CITY OF MERCER ISLAND

COMMUNITY PLANNING & DEVELOPMENT
9611 SE 36TH STREET | MERCER ISLAND, WA 98040
PHONE: 206.275.7605 | www.mercergov.org
Inspection Requests: Online: www.mybuildingpermit.com VM: 206.275.7730

SITE DEVELOPMENT INFORMATION

Worksheet for single family residential development

PROJECT INFORMATION

Permit Number:	2103-222	Parcel Number:	2948900022
Site Address:	5401 West Mercer Way	Phone Number:	(206) 256-0809
Owner Name:	Tomoko Lumpkin	Date:	05/09/2022

Signature & phone number of Individual who completed this worksheet:

Signature (206) 256 0809 Phone Number

GENERAL INFORMATION

Will any large trees be removed as a result of this development activity? Yes ☐ No ☒
Large tree- trees with diameter of greater than or equal to 10 inches.

Do you have an Accessory Dwelling Unit? New ADU ☐ Existing ADU ☐ No ☒

Will you be adding air conditioning to the proposed development? Yes ☐ No ☒

What is the total square footage of all proposed decks (covered and uncovered)on the property? 197 (west) + 258 (east) = 455 Square Feet

This is a worksheet and is not a substitute for the Mercer Island Development Regulations. Please consult the Mercer Island City Code. The City may require additional information to be supplies to document compliance with regulations.

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 SLOPE CALCULATIONS

Highest Elevation Point of Lot:	82	Feet
Lowest Elevation Point of Lot:	58.5	Feet
Elevation Difference:	23.5	Feet
Horizontal Distance Between High and Low Points:	149.1	Feet
Lot Slope*	15.7	%

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

Lot slope calculations shown on Sheet # TS-2

LOT COVERAGE

For single family residential development, "lot coverage" is the area of a lot that may be covered by a combination of the buildings and vehicular driving surfaces. Lot coverage is based on "net lot area". Net lot area is the size of the lot minus the area within any access easements on the property that do not provide access to the home on the subject lot. The maximum lot coverage for a specific lot is based upon the lots slope (see above). The area of the lot that cannot be used for lot coverage is "required landscaping area"; the landscaping area is typically improved with either hardscape (see below) or softscape.

Please note: *Lot coverage is not the same as impervious surface calculations used for drainage review.*

Lot Slope	Maximum Lot Coverage (House, driving surfaces, and accessory buildings)	Required Landscaping Area
Less than 15%	40%	60%
15% to less than 30%	35%	65%
30% to 50%	30%	70%
Greater than 50% slope	20%	80%

ADJUSTMENTS

A one-time reduction in the required landscaping area and an increase in the allowed maximum lot coverage is allowed if:

A. The total reduction in required landscaping area shall not exceed 5%, and the total increase in maximum lot coverage shall not exceed 5%; and

B. The reduction in required landscaping area is associated with:
   1. A development proposal that will result in a single-story dwelling with wheelchair accessible entry, and may also include a single-story accessory building; or
   2. A development proposal on a flag lot that, after optimizing driveway routing and minimizing driveway width, requires a driveway that is more than the 25% of the allowed lot coverage. The allowed reduction in the required landscaping area and increase in the maximum lot coverage shall not exceed 5% or the area of the driveway in excess of 25% of the lot coverage, whichever is less. For example, a development proposal with a driveway that occupies 27% of the allowed lot coverage, may increase the total lot coverage by 2%

C. A recorded notice on title, covenant, easement, or other documentation in a form approved by the city, shall be required. The notice on title or other documentation shall describe the basis for the reduced landscaping area an increase in lot coverage.

Does this project include a proposed adjustment? Yes ☐ No ☒

LOT COVERAGE CALCULATIONS

A.	Gross Lot Area	11600	Square Feet
B.	Net Lot Area	11600	Square Feet
C.	Allowed Lot Coverage Area	4060	Square Feet
D.	Allowed Lot Coverage	35	% of Lot
E.	Existing Lot Coverage:		
	1. Main Structure Roof Area	1449	Square Feet
	2. Accessory Building Roof Area	647 (= 520 +127)	Square Feet
	3. Vehicular Use (driveway, paved access easements [portion used by the lot for access], parking	426	Square Feet
	4. Covered Patios and Covered Decks	0	Square Feet

