



What is Missing Middle Housing?

Opticos Design founder Daniel Parolek inspired a new movement for housing choice in 2010 when he coined the term “Missing Middle Housing,” a transformative concept that highlights a time-proven and beloved way to provide more housing and more housing choices in sustainable, walkable places.

Missing Middle Housing:

House-scale buildings
with multiple units
in walkable neighborhoods

These building types, such as duplexes, fourplexes and bungalow courts, provide diverse housing options to support walkable communities, locally-serving retail, and public transportation options. We call them “Missing” because they have typically been illegal to build since the mid-1940s and “Middle” because they sit in the middle of a spectrum between detached single-family homes and mid-rise to high-rise apartment buildings, in terms of form and scale, as well as number of units and often, affordability.



Missing Middle Housing is primarily about the form and scale of these buildings, designed to provide more housing choices in low-rise walkable neighborhoods, although it also tends to be more affordable than other new housing products currently being built.

And while they are “missing” from our new building stock, these types of buildings from the 1920s and 30s are beloved by many who have lived in them. Ask around, and your aunt may have fond memories of living in a fourplex as a child, or you might remember visiting your grandmother as she grew old in a duplex with neighbors nearby to help her out. And today, young couples, teachers, single, professional women and baby boomers are among those looking for ways to live in a walkable neighborhood, but without the cost and maintenance burden of a detached single-family home. Missing Middle Housing helps solve the mismatch between the available U.S. housing stock and shifting demographics combined with the growing demand for walkability.

We need a greater mix of housing types to meet differing income and generational needs. This is where Missing Middle Housing can change the conversation.”

— Debra Bassert, National Association of Home Builders

Opticos Design is driving a radical paradigm shift, urging cities, elected officials, urban planners, architects and builders to fundamentally rethink the way they design, locate, regulate, and develop homes. Americans want and need more diverse housing choices in walkable neighborhoods; homes that are attainable, sustainable, and beautifully designed.

This website is designed to serve as a collective resource for elected officials, planners and developers seeking to implement Missing Middle projects. You will find clear definitions of the types of housing that are best for creating walkable neighborhoods, as well as information on the unifying characteristics of these building types. You’ll also find information on how to integrate Missing Middle Housing into existing neighborhoods, how to regulate these building types, and pin-point the market demographic that demands them.

“If there’s one thing Americans love, it’s choices: what to eat, where to work, who to vote for. But when it comes where we live or how to get around, our choices can be limited. Many people of all ages would like to live in vibrant neighborhoods, downtowns, and Main Streets—places where jobs and shops lie within walking distance—but right now those places are in short supply. ‘Missing Middle’ Housing provides more housing choices. And when we have more choices, we create living, thriving neighborhoods for people and businesses.

— Lynn Richards, President and CEO of the Congress for the New Urbanism

What does the market want?

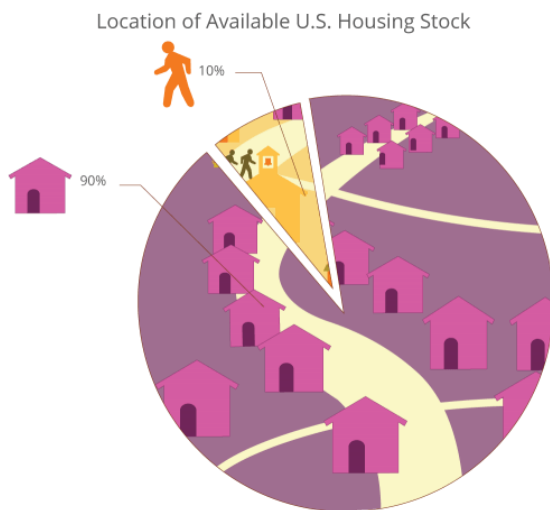
Demand for Housing Choice

A greater variety of household sizes and demographics require a greater variety of housing choices.

Young, highly educated, technology-driven **millennials** desire mobile, walkable lifestyles. They are willing to exchange space for shorter commutes, mixed-use neighborhoods, and shared open spaces that foster community interaction.

At the same time, **baby boomers** are working and living longer. They want to stay mobile and active in their later years, but they won't drive forever and don't want to be dependent on their family members to get around. They also want to find ways to stay in their community without having to care for a large home and yard.

