

Average Building Elevation Examples 1-3 – April 26, 2022

Example 1 is zoned R-16. How maximum height is measured currently varies depending on the zoning district the lot is located. For lots zoned R-16, the measurement is taken from both the low points and the high points of original and finished grade. By moving to average building elevation, we will be eliminating the two separate points of measurement. The average building elevation for this house is approximately 121.81, for a maximum of 146.81. The maximum height from the high point on the lot is 148.9, which is higher than what would be allowed under the proposal.

Example 2 is zoned R-20 and utilized the height bonus that's available for R-20 and R-30. The maximum height for this property is 36-feet from the low point of original grade and 30-feet from the high point. Again, by moving to average building elevation, relying on two measuring points will be eliminated. Averaging will automatically place the zero (where to begin measuring from) at a higher point so the new maximum height allowed with the bonus would just be 30-feet. The average building elevation for this house is approximately 154.38 and would have a maximum height of 184.38 under the height bonus.

Example 3 is the same example we looked at last month from Mercer Island and is located on a steep slope. The first page shows the table of how average building elevation was calculated and notes that the points are taken from existing grade because final was at the same grade or higher, and the second page shows an elevation section. While Mercer Island has a higher maximum height, we can generalize this example as if it were utilizing the height bonus that's offered for R-20 and R-30 lots. One of the concerns brought up during the February meeting was not allowing buildings to create a massive 50-foot façade on a downhill slope. To address this, the code includes language to limit the façade on a downhill slope to the maximum height otherwise allowed. Mercer Island's code is solely concerned with the façade and only measures to the roof framing, rafters, trusses, etc. (Example 3).

Average Grade Example #1
Maximum Height – 25 ft.

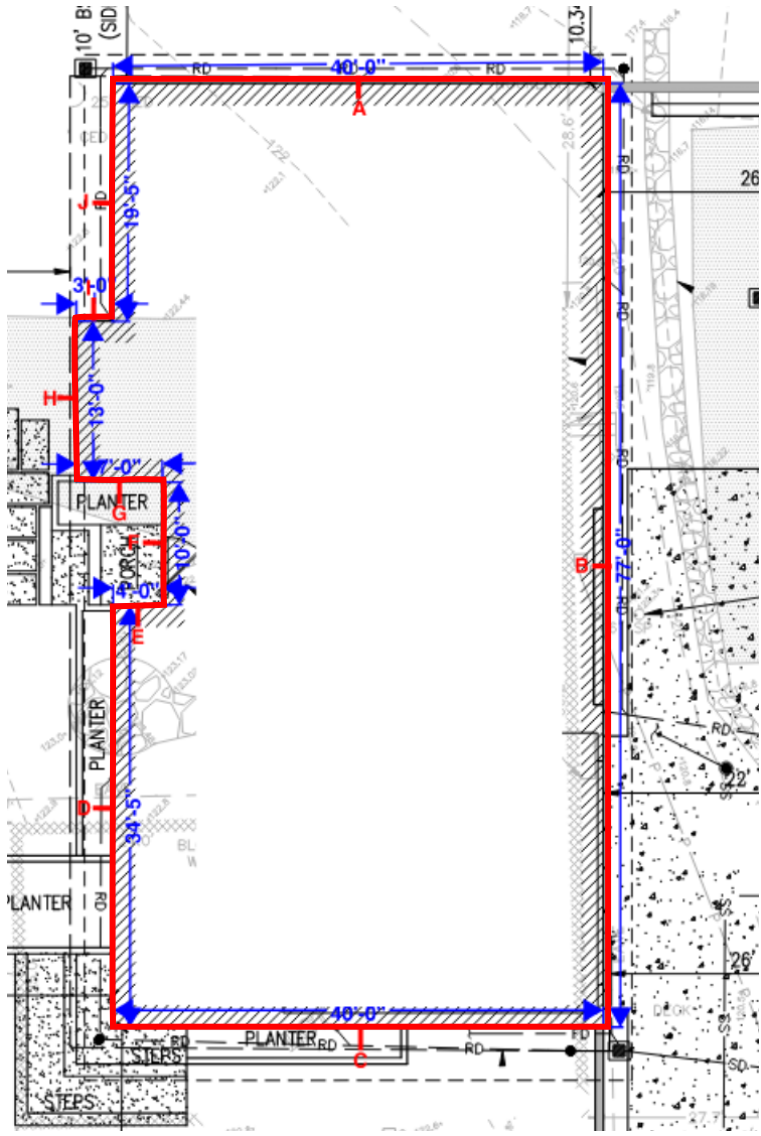
Midpoint Elevation	Rectangle Side Length
A. 121.2'	a. 40'
B. 121'	b. 77'
C. 121.9'	c. 40'
D. 122.8'	d. 34'-5"
E. 123'	e. 4'
F. 122.8'	f. 10'
G.122.6'	g. 7'
H. 122.6'	h. 13'
I. 122.5'	i. 3'
J. 122.7'	j. 19'-5"

