

City of Tacoma

Urban Residential Districts

Detailed Site Plan Testing

September 2024

MITHŪN

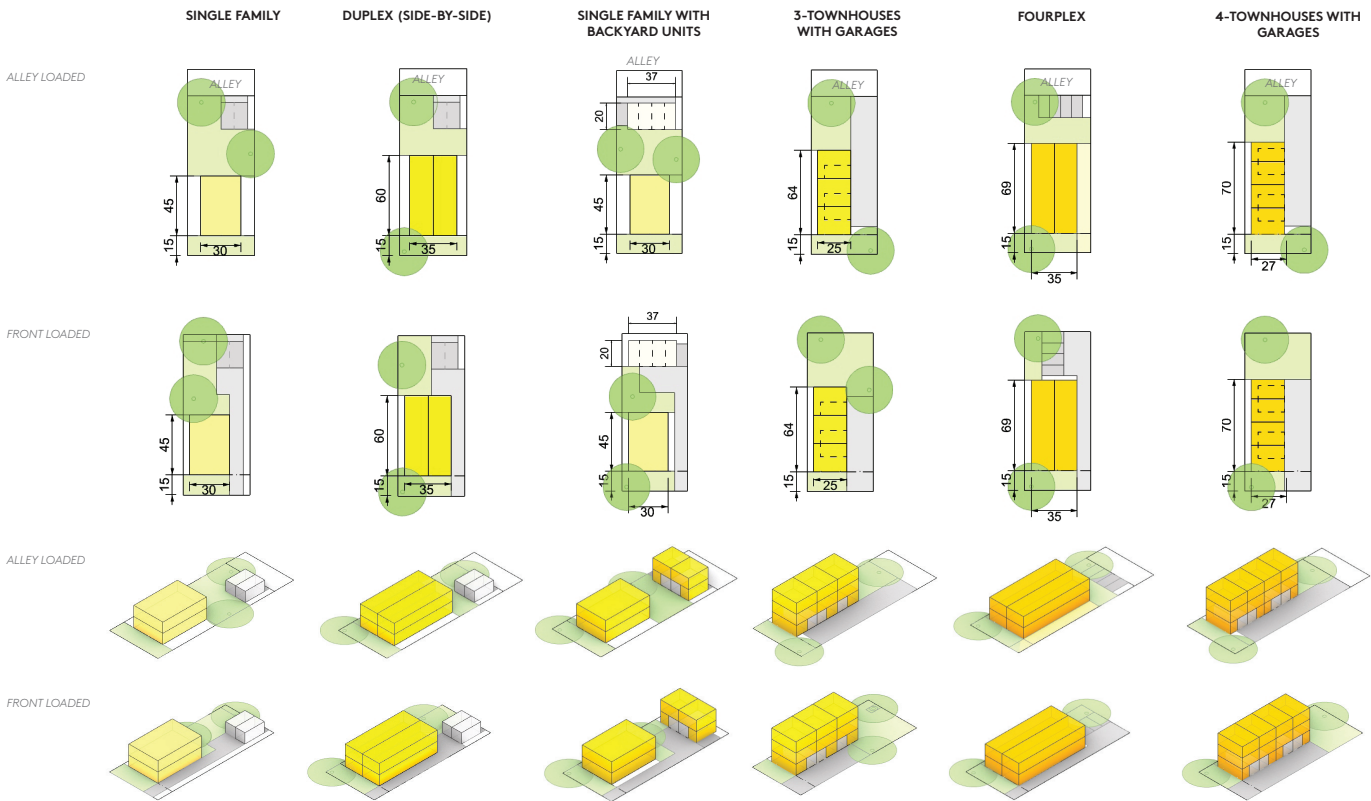


To realize the City’s Home in Tacoma project goals and adopted Phase 1 policies, the development feasibility of middle housing development throughout neighborhoods across the city is essential. An important aspect of that development feasibility is considering the spatial demands of all potential site requirements, such as buildings, required setbacks, amenity spaces, trees, vehicular and pedestrian access, car and bicycle parking, and infrastructure and utilities including solid waste, water, power, sewer, and stormwater management.

This document summarizes Mithun’s testing of those spatial elements using the updated Home In Tacoma zoning code and development standards as amended and recommended by the City of Tacoma Planning Commission on June 5, 2024. In addition to this Summary, it includes test fit graphics on pages 5-9, and an Appendix outlining the standards used in studies on pages 10-12.

Background & Earlier Studies

Throughout 2023 to assist with recommendations for the Home In Tacoma zoning code and development standards, Mithun conducted conceptual-level “test fitting” of 31 middle housing configurations on theoretical and prototypical Tacoma lots. These studies included configurations representing all five Housing Types in the Building Design Standards, to represent a wide range of potential site layouts. These studies, together with regional middle housing benchmarking and meeting with the Planning Commission (PC), informed the creation of Draft District Standards and Building Design Standards for the Urban Residential zones. They also set the basis for an economic feasibility study (by subconsultant ECONorthwest) to determine which housing prototypes would be most viable for rental and home ownership in Tacoma.



HOME IN TACOMA PHASE 2: TEST FITS FOR FEASIBILITY TESTING | AUGUST 2023

MITHUN

Image: Example of 12 conceptual-level Test Fits used to inform creation of middle housing development standards. These tests did not include the then-evolving utility requirements.

