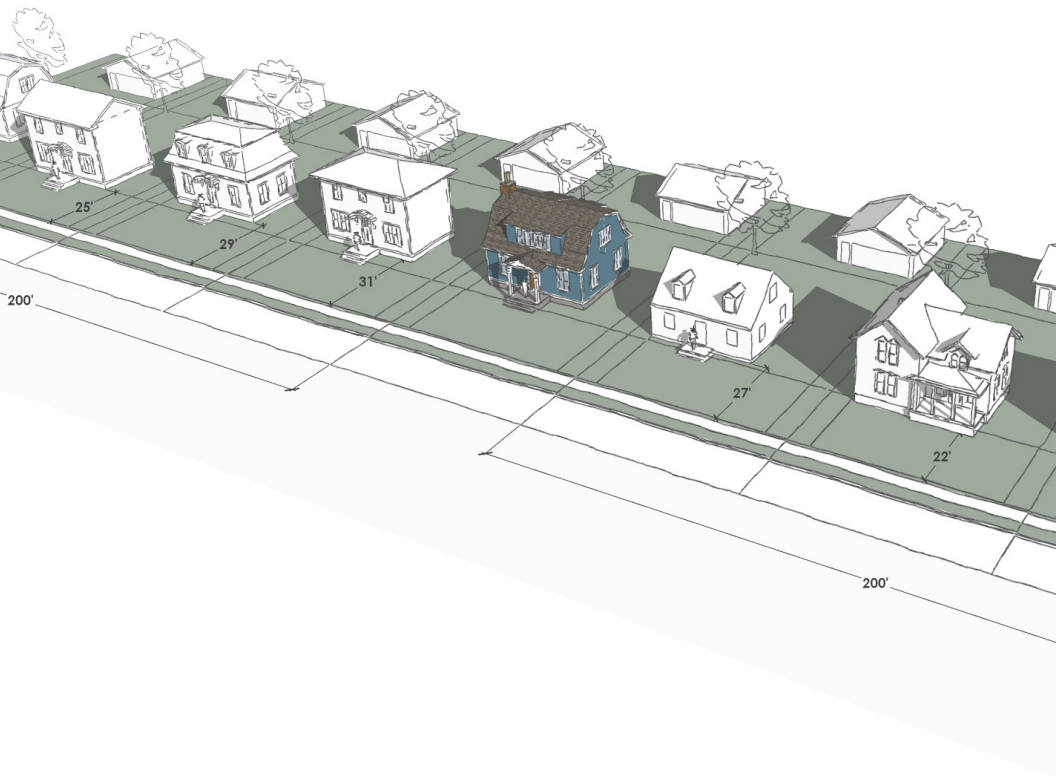


# ZONING ILLUSTRATED

A VISUAL GUIDE TO  
HOME BUILDING REGULATIONS  
FOR THE CITY OF PLYMOUTH, MICHIGAN



DECEMBER 16, 2018

## ACKNOWLEDGMENTS

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# INTRODUCTION AND CONTENTS

The goal of this document is to serve as an illustrated companion to the zoning regulations of single family homes. This guide is for those who wish to do home renovations, build a new home, or desire to understand how home design is regulated under the current ordinance.

LOT AREA	5
AVERAGE GRADE PLANE	6
MAXIMUM HEIGHT IN STORIES	8
MAXIMUM HEIGHT IN FEET	10
FRONT YARD	16
SIDE YARD	17
REAR YARD	18
FRONT PORCH EXCEPTION	19
AVERAGE FRONT YARD SETBACK	20
FLOOR AREA RATIO	22
MAXIMUM LOT COVERAGE	26
ACCESSORY STRUCTURES	28

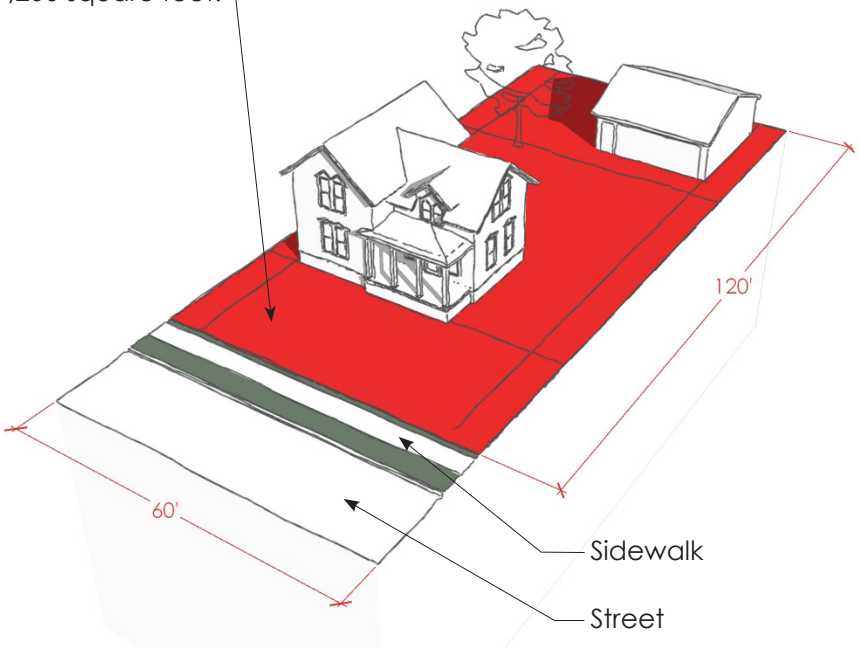
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# LOT AREA

Sec. 78-21.

Lot area refers to the total area within the property lines. Because of this, lot area does not include the area of the sidewalk, or between the sidewalk and street. This area including the sidewalk is known as the street right-of-way. The area of the lot affects other building regulations such as, Lot Coverage, and Floor Area Ratio.

Lot area, shown in red. For a lot 60' wide and 120' deep, the total area of this lot is 7,200 square feet.



Lot area varies by shape, width, and depth. If you don't possess a boundary survey of your lot, it may be necessary to contact a land surveyor to create one.

# AVERAGE GRADE PLANE

Sec. 78-21.

Grade plane means a reference plane representing the average of the existing grade or ground level. This imaginary line is used as a point to measure from when determining building height. To determine the average grade plane, follow the provided steps.

## STEP 1:

We will have to establish a common line in which to measure from. Generally the floor of the main level is a good choice.



## STEP 2:

At each corner measure vertically from the main level floor to the lowest point 6 feet away. For the corner we see on the left side of the house, the property line is 6', if the property line is less than 6 feet away, then measure to the closest point on the property line.

