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INCITY: URBAN COMPLEX IN WUHAN

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FACULTY OF ARCHITECTURE
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Project Details

Designer
Beisi Jia, in collaboration with
Baumschlager Eberle Hong Kong Ltd

Title
InCity: Urban Complex in Wuhan

Output Type
Urban Design, Architectural Design and
Interior Design

Function
Mixed use

Location
Qingshan, Wuhan

Client
SCPG

Practical Completion
2018

Budget
15 million HKD

Area/Size
370,000m²

Capacity
7 million visitors per annum

Contributing partners
A+E (collaborating architect, structural engineer)
Summary of the Work and its Significance, Originality, and Rigor

InCity challenges the conventional urban architectural design at three levels. Firstly, it implements the “Infrasturalism” concept in the largest state-owned industrial community, stimulating a transition from socialist comprehensive enterprise community to city life. The building complex operates as a “platform” or “infrastructure” to support a changing diversity of the community. Secondly, it is designed by Integrated Design Process (IDP) involving a variety of professionals starting from early design stage. Thirdly, it actively uses passive energy design methods to respond to extreme climatic conditions of the city Wuhan, which is characterized by very hot summers.
and cold winters. In short, the project’s originality lies in its operation as “a city” within a city, which means that the project’s scale provides dynamic possibilities involving public spaces, multiple functions, pedestrian networks and job opportunities associated with the largest national pre-industrial estate in China.
Founded in 1954, Wuhan Iron and Steel Corporation is one of the largest state-owned factories in China and one of the 500 largest enterprises in the world. The factory, which is located in Qingshan, is an enclosed and self-sustained compound where employees enjoyed not only permanent work but also access to education, medical care, social and cultural facilities of all kinds. Wuhan Iron and Steel Corporation is also considered as a model of socialist enterprise. The Qingshan InCity project design started at a difficult time when the industry was closing down and tens of thousands of employees were either forced to retire or were dismissed. This project aims to re-establish a center of community, linking Qingshan back to the city, to provide jobs for small businesses and to sustain the memory and identity of the place. Apart
from social and economic significances, the project also contributes to the following areas:

1. **New urban morphology:**
   **Infrastructuralism in urban density**

   Although the transformation of urban density and the concept of creating a sustainable city have long been implemented as part of the city policy, in-depth research on the theoretical understanding of new urban complexity and its impact on spatial quality based on newly-built cases have remained lacking. As a participatory design project, the Qingshan InCity project addressed the importance of the circulation system, the prototype of elevated public spaces in different scales, as well as internal and external interactions, thereby creating comfort and human
atmosphere. Moreover, the project demonstrated a morphological difference between traditional high-density urban complexes and the new ones. High density buildings do not automatically create an adequate program mixture if the architecture does not have an infrastructural characteristic. Spatial atmosphere remains the key to the development of a sustainable city where people can enjoy the benefits of walking and commuting comfort and human atmosphere. Moreover, the project demonstrated a morphological difference between traditional high-density urban complex and the new ones. High density does not automatically create a program mixture if the architecture does not have an infrastructure characteristic. Spatial atmosphere remains the key to the development of a sustainable city where
people can enjoy the benefits of walking and commuting.

2. IDP as design methodology
The traditional design process is no longer suitable for green design. Therefore, Integrated Design Process (IDP) was implemented for this project. We, the architects, became team leaders rather than form-givers, whereas other engineers played an active role at the early design stages. The main strategies of IDP include goal-driven performance, collaborative effort, systematic thinking, interactive process and whole-life cost analysis. Key assistive measures, such as performance (target setting), integrated design team (staffing), quantitative environmental analysis (simulation), workshop (teamwork), and database (products) for green buildings were
essential to the success of the building construction.