Background & Earlier Studies (continued)

In December 2023, Mithun collaborated with the City of Tacoma's Planning and Development Services (PDS) staff to conduct more detailed site plan testing analysis of six prototypes that were identified as more constrained, or "tighter" on their lots. The goal of the exercise was to inform whether changes were needed to the Draft Standards to improve the potential for middle housing feasibility. These six prototypes were intentionally chosen as part of a conservative approach. Since these were examples of the most constrained or highest-intensity scenarios, if they could fit on typical sites it was assumed that less intensive scenarios would fit as well.

The detailed site plan tests were laid out using the Draft Standards as well as assumptions for lot dimensions and access representing typical Tacoma lots. They also complied with proposed new standards for infrastructure and utilities, such as solid waste, water, power, sewer, and stormwater management. (These standards can be found in the Appendix.) Throughout the exercise, PDS staff sought input from members of the Tacoma Permit Advisory Group as well as from other departments and collaborated with partner utility and public service providers.

Overall, the exercise demonstrated that it was generally feasible to develop the intended housing types and densities, provided adjustments were made to infrastructure, access and utility standards. As a result of the analysis and stakeholder discussion, PDS staff recommended the three actions below to address potential feasibility limitations stemming from spatial demands in the most constrained scenarios. More detail on these recommendations can be found in PDS's report titled "HIT Site Planning Study Key Findings", dated 1/17/2024.

1. Minor changes to the HIT zoning and land use standards package. These were included in the Public Draft documents issued in December 2023.
2. Infrastructure, access and utilities standards changes. These were developed prior to the site testing analysis but were further vetted through this effort.
3. Future actions: Ongoing study to determine whether further adjustments should be made to the zoning and land use package and/or to infrastructure, access and utilities standards.

Updated Study

After receiving comments on the Public Draft, the PC proposed and approved certain amendments to the code on June 5, 2024. Most of the standards were unchanged, but changes to amenity space was included. Mithun used the June 2024 draft code as a basis for updating and re-testing five housing configurations to confirm and illustrate potential middle housing development feasibility.

Rather than selecting prototypes that are the most constrained on their lots, the updated detailed site plan tests focus on the most likely middle housing prototypes to be developed in Tacoma based on ECONorthwest's feasibility analysis. These prototypes, which can be found after this summary, include:

1. Retaining existing house with 3 Backyard units, UR-1, alley-loaded
2. 4-unit Houseplex, UR-1, street-loaded
3. 4 Rowhouses with 4 Backyard units, UR-2, street-loaded
4. 6-unit Houseplex, UR-3, alley-loaded
5. 23-unit Multiplex, UR-3, street-loaded

Overall, the updated detailed site plan tests show that the revised code is feasible to accommodate middle housing on prototypical lots.

Each detailed site plan test has unique opportunities or challenges which are noted on their individual sheets. Most of the studies maximize the allowable area (FAR) on their lots, while a couple are intentionally left smaller to reflect unit areas in the economic feasibility analysis.

Across the board, the Planning Commission's reduction of amenity space area requirements helped fit all elements on their sites, while still providing some outdoor amenities. In many cases, there is unassigned open space left on the sites that could be used for amenities or planting consistent with residential neighborhoods. The PC also revised the minimum tree credits required with a Variance, but it should be noted that these did not affect the studies since each test fit was able to meet its tree requirements without assuming a Variance.

In the early Home in Tacoma “Initial Standards” phase, a 50 ft by 120 ft lot (6,000 sq ft) was selected by staff as the prototypical lot size. Lots of many other sizes exist in Tacoma, including many at 5,000 sq ft, and many 100 ft deep. These smaller lots will, in many cases, not accommodate as much density as the larger prototypical site. Similarly, relatively flat sites without existing trees were used, with the understanding that sites with steep slopes or trees to be retained also likely would have less development capacity than the prototypical sites.

Recommendations

Based on the recently updated detailed site testing study, the following standards could be adjusted to improve the utility of the code and standards to support middle housing outcomes.

1. Stormwater requirements were estimated to be a moderate/middle solution using a vault to serve the needs of an average soil type. Actual soil conditions could result in requirements for larger or smaller stormwater facilities. In many cases the stormwater vault and tree planting clearances conflicted with each other. Since both provide stormwater benefit, the allowance of suspended pavement systems is recommended.

2. Public Works has the authority to require reconfiguration of parking, access, or utilities (including driveway width), when a lot is accessed from an arterial. The prototypical lots are assumed to be on residential streets, and the first four test fits use a 10 ft wide driveway. Increasing the driveway width to 16 ft could negatively affect development capacity on 50 ft wide lots. Due to the safer forward movement when exiting a driveway (i.e. not backing out of driveways onto arterials), and the low amount of traffic on middle housing lots, this should be reconsidered. Regionally, there is effective precedent for 8-unit townhouse developments to share 10 ft wide driveways.

3. Public Works requires separation of driveways from walkways, making awkward sidewalk transitions along garage frontages on lots up to eight units. In these low density lots there is almost always room in a shared drive for both people and automobiles. The speed on narrower driveways is usually slower, and people can effectively wait for each other to pass if they encounter each other. Where both auto and pedestrian access must occur deep into the lot, Public Works should consider eliminating the duplicate access requirements, since it is awkward and consumes space better used for amenities, planting, or other permeable surfaces. Separated access for automobile and pedestrians is still recommended on higher density sites such as Multiplexes.