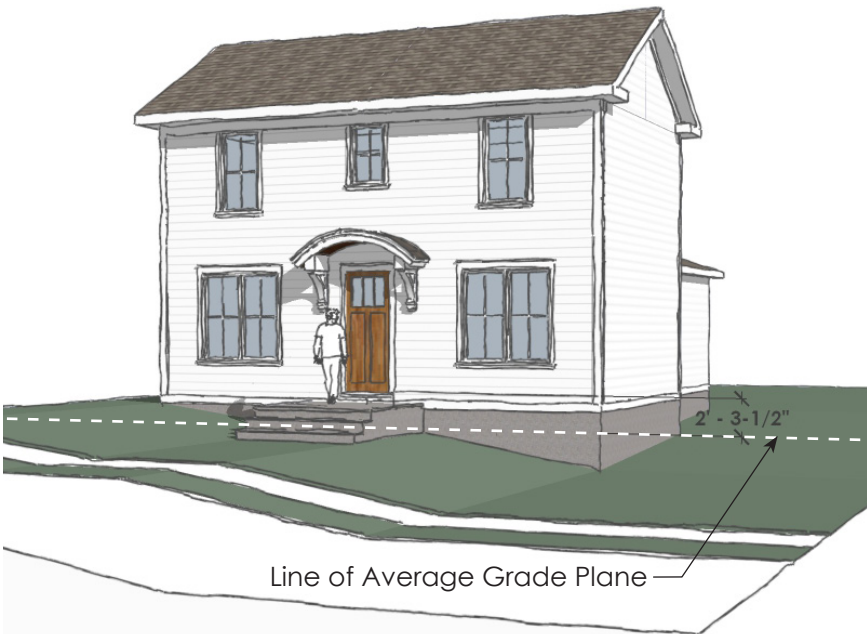
**STEP 3:**

For any measurements including inches we will convert to decimal feet. For example 4'-7" becomes 4.58'. We will take our measurements at our locations, add them up, and divide by the number of measurements:

Front Right Corner:	4.58'
Front Left Corner:	1'
Rear Right Corner:	2.58'
Rear Left Corner:	1'
<b>Total =</b>	<b>9.16'</b>

**STEP 4:**

Now divide by the number of measurements:  
 $9.16' \div 4 = 2.29'$

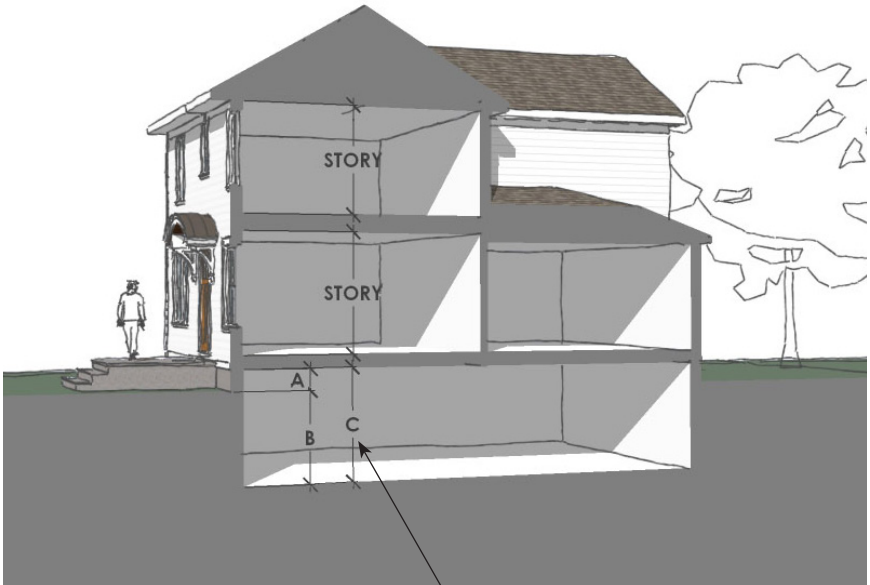


We've now established the "Average Grade Plane" is 2.29' below the main level floor line. This converts back to feet and inches as approximately 2'-3-1/2".

# MAXIMUM HEIGHT - STORIES

Sec. 78-21.

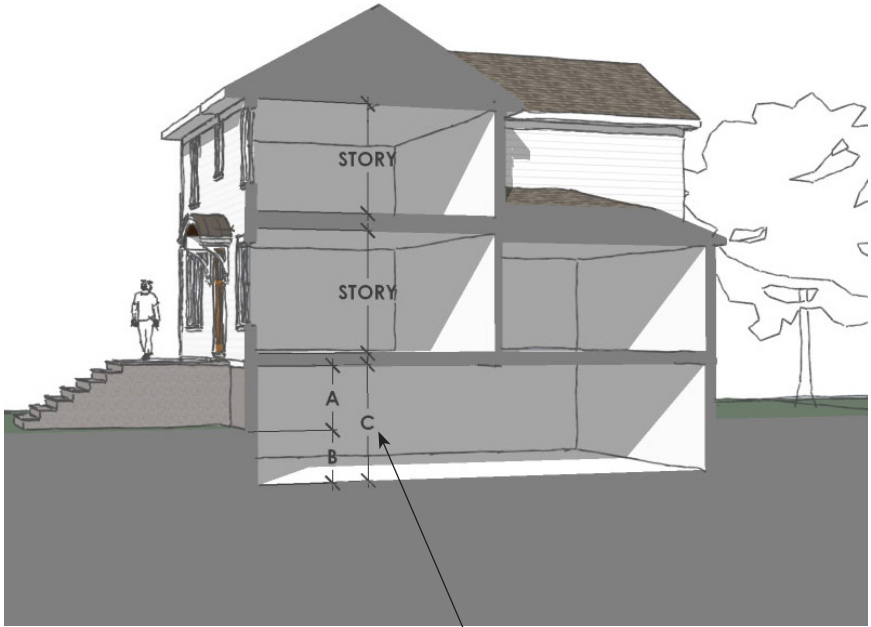
One way building height is regulated is in number of stories. A story consists of the part of a building between one floor and another, or the ceiling above. A basement is not counted as a story except as shown in the second illustration. Single family homes in Plymouth can be a maximum of 2 stories in height.



