Site Development Information

Worksheet for single family residential development

Project description: Addition to existing SFR, New detached Garage & Cabana Address: 6059 77TH AVE SE

Owner Name: PEYREE SCOTT W & MICHELLE N Phone No. 425.828.3081 Date 06.23.17

Signature & phone number of Individual who Completed this Worksheet _____
(*I hereby state that the information provided by me is true and correct to the best of my knowledge)*

Will any large trees be removed as a result of this development activity? ☑ Yes ☐ No
Large tree—conifers ≥ 6' tall, deciduous with diameter > 6".

Do you have an Accessory Dwelling Unit? New ADU ☐ Existing ADU ☐ None ☑

This is intended as a worksheet and is not a substitute for the Mercer Island Development Regulations. Please consult the Mercer Island City Code.
City of Mercer Island — Development Services Group 9611 S.E. 36th Street, Mercer Island, Washington 98040 — (206) 275-7605

DEVELOPMENT INFORMATION

LOT SLOPE—According to the Mercer Island City Code, slope is a measurement of the average incline of the lot or other piece of land calculated by subtracting the lowest elevation of the property from the highest elevation, and dividing the resulting number by the shortest horizontal distance between these two points. The resulting product is multiplied by 100.

LOT COVERAGE—On Mercer Island, the overall degree of lot slope governs total lot coverage. When calculating maximum allowable lot coverage, include **all impervious surfaces**, such as roof areas of primary and accessory buildings, impervious decks, patios, sidewalks, driveways and access easements. Refer to page 3 for more information about Pavers and Other Impervious Surfaces and Exemptions.

*The applicant shall note that impervious surface exemptions to lot coverage do not apply to stormwater runoff calculations or to critical areas.

The table below offers basic guidelines on lot slope and allowable lot coverage:

Lot Slope	Allowed Lot Coverage
Less than 15%	No more than 40%
15% - less than 30%	No more than 35%
30% - 50%	No more than 30%
Greater than 50%	No more than 20%

A steep slope is any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.

Please refer to page 3 for materials that are exempt from lot coverage calculations per MICC 19.02.020(D)(2).

Pavers and gravel surfaces for vehicular access are ALWAYS considered 100% impervious.

LOT INFORMATION

LOT SLOPE

Highest Elevation Point of Lot	73.0	feet
Lowest Elevation Point of Lot	18.1	feet
Elevation Difference	54.9	feet
Horizontal Distance Between High and Low Points	226.1	feet
Lot Slope*	24.9	%

**Lot slope is the elevation difference divided by horizontal distance multiplied by 100*

LOT COVERAGE

Allowed Lot Coverage	35	% of Lot
Gross Lot Area	21,200	Sq. Ft.
Main Structure Roof Area	4,443	Sq. Ft.
Accessory Building Roof Area	0	Sq. Ft.
Impervious Deck, Patio, Walkway Area	2,009	Sq. Ft.
Vehicular Use (Driveway, Access Easements, Parking)	1,834	Sq. Ft.
Total Existing Impervious Surface	8,286	Sq. Ft.
(Total Area Removed)	(3,880)	Sq. Ft.
Total New Impervious Surface Area	2,778	Sq. Ft.
Total Project Impervious Surface Area (Existing plus new)	7,184	Sq. Ft.
Proposed Lot Coverage	33.8	% of Lot

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Lot Coverage equals total impervious surface area divided by the gross lot area multiplied by 100

BUILDING AREA—All building areas must be identified and labeled on the site plan. Please distinguish all new construction from existing areas on both your drawing and in the calculations you complete to the right.

Will you be excluding a portion of the basement floor area?

☑ Yes ☐ No

If yes, you must provide basement floor area calculations, with your building permit application, that show how you determined what portion of the basement will be excluded. Refer to page 4.