4. Transformers on 3 ft by 3 ft pads are required on lots with eight or more units. Since these are out of character with residential neighborhoods, TPU should consider tying this requirement to a lot size. For instance, if four units on a 6,000 sq ft lot are allowed to have a pole-mounted transformer, then eight units on a 12,000 sq ft lot should also be allowed a pole-mounted transformer. These would be less obtrusive in the residential landscape and would better fit within setbacks.

5. Developments with more than 6 units require larger solid waste storage and collection areas than lower density developments. Sometimes dumpsters are also required. These are heavy to roll and require either Solid Waste staff or building management personnel (or residents) to move them to the curb. Alternatively, collection trucks can pick them up on-site. But since backing up is not recommended by Solid Waste, the required truck turning radii would render most small middle housing sites infeasible to develop. Coordination with the City of Tacoma’s Solid Waste department will be necessary in order align with the capabilities of the utility service and Home in Tacoma’s middle housing design goals.

In addition, the “HIT Site Planning Study Key Findings” document, dated 1/17/2024, also included several infrastructure recommendations for further study. It is Mithun’s understanding these are still in progress, and we believe many are valid to consider to reach Home In Tacoma middle housing goals.

#1 Retain House + 3-Unit Backyard Building

Building Data

- UR-1, 6000 SF lot
- FAR: 0.8 (0.8 max), 3 stories with 1,800 GSF existing house (1.5 stories)
- BYB unit size: 1,000 SF

Access & Parking

- Alley-loaded
- 3 surface parking stalls (3 min.)
- In-unit bike parking

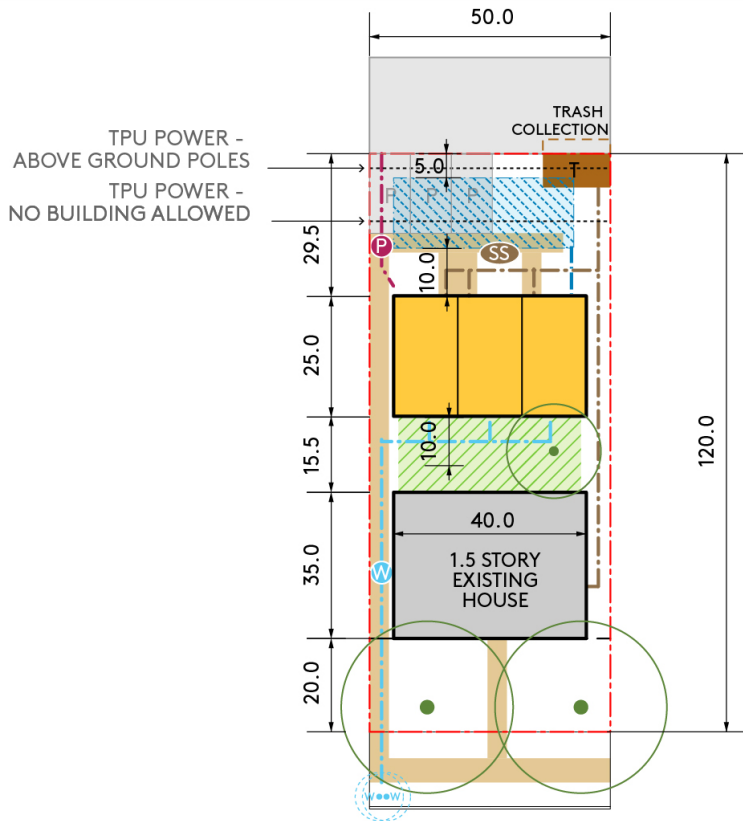
Amenity Space

- Ground level amenity space: 600 SF
- Amenity space min: 600 SF

Tree Credits

- Tree credit shown: 2,200 (2,100 min)
 - Can meet soil volume without SPS
- Greatest soil depth needed to meet volume requirements: 3'

Note: * BYB = Backyard Building



Building three backyard units makes them 13'-4" wide. This is tight, but there are ample precedents for narrow multi-story units in the Pacific Northwest and around the world.

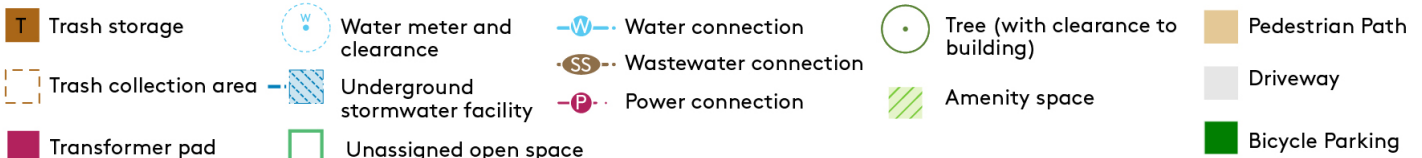
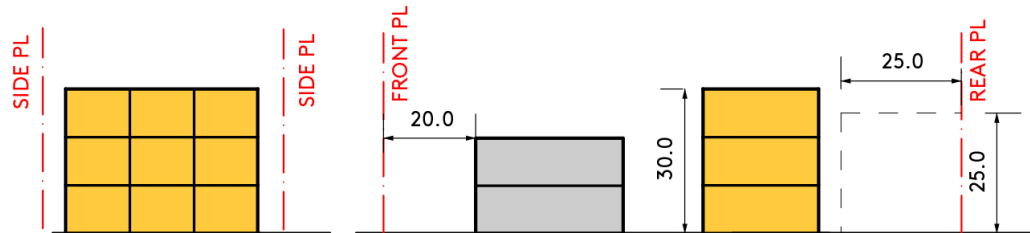
Depending upon configuration, stairs could take up between 40 to 60 sf per level, leaving enough space for a bedroom and bathroom on the middle level and either one large or two small bedrooms on the upper level. Building only two backyard units would allow for 20' wide and 1500 sf townhouses with larger rooms.