Multigenerational homes have increased by 17% since 1940, and that number continues to rise. The growing senior population, more families with multiple working parents, diverse family cultures, and an increased desire to live in intergenerational neighborhoods all contribute to the growing demand for multigenerational and even multi-family households. Affluent seniors seek to downsize from their large suburban homes to more convenient, easy-to-care-for townhouses, apartments, or condos, while others need quality, affordable housing that won't break their limited budget. Many retirees would like to move close to, but not live with, their children and grandchildren.



The growing demand for a walkable lifestyle has the potential to transform sprawling suburbs into walkable communities.

90% of available housing in the U.S. is located in a conventional neighborhood of single-family homes, adding up to a 35 million unit housing shortage. Source: Dr. Arthur C. Nelson, "Missing Middle: Demand and Benefits," Utah Land Use Institute conference, October 21, 2014.

Walkable and Accessible Amenities

Up to 85% of households will be childless by 2025.

“This country is in the middle of a structural shift toward a walkable urban way of living. After 60 years of almost exclusively building a drivable suburban way of life ... the consumer is now demanding the other alternative,” wrote Christopher Leinberger in the *New York Times* article [“Car-Free in America? Bottom Line: It’s Cheaper.”](#)

By 2020, 34% of all American households will consist of a single person, and many of these will be women, or older persons. By 2025, up to 85% of households will be childless as millennials choose to marry later and have fewer children and the number of empty nester households continues to grow.

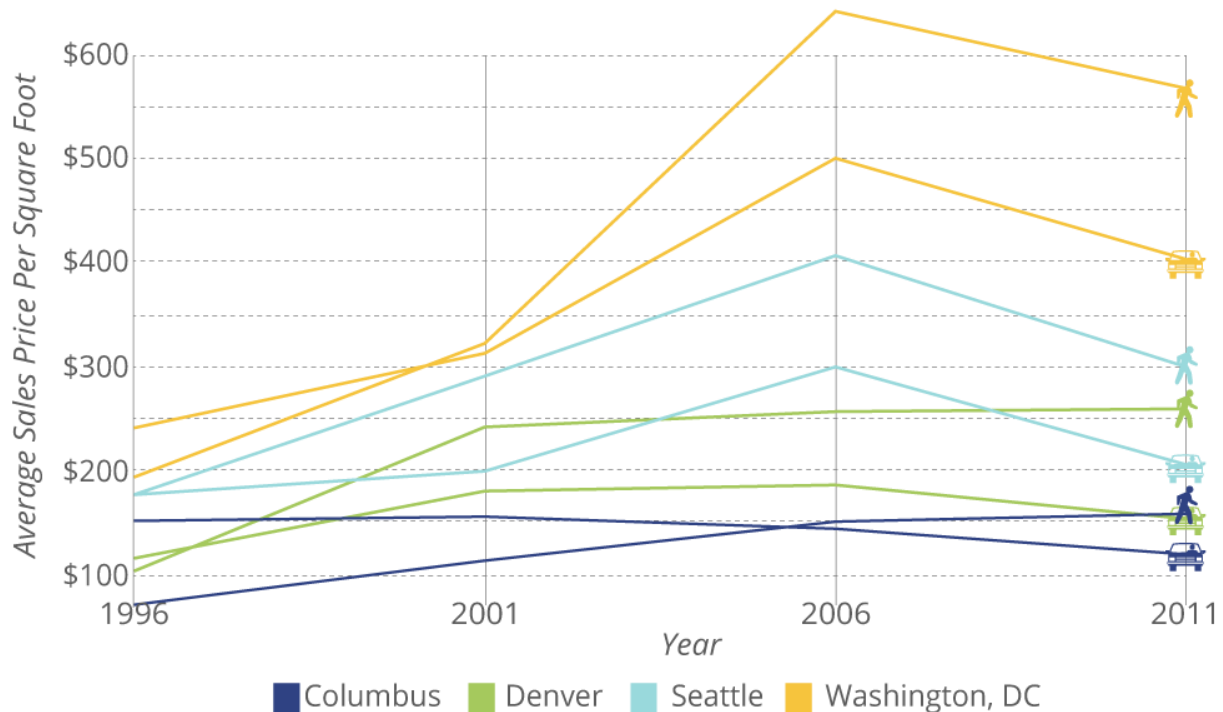
Housing trends show singles demand more amenities, and women and older persons who live alone generally seek housing options that offer better security. They also drive less, reducing the need for off-street parking in private garages or lots, and increasing the need for accessible public transportation.