	5. Total Existing Lot Coverage Area (E1+E2+E3+E4)	2522	Square Feet
F.	(Total Lot Coverage Area Removed)	2522	Square Feet
G.	Proposed Adjustment for Single Story (Area)	0	Square Feet
H.	Proposed Adjustment for Flag Lot	0	Square Feet
I.	Total New Lot Coverage Area:		
	1. Main Structure Roof Area	2221	Square Feet
	2. Accessory Structure Roof Area	794	Square Feet
	3. Vehicular Use (driveway, paved access easement [portion used by the lot for access], parking)	400	Square Feet
	4. Covered Patios and Covered Decks	0	Square Feet
	5. Total New Lot Coverage Area (I1 + I2 + I3 + I4)	3415	
J.	Total Project Lot Coverage Area = (E5 - F) + I5	3415	Square Feet
K.	Proposed Lot Coverage Area = (J/B) x 100	29.4	% of Lot

Lot coverage calculations shown on Plan Sheet # TS-2

HARDSCAPE

Up to 9% of the net lot area may consist of hardscape areas. For single family residential development, hardscape is the solid, hard, elements or structures that are incorporated into landscaping. The hardscape includes, but is not limited to, structures, paved areas, stairs, walkways, decks, patios, rockeries and retaining walls, and similar constructed elements that do not have a roof. The hardscape within the landscaping area consists of materials such as wood, stone, concrete, gravel, permeable pavements or pavers, and similar materials. Hardscape does not include solid, hard elements or structures that are covered by a minimum of two feet of soil intended for softscape (for example, a septic tank covered with at least two feet of soil and planted shrubs is not hardscape). The hardscape does not include driving surfaces or buildings.
In addition, unused lot coverage may also be improved with hardscape.

HARDSCAPE CALCULATIONS

A.	Gross Lot Area	11600	Square Feet
B.	Net Lot Area	11600	Square Feet
C.	Area Borrowed from Lot Coverage	0	Square Feet
D.	Allowed Hardscape Area = 9% of lot area + C	9	% of Lot
E.	Allowed Hardscape Area	1044	Square Feet
F.	Total Existing Hardscape Area:		
	1. Uncovered Decks	373	Square Feet
	2. Uncovered Patios	228	Square Feet
	3. Walkways	191	Square Feet
	4. Stairs	84	Square Feet
	5. Rockeries and Retaining Walls	0	Square Feet
	6. Other _____	0	Square Feet
	7. Total Existing Hardscape Area (F1+F2+F3+F4+F5+F6)	876	Square Feet
G.	(Total Hardscape Area Removed)	876	Square Feet
H.	Total New Hardscape Area:		
	1. Uncovered Decks	246	Square Feet
	2. Uncovered Patios	81	Square Feet
	3. Walkways	15.4	Square Feet
	4. Stairs	0	Square Feet
	5. Rockeries and Retaining Walls	70.7	Square Feet

6. Other	0	Square Feet
7. Total New Hardscape Area (H1+H2+H3+H4+H5+H6)	413.1	Square Feet
I. Total Project Hardscape Area = (F7 - G) + H7	(876-876) + 413.1 = 413.1	Square Feet
J. Total Project Hardscape Area = (I/B)x100	(413.1/11,600 x 100) = 3.6	% of Lot

Hardscape calculations shown on Plan Sheet # TS-2

GROSS FLOOR AREA (GFA)

For single family residential development, GFA is the total square footage of floor area, bounded by the exterior faces of the building(s). The GFA includes the floor area of the main building, accessory buildings, garages, attached roofed decks on the second or third story of a single family home, staircases, etc. The GFA does not include second- or third-story uncovered decks or uncovered rooftop decks.
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Allowed GFA

A. R-8.4: 5,000 square feet or 40% of the lot area, whichever is less.
B. R-9.6: 8,000 square feet or 40% of the lot area, whichever is less.
C. R-12: 10,000 square feet or 40% of the lot area, whichever is less.
D. R-15: 12,000 square feet or 40% of the lot area, whichever is less.
E. All zones: Lots with a lot area of 7,500 square feet or less, the lesser of 3,000 square feet or 45% of the lot area.
F. All zones: If an accessory dwelling unit is proposed, the 40% allowed GFA may be increased by the lesser of 5 percentile points, or the floor area of the accessory dwelling unit. Provided, this allowance shall not result in a GFA of more than 4,500 square feet or 45% of the lot area, whichever is less.

