

JOSHUA
BOLCHOVER

MULAN SCHOOL
EDUCATIONAL
LANDSCAPE



DESIGN FOLIO
FACULTY OF
ARCHITECTURE
UNIVERSITY OF
HONG KONG

Content

4	Project Details
8	Summary of the Work and its Significance, Originality, and Rigor
15	Originality
18	Rigor
20	Significance
22	Dissemination and Evidence of Peer Review



¹ Mulan Primary School incorporates an educational landscape with a series of sequential open spaces for play and study.

Project Details

Designer

Joshua Bolchover

Co-designer

John Lin

Landscape designer

Dorothy Tang

Title

The Mulan School

Function

School

Location

Mulan Village, Huaiji County,
Guangdong Province City

Client

Huaiji Education Bureau



¹ Smooth, mirror-tiles are deployed on the courtyard façade and on the vertical faces of the steps. This creates visual mirages and distorted reflections that animate as children play in the courtyard and steps.

Practical Completion

Phase 1: classroom building, 2014, Phase 2: educational landscape and toilet, 2015. Although the first Phase of the project was published in late 2013, the project was not fully completed and published until 2015.

Funding body

Huaiji Education Bureau, Power of Love Ltd.,
The Dexter Man Family, Dr. S.L. Ho, Luke Him Sau
Charitable Trust

Budget

90 000 USD (573 000 RMB)

Area/Size

New school building 550m²

Toilet block 45m²

Site area: 5800m²



¹ The roof is clad in old, recycled tiles collected from numerous villages in the local area. At three moments the roof tiles become vertical walls and help direct run-off water to the ground

Summary of the Work and its Significance, Originality, and Rigor

The project pioneers an alternative learning environment for rural schools in China. The majority of newly built schools in China are generic, two-story concrete frame structures, with little regard for local specificity of climate, landscape or materials. The project demonstrates design innovation in a highly constrained context in terms of budget, skilled workers and construction techniques.

An educational landscape is created by connecting an existing school building to a new primary school, toilet, and playground through a series of interlinked open spaces. The spaces between the buildings have different spatial qualities:

from outside seating areas, internal courtyards, micro-gardens, shaded circulation areas, to more formal sports areas. In this way, the project creates opportunities for learning to take place not only within the school, but outside the classroom environment as well. The school departs from the typical structure of a rural school in China -- a gated facility composed of a building flanking a sports area. In contrast, the public spaces and facilities of Mulan School are open to access for local villagers.

The construction of a new high-speed rail line on the other side of a small hill behind the school, created a depository of loose earth that, during extreme rain during monsoon season, posed a risk to the playground below. The lack of sufficient drainage caused staining and

