

砌体材料与结构  
Masonry Material and Structure

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江苏科学技术出版社

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# Chelsea Hill House

## 切尔西山住宅

### Design Challenge

The logistical challenge was to create within a small home a segregation of spaces for the very different habits (privacy, acoustical, tidiness, etc.) of teenagers and adults while providing quality spaces.

### Design Solution

The spaces most used by the teenagers, their bedrooms, a TV area, and sports equipment storage, are all placed on the ground level. Durable surfaces such as a radiant concrete floor are used throughout this level. The formal areas of the house, the living area, dining area, kitchen, but also the master bedroom and bathroom, are all located upstairs and, as such, are furnished with rich materials such as wood floors and glass railings are introduced with higher ceilings. While all of the noisy and messy areas fall out of view by being placed directly beneath the living area, the two levels are perceived to float lightly above the serene view beyond. In the living area, the primary living level is fundamentally simple, industrial materials, though the kitchen is constructed of fundamentally simple, industrial materials, one significant "cushy" indulgence was included: a bathtub suspended in the double-height space that looks over the valley. The tub, sunken in the floor, is accessed from the master bedroom and, if needed, is closed off from the adjacent living area by a sliding frosted-glass screen.

Last, because the house is quite small for a large family, an exterior, screened-in living/dining area was designed for the flat roof. When completed, this space will be accessed by an exterior steel stair, linking the interior living area and exterior living area.



Architect: Kariouk Associates  
Principal: Paul Kariouk  
Paul Kariouk (Principal), Chris Davis (Senior Design Associate), Sidam Kariouk (Design Associate), Cedric Szele (Design Associate)  
Submain Custom Building (Stephen Szele)

# Concrete

*As traditional solid clay bricks have been abandoned gradually, modern architecture requires more new masonry materials with high-strength, light weight, sustainability and energy efficiency. Concrete masonry can avoid the resultant waste of natural resources, pollution, and high self-weight of buildings in firing process of producing solid clay bricks. Common concrete masonry units include ordinary small size concrete air units, lightweight aggregates small size concrete units, autoclaved aerated concrete masonry units and cellular concrete units.*

*Concrete masonry units can make external walls solid and durable with impermeability, frost resistance and corrosion resistance. Concrete masonry units can provide a good visual effect for façade by using various creative bonds.*

# 混凝土砌体

随着传统的实心黏土砖逐渐退出历史舞台，现代建筑呼唤更多高强轻质、环保节能的新型砌体材料的出现。混凝土砌体能有效避免传统实心黏土砖烧制过程中耗能大、污染重，及建成楼房自重大等缺点。常见的混凝土砌块包括普通混凝土小型空心砌块、轻集料混凝土小型空心砌块、蒸压加气混凝土砌块和泡沫混凝土砌块。