GFA Modifiers

The GFA calculation for a floor with a ceiling height of 12 to 16 feet, is 150% of the area of the floor.
The GFA calculation for a floor with a ceiling height of more than 16 feet, is 200% of the area of the floor.
The GFA calculation for a stair case shall be counted as a single floor for the first two stories accessed by the stair case. For each additional story above two stories, the stair case shall count as a single floor area.
**Floor plans shall identify rooms with a ceiling height of more than 12 feet and rooms with a ceiling height of more than 16 feet.*
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 below.

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 6.

GROSS FLOOR AREA CALCULATIONS

Building Area	Existing Area		Removed Area		New/Addition Area		Total	
Upper Floor	560	Sq. Ft.	560	Sq. Ft.	0	Sq. Ft.	0	Sq. Ft.
Main Floor	1370	Sq. Ft.	1370	Sq. Ft.	1644	Sq. Ft.	1644	Sq. Ft.
Gross Basement Area	0	Sq. Ft.	0	Sq. Ft.	1634	Sq. Ft.	1634	Sq. Ft.
Garage/ Carport	520	Sq. Ft.	520	Sq. Ft.	520	Sq. Ft.	520	Sq. Ft.
Total Floor Area	2450	Sq. Ft.	2450	Sq. Ft.	3413	Sq. Ft.	3413	Sq. Ft.
Accessory Buildings	127	Sq. Ft.	127	Sq. Ft.	0	Sq. Ft.	0	Sq. Ft.

Accessory Dwelling Unit	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.
2nd & 3rd Story Roofed Decks	0 Sq. Ft.	0 Sq. Ft.	169 Sq. Ft.	169 Sq. Ft.
Basement Area Excluded	0 Sq. Ft.	0 Sq. Ft.	154 Sq. Ft.	154 Sq. Ft.
150% GFA Modifier* (main and upper floor ~~x2)~~ x 1.5	0 Sq. Ft.	0 Sq. Ft.	577 Sq. Ft.	577 Sq. Ft.
200% GFA Modifier* (main and upper floor x2)	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.
Staircase GFA Modifier* (x2 for a three story staircase, x3 for a four story staircase)	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.	0 Sq. Ft.
TOTAL Building Area	2577 Sq. Ft.	2577 Sq. Ft.	4390 Sq. Ft.	4390 Sq. Ft.

**Enter the actual room area*

A.	Lot Area	11,600	Square Feet
B.	Zone R-8.4 ☐ R-9.6 ☐	R-12 ☐ R-15	☑
C.	Allowed Gross Floor Area (refer to "allowed GFA")	4640	Square Feet
D.	Allowed Gross Floor Area	40	% of Lot
E.	Proposed Gross Floor Area	4390	Square Feet
F.	Proposed Gross Floor Area	37.8	% of Lot

Gross floor area calculations found on Plan Sheet # TS-2

Basement exclusion calculations found on Plan Sheet # TS-2

BUILDING HEIGHT

All building height measurements must be taken from existing grade or finished grade, whichever is lower. Existing grade refers to ground surface as it exists at the proposed building perimeter before grading or other alterations take place. Finished grade refers to the ground surface as it exists at the building perimeter after grading or other alterations take place.

Single family new construction and additions are limited to a maximum height of 30 ft. above the Average Building Elevation (ABE) – see section on next pages. The height is measured to the top of the structure. On the downhill side of a sloping lot, the wall façade height is also limited to a height of 30 feet measured from existing or finished grade (whichever is lower) to the top of the exterior wall facade supporting the roof framing, rafters, trusses, etc.