3. Passive energy design for inland city Wuhan

Wuhan is characterized by very cold winters and extremely warm summers. We proposed a maintenance energy reduction of 40%-50% while preserving a high outdoor-indoor thermal comfort. Green architecture should not only rely on mechanical and engineering technology. Passive energy design can reduce a large proportion of cooling and heating energy by developing the layout, construction, and material defined in architectural design phases. Major design efforts were found in south-facing massing, shading device, compact forming, calculating minimum window to wall ratio, glazing with high
thermal performance, good insulation, and incorporating high-level air tightness among others.
Originality

This project is the largest development in the Qingshan district and marks the transformation of the area from a state-owned working and living community into a city. The high density and high level of mixed uses pose a challenge to the traditional definitions of urban design, architecture, community, and landscaping. The concept of Infrastructuralism was implemented to support the diversity and continued changes in the community.
Key Research Questions

• What is Architecture as Infrastructure in a high-density city?

• How to create interactive and generative programs and forms along with providing passages, platforms, and multiple linkages on multiple levels?

• How should the culture, community and identity of the typical socialist enterprises be sustained and developed into an open system to generate new life?

• To what extent will a passive energy design respond to extreme weather conditions in a city like Wuhan?
Rigor

Despite the advantages of a dense urban complex, the quality of urban space and methodology of design require further research based on both practice and analysis. The high-density and multi-purpose design demands being placed on architecture are becoming increasingly complex, while the critical points become more significant as a result of differing interests. This development is in contrast with the didactic principle, which is reduced sharply to the visual perception of architecture and pays little attention to the real scope of assessment.

Wuhan InCity highlights the importance of Infrastructuralism, a concept of architecture where pedestrian networks and public spaces are
central. Emphasizing the quality of the atmosphere, this project leads to new perspectives on the true complexity facing architectural discourse.

As a study on urban typology, this project is a critic to the traditional urban pattern and it opens a new dimension which is both a place in the city and a linkage back to the city. Being critical to both nostalgic community and zoning separation in a conventional modern city plan, InCity is an open platform, in which the community is evolving from the past to the future with social and economic efficiency. Understanding the conflict between high-comfort and low-energy requirements, InCity introduces a deep building typology with a passive energy design in various aspects, especially in the articulation between inside and outside at different spatial levels.
InCity is a multiple disciplinary project by nature, therefore, a traditional linear design process was not effective. Engaging in a design-led research effort, this project promotes a pattern of teamwork with various expertise which share a common understanding and thus able to work effectively.
1 Plan showing the interwoven pedestrian network
2 Detail plan of a shopping street
3 The section shows the density and interior plaza.
Significance

Since its partial opening at the end of 2018, InCity has become the “center” of the community. Various websites, mainly by the locals, described it as the place to go for all kinds of people. New shops, no matter big or small in scale, were opening every week. Its housing was already sold out in 2016 but the market price is still increasing. It also attracts social and cultural events that gather visitors from the professional and commercial sectors. As one of the first multi-level vertical community, with both indoor and outdoor streets and plazas of highly-mixed functions ranging from private offices to a public library, InCity exemplifies the values of new urban typology:
• As the most important means of architectural expression, the building structure generates public space, which establishes the building’s specific qualities and characteristics.

• The infrastructural concept ensures that the building’s value is preserved as a network of public spaces and the possibility to convert and adapt to intensive changing uses.

• Separating the inside and the outside leads to different disciplines, architecture, and urban design. Infrastructuralism combines them as a whole, which forms a more significant characteristic in a high-density urban complex.
• The quality of both inside and outside open spaces relies on the atmosphere created in the design and the participation of users. The human scale, dignity of building surfaces and intensity of programs are as important as the relaxation of pedestrian movements and thermal comforts.

• Refined spatial configuration and lean management can provide an accurate perspective for analysis of the spatial diversity, flexibility and sustainability, especially for irregular and new forms of comprehensive urban spaces.

