

Arch 464
ECS
Spring 2015

Name _____

Quiz #3

"Is Silver Green?"

Read and look at everything before you write!

Yamate Street House

Tokyo A Tall Order: A Japanese architect stacks the atelier and dwelling of a local artisan to mesh with the urban environs.

A six-lane ring road encircling central Tokyo, Yamate Street is hardly a place for a private house. But when it comes to home-building in the "Big Mikan" (Japan's counterpart of the Big Apple), empty land is good land—even a tiny triangular lot wedged between a heavily trafficked boulevard and a narrow side street. The first realized work of architect Taichi Mitsuya (in collaboration with UNEMORI ARCHITECTS), the Yamate Street House occupies just such a site. Encased by bands of windows, the 54-foot-tall single-family dwelling blends inconspicuously with the high-rise office and condominium buildings nearby.

Looks can be deceiving. Devised for a 30-something leather accessories designer, the building began with a bag: after creating a tote for Mitsuya, the client sought the architect's advice and eventually hired him to design a five-story building to house his residence and studio. "Four floors made sense to us, but the client wanted to separate his atelier and living space," says Mitsuya. To satisfy his client's request and the site's shape, the architect stacked the rooms. Progressing from common to private, each occupies one of the building's 194-square-foot levels. Linked by lightweight steel stairs, the sequence starts with a garage at grade, followed by the atelier above it, then the kitchen/dining floor, bath and living areas (divided by a curtain), the bedroom, and a roof terrace. Though the building footprint maximizes the permissible coverage of the 258-square-foot site (surplus from the widening of Yamate Street in 2011), the legal 98-foot height limit was more than the house needed. This allowance gave Mitsuya the freedom to manipulate the building section. By differentiating floor-to-ceiling heights, he imparted to every level a distinctive character. As the building rises, the ceilings become progressively lower and the rooms more intimate. Entered through a giant door, the 12-foot-high garage could be converted to retail use at a scale in keeping with the street. At the other extreme, a 7-foot-high ceiling makes the bedroom a cozy retreat. Correlating with the height reductions, the number of steps needed between floors decreases. Shorter stairways not only saved precious inches, they enabled the architects to change the disposition of space on each level. By locating the longest run along the north wall, the design team was able to orient the ground floor toward Yamate Street, while placing the shortest run against the west wall left plenty of room for a double bed on the top floor. As the stairs climb, the relationship between inside and out also evolves. The sound of accelerating automobiles gradually fades, and privacy increases, as one progresses up and away from the



All photos: Shmkenchiku-sha, *Architectural Record*, April 2015

Reflecting light into the interior, silver paint coats the building's exterior. Devoid of scale-defining sashes, the windows read as wall openings that widen as the building ascends. The double-height door, sized to harmonize with the broad avenue in front, serves as the house's main entrance, with stairs that lead directly up to the owner's atelier.

street. At the same time, daylight and views improve, culminating at the terrace, where the city view fans out in every direction. These transitions from the ground level to the roof are largely a function of the double rows of windows wrapping each floor—the reason the house appears to hold more than five stories. “I didn’t want the building to stand out,” explains Mitsuya. On each floor, two windows are operable for natural ventilation while the rest hold single panes of fixed glass. The openings differ in size, becoming shorter and wider toward the roof. Thanks to the broadening of the windows, the views of sky and daylight coming in steadily increase, making the small spaces seem bigger. Stepping out incrementally at each level, the shifting proportion of the windows relates inversely to the house’s reinforced-concrete frame. Toward the top of the building, its load lightens, the solid walls decreasing and the voids increasing, with the narrowest openings being at the base and the widest ones at the apex. In clean, diagrammatic terms, the elevations document the building’s weight-bearing strategy. But this is just about the only straightforward aspect of the structural system. Due to the floor plan’s irregular geometry and the stairs’ changing orientation (which shifts the center of gravity at each level), the engineer faced complex calculations. The site’s dimensions also made aspects of construction difficult. Because of poor soil conditions, the building required twelve 59-foot-deep piles. Only one company in all of Tokyo had the mini-machinery needed for the confines of the exceptionally small site. And, even for them, this was the tightest job they had ever undertaken, according to Mitsuya. Size was also a driving force behind the minimal interior finishes and built-in furnishings. The design team applied insulating paint to the walls for climate control, but left the concrete ceilings exposed, embedded with downlights. For flooring, Mitsuya chose concrete at grade and maple almost everywhere else. He used water-resistant ipe for the bath/living level—a curious arrangement intended to separate moisture from mold-vulnerable bedding. While Mitsuya did not skimp on bath fixtures, the kitchen is spare, containing only a counter with a cooktop, sink, and small refrigerator. For storage, the architect left the client to his own devices. When construction finished, the neighborhood kids were shocked to learn that the tall building is actually a home, but the adults barely batted an eye. “They are used to weird houses,” explains Mitsuya. In Tokyo, when it comes to designing a place to live, the sky is truly the limit.