“The present economic research finds that business wants talent, but talent wants place—so more businesses are relocating to places. When drilled further the research finds Missing Middle Housing is the fastest growing preference because it has the ‘place’ quality talent seeks. Hence development of Missing Middle is now recognized as a housing AND economic development strategy.”

— James Tischler, Michigan State Housing Development Authority

According to the National Association of Realtors, walkability is fast becoming one of the most important factors in choosing where to live. People want of all ages want easy access to amenities such as stores, businesses, cultural center, and transit. Homebuyers are seeking locations within walking distance to shopping, cultural amenities, jobs, and open space and the value of homes in these types of neighborhoods has increased at a much faster pace than homes in driveable suburban neighborhoods. “In a scenario where two houses are nearly identical, the one with a five-foot-wide sidewalk and two street trees not only sells for up to \$34,000 more, but it also sells in less time,” wrote J. Cortright, in CEOs for Cities’ [Walking the Walk: How Walkability Raises Home Values in U.S. Cities](#). But, as the chart at the right shows, now you don’t have to live in a dense urban center to live a walkable lifestyle. Some 70% of upcoming, walkable places in Washington D.C. are quaint neighborhoods located outside of the urban core.

Home Price Comparison Walkable vs. Drivable Neighborhoods



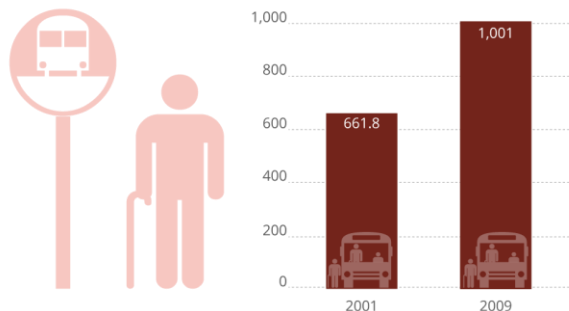
70% of walkable places in Washington D.C. are located outside the urban core.

Variety of Transportation

Accessibility to useful multimodal transit—public transportation, bike friendly streets, and car share—is needed by baby boomers and desired by millennials. But there is an economic argument, too.

“American families who are car-dependent spent 25% of their household income on their fleet of cars, compared to just 9% for transportation for those who live in walkable urban places,” [says Leinberger.](#)

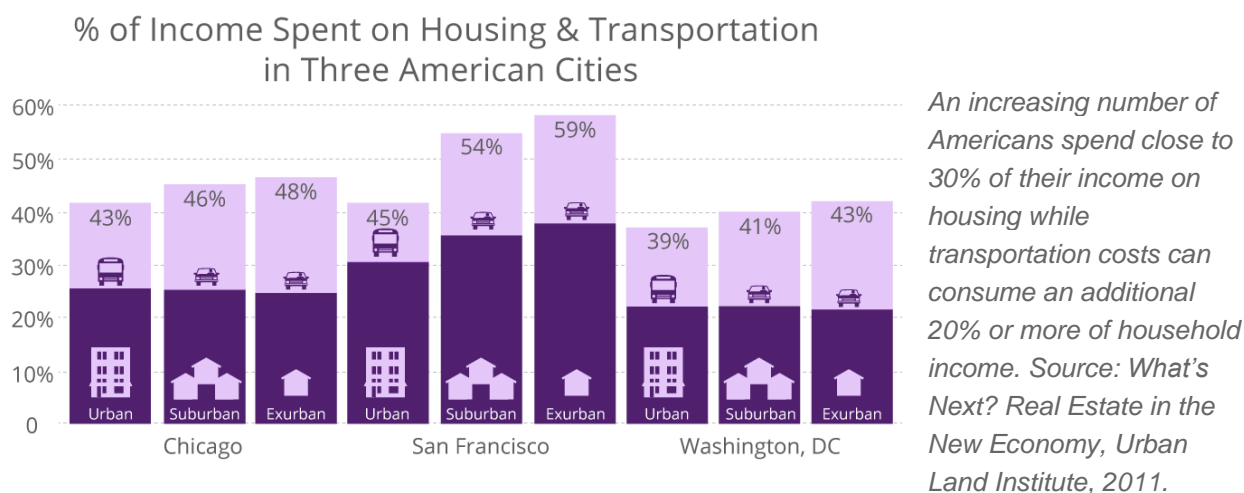
Trips by Seniors on Public Transportation in the U.S.



