmental quality might be presumed to be difficult to assess, factors such as ventilation, temperature, humidity, smell, lighting, and color are each tangible and quantifiable. Other factors identified as important but more qualitative are sense of control (visual privacy, light, sound), social support (comfort, food, social interaction, the ability to stay overnight, for instance, when visiting someone in a hospital), access to nature, and control of other distractions (views, access to the outside, social contact, a pleasing environment that raises productivity in the workplace, for instance, or shortens recovery time in a health care environment).

Symbolism. The design of a building's external appearance can generate varying degrees of symbolism that can provide added mar-

FIGURE 5: THE POTENTIAL ECONOMIC VALUE OF GOOD URBAN DESIGN

Tangible Economic Benefits	Intangible Economic Benefits
■ Potential for higher land values	■ Potential for greater security of investment depending on market
■ Higher sale values	■ Quicker permissions (reduced cost, less uncertainty)
■ Increased funding potential (public and private)	■ Distinctiveness (greater product differentiation)
■ Higher rental returns	■ Ability to tackle difficult sites
■ Increased asset value on which to borrow	■ Better reputation for developer (increased confidence/"trademark" value)
■ Reduced operating costs	■ Increased likelihood of future collaborations
■ Maintenance of value/income	■ Enhanced reputation for design professional
■ Reduced long-term maintenance costs	■ Increased workload and repeat commissions from high-quality, stable clients
■ Higher resale values	■ Competitive investment edge
■ Easy maintenance if high-quality materials are used	■ Higher-quality long-term tenants
■ Reduced security expenditure	■ Happier workforce (better recruiting and retention)
■ Reduced energy costs	■ Higher productivity
■ Reduced public expenditure on health care, crime prevention, urban management, and maintenance	■ Increased business (client) confidence
■ Increased economic viability for neighboring uses/opportunities	■ Fewer disruptive moves
■ Increased local tax revenue	■ Increased occupier prestige
■ Reduced travel costs	■ Increased city marketing potential

Tangible Economic Costs	Intangible Economic Costs
■ Potential for reduced land values	■ Increased design time (not always recognized in fees)
■ Higher risk if development costs are increased	■ More complex management, if it is a mixed-use development
■ Higher infrastructure costs (public space and social infrastructure)	
■ Higher construction costs	
■ Higher design costs (professional fees)	
■ Greater capital investment	
■ Continued private sector responsibility for public/private spaces	
■ Higher rents	
■ Higher management fees	

SOURCE: COMMISSION FOR ARCHITECTURE AND THE BUILT ENVIRONMENT, *THE VALUE OF URBAN DESIGN*, 2001.

ket value, with the degree of symbolism affecting building occupants' relationship with external stakeholders. Investment in design can generate an image or assist in the branding of an organization or business. The building's design can advance business principles and objectives with the public by addressing society's values through the creation of externalities with public benefit. Recognition of a structure as a green building, for example, may provide benefits for certain businesses and organizations.

A Value-Added Approach

The economic costs and benefits of good design can be understood in the context of a value-added investment model developed by CIC (see Figure 4 on previous page). The curve of capital investment begins at the point of zero investment in design, where the building produced would be completely dysfunctional, reducing productivity of occupiers and users. Point A indicates investment equal to the minimum functional requirements of an organization but providing no additional business benefits that could increase productivity or enhance market value. Point C shows the point of diminishing marginal returns, where excess resources invested in design no longer produce additional value-added returns. All points between A and C indicate a value-added business benefit derived from capital and resources invested in the four design attributes identified by CIC.

Investment in design can add value in the form of direct benefits to those responsible for the investment, as well as in indirect benefits to society and others. Some forms of value are tangible and can be measured objectively, while other forms are intangible and cannot be determined using simple valuation techniques (see Figure 5).

With continuing research, increased market education, and more leading examples, one can hope that investment in high-quality design in all its forms will become the market standard for our built environment. ■

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