Note that the parking stall count has been reduced by one since accessory dwelling units (2 max per site) do not require parking. Three stalls does not trigger accessible parking spot, but this could be easily added to this plan.

Note that the position of the existing house greatly affects the development capacity of sites retaining the existing house, as does the existence of an alley from which parking can be located directly, since some houses without alleys may not fit a driveway in their sideyards.

[NOT SHOWN] Parking beneath three backyard units is extremely tight and would likely require either an open carport or a shared garage, as well as shared stair access to the second level from which each unit would be entered. Constructing only two backyard units would better accommodate private garages and private access to each unit.

CHANGES SINCE LAST STUDY:
Reduced amenity requirements. Amenity space is easier to meet and could easily be exceeded.



Test fit to inform code and standards guidance only, not to depict a particular parcel design or development proposal. Intended only for its express use.

#2 4-unit Houseplex (Deep Townhouses)

Building Data

- UR-1 with bonus, 6000 SF lot
- FAR: 0.87, (1.0 max with bonus)
- 5,200 GSF, 2.8 stories
- Unit size: 1,300 SF

Access & Parking

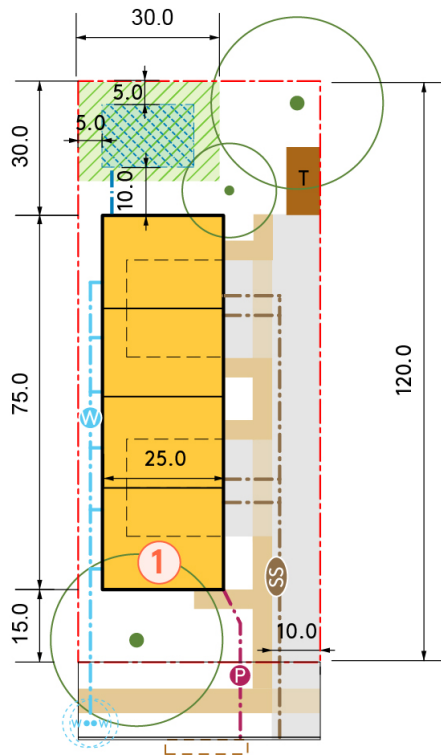
- Street-loaded
- 4 stalls in private garages (4 min.)
- In-unit bike parking

Amenity Space

- Ground level amenity space: 600 SF
- Amenity space min: 600 SF

Tree Credits

- Tree credit shown: 2,200 (2,100 min)
 - Can meet soil volume without SPS
- Greatest soil depth to meet volume requirements: 2.5'



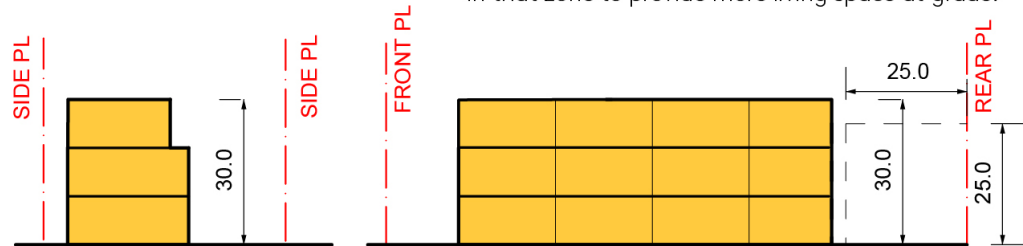
This configuration (often called a "slohome") is an increasingly common way to deliver fee-simple (ownership) homes with private garages on single lots. Slohomes are not well liked in many jurisdictions and not allowed in others because they often have blank facades and sometimes even utility yards along the street, and are skinnier and taller than traditional single family houses.

The Planning Commission felt it was important to allow deep townhouses (slohomes) in Tacoma with the goal of providing more ownership opportunities in Tacoma, as long as design parameters were included to avoid some of the common pitfalls of the type. HIT includes Building Design Standards that require a front orientation to the street (including an entry door & a certain percentage of windows) and prohibits services in the front yard.

An integral component of the Houseplex type is a backyard that is compatible with single family neighborhoods. In UR-1 and UR-2, where backyard requirements are higher, building four deep townhouses with private garages on 50' wide lots leaves minimal living space on the ground floors. Ground floors would likely contain (with the garage) an entry and/or mudroom, a small office or bonus space, laundry, and a stair up to the upper floors. Living rooms would occur on the second level and bedrooms on the top. Building three units would better accommodate living space or bedrooms on the ground level.

1 Note in this example the front unit is 21' wide while the other are 18' wide in order to accommodate a 10' deep habitable space at the street. In addition, the 3rd levels contain a small roof deck that also keeps the units within the area range of the economic feasibility study.

Since the UR-3 has no maximum building depth (i.e. fewer requirements for backyards), the 4-unit configuration works better in that zone to provide more living space at grade.