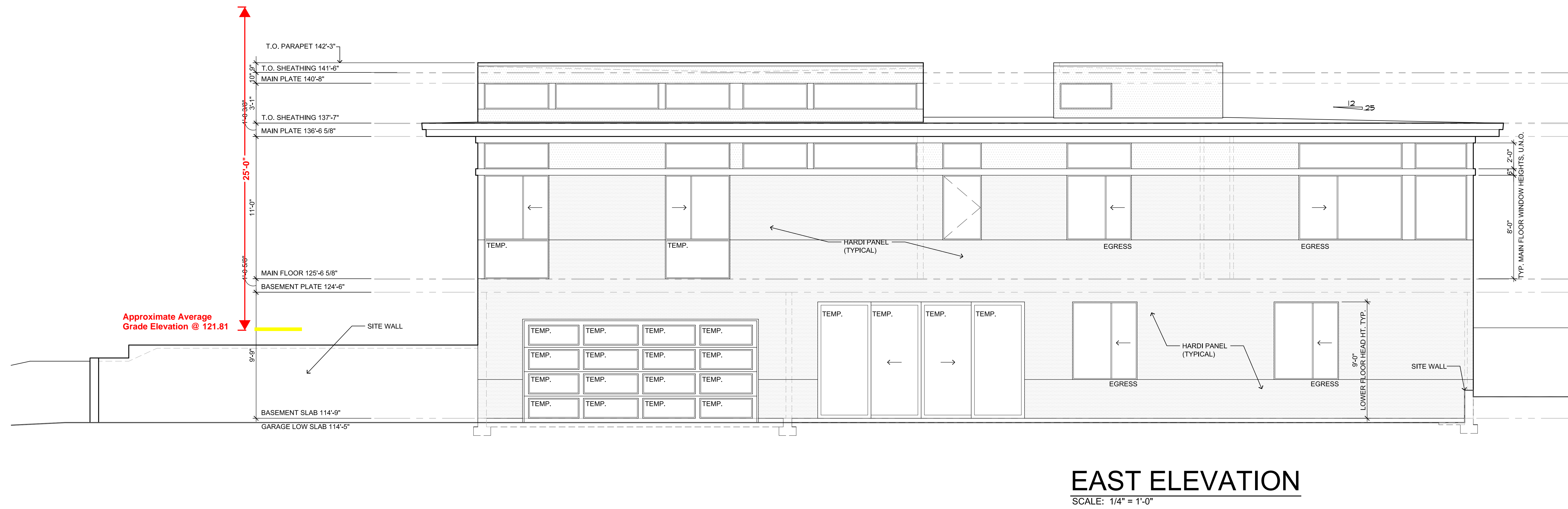
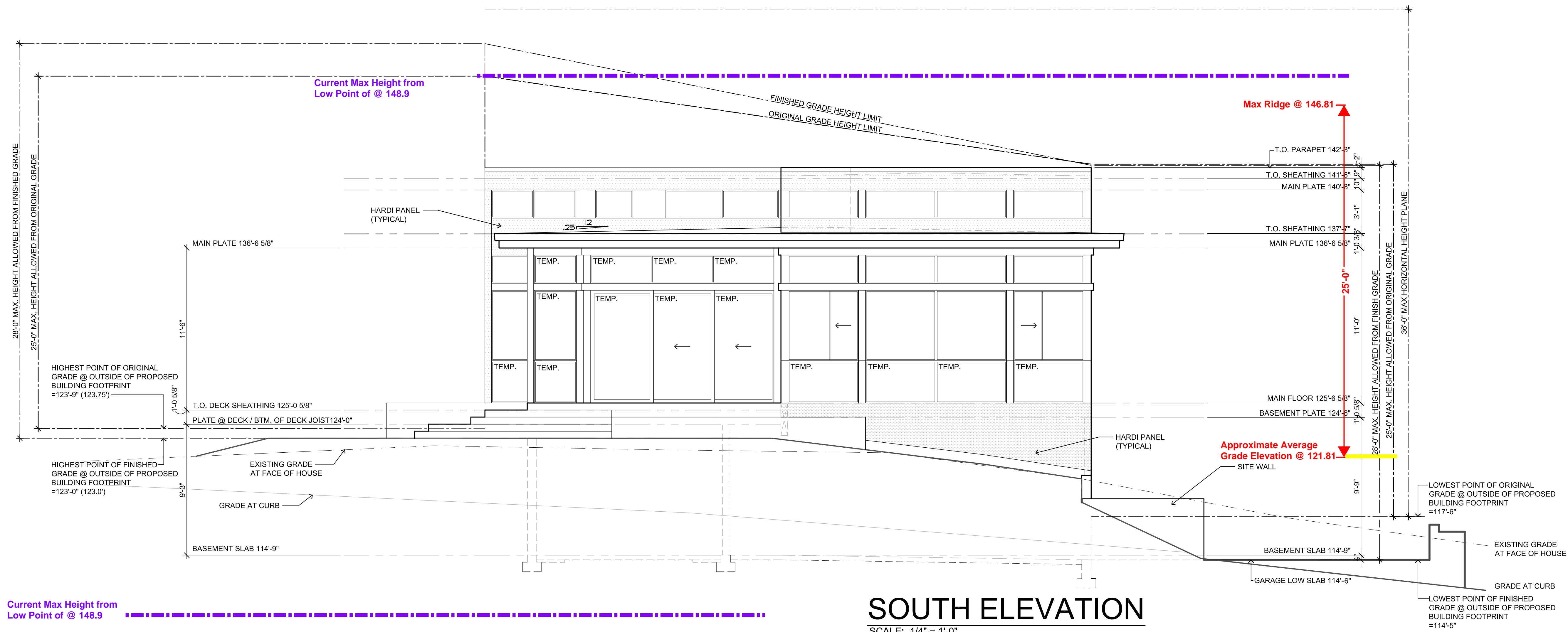
Formula:
$$\frac{(A \times a) + (B \times b) + (C \times c) + (D \times d) + (E \times e) + (F \times f) + (G \times g) + (H \times h) + (I \times i) + (J \times j)}{a + b + c + d + e + f + g + h + i + j}$$