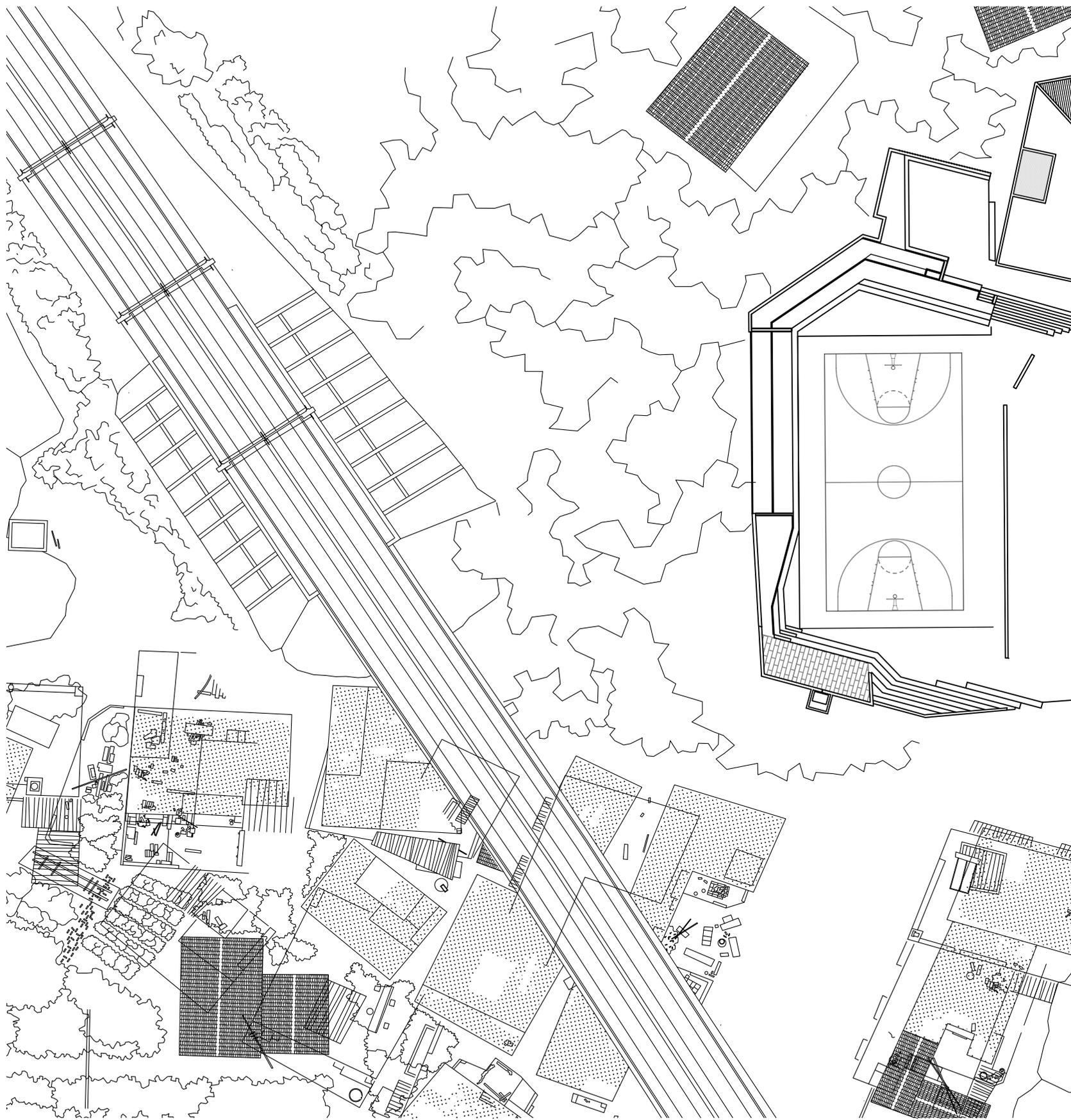
water damage to the existing school building. In response, the design of the toilet block incorporates a retaining wall linked to a natural reed bed system to filter waste water. The design forms a boundary edge to the site, increasing its stability, and at the same time allows polluted waste water to be remediated before entering the river. It demonstrates how sustainable aims can be realized in rural areas with limited means, not only in China, but in other parts of the world.

The project has received the Highly Commended Award in the AR Schools Award 2015, (1 of 3 awards) and was one of the key contributing projects that led to the awarding of both the 2015 Curry Stone Design Award and the 2014 Ralph Erskine 100 Years Anniversary Award. It has been published in numerous

international professional journals and exhibited at the inaugural 2015 Chicago Biennale.



¹ The steps are punctuated with small micro-courtyards that continue into the library.





¹ Site plan of Mulan Primary School showing its relation to the existing village and the new high speed railway.



¹ The roof of the new building is a continuous that rises from the ground as a series of steps forming a new public space and outdoor classroom.

Originality

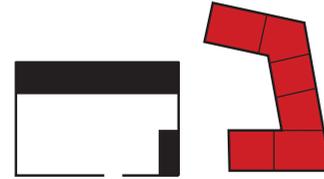
The Mulan School was a two-phase project commissioned by a Hong Kong based NGO working with the local education bureau of Huaiji County. The main objectives were to challenge the typology of school buildings in rural China; create unique context specific architecture within the limits of budget, structural and material constraints; and to demonstrate how sustainable water treatment systems could be integrated into an architectural and landscape strategy.