BUILDING AREA	Existing Area	Removed Area	New/Addition Area	Total
Upper Floor	2,383 Sq. Ft.	287 Sq. Ft.	1,063 Sq. Ft.	3,159 Sq. Ft.
Main Floor	2,600 Sq. Ft.	234 Sq. Ft.	912 Sq. Ft.	3,278 Sq. Ft.
Gross Basement Area	2,954 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.	2,954 Sq. Ft.
Garage/Carport	962 Sq. Ft.	883 Sq. Ft.	429 Sq. Ft.	508 Sq. Ft.
Total Floor Area	8,899 Sq. Ft.	1,404 Sq. Ft.	2,404 Sq. Ft.	9,899 Sq. Ft.
Accessory Buildings	0 Sq. Ft.	0 Sq. Ft.	434 Sq. Ft.	434 Sq. Ft.
Basement Area Excluded	(1,51) Sq. Ft.	(0) Sq. Ft.	(0) Sq. Ft.	(1,51) Sq. Ft.
TOTAL Building Area	7,389 Sq. Ft.	1,404 Sq. Ft.	2,838 Sq. Ft.	8,823 Sq. Ft.

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GROSS FLOOR AREA—Gross Floor Area (GFA) is the total square footage of floor area bounded by the exterior faces of a building.

The gross floor area of a single-family dwelling includes:

a. The main building, including but not limited to attached accessory buildings.
b. All garages and covered parking areas, and detached accessory buildings with a gross floor area over 120 square feet.
c. That portion of a basement which projects above existing grade as defined and calculated in Appendix B of this development code.

Exterior decks and below existing grade areas are excluded. The amount of living space, garages and other accessory buildings on a single family lot is limited to 45% of the net lot area. Please refer to Pages 4 and 5 for details.

GROSS FLOOR AREA	
Net Lot Area	21,200 Sq. Ft.
Net Lot Area Gross = Lot area minus ingress/egress easement	
Net Lot Area x 45% equals:	9,540
Allowed Gross Floor Area	9,540 Sq. Ft.
Proposed Gross Floor Area	8,823 Sq. Ft.
Proposed % of Lot Area	41.6 %

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BUILDING HEIGHT – All building height measurements must be taken from existing grade. Existing grade refers to ground surface as it exists at the proposed building perimeter before grading or other alterations take place.

The Average Building Elevation (ABE) is a calculated reference elevation from which the allowable building height is measured. It is a weighted-average of the mid-point elevations of the building's wall segments and is established by the following formula:

$$\frac{\text{(Mid-point elevation of individual wall segment) x (Length of wall segment)}}{\text{(Total length of wall segments)}}$$

Single family new construction and additions are limited to a maximum height of 30 ft. above the ABE. The height is measured to the top of the structure. On the downhill side of a sloping lot, the building may extend to a height of 35 feet measured from existing grade to the top of the exterior wall facade supporting the roof framing, rafters, trusses, etc.; provided, the roof ridge does not exceed 30 feet in height above the average building elevation.

A topographic survey is required at permit application when the proposed building height is within 2 ft. of the allowable building height. The survey must include a statement that attests the average contour elevation within the vicinity of the building footprint to be accurate within 6 inches vertically and horizontally from actual elevations.

BUILDING HEIGHT

Average Building Elevation (ABE) calculations located on sheet #:	A1.1
Allowable Building Height (ABE + 30 ft.):	82.56'
Proposed Building Height (ft.):	82.5'
Benchmark elevation (ft.)* :	76.49'
Describe Benchmark location (must be undisturbed throughout project):	TBM-PP
Sloping lot (Downhill side) – maximum height of top exterior wall façade above lowest existing grade (35-ft. max.):	35'
ABE and allowable building height shown on elevations-plan sheet #:	A3.1-A3.3
Topo-survey accuracy attested on plan sheet #:	A0.2

(Note- survey must attest to accuracy when proposed building height is within 2 ft. of the allowable building height)

Please see page 6 for more information about calculating Average Building Elevation (ABE):

**The bench mark elevation is a fixed elevation point on or off site that will not be disturbed during development activity and is used to verify final building height.*

IMPERVIOUS SURFACES INCLUDING PAVERS, AND OTHER PARTIAL EXEMPTIONS

The Mercer Island Unified Development Code (Section 19.02.020) contains maximum impervious surface limits for lots. The information below describes surfaces that are impervious or pervious. Refer also to the excerpts from the Code with respect to impervious surfaces including applicable definitions and impervious surface exemptions (see below).