**BASEMENT**

If the measurement of "A" is less than "B" then "C" is a basement





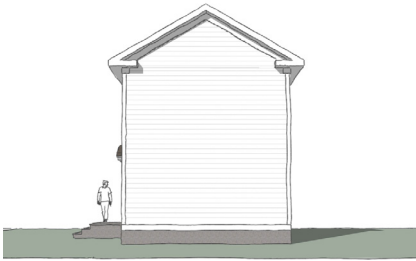
**STORY**

If the measurement of "A" is greater than "B" then "C" is a story

# MAXIMUM HEIGHT

Sec. 78-21. Sec. 78-190. Sec. 78-191.

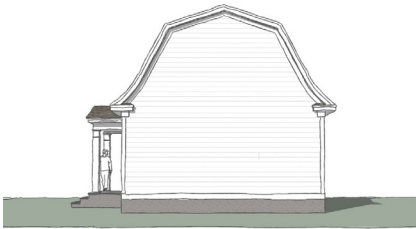
The second way building height is by measurement. The height is measured vertically from the Average Grade Plane to a specific point of the roof depending on roof type. The maximum distance this vertical measurement can be is 25'. The ordinance addresses these 5 different roof types:



**GABLE**



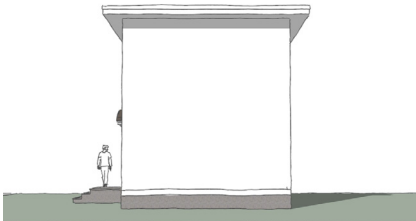
**HIP**



**GAMBREL**

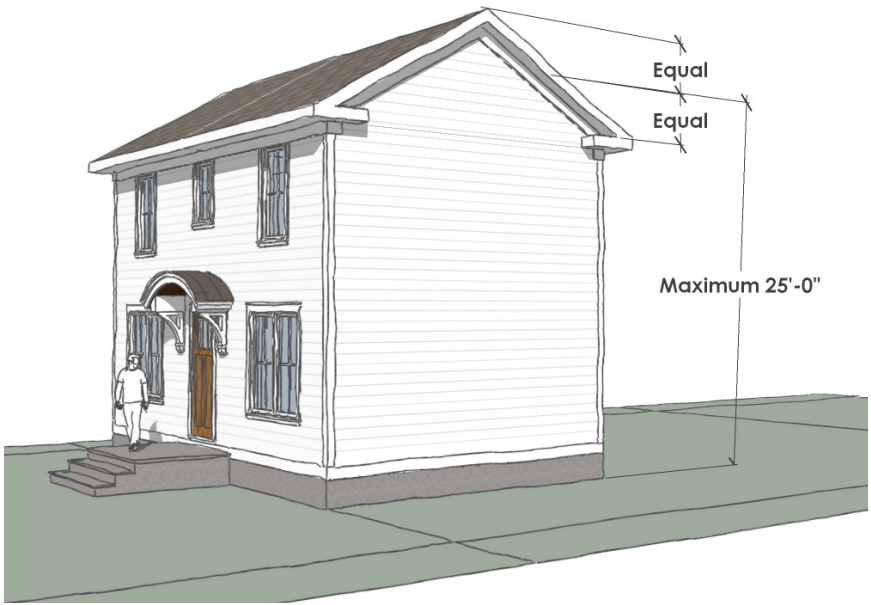


**MANSARD**



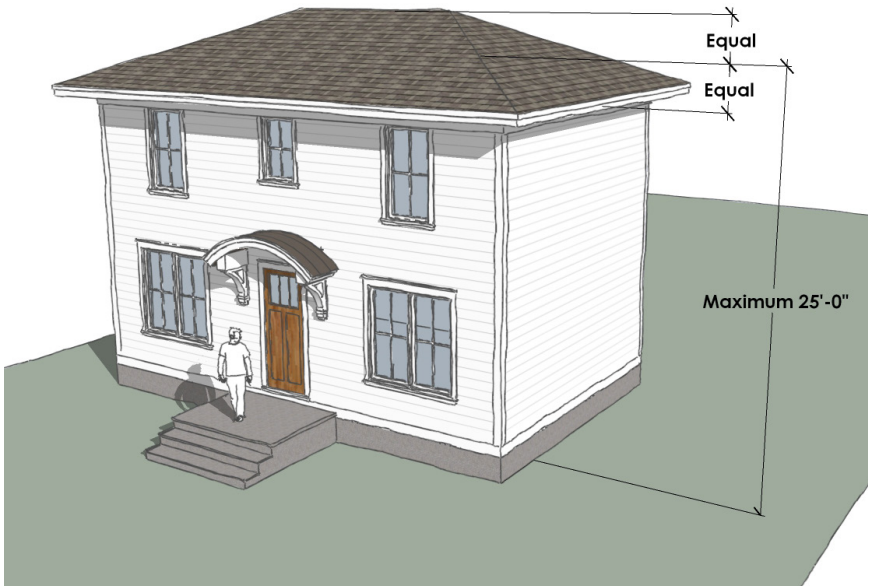
**FLAT**

# MAXIMUM HEIGHT - GABLE



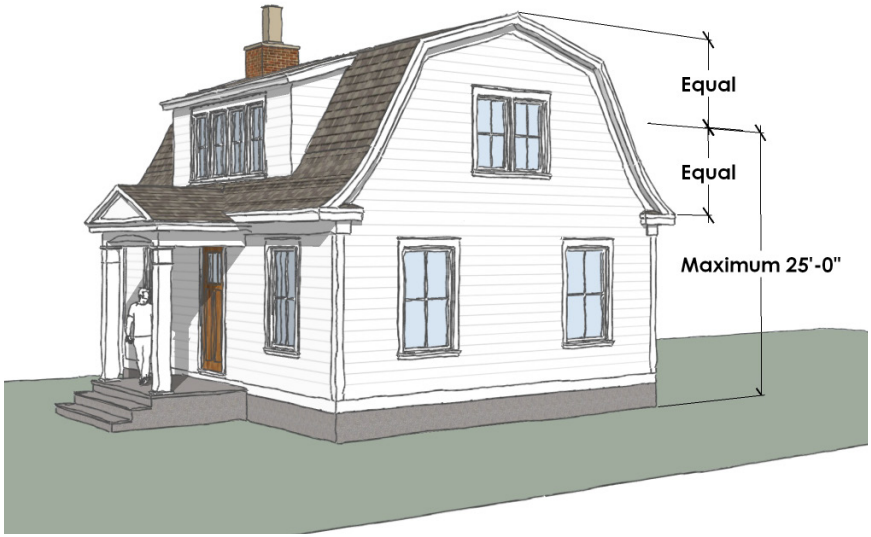
For a Gable Roof, height is measured from the Average Grade Plane to the point halfway between the eaves (overhang) and ridge (highest point).