Research Questions

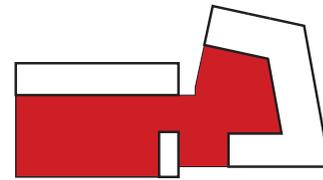
- Can we create a new typology of school building using a similar budget, structural system and material palette used in typical rural school construction?
- Can we demonstrate how open spaces can create new learning environments within a school?
- Can we create public gathering spaces within the school campus that can be accessed by local people?
- Can we integrate sustainable water treatment into an architectural and landscape strategy?



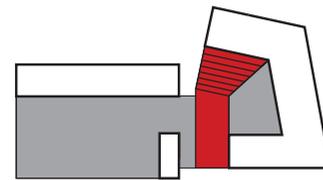
Existing school



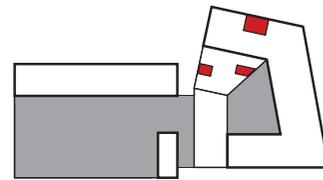
6 new classrooms are added as the village expands



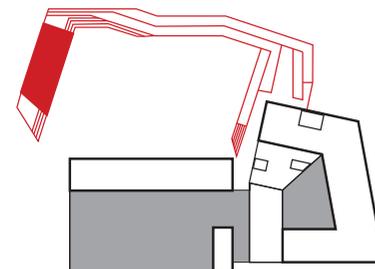
The wall is removed to create a continuous open space



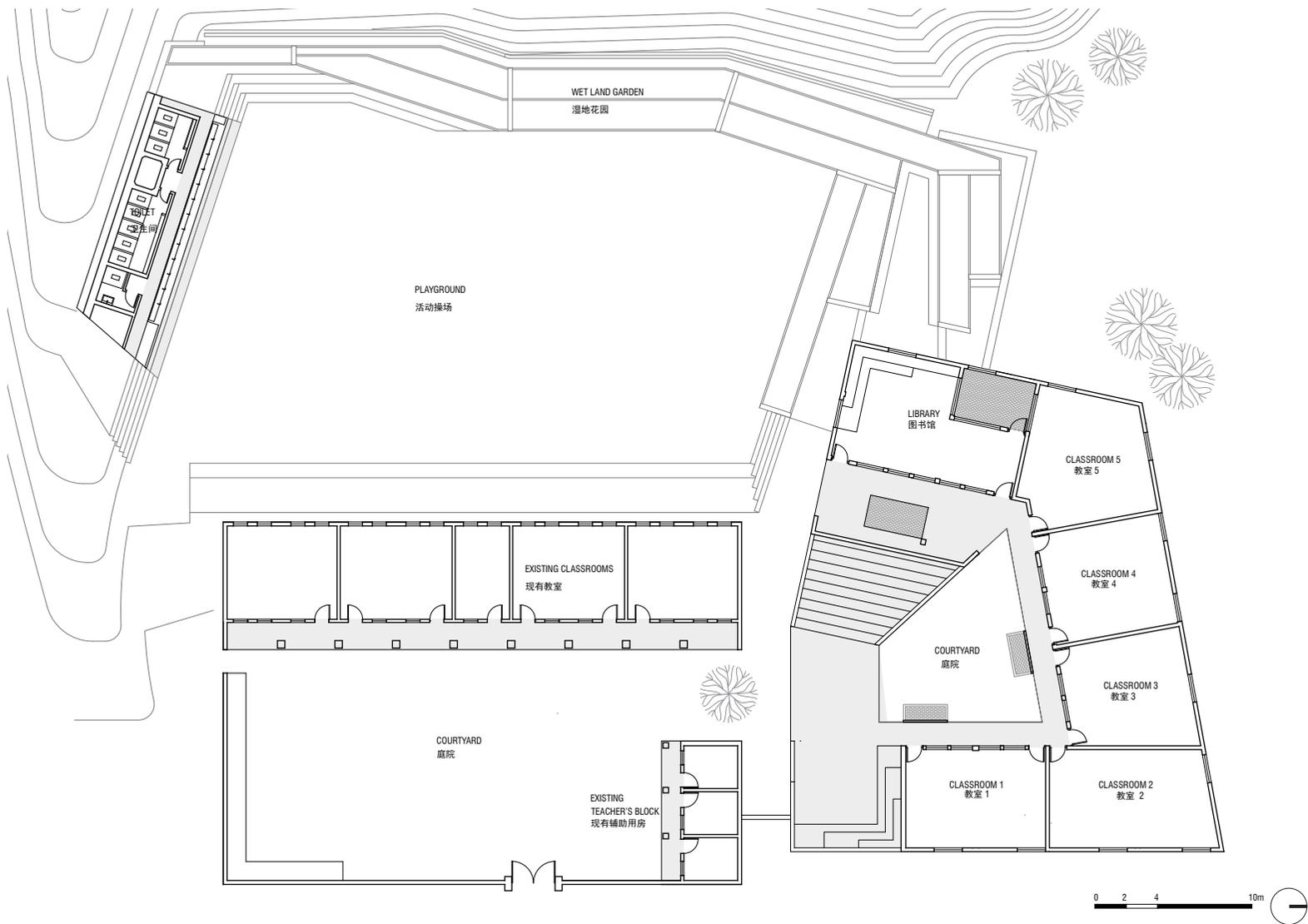
The public space is defined by creating a stepped concrete plinth



