WILLIAM P. MACHT

Splitting Makes It Whole

An architect splits an apartment complex in a small metropolitan town to capture views and make units private, urbane, and whole.

As some developers seek to retrofit suburbia, a few are rediscovering the urban structures of small towns that long ago were absorbed into larger metro areas in the Pacific Northwest. Small-scale systems of gridded streets were platted for each of these towns, very much like the larger grids that became the centers of the cities that grew outward in the 20th century to encompass them. Lying seven miles (11 km) from downtown Portland, Oregon, Lake Oswego has its own small downtown, now the urban heart of a wealthy suburban area.

Just two 400-foot-long (122 m) blocks from the "100 percent corner"—that intersection of main streets that draws the most people and generates the highest rents—of downtown Lake Oswego, locally based architect Ben Waechter in July 2015 completed Sawtooth, a complex of eight compact rental townhouses meant to attract older millennials and couples like those already drawn to trendy, close-in areas of Portland. Through investment in lakefront plazas and streetfront improvements; creation of mixed-use public/private partnerships; and the introduction of dozens of new shops and restaurants, downtown Lake Oswego has achieved a level of walkable urbanism that now attracts developers of condominiums, apartments, and townhouses.

In 1992, the developer, Jim Morton of Portland-based Morton Properties, found an 8,000-square-foot (743 sq m) lot with a small single-family house on D Avenue just below First Street. Measuring 80 feet (24 m) wide and 100 feet (30 m) deep, the site had larger, older apartment houses to the north and south.

"Arranging the living room and kitchen as one airy and open space placed on the upper floor, while placing sleeping, bathroom, and laundry [space] on the floor below, allows [for] the views and clerestory light provided by the vaulted roof form of the upper story to be accessed by the most-used primary space."

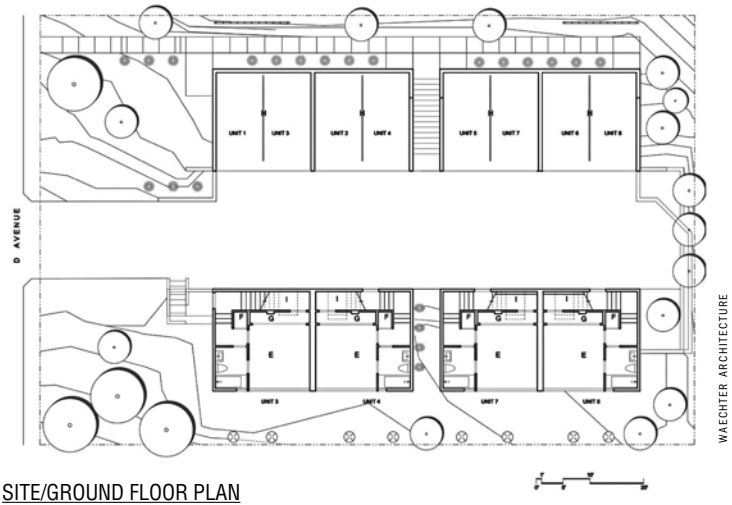
—Ben Waechter

DAVID PAPAZIAN

A complex of eight rental townhouses was built as four duplexes and achieves a density exceeding 43 units per acre (108 per ha).

DAVID PAPAZIAN

A common grade at the center of the site's slope that is a 22-foot-wide (6.7 m) auto court gives access to all the units. Because it was paved as a plaza with a grid of permeable pavers, the auto court connects the rows and brings residents together when they park.

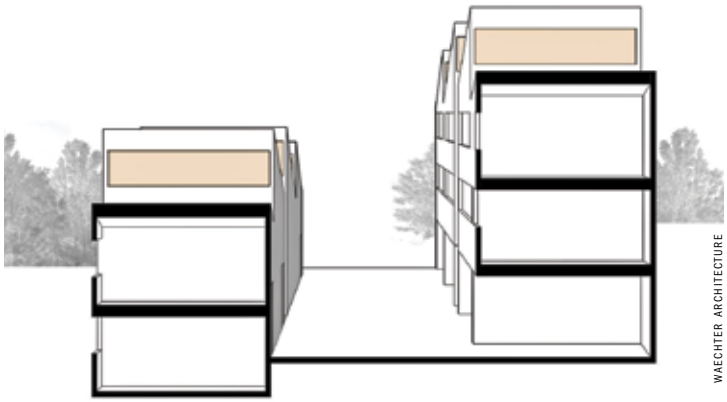


WAECHTER ARCHITECTURE

SITE/GROUND FLOOR PLAN

A	Dining	C	Storage	E	Bedroom	G	Closet	I	Utility
B	Living	D	Kitchen	F	Laundry	H	Parking		

The site is a small 8,000-square-foot (743 sq m) lot, with a former single-family house measuring 80 feet (24 m) wide and 100 feet (30 m) deep. By splitting the eight units into two rows and then splitting each row again, the project became four simple duplexes, avoiding an elaborate multifamily design review process, eliminating sound transfer between units, and facilitating simple wood-framed construction.