# MAXIMUM HEIGHT - HIP



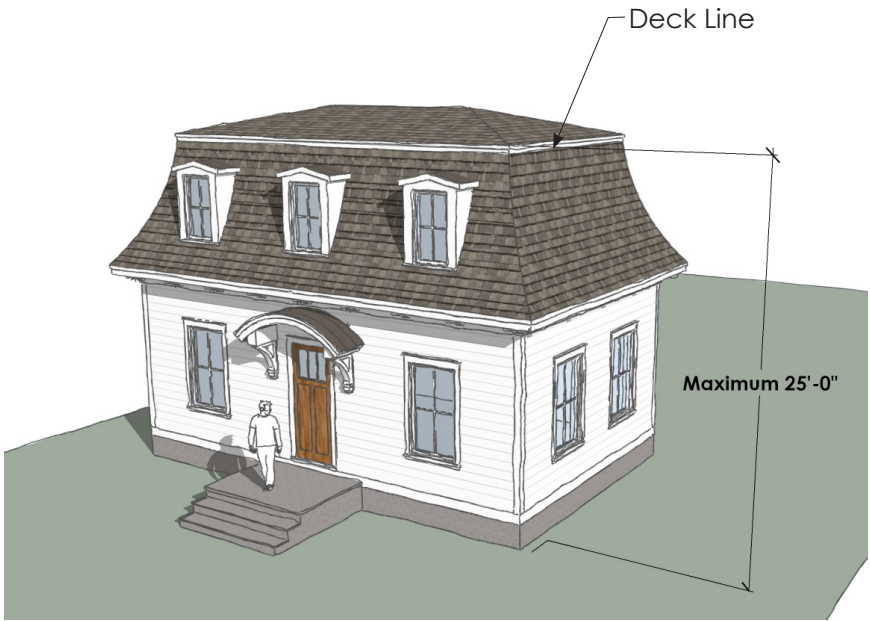
For a Hip Roof, height is measured from the Average Grade Plane to the point halfway between the eaves (overhang) and ridge (highest point).

# MAXIMUM HEIGHT - GAMBREL



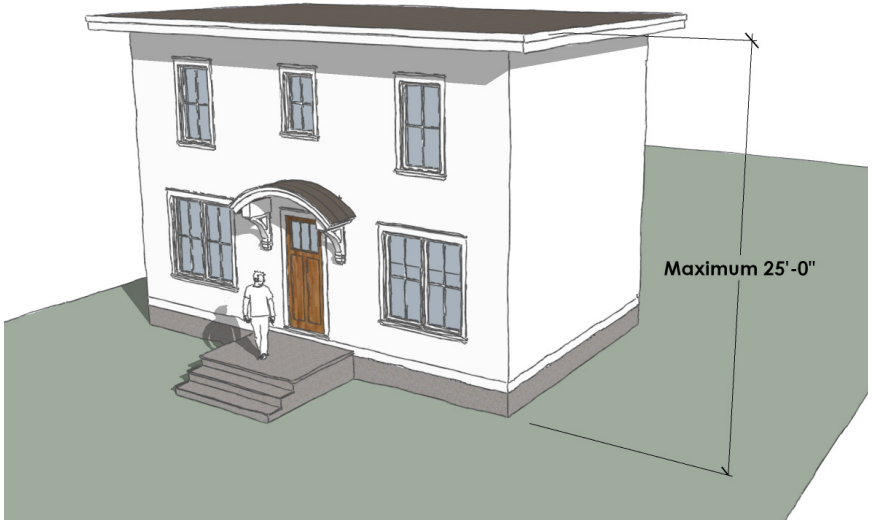
For a Gambrel Roof, height is measured from the Average Grade Plane to the point halfway between the eaves (overhang) and ridge (highest point).

# MAXIMUM HEIGHT - MANSARD



For a Mansard Roof, height is measured from the Average Grade Plane to the deck line (the location where the roof transitions from nearly vertical to nearly flat).

# MAXIMUM HEIGHT - FLAT

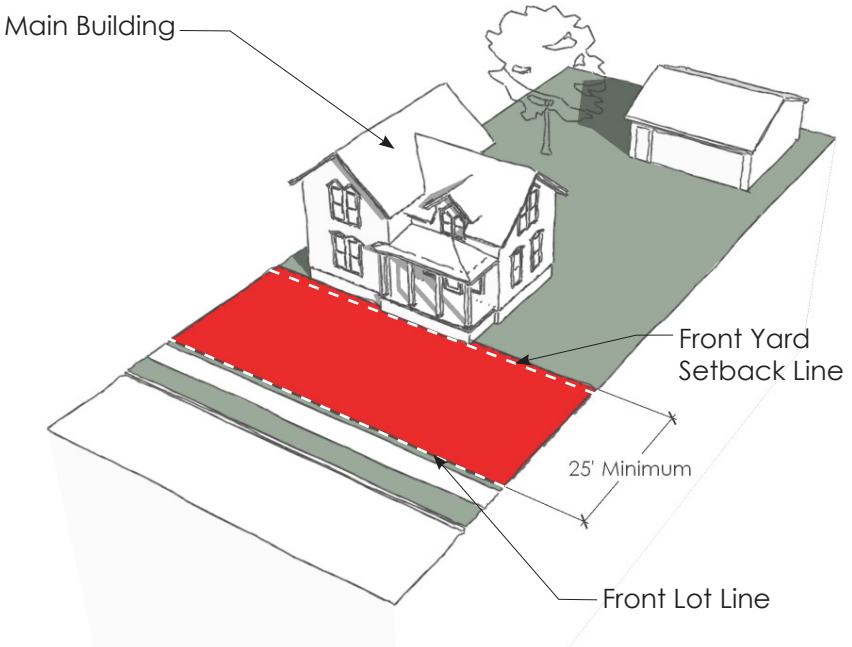


For a Flat Roof, height is measured from the Average Grade Plane, to the top of the roof.

# FRONT YARD

Sec. 78-21. Sec. 78-190.

Front yard means an open space extending the full width of the lot, and the depth of which is the minimum horizontal distance between the front lot line and the nearest point of the main building.