Voids penetrate the steps and roof to create interior courtyards



The toilet waste water is naturally filtered by a reed bed that retains the slope and provides the edge of the new playground



¹ Diagrams demonstrating the key strategies of the project.

² Plan of the existing school block, new extension and educational landscape with a reed bed filtration system

Rigor

The project was an opportunity to investigate the relationship between the building and its exterior and how infrastructural elements such as the waste water treatment system could be integrated into the site strategy.

Key design methods included:

- Surveying the site using aerial photographs from an air balloon to understand site limitations and existing landscape conditions;
- Conducting research into generic building techniques and available materials;
- Creating multiple physical models exploring the relationship between the building and exterior public spaces;

- Conducting knowledge exchange with the local design institute, the education bureau and construction workers to discuss how project can be realized; and
- Creating drawings and models to convey how project can be built with limited resources



¹ The high speed rail at the back of a primary school before construction of the playground and slope retaining elements.

Significance

The construction of infrastructure, particularly high speed rail and highways, has been a key driver in China's rapid urbanisation. In the process, large-scale earthworks can pose a threat to slope stability and can lead to increased erosion and flood risk. Rather than remove or encase this slope in concrete we saw this as an opportunity to combine a retaining wall with a reed-bed filtration system. This demonstrates a new approach to rethinking how slopes can be managed together with the introduction of a sustainable and low cost water filtration system for rural school toilets. The design of the school building challenges the standardization of rural school buildings in China to produce a unique building in terms of

form, spatial experience and material application. It demonstrates that this can be achieved within the same constraints of construction techniques, material availability and budget as similar building types. Additionally, it presents how the school and its exterior environment can be designed to incorporate outdoor learning spaces and public gathering spaces that can be accessed by local villages. This shows how rural schools can be a community focal point and active public space in China and other rural contexts.

This has been recognized by its inclusion into “Klasse Schule: So baut die Welt” a book describing best practices of school design using seminal examples from 1822 to the present day.

Dissemination and Evidence of Peer Review

Prizes and Awards:

- AR Schools Award 2015

Commended: Mulan Village School in China by Rural Urban Framework. “RUF’s expansion of a school in a backwater in north Guangdong, makes it a focus for the rural community”.

- The Ralph Erskine 100 Years Anniversary Award, 2014.

Awarded by the Swedish Association of Architects, the international prize is conferred for “innovation in architecture and urban design with regard to social,

ecological and aesthetic aspects. The efforts of the applicant are to have benefitted primarily the less privileged in society.” The Jury commented: “Their architectonic solutions give proof to an innovative ability to use local techniques and materials, recycling as well as a robust approach to climate adaptation for the architectural design of important new functions in the villages.”functions in the villages.”