IMPERVIOUS SURFACES INCLUDE WITHOUT LIMITATION THE FOLLOWING:

1. Buildings:	The footprint of the building and structures including all eaves
2. Vehicular Use:	Driveways, streets, parking areas and other areas, whether constructed of gravel, pavers, pavement, concrete or other material, that can reasonably allow vehicular travel
3. Sidewalks:	Paved pedestrian walkways, sidewalks and bike paths
4. Recreation Facilities:	Decks, patios, porches, tennis courts, sport courts, pools, hot tubs, and other similar recreational facilities
5. Miscellaneous:	Any other structure or hard surface which either prevents or retards the entry of water into the soil mantle as under natural conditions prior to development, or causes water to run off the surface in greater quantities or at an increased rate of flow from present flow rate under natural conditions prior to development

EXEMPTIONS

For purposes of lot coverage only, the following are exempted from being counted toward total impervious surface lot coverage for an individual building lot. These exemptions do not apply to stormwater runoff calculations for sizing conveyance, detention systems or to critical areas.

1. Decks/Platforms:	Decks and platforms constructed with gaps measuring 1/8 inch or greater between the boards, which provide free drainage between boards as determined by the Code Official shall be exempt from the calculation of maximum impervious surface limits so long as the surface below the deck or platform is not impervious.
2. Pavers*:	Pavers installed with a slope of five percent (5%) or less and covering no more than ten percent (10%) of the total lot area will be calculated as only seventy-five percent (75%) impervious. Provided, however, that all pavers placed in driveways, private streets, access easements, parking areas and critical areas shall be considered 100% impervious. "Pavers" are defined as pervious pavers, per MICC 19.16.010 (P) and Washington State Stormwater Management Manual (Updated version available at http://www.ecy.wa.gov/programs/wq/stormwater/manual.html).
3. Patios/Terraces:	Uncovered patios/terraces constructed of pavers shall be exempt from the maximum impervious surface limits.
4. Pedestrian oriented walkways:	Uncovered pedestrian walkways constructed with gravel or pavers not to exceed 60 inches in width shall be exempt from the maximum impervious surface limits.
5. Rockeries/Retaining Walls:	Rockeries and retaining walls shall be exempt from the maximum impervious surface limits

** Pavers: A paver or pavement that allows rain and/or surface water runoff to pass through it and reduce runoff from a site and surrounding areas. Pavers include porous pavement, porous pavers, and permeable interlocking concrete pavement as described in the Washington State Department of Ecology Stormwater Management Manual, as now exists or hereinafter amended.*

IMPERVIOUS VS. PERVIOUS

Impervious	Pervious
Decks and platforms constructed with no gaps, gaps less than 1/8 inch between boards, or when the surface below the deck or platform is considered impervious.	Decks and platforms constructed with gaps 1/8 inch or greater between boards to provide free drainage provided that the surface below the deck or platform is not impervious.
Pavers placed in driveways, private streets, access easements, parking areas and critical areas are considered 100% impervious.	*Pavers used for uncovered patios or terraces are exempt from the maximum impervious surface limits. (See definition of "pavers" in previous section.)
Uncovered pedestrian walkways constructed with gravel or pavers exceeding 60 inches in width or in critical areas.	Uncovered pedestrian walkways constructed with gravel or pavers not exceeding 60 inches in width.
Access easements, driveways and parking areas	Rockeries and retaining walls.

Note: the impervious surface exemptions contained in MICC 19.02.020(D)(2) apply only to impervious surface lot coverage and do not apply to stormwater runoff calculations (conveyance and detention). NOTE: These exceptions do not apply in critical areas.

APPENDIX B — BASEMENT FLOOR AREA CALCULATION

The Mercer Island Development Code allows for the portion of the basement floor area which is below grade to be excluded from the Gross Floor Area. That portion of the basement which will be excluded is calculated as shown:

Portion of Excluded Basement Floor Area = Total Basement Area x

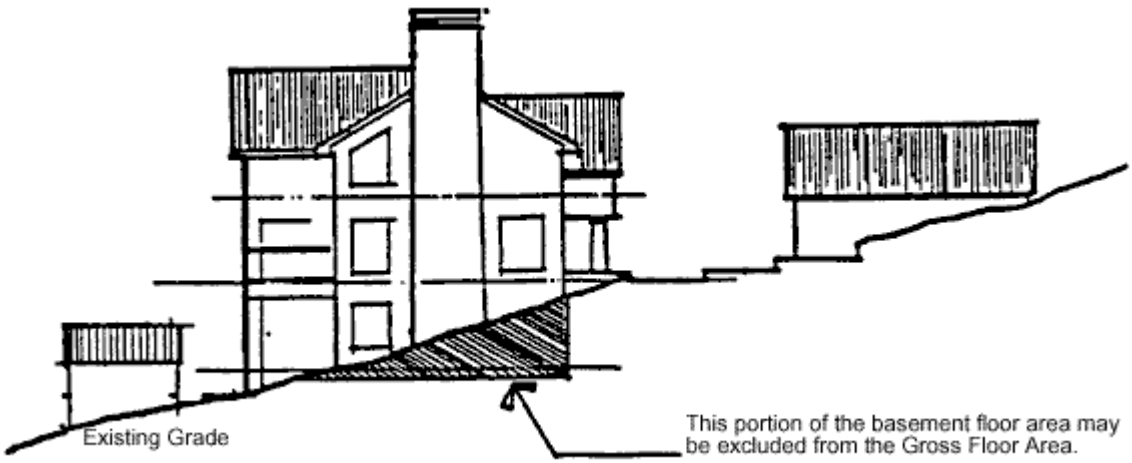
$$\frac{\Sigma\ (\text{Wall Segment Coverage} \times \text{Wall Segment Length})}{\text{Total of all Wall Segment lengths}}$$

Where the terms are defined as follows:

Total Basement Area: The total amount of all basement floor area.

Wall Segment Coverage: The portion of an exterior wall below existing grade. It is expressed as a percentage. Refer to example below.

Wall Segment Length: The horizontal length of each exterior wall in feet.



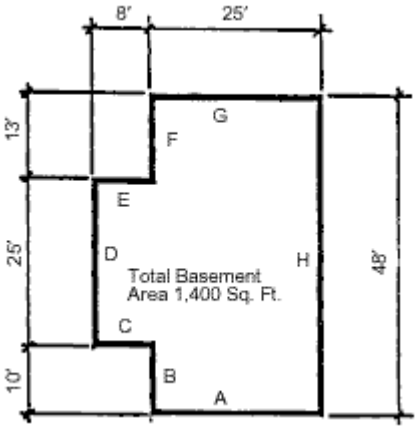
EXAMPLE OF BASEMENT FLOOR AREA CALCULATION

This example illustrates how a portion of the basement floor area may be excluded from the Gross Floor Area. In order to complete this example, the following information is needed:

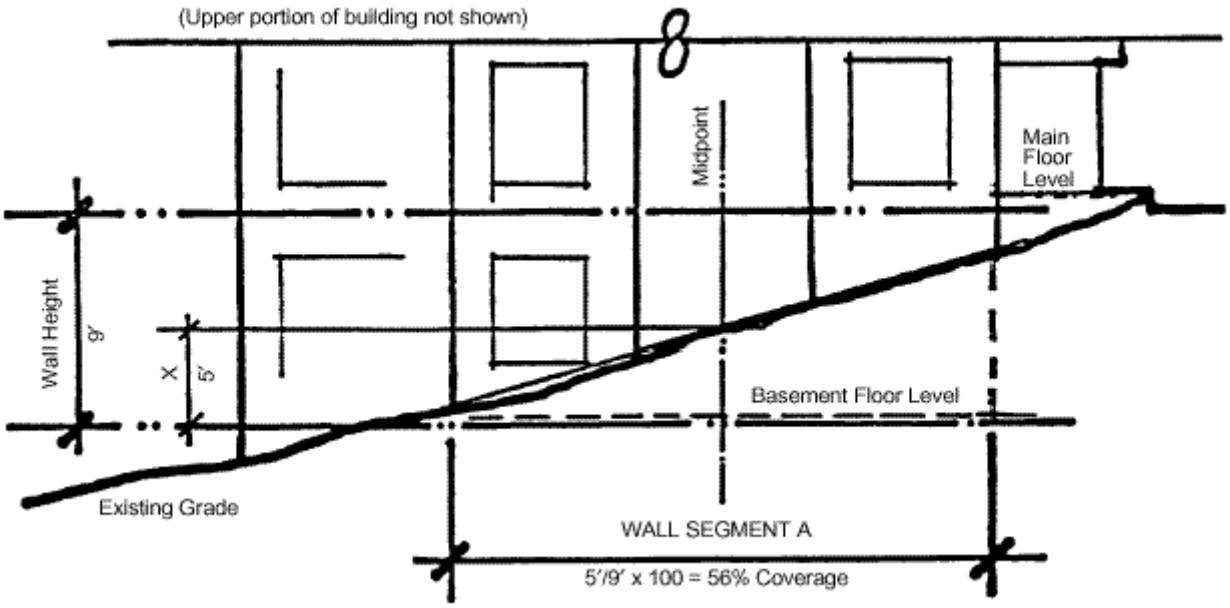
A. A topographic map of the existing grades.
B. Building plans showing dimensions of all exterior wall segments and floor areas.
C. Building elevations showing the location of existing grades in relation to basement level.