- T Trash storage
- Water meter and clearance
- Water connection
- Tree (with clearance to building)
- Pedestrian Path
- Trash collection area
- Underground stormwater facility
- Wastewater connection
- Driveway
- Transformer pad
- Unassigned open space
- Power connection
- Amenity space
- Bicycle Parking

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#3 4 Rowhouses with 4 Backyard Buildings ("8-Pack")

Building Data

- UR-2, 12,000 SF lot
- FAR: 0.87, (1.0 max)
- 10,400 GSF, 2.6 stories
- Unit size: 1,300 SF

Access & Parking

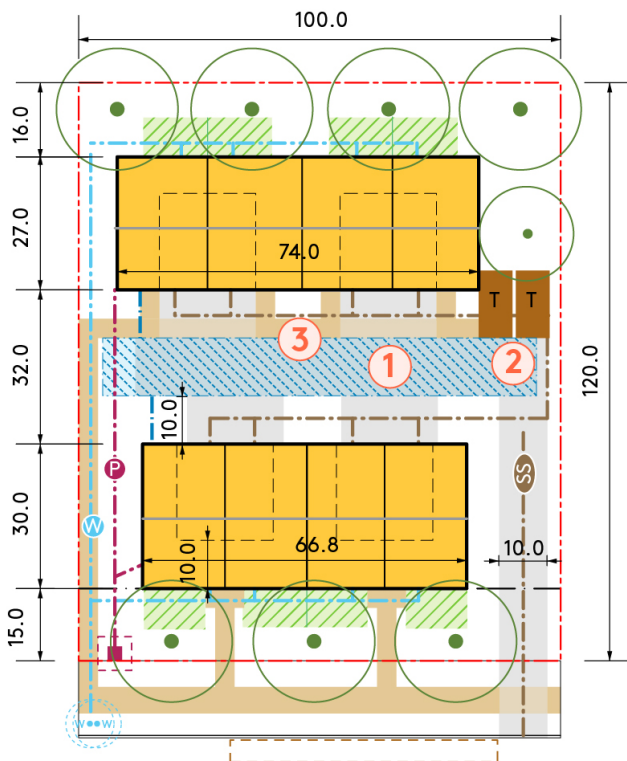
- Street-loaded
- 8 parking stalls in garages (6 min.)
- In-unit bike parking

Amenity Space

- Ground level amenity space: 900 SF
- Amenity space min: 900 SF

Tree Credits

- Tree credit shown: 3,700 (3,600 min)
- Can meet soil volume without SPS
Greatest soil depth to meet volume requirements: 2.5'

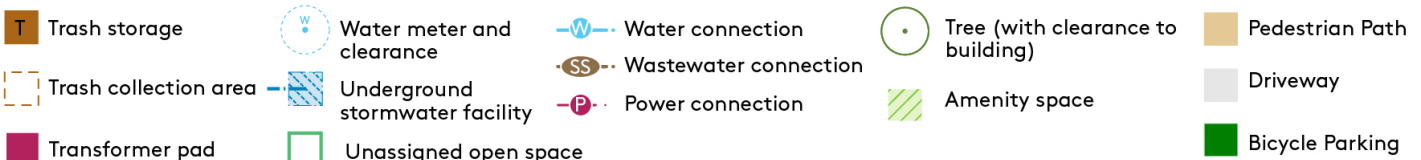
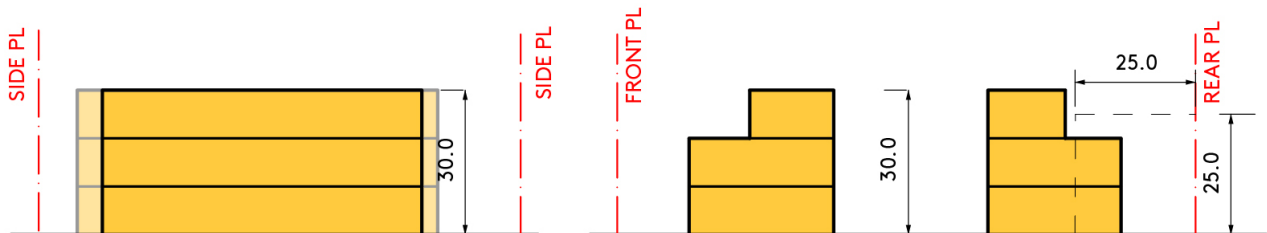


This Rowhouse with Backyard Building configuration is often called an "8-pack" in Seattle. It takes advantage of consolidating two lots that share parking access to create a more traditional (and often preferred) relationship of units to the street. Individual entrances and more windows are possible, and the buildings do not have the same "skinny" effect of the deep townhouses (slothomes).

This configuration would fit more units (allowed in both UR-2 and UR-3) by making them narrower and deeper. However, driveway and some utility requirements increase above 8 units, possibly making that less attractive.

- Standard stormwater facility clearance results in a larger parking area and more impervious surface than is desirable. Would be a better design to minimize parking area and put more amenity space in front and back yards.
- Dumpsters are required for developments with more than 6 units. This puts a burden on relatively small developments like this one, by requiring expensive equipment and an area for a large truck to enter even small lots to pick up solid waste. We suggest tying the requirement for a trash compactor to density, rather than the number of units. However, even this worse-case scenario can work.
- Public Works requires separation of driveway and walkways, making an awkward sidewalk along the driveway edge. Putting the sidewalk to the back of the site would require three access easements and take up space for private yards on the site. We recommend changing this requirement to align with local precedents that do not have this separation requirement.