¹ Open spaces link the courtyards between the existing school, the new building and the playground

- The 2015 Curry Stone Design Prize:
Rural Urban Framework

[https://currystonefoundation.org/
practice/rural-urban-framework-ruf/](https://currystonefoundation.org/practice/rural-urban-framework-ruf/)

“The Foundation’s hope was—and is, to support pioneering social design practitioners and to use their work to inspire others to apply design approaches to improving their own community’s vitality. Nominees were chosen anonymously via a network of around 200 international design professionals. The ultimate winners were determined by a jury comprised of Foundation members and invited international experts.”



¹ Basketball court edged by reed-bed filtration system and toilet that retains the re-contoured loose earth.

² Classroom in the new extension.



Dissemination and Evidence of Peer Review

Related publications by the Designer:

Joshua Bolchover and John Lin, Rural Urban Framework: Transforming the Chinese Countryside, Basel, Birkhauser, 2014: 151-158.

Joshua Bolchover and John Lin. "Strategies for Rural-Urban Architecture" in Resources Urbaines Latentes ed. by R. D'Arienzo, C. Younes, A. Lapenna, M. Rollot; Metis Presses, Italy, 2016: 377-389 [ISBN 978-2-940563-03-6]

Joshua Bolchover and John Lin. "Rural Urban Framework: Dorfliche Urbanisierung in China" in Stadtland: Der neue Rurbanismus, ARCH +, Berlin 2017, pp. 68-77 [ISBN 978-3-931435-39-4]

Book chapters by others:

John Cary, Design for Good: A New Era of Architecture for Everyone, Island Press, Washington, Covelo, London, 2017: 150-161.

"Grundschule Mulan, Guangdong China", Klasse Schule: So baut die Welt, IFA, ISBN 978-3-92197065-2. 2014.

Citations in professional journals:

Eduard Kogel, "Im chinesischen Hinterland: Arbeiten des Buros Rural Urban Framework" Werk, Bauen+Wohnen 103 (October 2016): 68-73.

Austin Williams, “Mulan Village school in China by Rural Urban Framework”, The Architectural Review (September 2015)

“Mulan Primary School, Huaiji, Guangdong, China”, World Architecture 296 (February 2015), 88-93.

Christiane Lange, “Spiegeln auf dem Lande: Grundschule in Mulan,” Deutsche Bauzeitung (June 2014), 26-32. (Deutsche Bauzeitung is a professional journal based in Germany.)

“Rural Urban Framework,” in Eastern Promises: Contemporary Architecture and Spatial Practices in East Asia, edited by Christoph Thun-Hohenstein, Andreas Fogarasi, Christian Teckert,

66-69, 266-69 (City?, Germany: Hatje Kantz, 2013).(ISBN 978-3-7757-3670-1)

Exhibitions:

“Rural Urban Framework” in the exhibition Constellations, Arc en Rêve, Centre d’architecture, Bordeaux, June 2 – October 2 2016

“Rural Urban Framework: Transforming the Chinese Countryside” in The State of the Art of Architecture, The Chicago Architecture Biennial 2015, Oct 3- Jan 3 2016.

“Four Schools: A Retroactive Manifesto” in The Future Is Not What It Used To Be, The 2nd Istanbul Design Biennial, November 1- December 14th 2014.

“Mulan School: Rural Urban Framework”, Eastern Promises: Contemporary Architecture and Spatial Practices in East Asia, The MAK, Vienna, Austria, 5 June- 6 October, 2013.

Lectures:

“Rural Urban Framework: Designing in Sites of Contradiction”, The School of the Art Institute of Chicago (SCAI), 19 October 2017

“Rural Urban Framework: Designing in Sites of Contradiction”, The Cooper Union, New York, 17 October 2017

Joshua Bolchover and John Lin/ Debora Mesa and Antón García-Abril, Pratt Institute, New York, “New Contexts”, 16 October, 2017