• Departing from the traditional high-density complex, a new urban complex tends to introduce many types of movements, urban open spaces, and
stronger integration of the inside and outside, maximizing the safety and comfort and most importantly triggering spontaneous community. A larger proportion of public spaces than those in traditional cities is needed to achieve these goals.
Dissemination and Evidence of Peer Review

Since its opening a year and a half ago, our team and InCity have won

(1) the First Prize in the urban category for Sustainable Architecture (S.ARCH) in 2019 in Havana for the completed project; and

(2) International Business Awards in Hong Kong 2018 (see attachment)

Research Papers published in international conferences:


Although the transformation of urban density has become a common topic in architectural research and the concept of creating a sustainable city has long
been implemented as part of the city policy, in-depth research on the theoretical understanding of the new form of urban complexity or its effects on the spatial quality based on the study of newly-built cases has remained lacking. Hence, this paper introduces a theory of urban morphology and the concept of “Infrastructuralism in Architecture” in particular. The observations are based on the classification of spatial levels with a focus on the performance of public space. After comparing several urban morphological patterns, this paper investigated a recent large-scale project, the Wuhan InCity, which was completed by BEA Hong Kong. As a participatory research, the paper analyses the circulation system, the prototype of the elevated public spaces in different scales, and the interaction between the inside and the outside. The paper addresses the importance of the atmosphere of the public space in the design. The research concludes that a morphological difference can be observed between traditional high-density urban complexes and new ones. High-density does not automatically create a program mixture if the architecture does not have the characteristic of infrastructure. However, spatial atmosphere remains the key to create a walkable, commutable and eventually sustainable city.
Although green building design and management principles have been gradually implemented such as the green building guidance system (GBL) which has been in effect for more than ten years in China, few studies have focused on the application and barriers related to the design process. This paper introduces one of the recent large-scale projects, the Wuhan-InCity, and its process, tracing back to the last three years. Based on the theory of Integrated Design Process (IDP), the methodology of this paper consists of theoretical introduction, document search, comparison between the practices and the ideal formality of IDP from the architects’ point of view. As a participatory research, the paper focuses on the relationship between green building indicators, design process, working pattern between architects, engineers, and most importantly, the clients as well as the use of simulation software. The research concludes that the ideal IDP model is not
effective. However, a common understanding of all participants and the conceptual input, but not technical assistance, is crucial to address issues such as market pressure, fast construction speed and consistent changes in the regulations and requirements in the design and construction process.

Websites in China


https://wh.focus.cn/zixun/69e608c5c2045367.html


https://wh.leju.com/news/2017-12-04/08036342295189293677799.shtml
Websites international


https://www.bing.com/images/search?q=Baumschlager+Eberle+InCity&qpvt=Baumschlager+Eberle+InCity&FORM=IGRE

Award certificates

Hong Kong Business hails the most outstanding companies in 2018

The awarding ceremony was graced by nearly 100 executives.

Hong Kong Business hailed the most exceptional international firms in the city in a joint awards ceremony for the Hong Kong Business International Business Awards (I.B.A), Listed Companies Awards (L.C.A), National Business Awards (N.B.A) and the Business Rankings Awards. Held at Island Shangri-La, Hong Kong on September 5, 2018, the awards night was attended by 90 executives.

This year’s nominees were judged by a panel consisting of Andrew Kwan, Managing Director at Baker Tilly Hong Kong, Roy Lo, Managing Partner at SHINEWING (HK) CPA Limited, Charles Lo, Director at Crowe (HK) CPA Limited, and Anthony Tam, Executive Director in Tax Services at Mazars Hong Kong.

On its fourth year and with the support of 11 Hong Kong chambers, the I.B.A honoured the top international businesses in Hong Kong. Meanwhile, the 4th Listed Companies Awards (L.C.A) celebrated the most outstanding publicly listed companies in Hong Kong.

HKB also honoured the city’s top homegrown businesses for the second year of the National Business Awards (N.B.A).

The awards programme also lauded Hong Kong’s largest firms who were part of the magazine’s business rankings list.