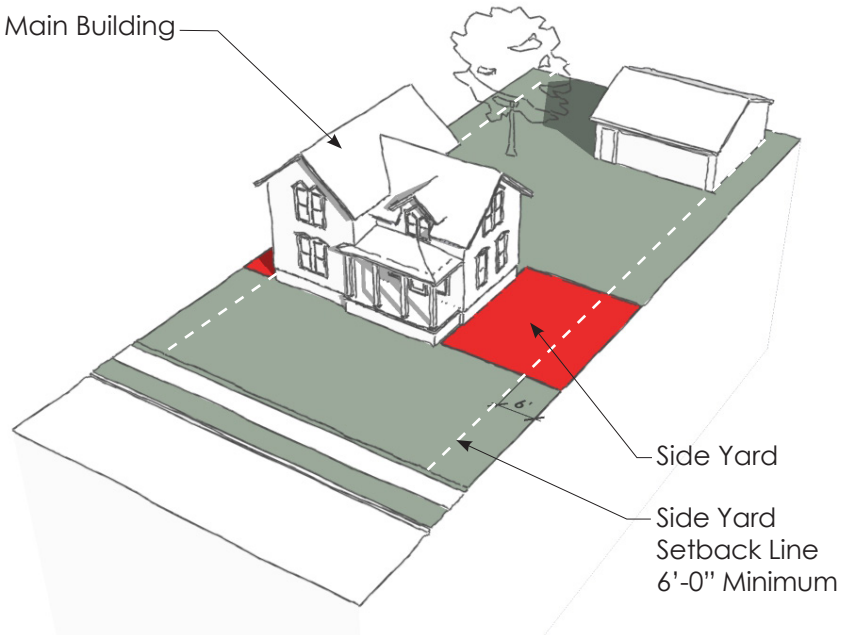




# SIDE YARD

Sec. 78-21. Sec. 78-190.

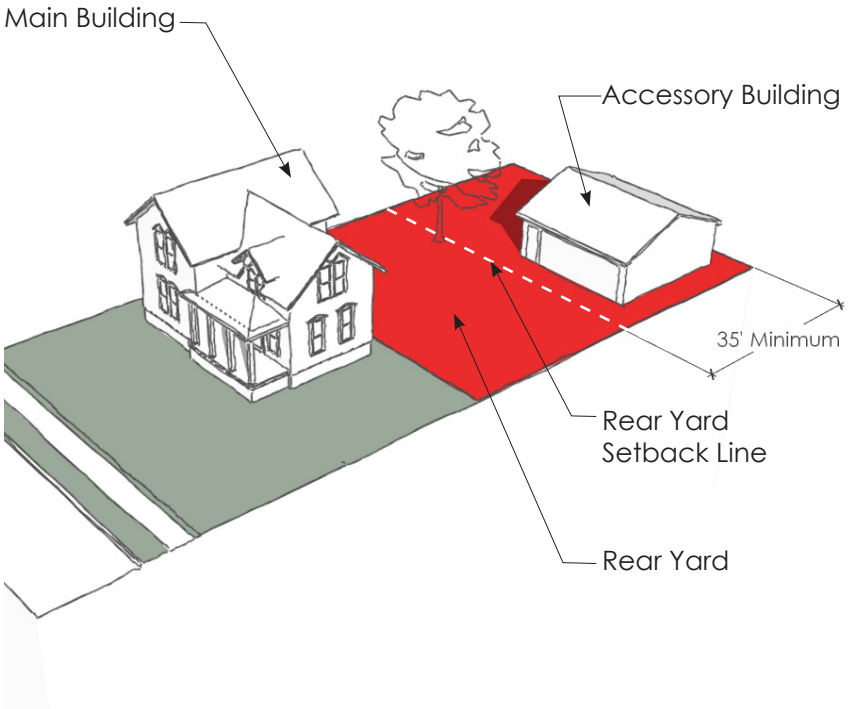
Side yard means an open space between a main building and the side lot line, extending from the front yard to the rear yard, the width of which is the horizontal distance from the nearest point on the side lot line to the nearest point of the main building.



# REAR YARD

Sec. 78-21. Sec. 78-190.

Rear yard means an open space extending the full width of the lot, the depth of which is the minimum horizontal distance between the rear lot line and the nearest point of the main building. In the case of a corner lot, the rear yard may be opposite either street frontage.



# FRONT PORCH EXCEPTION

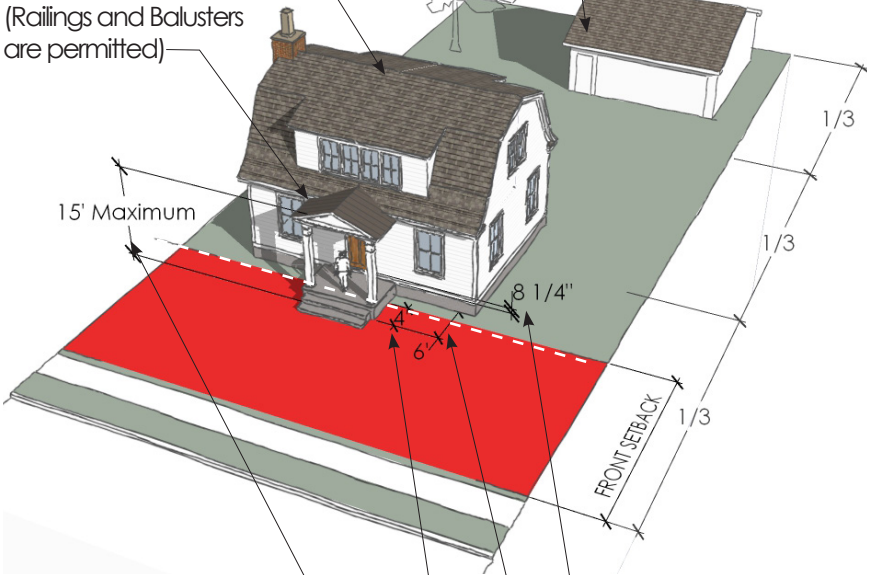
Sec. 78-43.(11)(12)

New single family dwellings are encouraged to positively contribute toward neighborhood enhancement and walkability of the city. Residential projects may be granted an exception which allows a front porch to extend into the front yard setback if the following criteria is met:

New or existing single family dwelling

Porch must be covered with a roof and unenclosed by walls. (Railings and Balusters are permitted)

Garage located in the rear 1/3rd of the lot or attached to the rear of the dwelling



Porch must be single story in height, no higher than 15' as measured per Building Height

Porch must be No more than eight and one-quarter inches from the elevation of the finished first floor

May be located in the Front Yard Setback up to 4' for new dwellings or 6' for existing dwellings. Front Yard Setback Line per sections 78-190 and 78-191

The porch must be a minimum of six feet in depth

# AVERAGE FRONT SETBACK

Sec. 78-191, Sec. 78-43.