“Rural Urban Framework”, Harvard University China GSD, May 2017

“Rural Urban Framework”, Rensselaer Institute/ CASE, SOM May 2017

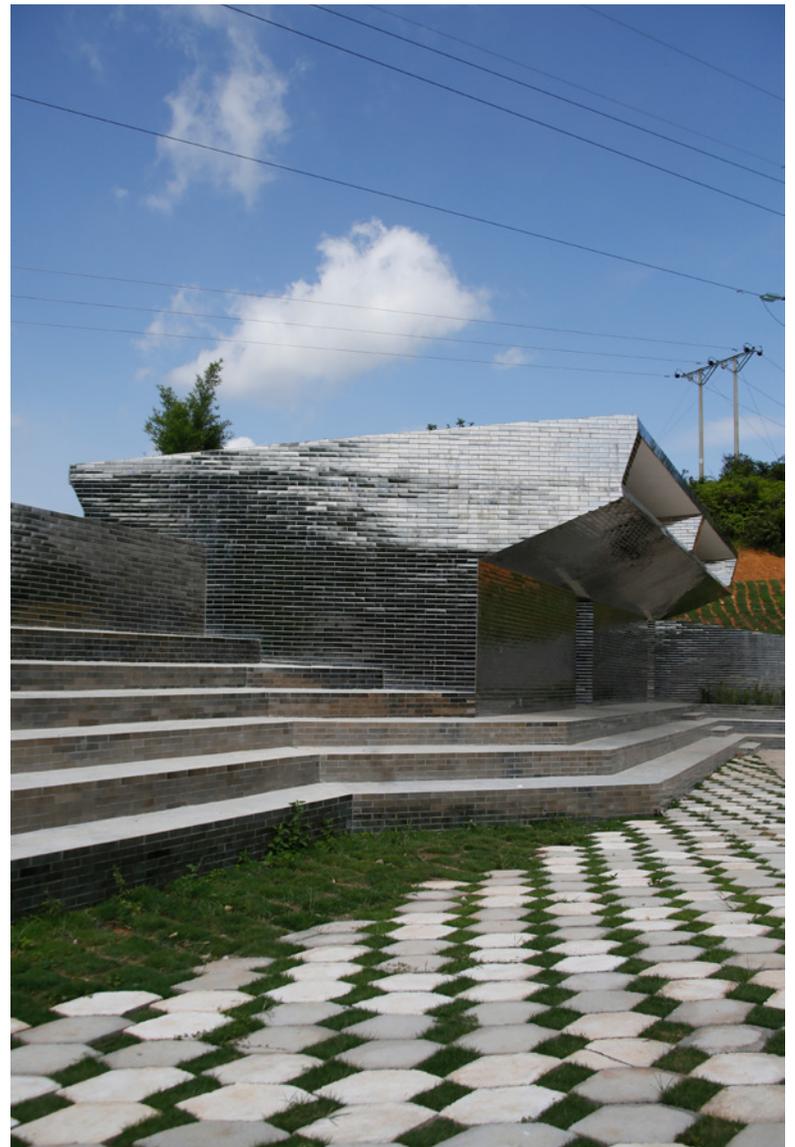
“The 2016 International Emerging Architecture Award”, The Royal Institute of British Architects, London, Nov 2016

“Rural Urban Framework: Transforming the Chinese Countryside”, Columbia University, New York, Jan 2016

“Rural Urban Framework: Transforming the Chinese Countryside” The University of Miami, Jan 2016

“RUF: Transforming the Chinese Countryside” keynote speaker at Re-imagining Rurality Conference, The University of Westminster, 27-28th February 2015.

“The Horizontal Metropolis” keynote speaker and workshop leader, EPFL, Switzerland (Ecole Polytechnique Federale de Lausanne), December 12-17th 2014.