WAECHTER ARCHITECTURE

By using the bottom of the upper row for covered parking for each of the eight units, the upper row was elevated a full story above the lower one. Building the units as duplexes reduced the parking required from what it would have been as apartments, a 1:1 per unit versus 1.25:1 parking ratio for one-bedroom units.

It was steeply sloped and had views of the Willamette River to the east. To capture unobstructed views for each of the units on the small site, Waechter split the units vertically, thereby elevating each living/dining area above a bedroom and bathroom downstairs.

The site was not deep enough to build a continuous row of eight units. So Waechter divided the units again into two rows, using the site's slope to elevate the upper row one story above the lower one to ensure views for the upper units. That placed a common grade at the center of the site's slope that could be made into a 22-foot-wide (7 m) auto court giving access to all the units. More than that, because it was paved as a plaza with a grid of permeable pavers, the auto court connects the rows and brings residents together when they park. Again working with the slope, a landscaped walkway above provides more private, grade-level access to the four upper units.

Then Waechter again split each row of four units in half. That strategy provided a staircase for the upper units to reach parking and it also created a space for heat pump compressors between the lower units. In addition, by splitting the eight units into two rows and then splitting each row again horizontally, the project became four simple duplexes, essentially eliminating sound transfer between units and facilitating simple wood-framed construction by Morton Construction.

Zoning

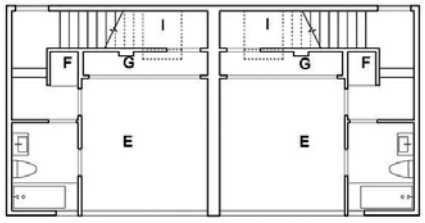
Zoning constraints also drove these physical solutions. Waechter said that the city of Lake Oswego does not require its design review process, which the development team considered lengthy and uncertain, for buildings erected as duplexes. Those reviews are required only for multifamily buildings with three or more units. Waechter carefully maximized the allowable building envelope. At the front-line setback, a building is limited to a 20-foot (6 m) height. From that point, the envelope rises at an imaginary 6:12 ratio slope (which equates to a 25-degree angle) to a maximum height of 28 feet (8.5 m). By start-


DAVID PAPAZIAN

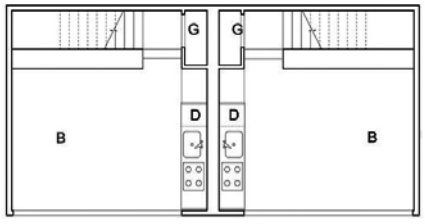

DAVID PAPAZIAN

Above: Arranging the living room and kitchen as one open space on the upper floor with sleeping, bathroom, and laundry space on the floor below allows the views and the clerestory light provided by the vaulted roof form of the upper story to be accessed by the most-used primary space. Each unit's kitchen, designed as white oak casework, is set into a single wall while a white oak guardrail delineates eating and living spaces and provides a calm art wall on its stair side and a furniture-like cabinet for storage or books on the living side. Below: With the conversion of permitted height into a sawtoothed form and the insertion of clerestory windows along the full length of the north-facing wall, the interior could be flooded with daylight. The property faces south, so the slope rises to the north and the clerestory skylights add no solar gain that would overheat the interior. In addition, they can also be used to naturally vent the units in the summer.


DAVID PAPAZIAN

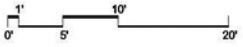


TYPICAL UNIT LOWER LEVEL PLAN



TYPICAL UNIT SECOND LEVEL PLAN

WAECHTER ARCHITECTURE



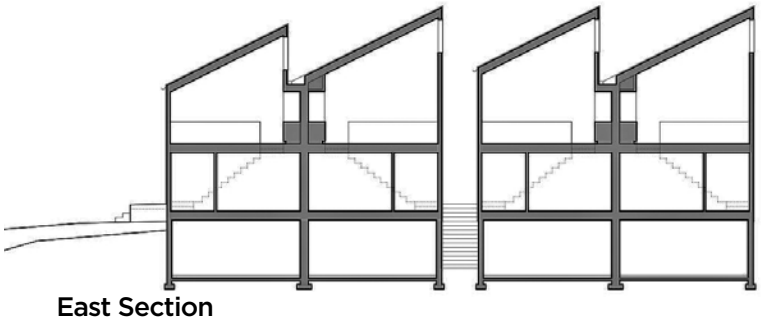
A Dining	D Kitchen	G Closet
B Living	E Bedroom	H Parking
C Storage	F Laundry	I Utility