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 CALCULATIONS

A.	Average Building Elevation (ABE) calculations located on sheet #:	TS-2	
B.	Allowable Building Height (ABE + 30 ft.)	104'-1"	Feet
C.	Proposed Building Height	96'-5 1/2"	Feet
D.	Benchmark Elevation*	156.21	Feet
E.	Describe Benchmark Location (must be undisturbed throughout project)	City BM #3144; NAVD 88	

F. Sloping lot (Downhill side)- maximum height of top of exterior wall façade above lowest existing grade (30-ft max) 21'-7" Feet

G. ABE and Allowable Building Height Shown on elevations plan sheet # TS-2

H. Topo-survey Accuracy Attested on Plan Sheet # NA

Note: survey must attest to accuracy when proposed building height is within 2 feet of the allowable building height. Please see page 8 for more information on calculating Average Building Elevation (ABE)

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

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

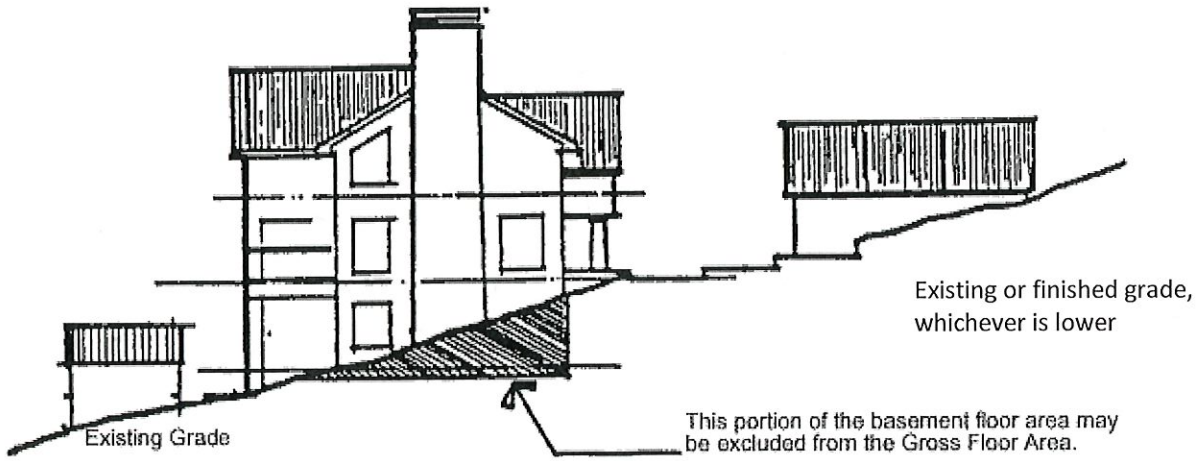
$$\frac{\Sigma\,(\text{Wall Segment Coverage} \times \text{Wall Segment Length})}{\text{Total of all Wall Segment lengths}}$$

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 or finished grade, whichever is lower. 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:

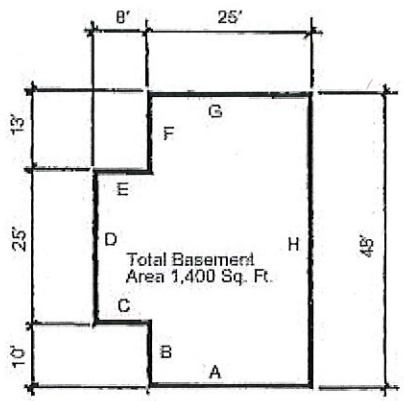
a. A topographic map of the existing (e) grades and showing proposed finished (f) grades.
b. Building plans showing dimensions of all exterior wall segments and floor areas.
c. Building elevations showing the location of existing and finished grades in relation to basement level.