$$\frac{(121.2 \times 40) + (121 \times 77) + (121.9 \times 40) + (122.8 \times 34.5) + (123 \times 4) + (122.8 \times 10) + (122.6 \times 7) + (122.6 \times 13) + (122.5 \times 3) + (122.7 \times 19.5)}{40 + 77 + 40 + 34.5 + 4 + 10 + 7 + 13 + 3 + 19.5}$$

$$\frac{4848 + 9317 + 4876 + 4236.6 + 492 + 1228 + 858.2 + 1593.8 + 367.5 + 2392.65}{248} = \frac{30209.75}{248} = \mathbf{121.81 \text{ average grade elevation}}$$

Maximum Elevation = 146.81'





Average Grade Example #2

Maximum Height – 36 ft. (they utilized the R-20 height bonus)

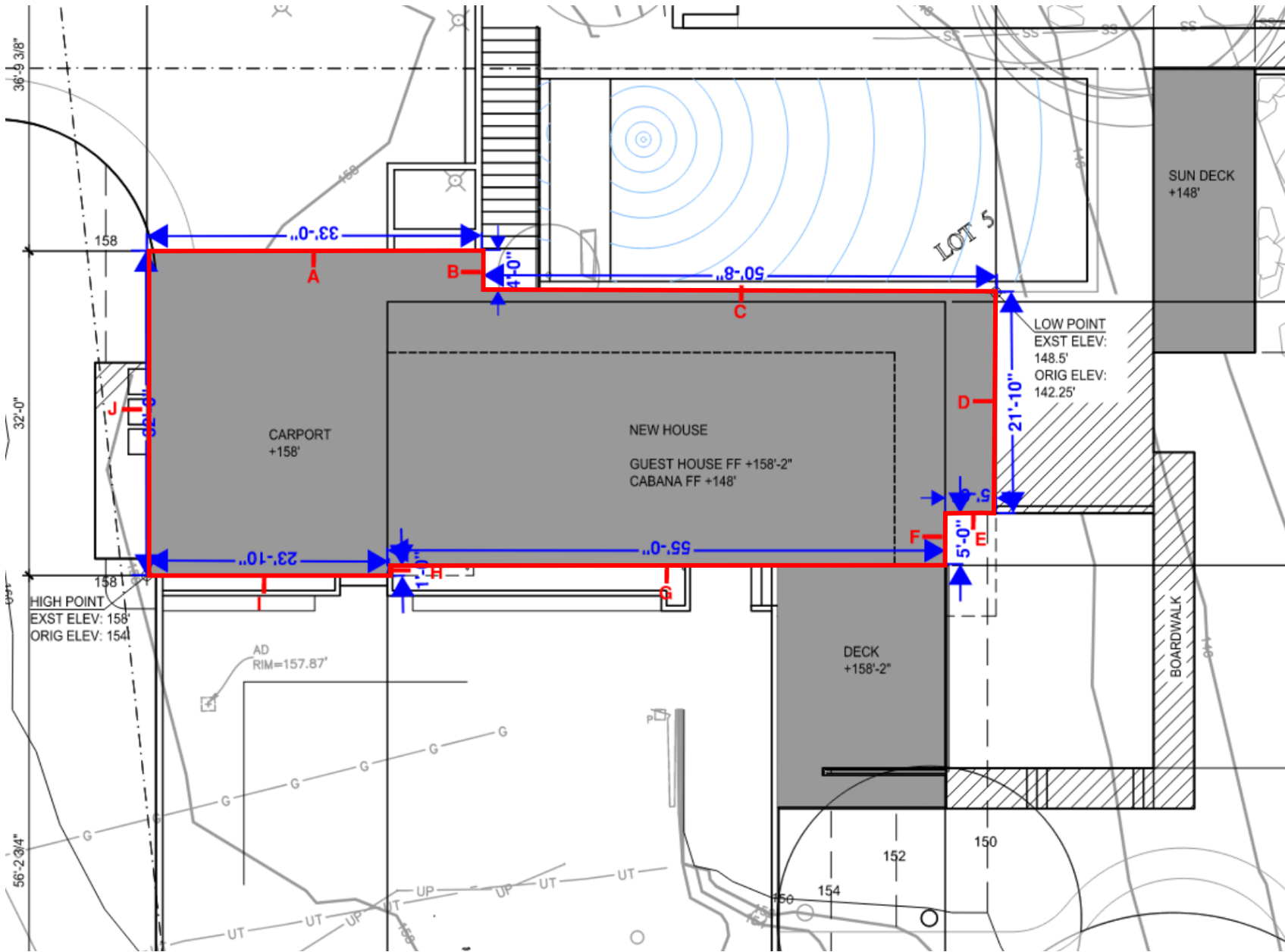
Midpoint Elevation	Rectangle Side Length
A. 157.7'	a. 33'
B. 157.5'	b. 4'
C. 149.8'	c. 50'-8"
D. 148.6'	d. 21'-1"
E. 150.3'	e. 5'
F. 150.9'	f. 5'
G.156'	g. 55'
H. 157.1'	h. 1'
I. 157.5	i. 23'-1"
J. 157.7'	j. 32'