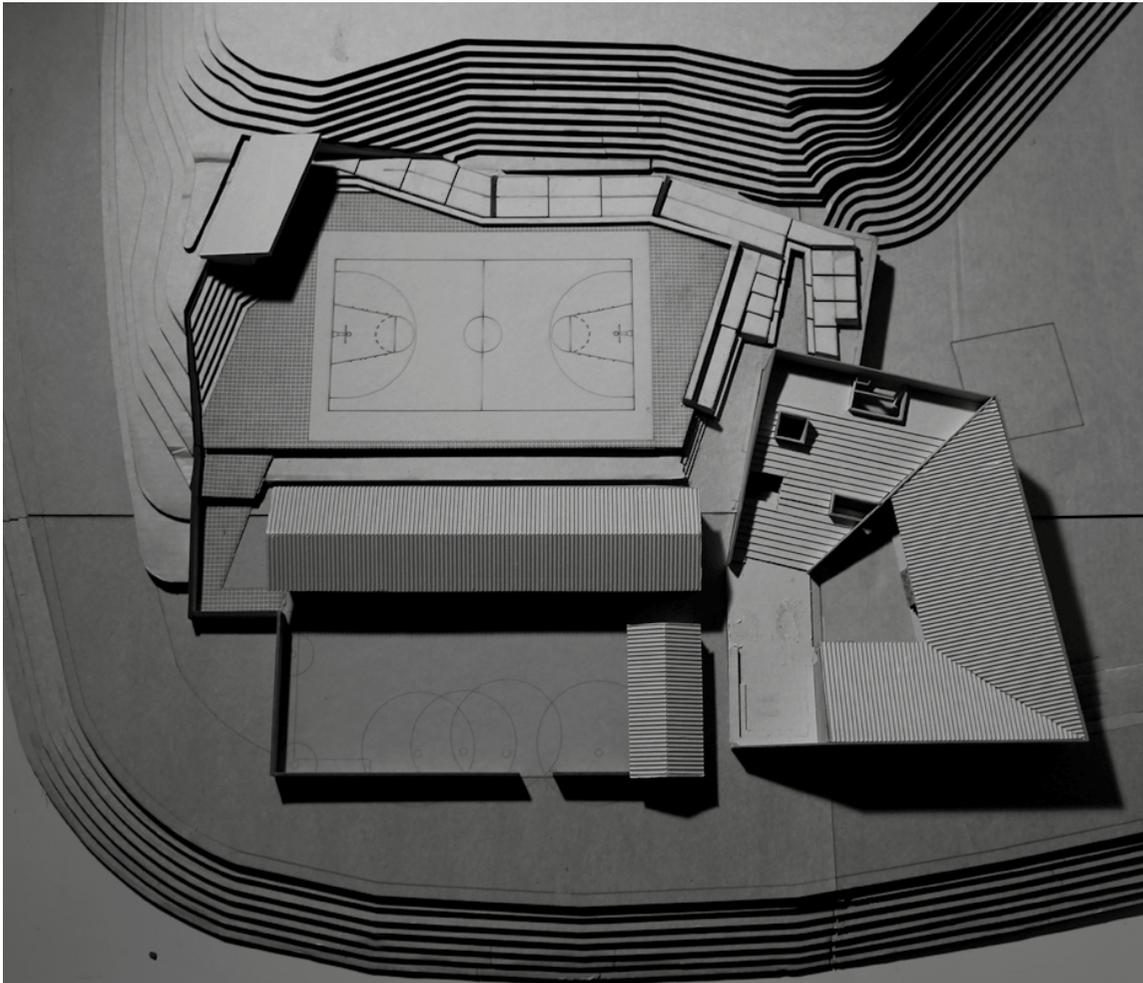
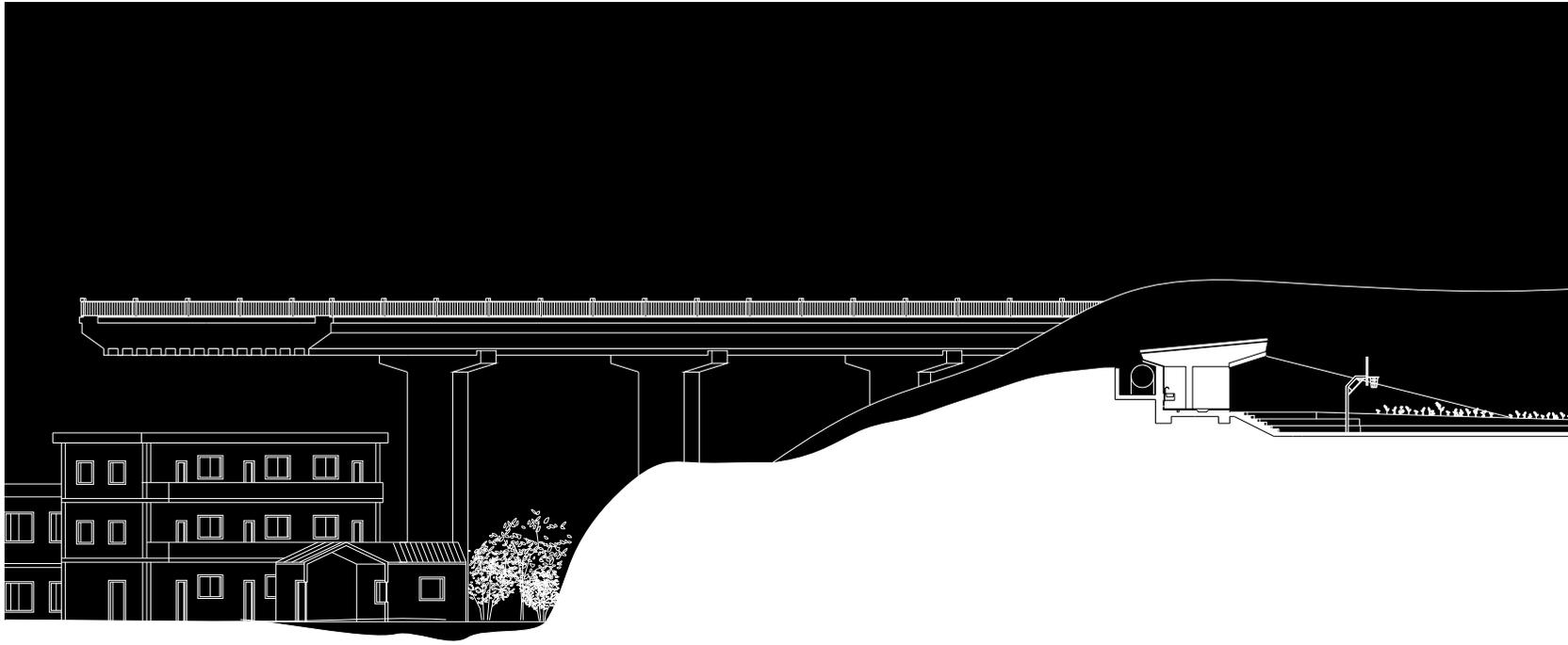