Above: The footprint for each townhouse is only 19 feet (5.8 m) wide by 18 feet (5.5 m) deep, yielding an interior space that measures only 684 square feet (208 sq m). To capture unobstructed views for each of the units on the small site, the architect chose to split the units vertically, thereby elevating each living/dining area above its bedroom and bathroom on a story below.

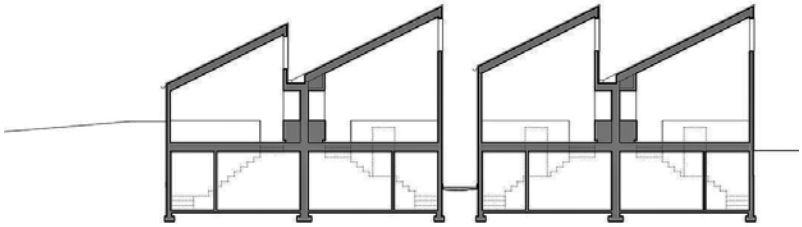
ing a vaulted ceiling in the living room on the second floor of each unit at a height only seven feet (2 m) above the finished floor, the peak of the vault would rise to the maximum 28-foot (8.5 m) code level, yielding nearly 16 feet (4.9 m) of height inside. Then, by converting that height into a sawtoothed form and inserting clerestory windows along the full length of the north-facing wall, Waechter could flood the interior with daylight. Fortuitously, the property faces south, so the slope rises to the north and the clerestory skylights would add no additional solar gain that would overheat the interior. In addition, they can be used to naturally vent the units in the summer.

Waechter also used other zoning constraints to advantage. The city's building height limits allow maximum building heights that conform to the natural grade of the site, rather than to an average elevation of the slope. Since D Avenue slopes steeply at that location, he was able to elevate the upper units a complete story above the lower units yet still come within the 28-foot (8.5 m) maximum building height limit. And building the units as duplexes actually reduced the parking required from what it would have been as apartments, a 1:1 per unit versus 1.25:1 parking ratio for one-bedroom units.

Simplifying the design of each unit, and the complex, not only made the project more economically feasible but also achieved the overriding objectives to fill the small townhouses with copious light, fully capture unusual views, and create complete privacy for the smaller spaces. Waechter says, "Arranging the living room and kitchen as one airy and open space placed on the upper floor, while placing sleeping, bathroom, and laundry [space] on the floor below, allows the views and clerestory light provided by the vaulted roof form of the upper story to be accessed by the most-used