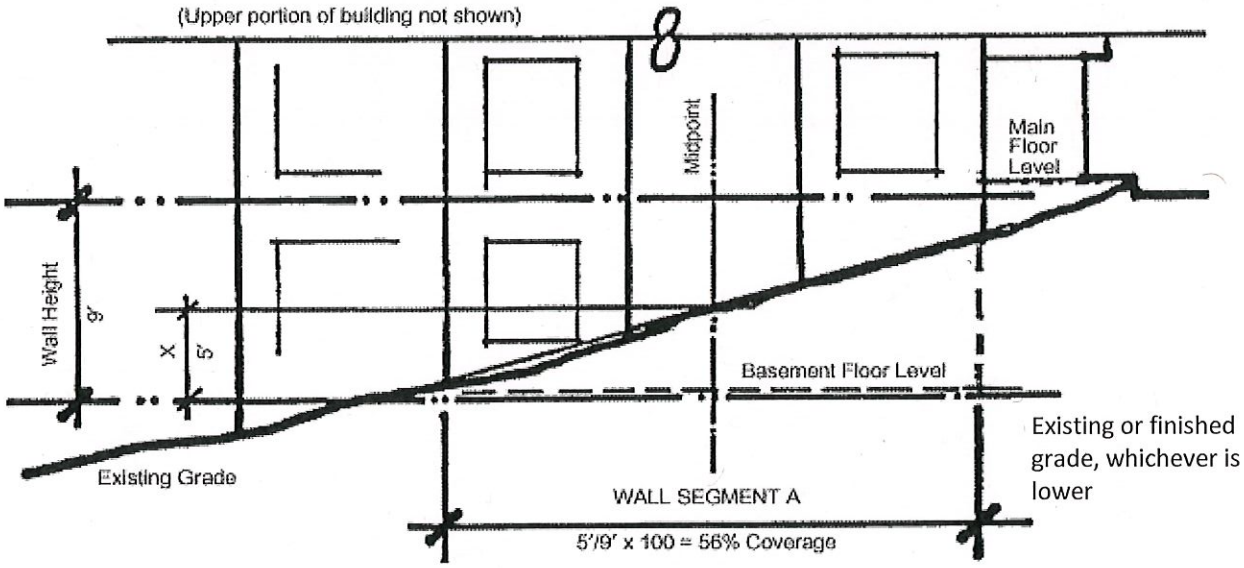
Step One

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 and finished grade. In other cases, where the existing contours are complex, an averaging system shall be used. Refer to illustration.





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%
B	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 Calculation below

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

= 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 30 feet measured from existing or finished 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 or finished grade, whichever is lower, 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:

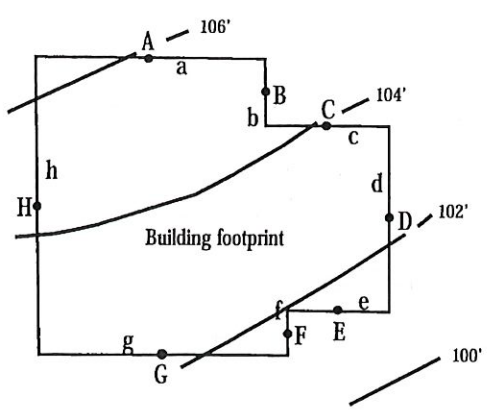
$$\frac{\text{(Mid-point Elevation of Individual Wall Segment)} \times \text{(Length of Individual Wall Segment)}}{\text{(Total Length of Wall Segments)}}$$

—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... = Lower of Finished or 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

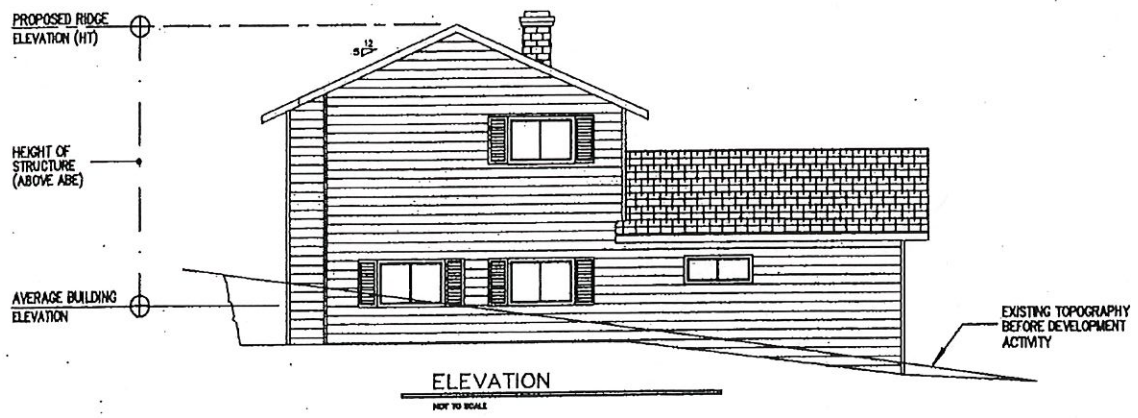
ABE CALCULATION:

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

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

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 8.
- ☐ Indicate on an elevation drawing where the average building elevation strikes the building and the proposed ridge elevation (see below for example).
- ☐ Elevation drawings for all sides of the building.
- ☐ 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.
- ☐ 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 6.
- ☐ Indicate ceiling heights greater than 12' and greater than 16' on floor plans.

CROSS-SECTION REPRESENTATION OF ABE