混凝土砌体具有抗渗性、抗冻性、耐蚀性等性能，使墙面坚固耐用。混凝土砌体还可通过各种充满创意的砌筑方式营造出良好的立面视觉效果。



# Chelsea Hill House

## 切尔西山住宅

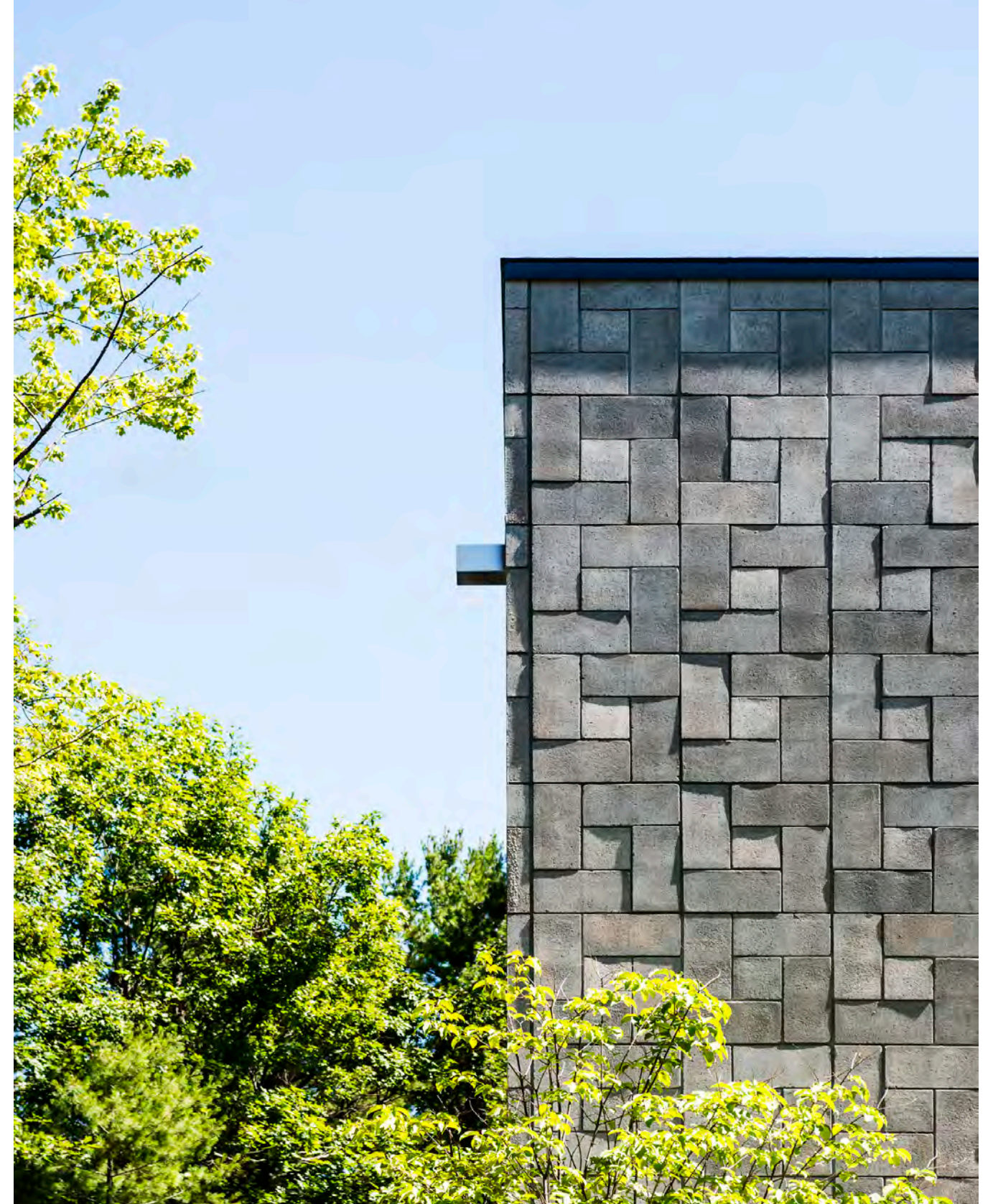
### Design Challenge

The logistical challenge was to create within a small home a segregation of spaces for the very different habits (privacy, acoustical, tidiness, etc.) of teenagers and adults while avoiding choppy spaces.

### Design Solution

The spaces most used by the teenagers, their bedrooms, a TV area, and sports equipment storage, are all placed on the ground level. Durable surfaces such as a radiant concrete floor are used throughout this level. The formal areas of the house, the living area, dining area, kitchen, but also the master bedroom and bathroom, are all located upstairs and, as such, are given the most privileged views. Here, as well as on the stairway that leads to the main living level, more rich materials such as wood floors and glass railings are introduced with higher ceilings. While all of the noisy and messy areas fall out of view by being placed directly beneath the living areas, the two levels are joined by the double-height entryway and hallway below. In this way, the primary living level is perceived to float lightly above the serene vista beyond. Though the home is constructed of fundamentally simple, industrial materials, one significant "cushy" indulgence was included: a bathtub suspended in the double-height space that looks over the valley. This tub, sunken in the floor, is accessed from the master bedroom and, if needed, is closed off from the adjacent living area by a sliding frosted-glass screen.

Last, because the house is quite small for a large family, an exterior, screened-in living/dining area was designed for the flat roof. When completed, this space will be accessed by an exterior steel stair, linking the interior living area and exterior living area.



Architect 建筑公司  
Kariouk Associates

Design Architect 建筑设计  
Paul Kariouk

Project Team 项目团队  
Paul Kariouk (Principal), Chris Davis  
(Senior Design Associate), Susan Gardiner  
(Design Associate), Cedric Boulet  
(Design Associate)