Walkable neighborhoods are now a top priority for seniors, along with access to transportation, and connectivity. Source: *What's Next? Real Estate in the New Economy*, Urban Land Institute, 2011; *Transportation for America*.

The same is true for bike friendly cities. According to the [Livable Street Alliance](#), as reported on the [AARP Livability Fact Sheet](#), the average American household spends more than \$8,000 a year on cars while the cost to maintain a bicycle is only about \$300 per year. These savings, which could amount into the billions if trends were widely adopted, could be reinvested into transit-oriented development and infrastructure, education, and health care.

Cities and property owners benefit from less car dependent zoning too. “An off-street parking space costs between \$3,000 and \$27,000 to build, and about \$500 a year to maintain and manage. On-street parking is more efficient and can bring in as much as \$300,000 per space in annual revenues,” writes Prof. Donald Shoup, in [Instead of Free Parking](#).



Affordability

Housing affordability is a primary concern for many Americans across the country ranging from blue-collar workers to early-career singles, young families and seniors. There is an increasing segment of the population that spends more than 30% of their income on housing, reducing their purchasing power for other amenities (*Source: What's Next? Real Estate in the New Economy, Urban Land Institute, 2011*).

Smaller homes and apartments cost less to rent or purchase and maintain, while urban neighborhoods provide services and amenities within walking distance as well as a variety of affordable transportation options.

Cities and towns that want to retain or attract these household types need to focus on providing diverse, affordable housing options near jobs, schools, and other amenities within walkable communities. In addition, suburbs that want to retain their aging populations and attract newer, younger families, will need to

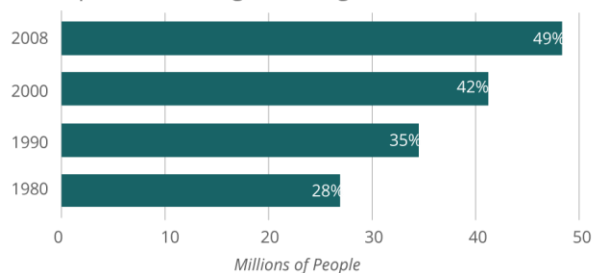
create new, walkable urban environments and encourage the construction of Missing Middle Housing through rezoning and by providing public transportation options.

Sense of Community

More and more, Americans say living in a diverse community that includes people at all stages of life is an important factor in determining where to live.

Seniors want to live near family and friends, but not with them. Missing Middle building types allow people to stay in their community throughout their lives because of the variety of sizes available and an increased accessibility to services and amenities.

% U.S. Population Living in Multigenerational Households



Almost 49% of Americans are living in a multigenerational household. Source: Pew Research Center analysis of U.S. Decennial Census and American Community Surveys.

According to Chris Leinberger in his article [“The Next Slum?” for The Atlantic](#), elements that used to draw families into the suburbs—better schools and safer communities—are now becoming the norm in cities, while these elements could worsen in suburbs that are dependent on home values and new development.

Housing market projections suggest that construction in the near future will accelerate only moderately for single-family housing but will greatly increase for multifamily housing (Source: Jordan Rappaport, [“The Demographic Shift From Single-Family to Multifamily Housing,” Economic Review, Kansas City: Federal Reserve Bank of Kansas City, 2013](#)). Implemented in both urban and rural contexts, Missing Middle Housing allows people to stay in their community during different stages of life because of the wide variety of sizes, housing levels, and accessibility it provides.

What are the characteristics of Missing Middle Housing?

Missing Middle Housing is not a new type of building. It is a range of building types that exist in cities and towns across the country and were a fundamental building block in pre-1940s neighborhoods. They are most likely present on some of your favorite city blocks—you may even have them in your own neighborhood.

Combined together (and usually with detached single-family homes), Missing Middle building types help provide enough households within walking distance to support public transit and local businesses, and they are found within many of the most in-demand communities in places like Denver, Cincinnati, Austin and San Francisco.

So what do Missing Middle building types have in common?



Development patterns in walkable urban neighborhoods make walking and biking convenient and support robust public transit. (Bouldin Creek neighborhood in Austin, TX.)