East Section



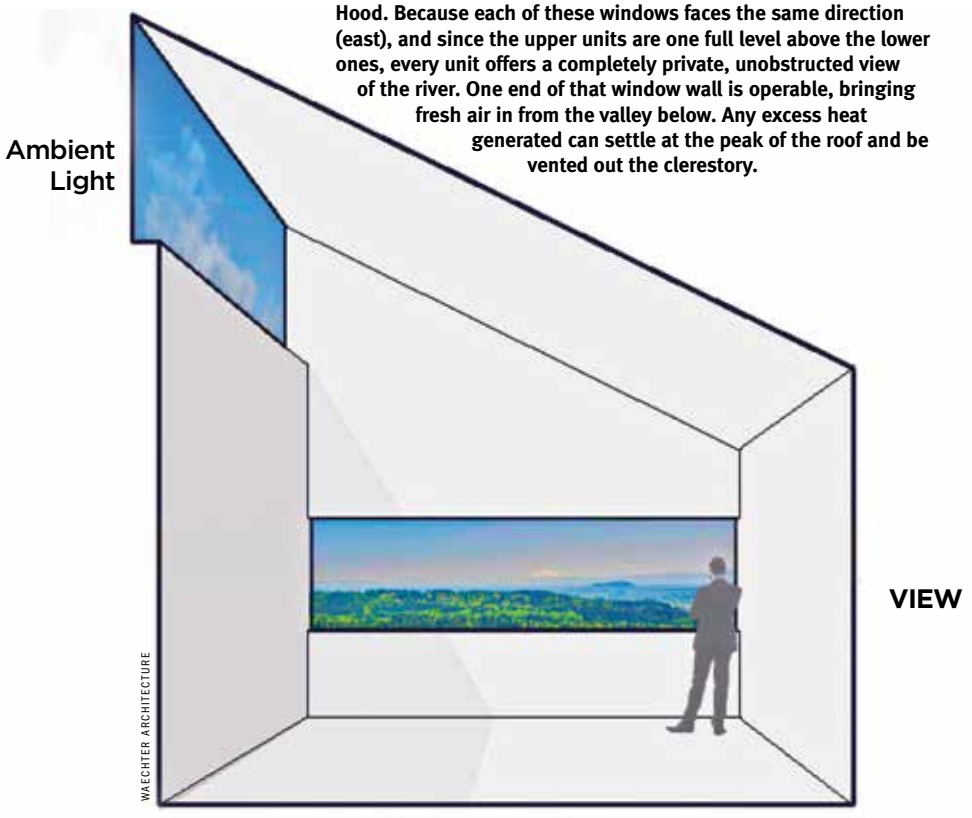
East Section

WAECHTER ARCHITECTURE

At the front-line setback, a building is limited to a 20-foot (6 m) building height. From that point, the envelope rises at an imaginary 6:12 ratio slope (which equates to a 25-degree angle) to a maximum height of 28 feet (8.5 m). By starting a vaulted ceiling in the living room on the second floor of each unit at a height only seven feet (2 m) above the finished floor, the peak of the vault would rise to the maximum 28-foot (8.5 m) level, yielding a space that is nearly 16 feet (4.9 m) high inside.

WINDOW DIAGRAM

On the east wall of each unit, a five-foot-tall by 19-foot-long (1.5 by 5.8 m) window overlooks the Willamette River and Mount Hood. Because each of these windows faces the same direction (east), and since the upper units are one full level above the lower ones, every unit offers a completely private, unobstructed view of the river. One end of that window wall is operable, bringing fresh air in from the valley below. Any excess heat generated can settle at the peak of the roof and be vented out the clerestory.



WAECHTER ARCHITECTURE

One Room—Two Windows

primary space." The bedroom and bathroom levels have a unit-wide window facing east. Because of the steep topography, the lower units have views of the river.

The footprint of each townhouse is only 19 feet (5.8 m) wide by 18 feet (5.5 m) deep, yielding a total interior space that measures just 684 square feet (63.5 sq m). But the floor space belies the visual interior space. The double-sawtoothed-shaped roof over each duplex raises the interior ceiling over the 342-square-foot (31.7 sq m) great room to double height. On the east wall of each unit, a five-foot-tall by 19-foot-long (1.5 by 6 m) window overlooks the Willamette River and Mount Hood. Since each of these windows faces east, and since the upper units are one full level above the lower ones, every unit gets an unobstructed view of the river. One end of that window wall is operable, allowing the entry of fresh air from the valley.

The building's roof and exterior walls are painted a monochromatic dark bronze, giving them a sculptural quality. "In order to keep this project cost-effective and still design a building intended to inspire identity and vivid experience, we used Hardie Board siding but added subtle design features such as rounded aluminum corners and recessed windows with deep sills that create shadow relief. This selection of materials and design details streamlines costs, design time, and construction while also making for easier and lower-cost maintenance over time," notes Waechter.

Each unit's kitchen, designed as white oak casework, is set into a single wall while a white oak guardrail delineates eating and living spaces, provides a calm art wall on its stair side, and features a cabinet for storage or books on the living side.

The cumulative effect of the decisions to split the site, townhouse rows, and units both horizontally

and vertically produces a degree of privacy, light, views, and openness for each unit more like that seen in single-family detached houses. Surprisingly, Sawtooth still achieved a density exceeding 43 units per acre (108 per ha), with a parking ratio of one space per unit. That combination enabled the developer to quickly lease all the units in only two months, at $1,595 per month plus $75 in utility bill-backs, as they were completed. The simple designs proved to be economically built at a total development cost of $1.5 million, including $400,000 for land, which Morton says he developed for long-term investment.

Developers like Morton are beginning to seek, find, and develop opportunity sites in smaller metropolitan downtowns that offer walkable urbanism with the kind of urbane housing that has resuscitated so many other neighborhoods close to metropolitan downtowns. UL

WILLIAM P. MACHT is a professor of urban planning and development at the Center for Real Estate at Portland State University in Oregon and a development consultant. (Comments about projects profiled in this column, as well as proposals for future profiles, should be directed to the author at macht@pdx.edu.)