The front setback line is determined by calculating the average measured setback of the homes within 200'. The minimum setback distance must be at least 90% of the calculated distance. If we are trying to determine the closest the blue home (in the image below) could be placed to the street we would do the following:



## STEP 1:

Measure and total all of the setbacks of the neighboring homes on the same side of the street within 200' of the blue home's property. The front property line is typically 1' in (towards the house) from the sidewalk. If there is a covered porch, measure to the porch. If the porch is uncovered measure to the face of the house closest to the sidewalk. (Homes listed from left to right).

House 1	31'
House 2	25'
House 3	29'
House 4	31'
House 5	27'
House 6	22'
House 7	25'
House 8	28'
<b>Total</b>	<b>218'</b>

**STEP 2:**

Divide by the number of homes measured

$$218 \div 8(\text{homes}) = 27.25'$$

**STEP 3:**

The setback distance must be at least 90% of the average (the answer from step 2).

$$27.25' \times 0.90 = 24.525'$$

The closest the blue home can be is 24.525'

Note:

If step 2 resulted in a number less than 15', the minimum setback would be 15'

If a home differs by more than 25', the out-lier home may be excluded from the calculation per the building official's discretion.

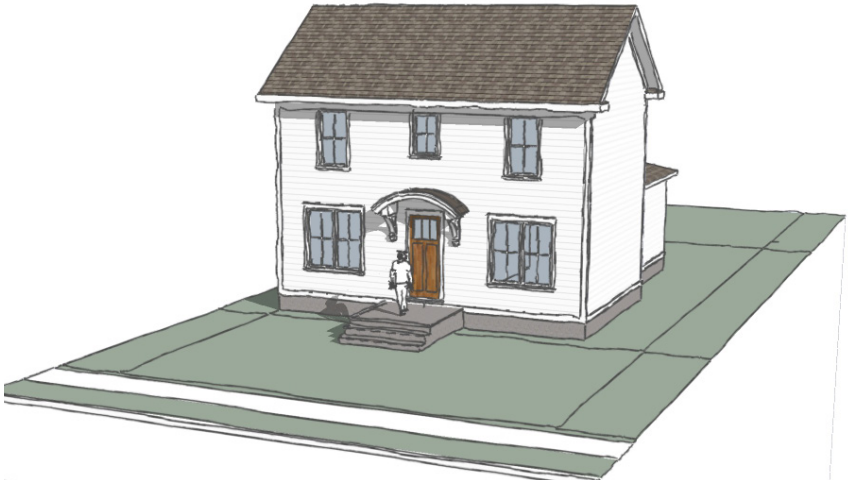
**FRONT PORCH EXCEPTION:** Sec. 78-43(11)(12).

If the home is eligible for this exception, measurements taken are measured from the property line to the front face of neighboring buildings (instead of to the porch) This Changes the calculation in our example. Home 1's measurement would be 37' instead of 31. Home 6's would have been 23'. Replacing those figures, our new setback line becomes 25.31'. Because the exception allows the porch to protrude into the front yard setback 4' (6' for existing homes), the porch can be set at 21.31'

# FLOOR AREA RATIO

Sec. 78-21. Sec. 78-190.

The purpose of this ratio is to control the overall size of buildings based on the size of their lot. Plymouth allows a house to have a ratio of 0.4 which means the sum of a house's footprint and upper level cannot be more than 40% of the area of the lot it sits on.

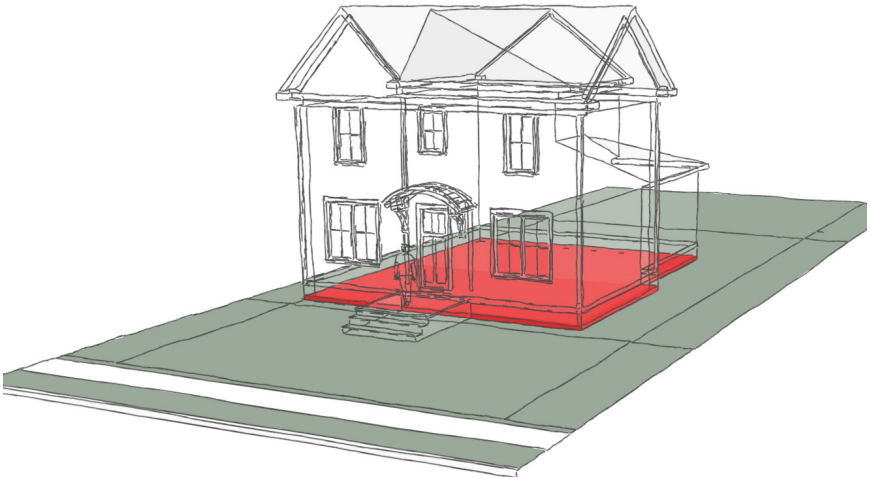


## CALCULATION

The following steps will use the house pictured above as an example. This home is approximately 2,100sqft in size with 3 bedrooms, 2-1/2 bathrooms, a great room, kitchen, breakfast area, living room, and formal dining room.

**STEP 1:**

Measure or calculate the area in square feet for the main level of the house, including attached garages and enclosed porches. In this example (the area shown in red) we have 1,180sqft.



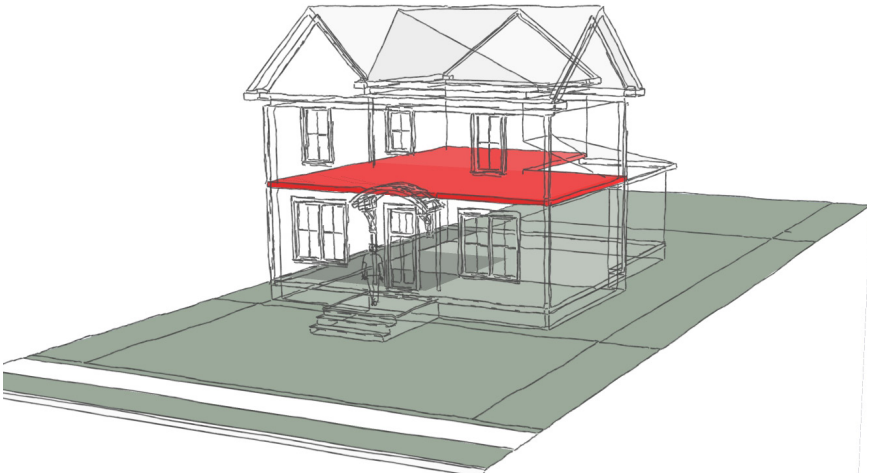
Other areas to include in Step 1 are:

- Car Ports/Porte Cochere
- Accessory buildings other than detached garages
- Architectural Projections with floor area

## FLOOR AREA RATIO - CONTINUED

### STEP 2:

Measure or calculate the area in square feet that the upper level of the house, leave out any unfinished attics or spots where the ceiling is lower than 5' high. In this example, (the area shown in red) we have 994 sqft.