Walkable Context

Missing Middle housing types are best located in a walkable context. Buyers and renters of these housing types are often trading space (housing and yard square footage) for place (proximity to services and amenities).

Small-Footprint Buildings

These housing types typically have small- to medium-sized footprints, with a body width, depth and height no larger than a detached single-family home. This allows a range of Missing Middle types—with varying densities but compatible forms—to be blended into a neighborhood, encouraging a mix of socioeconomic households and making these types a good tool for compatible infill.



Missing Middle housing types generally have a similar size footprint to detached single-family homes.

Lower Perceived Density

Due to the small footprint of the building types and the fact that they are usually mixed with a variety of building types even on an individual block, the perceived density of these types is usually quite low—they do not look like dense buildings.

But one of the primary benefits of Missing Middle Housing is that it helps provide the number of households needed for transit and neighborhood-serving local businesses to be viable (typically about 16 dwelling units per acre).

“From the perspective of my work, Missing Middle Housing has a natural complement in MMP (missing middle plan), a.k.a. a ‘hybrid grid’ or as named it in my work, a Fused Grid ... The Fused Grid proposes a set of neighborhood modular layouts (reminiscent of Savannah) that incorporate all the desirable elements—livability, safety, security, sociability, and delight—as do MMH buildings.”

— Fanis Grammenos, Director of Urban Pattern Associates and author of “Remaking the City Street Grid – A Model for Urban and Suburban Development”

Smaller, Well-Designed Units

Most Missing Middle housing types have smaller units. The challenge is to create small spaces that are well designed, comfortable, and usable. The ultimate unit size will depend on the context, but smaller-sized units can help developers keep their costs down and attract a different market of buyers and renters who are not being provided for in all markets.



One characteristic of Missing Middle Housing is smaller, well-designed units. Courtesy: [The Cottage Company](#)

Fewer Off-street Parking Spaces

Because they are built in walkable neighborhoods with proximity to transportation options and commercial amenities, Missing Middle housing types do not need the same amount of parking as suburban housing. We typically recommend no more than one parking spot per unit, and preferably less. In fact, requiring more than one parking space per unit can make Missing Middle Housing infeasible to build. For example, if your zoning code requires two parking spaces per unit, a fourplex would require eight parking spaces, which would never fit on a typical residential lot. In addition, providing that much off-street parking for each fourplex would create a neighborhood of small parking lots rather than the desired neighborhood of homes. Finally, requiring too much parking means that fewer households can fit in the same amount of land, lessening the viability of transit and local businesses.

Simple Construction

Missing Middle Housing is simply constructed (wood-frame/Type V), which makes it a very attractive alternative for developers to achieve good densities without the added financing challenges and risk of more complex construction types. This aspect can also increase affordability when units are sold or rented.

As providing single family detached sub-\$200,000 starter homes is becoming increasingly out of reach for builders across the country, Missing Middle Housing can provide [an attractive and affordable alternative starter home](#).

Creates Community

Missing Middle Housing creates community through the integration of shared community spaces within the building type (e.g. [bungalow court](#)), or simply from being located within a vibrant neighborhood with places to eat, drink, and socialize.



This is an important aspect in particular considering the growing market of single-person households (nearly 30% of all households) that want to be part of a community.

Missing Middle housing types help to create walkable communities.

Marketable

Because of the increasing demand from baby boomers and millennials, as well as shifting household demographics, the market is demanding more vibrant, sustainable, walkable places to live. These Missing Middle housing types respond directly to this demand.

In addition, the scale of these housing types makes them more attractive to many buyers who want to live in a walkable neighborhood, but may not want to live in a large condominium or apartment building.

If there is land for beautifully-designed homes that fill a gap between stand-alone houses and mid-rise apartments, the smart thing to do is to fill it with housing types we've been missing in our market for so long.”

— Heather Hood, Deputy Director, Northern California, Enterprise Community Partners

How does Missing Middle Housing integrate into blocks?

Missing Middle Housing [types](#) typically have a footprint not larger than a large detached single-family home, making it easy to integrate them into existing neighborhoods, and serve as a way for the neighborhood to transition to higher-density and main street contexts. There are a number of ways in which this can be accomplished:

Distributed throughout a block

Missing Middle Housing types are spread throughout the block and stand side-by-side with detached single-family homes. This blended pattern of detached single-family homes and Missing Middle Housing types, with densities up to 40 dwelling units per acre, works well because the forms of these types are never larger than a large house.