Size: 964 square feet.

—Naomi R. Pollock



View of the entry and site pavers from the northeast.



The five-story freestanding building features a garage entrance on the street.

Analysis

1. Tokyo is at about 35 degrees north latitude and has a humid maritime climate. Given the building plan and orientation *point out two features of the design that have potential to highlight sustainable design and two features that are not considered sustainable design. Fully explain your nominations of these four features.*

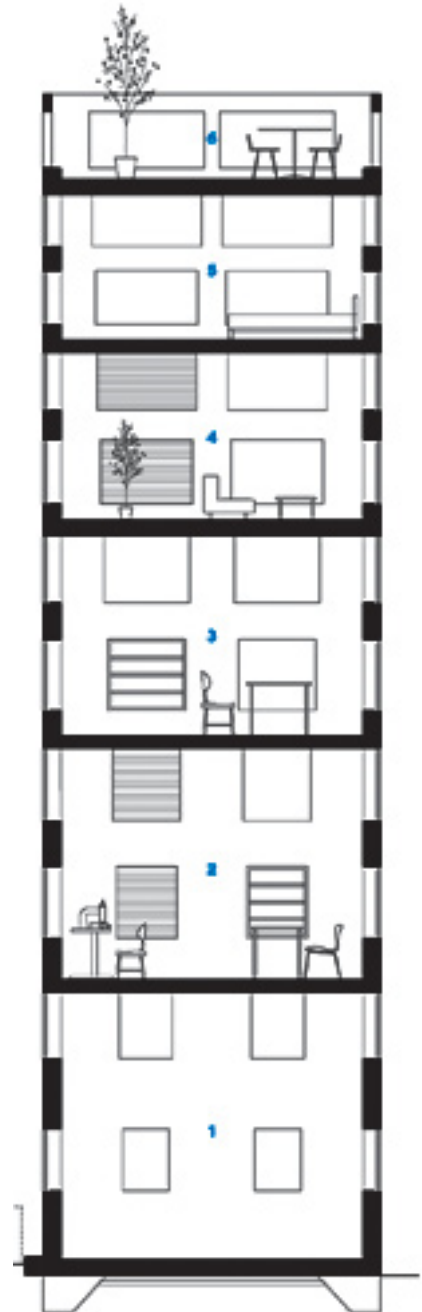
4 points

1

2

1

2



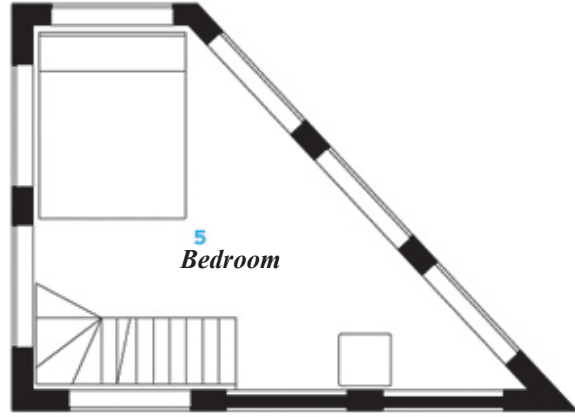
As you rise in the building the ceiling heights get lower, but daylight and views improve as you ascend narrow stairs that lead up from the garage to the atelier.



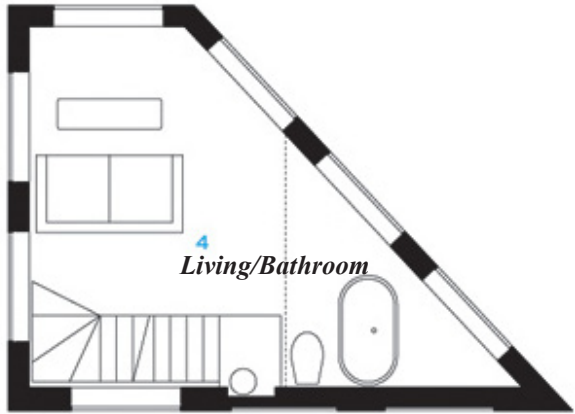
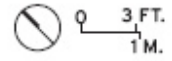
*Living (above)
Bath (right)*