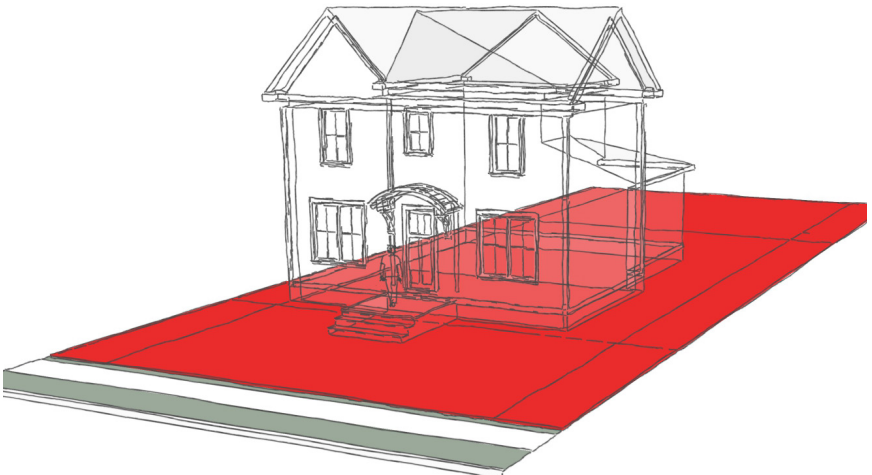
### STEP 3:

Add the total from the first two steps together. In this example we get 2,174 sqft.



**STEP 4:**

Determine the area of the lot. In this example our lot is 50' by 120' making our lot 6,000sqft. in size.



**STEP 5:**

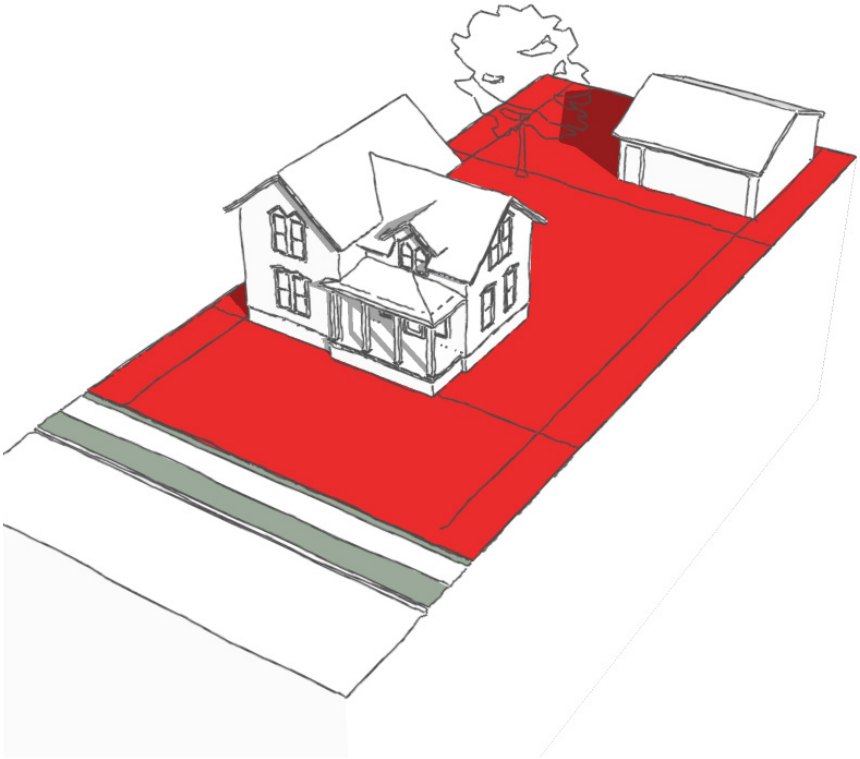
2,174sqft (our total in step 3) divided by 6,000sqft (our lot size) gives us a ratio of 0.32633.

Since a ratio of 0.4 is allowed, our house meets the Floor Area Ratio criteria.

# MAXIMUM LOT COVERAGE

Sec. 78-21. Sec. 78-190.

Lot coverage means the part or percent of the lot occupied by buildings including accessory buildings and including but not limited to decks, terraces, pools, outdoor enclosures and similar structures. The maximum allowed coverage is 35%.



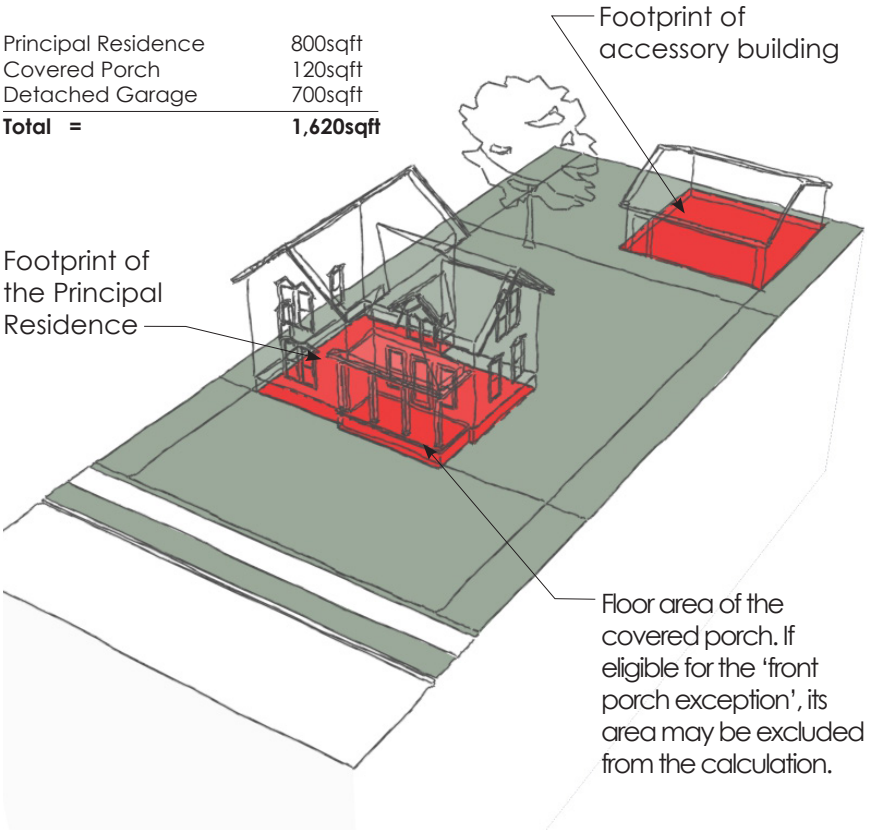
## STEP 1:

To calculate lot coverage, determine the area of your lot. In this example our lot is 50' by 120' making our lot 6,000sqft. in size.