“For us, mixing housing types is important in today’s market. Buyers want choices, the investors and lenders want more flexibility in the projects, and planning officials expect a more thoughtful integration into the existing neighborhoods. The mixing of product provides a diverse community, enhances value, and it helps create the type of place our buyers are looking for today.”

— David Leazenby, Onyx+East

Placed on the end-grain of a block

Missing Middle Housing types are placed on the end-grain of a block with detached single-family homes, facing the primary street, which is often a slightly busier corridor than the streets to which the detached single-family homes are oriented. The most common condition is to have several [fourplex](#) units on the end grain lots facing the primary street. This configuration is usually located on the end grain of several continuous blocks adjacent to a neighborhood main

street, which increases the blended density to achieve the 16 dwelling units/acre necessary to support small, locally-serving commercial and service amenities.

This configuration allows for the use of slightly larger buildings because the Missing Middle housing types are not sitting next to detached single-family homes. In this block type, the alley to the rear of the lots also allows for a good transition in scale to the detached single-family home lots behind them. Often you will see a similar block configuration with one or two fourplexes on the corners of the end grain lots on the block.



Transitioning to a commercial corridor

Missing Middle Housing is excellent to transition from a neighborhood to a Main Street with commercial and mixed-use buildings. These types are generally more tolerant and better able to effectively mitigate any potential conflicts related to the proximity to commercial/retail buildings or parking lots behind commercial buildings.



Transitioning to higher-density housing

Smaller-scale Missing Middle Housing types are placed on a few of the lots that transition from the side street to the primary street, providing a transition in scale to the larger buildings on the end grain of the block along the primary street.



What's the best way to regulate Missing Middle Housing?

Hint: Conventional Zoning Doesn't Work

Conventional (Euclidean) zoning practice regulates primarily by land use or allowed activities, dividing neighborhoods into single-family residential, multifamily residential, commercial, office, etc. This separation of uses is the antithesis of mixed-use walkable neighborhoods. Along with use, the zones are often defined and controlled by unpredictable numeric values, such as floor area ratio (FAR) and density, which create all sorts of barriers to Missing Middle Housing.

For starters, Missing Middle Housing (MMH) is intended to be part of low-rise residential neighborhoods, which are typically zoned as "single-family residential" in conventional zoning. However, because MMH contains multiple units, it is, by definition, not allowed in single-family zones. On the other hand, most multifamily zones in conventional codes allow much bigger buildings (taller and wider) and also typically encourage lot aggregation and large suburban garden apartment buildings. The environments created by these zones are not what Missing Middle Housing is intended for.


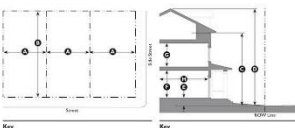
In addition, density-based zoning doesn't work with the blended densities that are typical in neighborhoods where Missing Middle Housing thrives. MMH are similar in form and scale to detached single-family homes, but because they include more units, they often vary dramatically in their densities, making them impossible to regulate with a density-based system. For example, a bungalow court can have densities of up to 35 dwelling units per acre even though the buildings are only one story tall, because the size of each cottage is only 25 feet by 30 feet. So if a zoning district sets a maximum density of 20 dwelling units per acre, it would not allow the bungalow court type. On the other hand, if the zoning district has a maximum density of 35 dwelling units per acre with few or no additional form standards, every builder/developer will max out a lot with a large, out-of-scale apartment building, rather than building the bungalow court the neighborhood would prefer.

And one more thing: density-based zoning treats all units the same regardless of size. This means that a 3,500-square-foot unit is considered the same as a 600-square-foot unit for calculations such as density, parking and open space, thus discouraging much-needed smaller units. For example, a fourplex with four 600sf units would require four times the parking and open space as a 2,400sf detached

Then for each form-based zone, a specific range of housing types is allowed based on the intention for the neighborhood. For example, in a walkable neighborhood, single-family-detached homes, bungalow courts, and side-by-side duplexes may be allowed, or in a slightly more urban walkable neighborhood, bungalow courts, side-by-side duplexes, stacked duplexes, fourplexes, and small multiplexes might be allowed.