Step One
Determine the number and lengths of the Wall Segments.

Step Two
Determine the Wall Segment Coverage (in %) for each Wall Segment. In most cases this will be readily apparent, for example a downhill elevation which is entirely above existing grade. In other cases where the existing contours are complex, an averaging system shall be used. Refer to illustration.



APPENDIX B (Continued)



Step Three

Multiply each Wall Segment Length by the percentage of each Wall Segment Coverage and add these results together. Divide that number by the sum of all Wall Segment Lengths. This calculation will result in a percentage of basement wall which is below grade. (This calculation is most easily completed by compiling a table of the information as illustrated below.)

Wall Segment	Length x	Coverage =	Result
A	25'	56%	14'%
B	10'	0%	0'%
C	8'	0%	0'%
D	25'	0%	0'%
E	8'	0%	0'%
F	13'	0%	0'%
G	25'	60%	15'%
H	48'	100%	48'%
Totals	162'	NA	77'%

Step Four

Multiply the Total Basement Floor Area by the above percentage to determine the Excluded Basement Floor Area.

Portion of Excluded Basement Floor Area

$$= 1{,}400 \text{ Sq. Ft. x } \frac{(25' \times 56\% + 10' \times 0\% \ldots 25' \times 60\% + 48' \times 100\%)}{162'}$$

= 1,400 Sq. Ft. x 47.53%

= 665.42 Sq. Ft. Excluded from the Gross Floor Area

CALCULATING AVERAGE BUILDING ELEVATION (ABE)

No part of a structure may exceed 30 feet in height above the "Average Building Elevation" to the top of the structure, except that on the downhill side of a sloping lot the structure shall not extend to a height greater than 35 feet measured from existing grade to the top plate of the roof; provided the roof ridge does not exceed 30 feet in height above the "Average Building Elevation." ABE is defined as: The elevation established by averaging the elevation at existing grade, prior to any development activity, at the center of all exterior walls of the completed building.

NOTE:
INCOMPLETE AVERAGE BUILDING ELEVATION INFORMATION COULD SUBSTANTIALLY DELAY THE PROCESSING OF YOUR APPLICATION

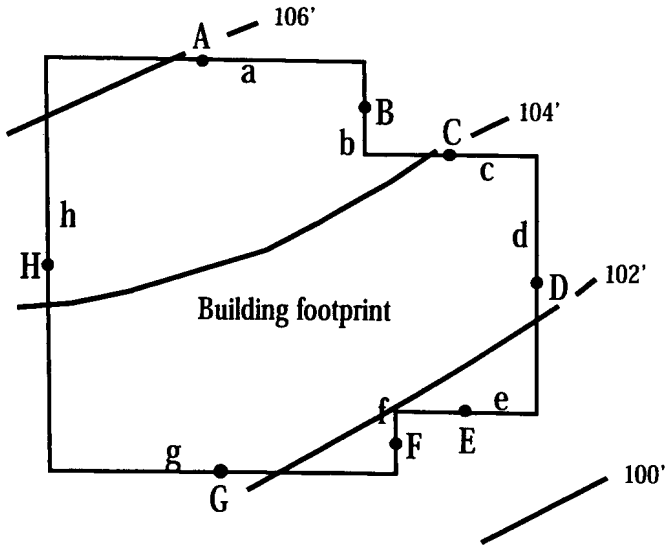
AVERAGE BUILDING ELEVATION FORMULA:

$$\frac{\text{(Mid-point Elevation of Individual Wall Segment) x (Length of Individual Wall Segment)}}{\text{(Total Length of Wall Segments)}}$$

