

Supplementary Materials File 1: Building Archetypes Description

Building Stock and Building Typology of Kigali, Rwanda

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Rudimentary, basic or unplanned buildings					
<p>“Rudimentary, basic or unplanned buildings” are the predominant building type in Kigali. This type is a low-rise building with a single floor. It is abundant in densely built-up areas and rural areas. It is constructed of basic building materials and the roof materials are corrugated metal or metal sheets on a single slope roof. Identifying “Basic”-type buildings can be difficult when the roof structure is not clearly visible, due to density and similar appearance to the ground and nearby buildings.</p>					
Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
1	Basic	5	150	2.1	6
Reference Pictures					
					
					

Building in block structure/large courtyard buildings

The building class “Building in block structure/large courtyard buildings” consists of dense buildings around the perimeter of a block, with one to three floors. This class is typically of higher quality than “Basic” buildings, and includes densely built-up courtyard buildings. The assignment of this class is largely an expert-based decision based on the constellation of neighboring buildings. The roofs are flat or single slope roofs with metal sheets (including corrugated metal). Distinguishing this typology from densely built-up informal settlements and halls is difficult. The class is predominantly found in the CBD or in central areas with a high road network density.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
2	Block	5	-	2.1	8

Reference Pictures



Bungalow-type buildings

“Bungalow-type buildings” occur mostly in detached, semi-detached and terraced building patterns. They have a clearly defined ridge on a gabled roof, but also variations with dormers, hip roof shapes and simple valley shapes. Here, the footprint of the buildings can also be L-shaped or plus-shaped. The property includes often a small garden and/or courtyard. Higher quality construction and building materials help to identify the buildings. The delineation to “Basic”-type buildings and relatively small “Villa”-type buildings can be difficult.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
3	Bungalow	40	500	3.1	12

Reference Pictures



Villa-type buildings

“Villa-type buildings” are predominantly detached buildings (besides some small outbuildings). The size of the building is 150-600m². In most cases, the building is surrounded by a large open space (courtyard and garden). High quality construction materials are used. Predominantly, the roofs have complex structures with multiple dormers and/or valley shapes. The delineation between “Villa-type buildings” and relatively low “Mid-rise” buildings can be difficult.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
4	Villa	150	600	3.2	15

Reference Pictures



Low to mid-rise multi-unit buildings

“Low to mid-rise multi-unit buildings” are multi-storey and multi-unit buildings of 1 to 4 floors. The building type has a minimum elevation of 3m and a maximum elevation of 10m. The roofs have in most cases a gabled structure with dormers, but can have also more complex structures like hip roof shapes and simple valley shapes. A “Mid-rise” building is most often a detached building. The delineation between “Mid-rise”, “Halls”, “Villa”-type buildings and relatively low “High-rise” buildings, can be difficult.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
5	Mid-rise	100	-	3	10

Reference Pictures

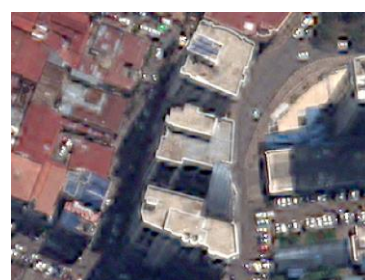


High-rise buildings

“High-rise multi-storey buildings” with more than three floors and a minimum height of 8m. The building height information of the attribute table is overruled when a large shadow indicates more than 8m elevation at the manual inspection. The roofs of this building class are often relatively flat. The building type is primarily present in the CBD, other places that are central in the city, and in new construction areas with a number of high-rise apartments. In most cases, the buildings are detached, but can be grouped in densely built-up areas like the CBD. Distinguishing this typology from relatively large “Mid-rise” buildings can be difficult.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
6	High-rise	200	-	8	-

Reference Pictures






Halls

“Halls” are buildings with a large ground floor area ($\geq 100\text{m}^2$). The roof of the building has a uniform structure with variations of single and double slopes. This building class is mostly rectangular or L-shaped. “Halls” are mostly detached buildings or are grouped with other halls. Distinguishing this typology from relatively large “Basic”, as well as “Mid-rise” buildings can be difficult.

Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
7	Hall	100	-	3	-

Reference Pictures



Special structures					
<p>“Special structures” are structures with morphological properties that are not covered by the other classes. Examples include power plants, refineries, transformer-stations, silos and antennas.</p>					
Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
8	Special	5	-	-	-
Reference Pictures					
					

Construction sites					
<p>The class “Construction sites” is assigned when both i) no other building (completed) type can be assigned, and ii) construction activity can be identified from the imagery. The class is also valid for buildings that are being demolished.</p>					
Code	Short name	Min. area (m ²)	Max. area (m ²)	Min. height (m)	Max. height (m)
9	Construction	5	-		
Reference Pictures					