Specific to Transit Zones 1703-2-70 T4 Neighborhood Small Footprint (T4NSF)

T4 Neighborhood Small Footprint (T4NSF)
1703-2-70 T4 Neighborhood Small Footprint (T4NSF)

C. Allowed Building Types

Building Type	Width	Depth	Standards
Carriage House	min	min	1703-2-40
Detached House	30' min.	70' min.	1703-2-80
Compass	50' min.		
Cottage Court	70' min.	100' min.	1703-3-70
Duplex	40' min.	100' min.	1703-3-80
House	25' min.		
Multi-Unit Small	35' min.	80' min.	1703-3-90
Live/Work	35' min.	80' min.	1703-3-100
	35' min.		

D. Building Form

Height	Standards
3 1/2 stories max.	1703-2-100
24' max.	1703-2-110
35' max.	1703-2-120
3 stories max.	1703-2-130
1 story max.	1703-2-140
18' min.	1703-2-150
12' min.	1703-2-160
8' min.	1703-2-170
24' min.	1703-2-180
24' max.	1703-2-190
32' max.	1703-2-200

City of Cincinnati Form-Based Code Final Draft 2/15/13 3-23 3-24 Final Draft 2/15/13 City of Cincinnati Form-Based Code


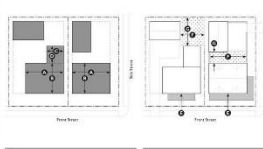
A zone from the Cincinnati's Form-Based Code

In addition for each type, there are typically supplemental form standards that are regulated to allow some of the individual aspects of certain MMH types while preventing overbuilding in terms of height and bulk. For example, a bungalow court type typically allows for more units, but has a maximum height of 1–1.5 stories, a maximum building footprint/unit size of around 800 square feet and a minimum size of courtyard. A Form-Based Code can regulate these fine-grained details, such that on a 100' by 100' lot, two fourplexes or a bungalow court with eight small, one-story units could be allowed, but not a single, larger eight-unit apartment building.

For these reasons and more, Form-Based Coding is the most effective way to enable Missing Middle Housing.

Specific to Building Types 1703-3-100 Multiplex Small

1703-3-100 Multiplex Small

A. Description
This building form is intended to provide a range of housing options in a walkable neighborhood. It is designed to be a small, multi-unit building that can be integrated into a variety of neighborhood contexts. The form is intended to be a small, multi-unit building that can be integrated into a variety of neighborhood contexts. The form is intended to be a small, multi-unit building that can be integrated into a variety of neighborhood contexts.

B. Building Form

Building Type	Width	Depth	Standards
Carriage House	min	min	1703-2-40
Detached House	30' min.	70' min.	1703-2-80
Compass	50' min.		
Cottage Court	70' min.	100' min.	1703-3-70
Duplex	40' min.	100' min.	1703-3-80
House	25' min.		
Multi-Unit Small	35' min.	80' min.	1703-3-90
Live/Work	35' min.	80' min.	1703-3-100
	35' min.		

D. Allowed Form Standards

Height	Standards
3 1/2 stories max.	1703-2-100
24' max.	1703-2-110
35' max.	1703-2-120
3 stories max.	1703-2-130
1 story max.	1703-2-140
18' min.	1703-2-150
12' min.	1703-2-160
8' min.	1703-2-170
24' min.	1703-2-180
24' max.	1703-2-190
32' max.	1703-2-200

City of Cincinnati Form-Based Code Final Draft 2/15/13 3-18 3-19 Final Draft 2/15/13 City of Cincinnati Form-Based Code

The small multiplex building type from Cincinnati's Form-Based Code

“I want to thank you for your great work on Missing Middle Housing! It has been useful in my current research on policy reforms to support more affordable infill development in Victoria, B.C., and informing my report ‘Affordable Accessible Housing in a Dynamic City.’”

— Todd Litman, Victoria Transport Policy Institute

For more information about Form-Based Codes, see:

- [*Form-Based Codes: A Guide to Planners, Urban Designers, Municipalities, and Developers,*](#)
by Daniel Parolek, Karen Parolek, and Paul C. Crawford
 - [Form-Based Codes Institute](#)
Form-Based Codes with Building Types to Reference:
 - [Cincinnati, OH](#) (And read this [blog post](#) about the project)
 - [Mesa, AZ](#) (Article 6: Form-Based Code)
 - [Livermore, CA](#)
- Or find out about our [Form-Based Coding services](#)



Illustration of the variety of places regulated by Flagstaff's Form-Based Code