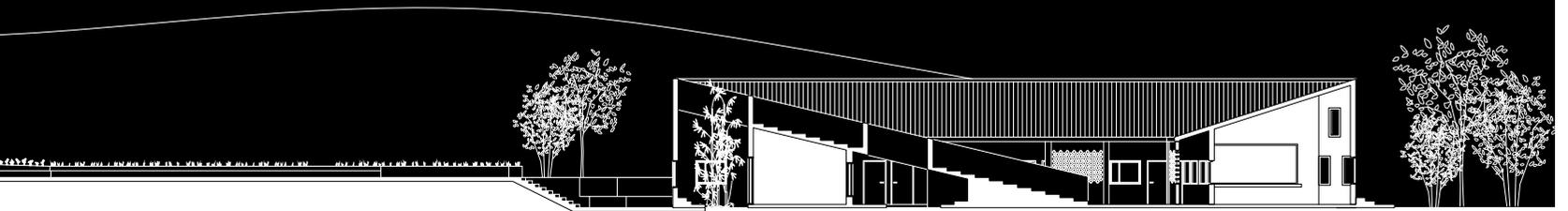
¹ Toilet block clad in mirror tiles.



¹ Roof tiles become vertical walls and help direct run-off water to the ground







¹ Section through the outdoor classroom, basketball court, toilet, and high speed railway infrastructure.

² Model of the project used to present to local stakeholders.

³ The roof of the new building is a continuous ribbon that rises from the ground as a series of steps forming a new public space and outdoor classroom.

Content:

© Joshua Bolchover

Graphic Design:

Milkshake

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.