Note the 3rd levels contain roof decks that keep the units within the area range of the economic feasibility study.



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#4 6-unit Houseplex (Deep Townhouses)

Building Data

- UR-3 in RPA, 6000 SF lot
- FAR: 1.2 (1.2 max)
- 7,200 GSF, 2.8 stories
- Unit size: 1,200 SF

Access & Parking

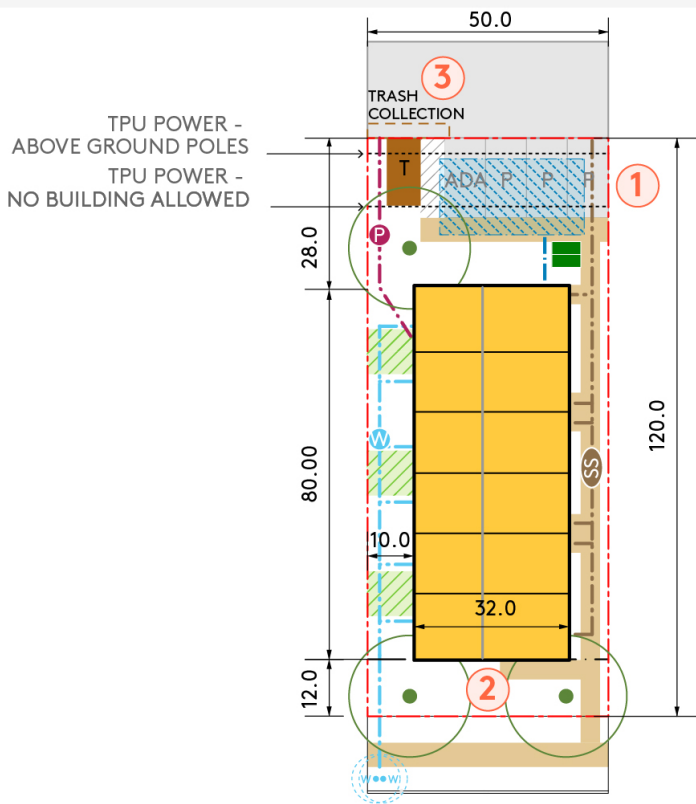
- Alley-loaded
- 4 surface parking stalls, including one accessible stall (3 min)
- 2 in-unit bike parking; 2 spaces in bike lockers

Amenity Space

- Ground level amenity space: 300 SF
- Amenity space min: 300 SF

Tree Credits

- Tree credit shown: 1,500 (1,500 min)
- Can meet soil volume 1500 SPS
- Greatest soil depth needed to meet volume requirements: 2.1'



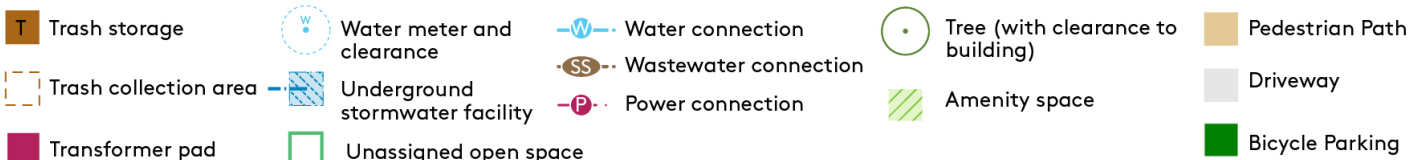
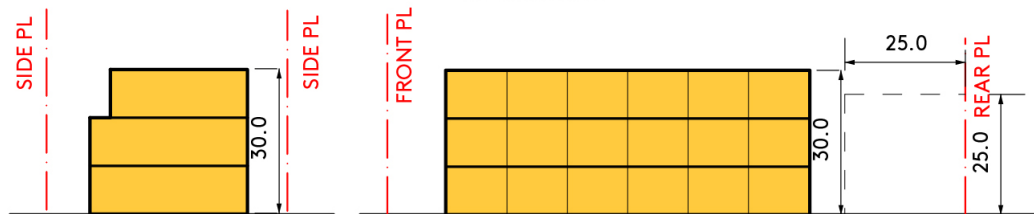
Similar to Study #2, this is a deep townhouse (slothome) configuration. Shown in UR-3, this study has a smaller backyard and a deeper building that results in 13'-4" wide units. As noted in Study #1, these units are tight but ample global precedents exist for narrow multi-story units.

- 1** In this case, four shared parking spaces are shown in the rear of the lot, allowing the ground floors to contain living spaces, and more area on the lot for pedestrian access and ground-related amenity space adjacent to the units. Street-loaded parking with a 10' driveway to the rear parking would make this type less feasible. Note only three stalls are required in the UR-3 zone, or with bonused projects in UR-1 or UR-2, and none are required in the Reduced Parking Area (RPA). Eliminating any parking on the site in these areas could create even more open space. Note that fitting 4 spaces would be difficult if there is a power pole on the site.
- 2** All units are shown oriented in the same direction. This allows each to have private amenity space and this, but the street presence is not as ideal as facing the two front units to the street. However, crossing sewer and water lines while also fitting trees does not fit in the front yard. Note also the building sets back 12' from the front property line to allow for tree planting, though 10' setbacks are allowed in UR-3, as well as for bonus projects in UR-1 and UR-2 zones.
- 3** Note that 17' width for solid waste staging (for 4-6 units) slightly overlaps accessible stall.