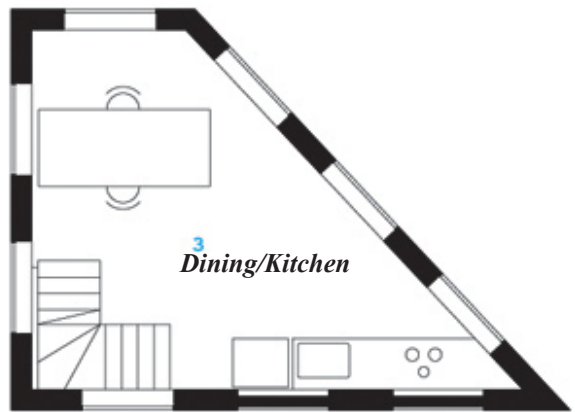
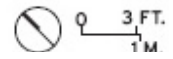
Kitchen stair to Living



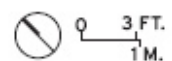
FIFTH FLOOR



FOURTH FLOOR



THIRD FLOOR



Site Energy

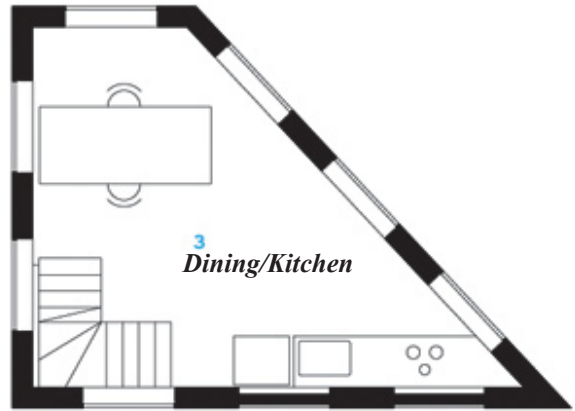
3 points

2. The architect did not opt for any on-site energy generation. (1) *Discuss* the merits, placement, and drawbacks of solar thermal. (2) *Discuss* the merits, placement, and drawbacks of photovoltaics. & (3) *Discuss* the merits, placement, and drawbacks of a wind turbine. Use diagrams and the building plans and section to illustrate your ideas.

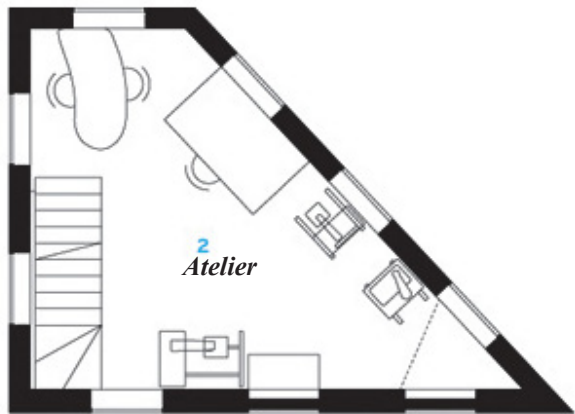
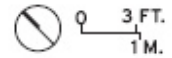
1

2

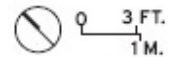
3



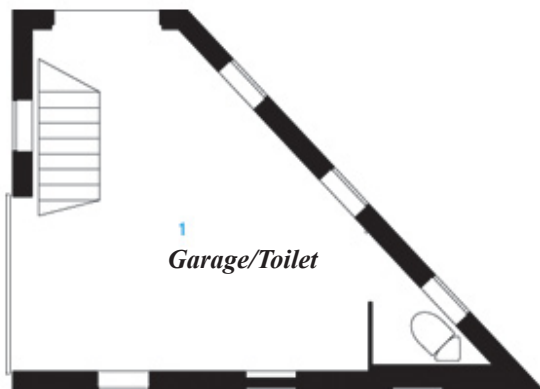
THIRD FLOOR



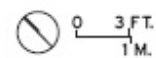
SECOND FLOOR

*Atelier*

Consistent with the light-filled, airy interior, thin steel stairs connect the client's atelier and dining area, blending his studio and residence into one fluid, vertically stacked space. Compensating for the absence of built-in closets and cabinetry, the client hangs his leather-working tools on the walls and uses shelves he inserted inside the deep window recesses for additional storage or display.

*Garage entry*

FIRST FLOOR



Design Magic

3. *Two of the architect's green architecture strategies require further study. Analyze the two claims below.*

a.) *Reflecting light into the interior, silver paint coats the building's exterior.*

b.) *The design team applied insulating paint to the (concrete) walls for climate control, but left the concrete ceilings exposed, embedded with downlights.*

3 points

a.)

b.)