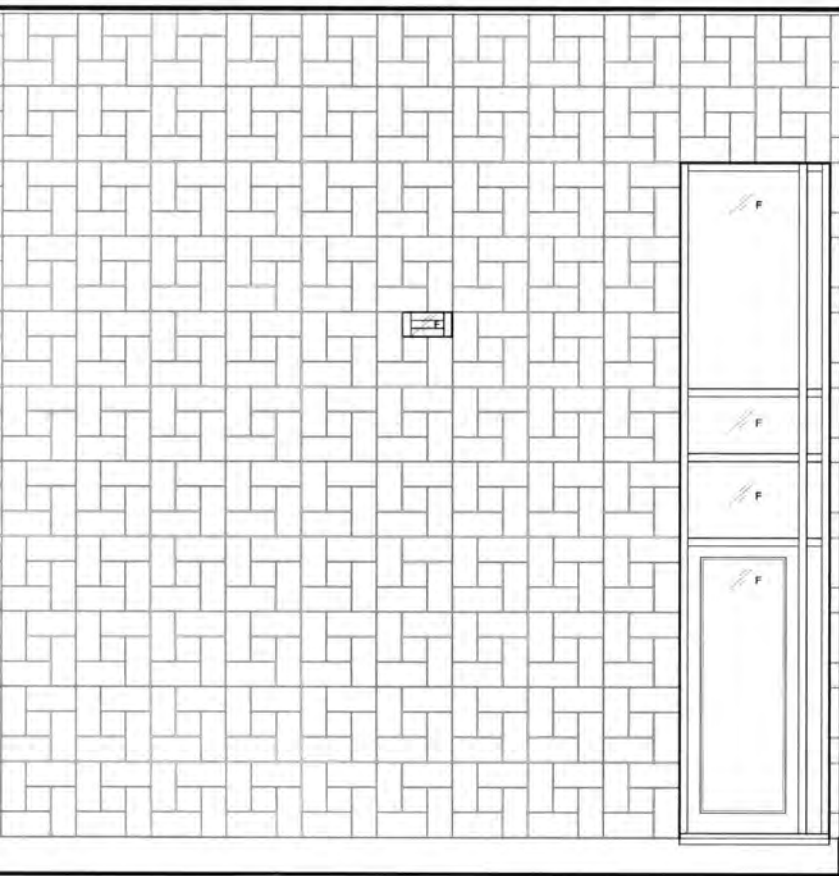
Contractor 承建商  
Sabean Custom Building (Stephen Sabean)

Structural Engineering 结构工程  
The Paterson Group (Zbig Kisilewicz)

Photographer 摄影师  
Photolux Studios (Christian Lalonde)

Location 地点  
Chelsea, Québec, Canada  
加拿大魁北克省切尔西

Area 面积  
195 m<sup>2</sup>



Elevation 立面图

## Analysis of Material and Structure

## 材料与结构分析

The house is conceived as a very simple masonry volume: "the foundation of the family" which overlooks a beautiful river valley. The lightness of the interior living area is contrasted by the solidity of the exterior. In response to the project's very modest budget, industrial concrete blocks were used as the exterior veneer, but in an unconventional manner: the rough material is arranged in a pinwheel pattern yielding a playful façade throwing deep shadows.

The idea behind the "basket-weave" pattern of the concrete block is that it takes a very coarse industrial material and makes something graceful out of it. Likewise, the use of small and large blocks creates a more varied shadow pattern that also helps to break down the scale of the house. The designers came up with this pattern by buying a stack of the blocks and just playing with them in the office; after numerous configurations the designers

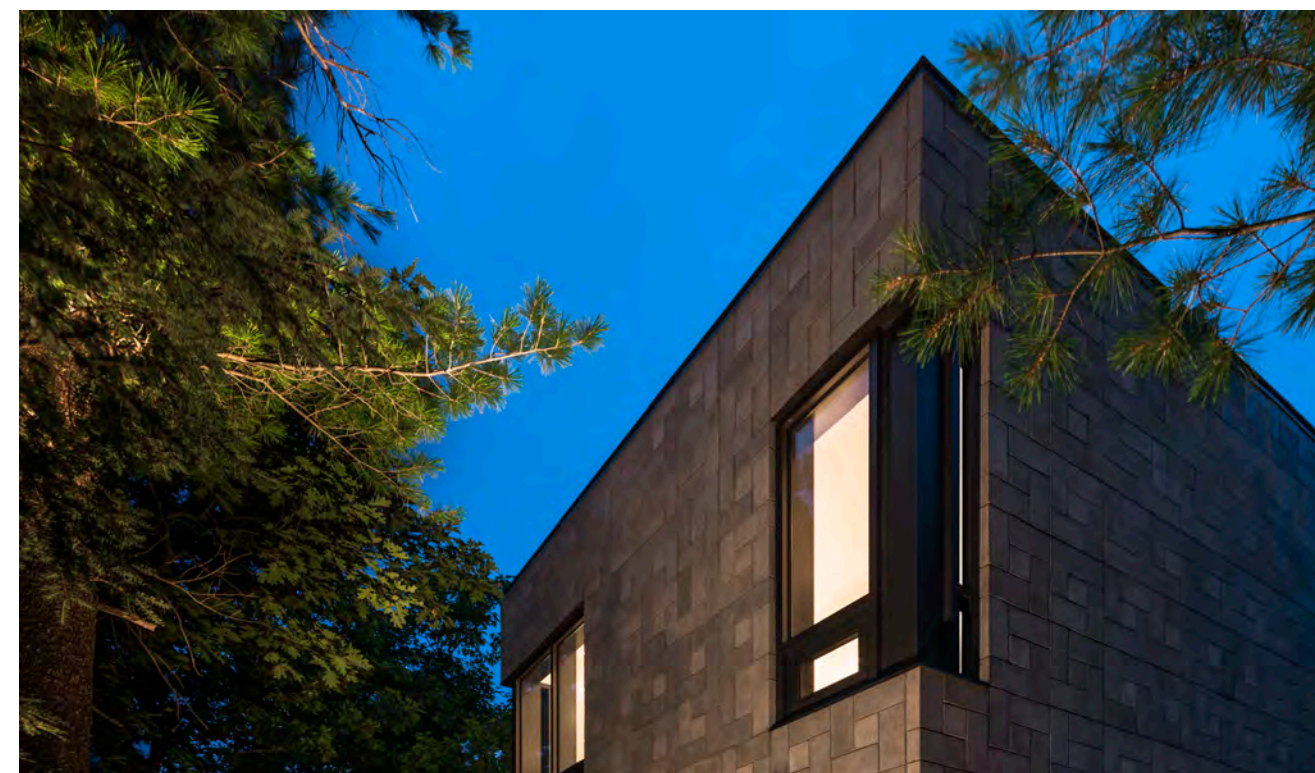
decided they liked this one best. The difficult part was that the designers then had to work the overall dimensions of the entire house in relation to the dimension/module of the block since to end up with a "perfect" effect the designers could not have any cut/partial blocks.