In UR-1 or UR-2, the building depth requirement would make the units tighter and less likely to be built, perhaps making 5-unit configurations more likely.

Note the 3rd levels contain a small roof deck that also helps the site stay within FAR limits.

CHANGES SINCE LAST STUDY: (1) Increased building depth from 70' to 75' in UR-1 and UR-2 before public draft. Allows wider units. (2) Reduced amenity requirements. Amenity space is easier to meet and could easily be exceeded.



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#5 Multiplex with 23 Units

Building Data

- UR-3 with bonus, 12,000 SF lot
- FAR: 1.6 (1.6 max)
- 19,200 GSF, 4 stories
- Unit size: 680 SF
(Excluding 650 SF per level for access and ground-floor bike room)

Access & Parking

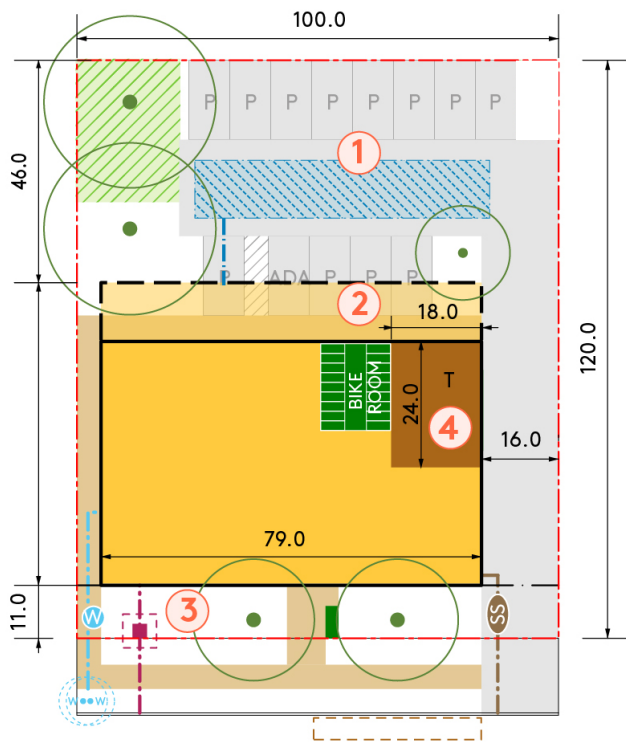
- Street-loaded
- 12 surface parking stalls, including one accessible stall (9 min)
- Bike room: 260 SF, 18 spaces

Amenity Space

- Ground level amenity space: 600 SF
- Amenity space min: 600 SF

Tree Credits

- Tree credit shown: 3,200 (3,000 min)
- Can meet soil volume without SPS
Greatest soil depth to meet volume requirements: 3'

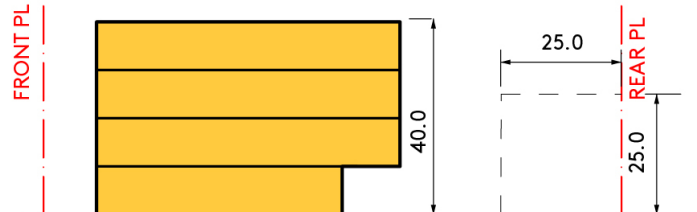
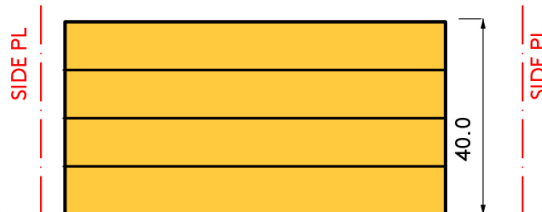


This configuration shows a small apartment building in the UR-3 zone, taking advantage of a density increase and parking decrease for affordable housing. Utility needs are higher than on other sites, requiring more maneuvering clearance for trash trucks, and the addition of a transformer. The building is assumed to contain two egress stairs and an elevator as required by building code, and units would be arranged along a double-loaded corridor.

- ① There is more parking shown than required, as no stalls are required for units using the affordability bonus. The four extra stalls could be re-purposed for amenity space.
- ② Tuck-under parking is shown to meet unit and FAR goals. This is only necessary in street-loaded conditions, and would not be necessary if eliminating or significantly reducing parking stalls in the Reduced Parking Areas (RPA).
- ③ Transformer pad clearances make this front yard setback 11', though 10' or modulation of the facade) is allowed.

CHANGES SINCE LAST STUDY: (1) Reduced amenity requirements. Amenity space is easier to meet and could easily be exceeded at grade.

- ④ To avoid on-site solid waste collection clearances that would render a 24-unit multiplex infeasible, resident managers would need to haul dumpsters and/or bins to a street collection area. To make hauling easier, the storage area has been located inside the building, which reduced the desired unit count by one unit. Close collaboration with Tacoma Solid Waste's evolving requirements should continue in order to ensure housing feasibility is maintained for this scale of development.