**STEP 2:**

Add up the footprint of the principal residence, attached garages covered porches, decks above 12" high, and footprints of accessory buildings. For this example we will add the following:

Principal Residence	800sqft
Covered Porch	120sqft
Detached Garage	700sqft
<b>Total =</b>	<b>1,620sqft</b>



**STEP 3:**

Divide the total area from step 2 by the total lot area.

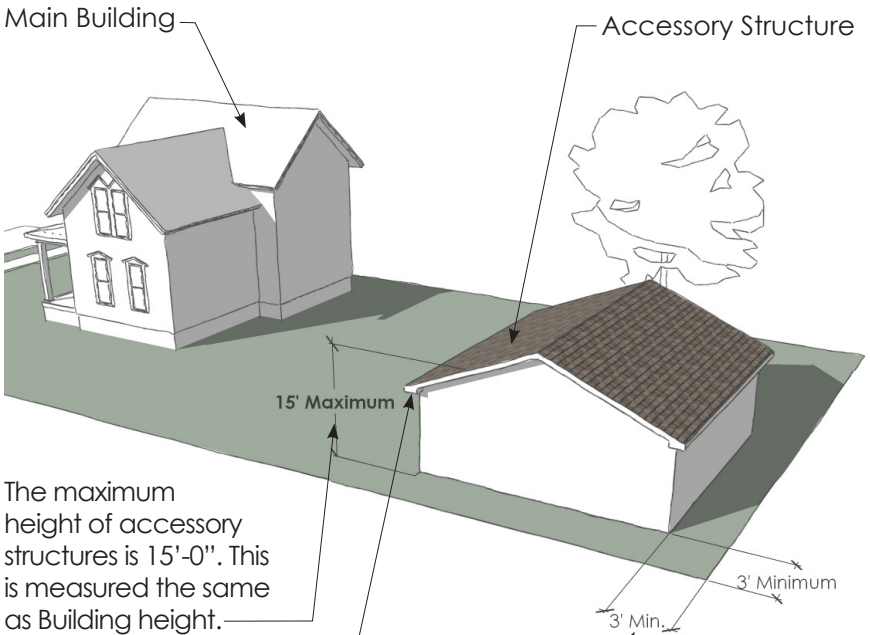
$$1,620\text{sqft} \div 6,000\text{sqft} = 0.27$$
$$0.27 \times 100 = \mathbf{27\%}$$

The lot coverage for residence in this example is 27%, less than the allowed 35%, complying with the regulation.

# ACCESSORY STRUCTURES

Sec. 78-21. Sec. 78-260.

Accessory structures are those that have a use which is clearly incidental to the primary residence, and shares the same lot as the primary residence. A detached garage is an accessory structure. If an accessory structure were attached to the main building, it must conform to all regulations applicable to the main building.



The maximum height of accessory structures is 15'-0". This is measured the same as Building height.

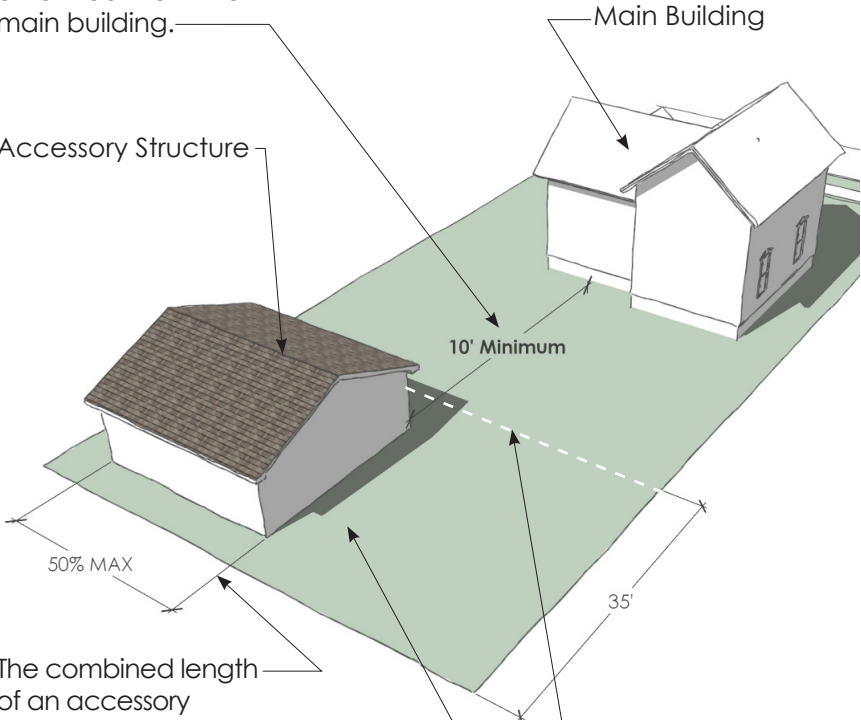
The minimum eave height shall not be less than 7'-0" from the average grade at the structure

No detached accessory building in residential districts shall be located closer than three feet to any side or rear lot line.

Detached accessory structures must be located a minimum of ten feet from the main building.

Accessory Structure

Main Building



10' Minimum

50% MAX

35'

The combined length of an accessory building's walls that parallel the rear lot line shall be no more than 50% of the total length of the rear lot line. If 50% of the lot line equals a length less than 30'-0", then the length allowed may be up to 30'-0". In no instance may the length be greater than 50'-0".

Rear Yard Setback Line

All accessory buildings, structures and uses combined shall cover no more than 35 percent of the area created by the required rear yard setback.

# NOTES

# NOTES

This guide was created as a collaboration between Greta Bolhuis and Joshua Dee as part of Lawrence Technological University's Activist Architecture & Design Studio led by Professor Edward Orłowski. The studio is focused upon the role of the designer, not just as an individual who solves problems, but as someone who identifies problems. Special focus is placed on the social impact of design interventions, as well as on principles of sustainability and community engagement. For more information about the studio, go to: <https://activistarchltu.wordpress.com/>