本案被设计成一个非常简单的砌体结构，从室内可俯瞰风光秀丽的河谷。室内生活区的轻快与室外立面的厚重形成了鲜明的对比。由于本案预算非常低，因此外墙饰面采用了工业混凝土砌块，以创新的砌筑方式砌筑而成。设计师借鉴了风车叶片的排列方式，以五块为一组，把这些粗糙的混凝土砌块作向心式砌筑，四个长方形的砌块横平竖直地围绕着中间的正方形

砌块，当阳光照射在立面上时，砌块之间的凹凸不平之处就会形成深深的阴影，从而使立面的形式变得生动活泼。

这种席纹图案的砌筑方式背后的理念是利用非常粗糙的工业材料建造出优雅的建筑艺术作品。同样地，使用不同尺寸的砌块可形成不同的阴影图案，有助于减弱建筑因规模大而造成的视

觉冲击。设计师在办公室中不断摆弄一堆买来的混凝土砌块，在尝试过大量不同的组合堆砌方案之后，才确定该种砌筑方式是最佳方案。该方案最困难的部分是设计师必须要估算好整个立面的规模才能确定每个混凝土砌块的尺寸与模数，这样才能在不对砌块进行切割的情况下砌出完美的视觉效果。



## 设计挑战

本案的设计师所面临的挑战在于空间规划方面，就是要在有限的空间内，根据业主一家大小不同的生活习惯及需求（例如对隐私、声环境及整洁程度方面的需求）对空间进行划分，但又能避免出现把空间分割得支离破碎的后果。

## 解决方案

本案的大部分空间都属于业主的几个十几岁的孩子，包括设置在首层的卧室、电视厅和体育器材室。首层全部采用以耐磨的材料为表面的混凝土辐射采暖地板。本案的正式客厅/餐厅、生活区、用餐区、厨房、主卧和浴室都设置在二层，如此一来就能让居住者拥有绝佳的观景视野了。通往主要生活区的楼梯间由丰富的材料打造而成，如木地板和玻璃栏杆，与高耸的天花板十分相衬。所有可能产生较大噪声和脏乱的区域都被安排在生活区的楼下，

以远离居住者的视野。从首层的双高入口通道和门厅可通往二层，以便居住者在主生活区欣赏到优美的风景。尽管本案是由极其简单的工业材料建造而成的，但某些部分的设计却不惜工本，如设置在双高空间中的浴缸，它能让居住者在沐浴时俯瞰河谷的景致。从主卧可到达这个嵌入地板中的浴缸，另外，还可根据需要，把磨砂玻璃推拉门关上，这样就能把浴室与隔壁的主生活区分隔开来。

最后，由于本案的空间对这个大家庭来说略嫌窄小，因此，设计师为屋顶平台设计了一个向室外开放的带遮蔽设施的生活/用餐区。完工后，居住者可通过室外的楼梯通往这个把室内生活空间与室外生活空间连接起来的屋顶平台。