The full list of winners are as follows:

International Business Awards 2018 (4th Year)
Advertising - JCDecaux Transport
Architecture - Baumschlager Eberle Hong Kong Ltd
Automotive and Transport - Mercedes-Benz Hong Kong Limited
Business Insurance - Esler Hermes Asia Pacific
Computer Software - EventBank
Cybersecurity - Kaspersky Lab (Asia Pacific)
Health Products & Services - Farmer’s Campina (Hong Kong) Limited
Hospitality & Leisure - WellWork
Insurance Technology - Atradius Crédito y Caución S.A.
Telecommunications - NTT Communications

S.ARC 2019
PROJECT AWARD

BEST COMPLETED PROJECT
CATEGORY URBAN PROJECT

Presented to
Baumschlager Eberle Hong Kong Ltd.
for
InCity

The 6th International Conference on Architecture and Built Environment - S.ARC 2019
5-7 March 2019 | Havana, Cuba
Appendix I: Two More Issues on the Design-led research in InCity

1 Integrated Design Process (IDP)

The design remains the key to integrate various indicators into a single scheme, although the implementation of green building assessment tools in the building industry is still crucial. The IDP promotes a pattern of collaboration among individuals with various expertise that must share a common understanding of green buildings. However, the initial objective of the design is crucial in practice and is more important than the process of work.

Market interests of the client do not necessarily come into conflict with the green building intention. In the case of the InCity project, the client SCP proposed the ideas of mixed-use, compactness of form, integration with the city, and multiple levels of the street market. These ideas contribute not only to the economic value but also to the environmental and social soundness of the project. The initial ideas of the architects, such as pleasant public spaces, attractive shapes, efficient and multilevel circulations, rational distribution of service facilities, functional flexibility, and passive energy design intentions enabled the growth for the quality of
green building at the beginning. The process of design, including IDP, is a vehicle for safeguarding and streamlining the implementation of green building ideas. A robust and effective objective of the clients and architects is crucial in a conventional building design of which expertise and time are limited.
2. Passive Energy Design

The green building design was not required specifically in the brief for the clients, even though they raised the idea of sustainable architecture as a general concept. The architects specified the requirements in the conceptual plan as follows. Wuhan is characterized by cold winters and extremely warm summers. Hence, we propose a maintenance energy reduction of 40%–50% with the following strategies in its architecture design, while maintaining a high indoor thermal comfort. Green architecture should not rely solely on mechanical and electrical technology. Passive energy design through building layout, construction, and material defined in the architecture design phases can significantly reduce the need for cooling and heating energy.

- Major building volumes and housing facing south
- Shading combined with movable shading devices to reduce solar heat during summers
- Compactness with minimum outer wall ratio (envelope the area)
- Construction, heavy thermal storage, and stability
- Window-to-wall ratio: optimal ratio
- Glazing (U-Value: 1.0 (W/
m2a) (heat protection double glazing); g-Value = 0.40 9) (sun protection coating)

- Insulation (wall, roof and floor)
- Façade air tightness 0.12 1/h (non-airtight)
- Operable window

Façade design has focused on controlling radiation from the sun by providing a shading device because of the warm climate. Most of the other materials do not have a database.

- “Shading device on the residential façade will be composed of concrete material as proposed by BE. AED will accommodate the load into the structure calculation. The Cost department of SCP will provide comments on cost later” (business meeting on 26 March 2017).

- “AED advised that the shading coefficient would require low-e glass, BE to specify color” (business meeting on 4 June 2014).

- “SCP suggested enlarging the green islands in the northeast corner to satisfy the government requirement of green space ratio” (Business meeting on 5 March 2015).
1. Shading device, “thick façade” and window-wall ratio are a few attentions in environmental design
2. The skylight design was based on the solar heat and lighting analysis
Appendix II: Photos from Locals and Public Websites
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Appendix II:
Photos from Locals and Public Websites
Public space network in the evening
The Department of Architecture educates students in an active culture of service, scholarship and invention. Uniquely situated at the crossroads of China and global influence, the Department takes the approach that design is best explored from a sophisticated understanding of both. With a multidisciplinary curriculum emphasizing technology, history and culture, students gain broad knowledge and skills in the management of the environmental, social, and aesthetic challenges of contemporary architectural practice. With opportunities for design workshops, international exchanges, and study travel, graduates of the Department of Architecture are well prepared for contribution to both international and local communities of architects and designers.