Trash storage	Water meter and clearance	Water connection	Tree (with clearance to building)	Pedestrian Path
Trash collection area	Underground stormwater facility	Wastewater connection	Amenity space	Driveway
Transformer pad	Unassigned open space	Power connection	Bicycle Parking	

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Standards used for updated detailed site plan testing

1. PC-recommended Code dated 6/5/24 (District Standards 13.060.020, Building Design Standards 13.060.100.F, Site Development Standards TMC 13.06.090)
2. Frontage
 - Curb/gutter + 5' planting strip + 5' sidewalk + 5.5' behind walk before start of property line
3. Pedestrian pathways
 - 4 ft wide
 - 3 ft for ADUs or when needed to retain existing building or tree
 - Sharing driveways for pedestrians not allowed, but they may cross
4. Driveway widths
 - 10 ft min up to 8 stalls
 - 16 ft min for 9-20 stalls,
 - 20 ft min for 21+ stalls
 - 20 ft access aisles, and 5' extension for backing up
5. Parking stall dimensions
 - Standard: 8.5' x 16.5'
 - Compact: 7.5 'x 15' (50%)
 - Accessible: 9'x any length with 5' access aisle (required with 4+ stalls)
6. Bicycle Parking
 - Bikes stalls per unit (1-4 units)
 - Short-term: None
 - Long-term: 1 rack / unit
 - Bike stalls per unit (5 or more units)
 - Short-term: 1 rack / 20 units
 - Long-term: 1 locker / unit (can be external or within the unit if flat and accessible access)
 - Stall sizes:
 - Short-term (48" x 7"– one rack for two bikes)
 - Long-term (24" x 72" per bike for in-unit and private garage; if it's in a separate shared location, need 24" pathways)
 - Access and enclosure:
 - Short-term: Locate within 50' of primary building entrance for individual sites
 - Long-term: In-unit, private garages, and patio or deck parking may count. If outside, needs a roof. Locate at same grade as sidewalk or reachable by ramp or accessible route. Locate within 100' of building.
 - Clearances
 - Short term: 36" min. between parallel racks, 24" between each rack and wall or curb, 48" min. between rows of bicycle racks.
 - 3 ft min parallel spacing between conventional ground-level bicycle racks (e.g. inverted-U racks) to allow access to bicycles parked adjacent to each other.

Appendix (continued)

Standards used for updated detailed site plan testing

- 5 ft min. perpendicular access aisle between rows of bicycle parking to allow users to safely move and park their bicycles.
- 2.5 ft min perpendicular spacing between a row of conventional ground-level bicycle racks (e.g. inverted U-racks) and walls or obstructions to allow the bike to be placed correctly on the rack.
- 2 ft min for user access between a wall or other obstruction and the side of the nearest parked bicycle (18" min for some rack types such as wall-mount).
- 50% min ground-level spaces for use by those unable to lift bikes to higher racks and those with bikes that may not fit in upper-level or wall hanging racks.

7. Trees

- Clearances:
 - 5' from buildings
 - 2' from pavement
 - 10' from stormwater vaults
 - 10' from light standards
 - 5' from other utilities
 - Spacing between trees: 10' for small, 16' for medium, 22' for large

8. Solid Waste

- 6 units or less
 - 17 ft frontage required along alley or street frontage without conflicting with other restriction
 - Haul route on alley for alley configurations; haul route on street for configurations without an alley
 - Onsite trash enclosure for storage of containers (14' x 7') – one common area for shared bins. Not allowed in front yards. Exception for steeply sloped sites.
- More than 6 units
 - 38' of frontage required for collection area, or truck access for on-site pickup. See below.
 - Dumpster and/or Trash Compactor required
 - Assume 24' x 18' storage area
 - Drive access and turning radius for truck required: 20' radius on inside turn.

9. Stormwater facility

- Capacity of underground stormwater facility for each scenario:
 - Scenario 1, 2, 4 – 500 sq ft
 - Scenario 3 – 1000 sq ft
 - Scenario 5 – 2000 sq ft
- 5' easement restricted area center on new pipe from building to stormwater facility
- Clearances
 - 10' from buildings
 - 5' from property lines
 - 5' from other utilities
 - 5' from tree trunk
 - Can be located under driveway/parking

10. Wastewater/sewer

- 5' easement/restricted area centered on new pipe

Appendix (continued)

Standards used for updated detailed site plan testing

- Separate connection for each unit / shared lateral/private main allowed
- Clearances: min 10' separation from water pipe and 5' from any other utility
- Assume wastewater main in alley for alley-loaded and in street for street-loaded

11. Water

- Assume water main is located in street for all scenarios
- Assume 2 meters for each scenario
 - 1 for domestic supply
 - 1 for fire/irrigation supply
- Clearances
 - Min 18" separation between water meters
 - No other amenities (trees) allowed within 5' of water meter
- Located between curb and sidewalk
- 5' Easement/restricted area center on new private pipes
- Separate connection for each unit / common trench and branch connections allowed

12. Power

- Alley-loaded configurations: assume above ground power with aerial transformer and a pole occupying the first 3 feet within the alley frontage. This configuration will not allow any building within 14 feet of the 7000V lines (running through alleys, usually 17' off ground), but bikes and trash and trees ok.
- Street-loaded configurations: assume pad mount transformer located on property with 3'x3' pad
 - Number of units before a transformer is needed: 8 units
 - Clearances
 - No vegetation allowed within 8' of transformer on any side
 - No other surface amenities allowed within 2' of transformer on any side - If parking is adjacent to transformer bollard is required with 30" from center of bollard to edge of transformer
 - Transformer pad must be 8' from any building
 - 5' Easement/restricted area from transformer to building centered on conduit
 - 5' Easement/restricted area from transformer to street/alley