—OR—

$$\frac{(Axa)+(Bxb)+(Cxc)+(Dxd)+(Exe)+(Dxd)+(Exe)+(Fxf)+(Gxg)+(Hxh)}{a+b+c+d+e+f+g+h}$$

WHERE: A,B,C,D… = Existing Ground Elevation at Midpoint of Wall Segment
AND: a,b,c,d… = Length of Wall Segment Measured on Outside Wall



MIDPOINT ELEVATION	WALL SEGMENT LENGTH
A = 105.9 feet	a = 30 feet
B = 104.7 feet	b = 9 feet
C = 103.7 feet	c = 17 feet
D = 102.7 feet	d = 25 feet
E = 101.6 feet	e = 13 feet
F = 101.7 feet	f = 6 feet
G = 102.2 feet	g = 34 feet
H = 104.5 feet	h = 40 feet

ABE CALCULATION:

$$\frac{(105.9)(30)+(104.7)(9)+(103.7)(17)+(102.2)(25)+(101.6)(13)+(101.7)(6)+(102.2)(34)+(104.5}{30+9+17+25+13+6+34+40}$$

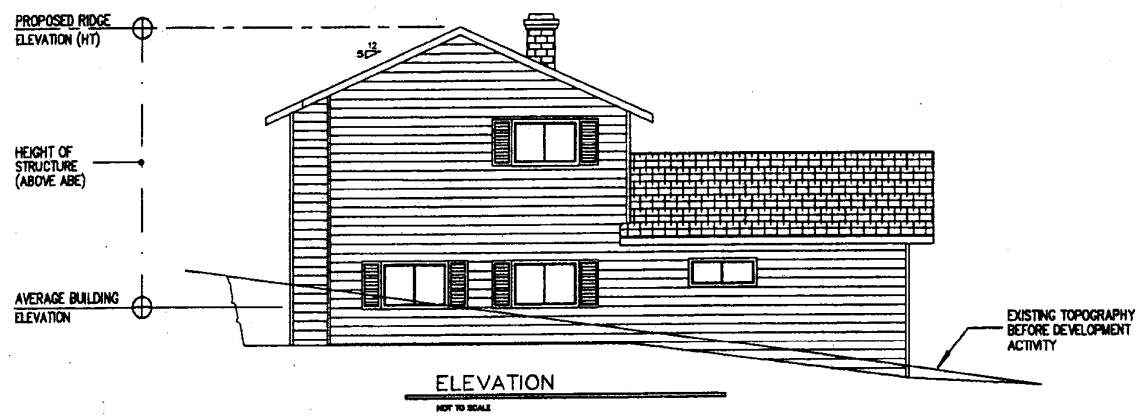
$$\frac{18023}{174} = 103.6\text{' Average Building Elevation (ABE)}$$

NOTE: This example is not to scale. Site plans submitted to the building department must be to scale.

BEFORE SUBMITTING YOUR CONSTRUCTION DRAWINGS, CHECK TO SEE THAT YOU HAVE PROVIDED THE INFORMATION BELOW.

- ❒ The site plan and the elevation drawings must be drawn to scale, for example 1" = 20', and based on a survey.
- ❒ Clearly show existing topography on your site plan. Topography should be shown in 2' increments.
- ❒ Submit (with the site plan) your average building elevation calculations using the formula provided on page 6.
- ❒ Indicate on an elevation drawing where the average building elevation strikes the building and the proposed ridge elevation (see below for example).
- ❒ Indicate on the site plan the elevation of the finished floor or garage slab.
- ❒ Indicate the elevation and location of a fixed point (benchmark) within the ADJACENT RIGHT-OF-WAY or other point approved by the Building Official. The benchmark elevation and location must be provided and cannot be a part of the proposed structure. Note: Benchmark must be established, verified by a licensed surveyor and remain during construction so height can be verified when completed.
- ❒ Sections of the structure that are below the existing grade and do not have a wall that extends above the existing grade, are not used in the ABE calculation.
- ❒ For additions, you must provide an average building elevation calculation for the entire structure.
- ❒ If a portion of the basement floor area will be excluded from the gross floor area, provide the exclusion calculations with your site plan. The formula for basement area exclusions is shown on page 5.

CROSS-SECTION REPRESENTATION OF ABE



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