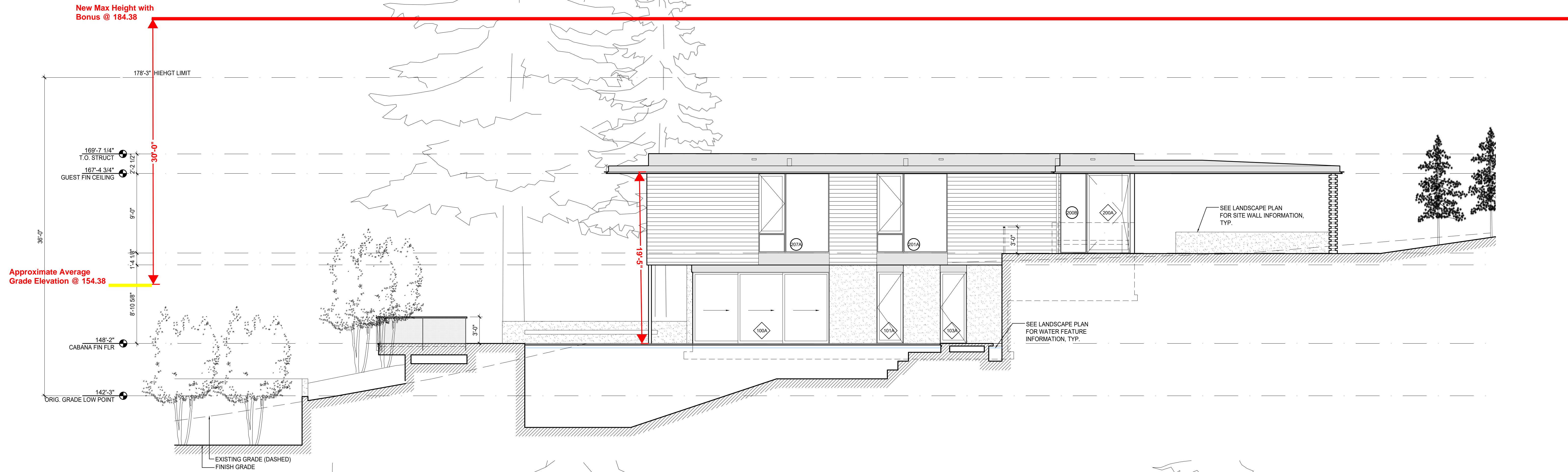
Formula:
$$\frac{(A \times a) + (B \times b) + (C \times c) + (D \times d) + (E \times e) + (F \times f) + (G \times g) + (H \times h) + (I \times i) + (J \times j)}{a + b + c + d + e + f + g + h + i + j}$$

$$\frac{(157.7 \times 33) + (157.5 \times 4) + (149.8 \times 50.8) + (148.6 \times 21.1) + (150.3 \times 5) + (150.9 \times 5) + (156 \times 55) + (157.1 \times 1) + (157.5 \times 23.1) + (157.7 \times 32)}{33 + 4 + 50.8 + 21.1 + 5 + 5 + 55 + 1 + 23.1 + 32}$$

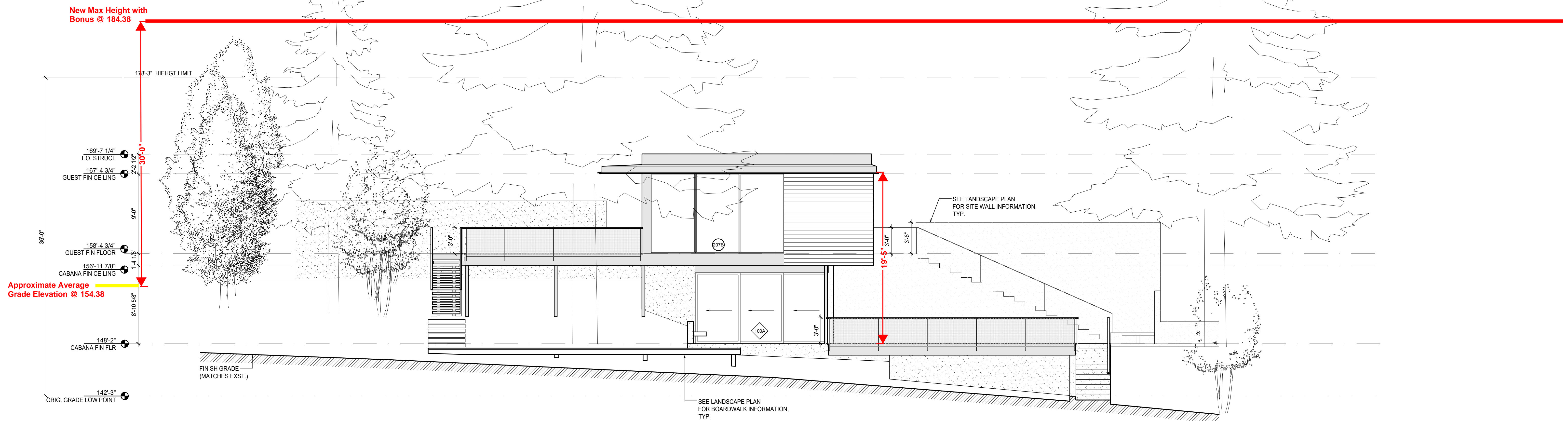
$$\frac{5204.1 + 630 + 7609.84 + 3135.46 + 751.5 + 754.5 + 8580 + 157.1 + 3638.25 + 5046.4}{230} = \frac{35507.15}{230} = \mathbf{154.38 \text{ average grade elevation}}$$

Maximum Elevation with *new* Height Bonus (Max of 30') = 184.38





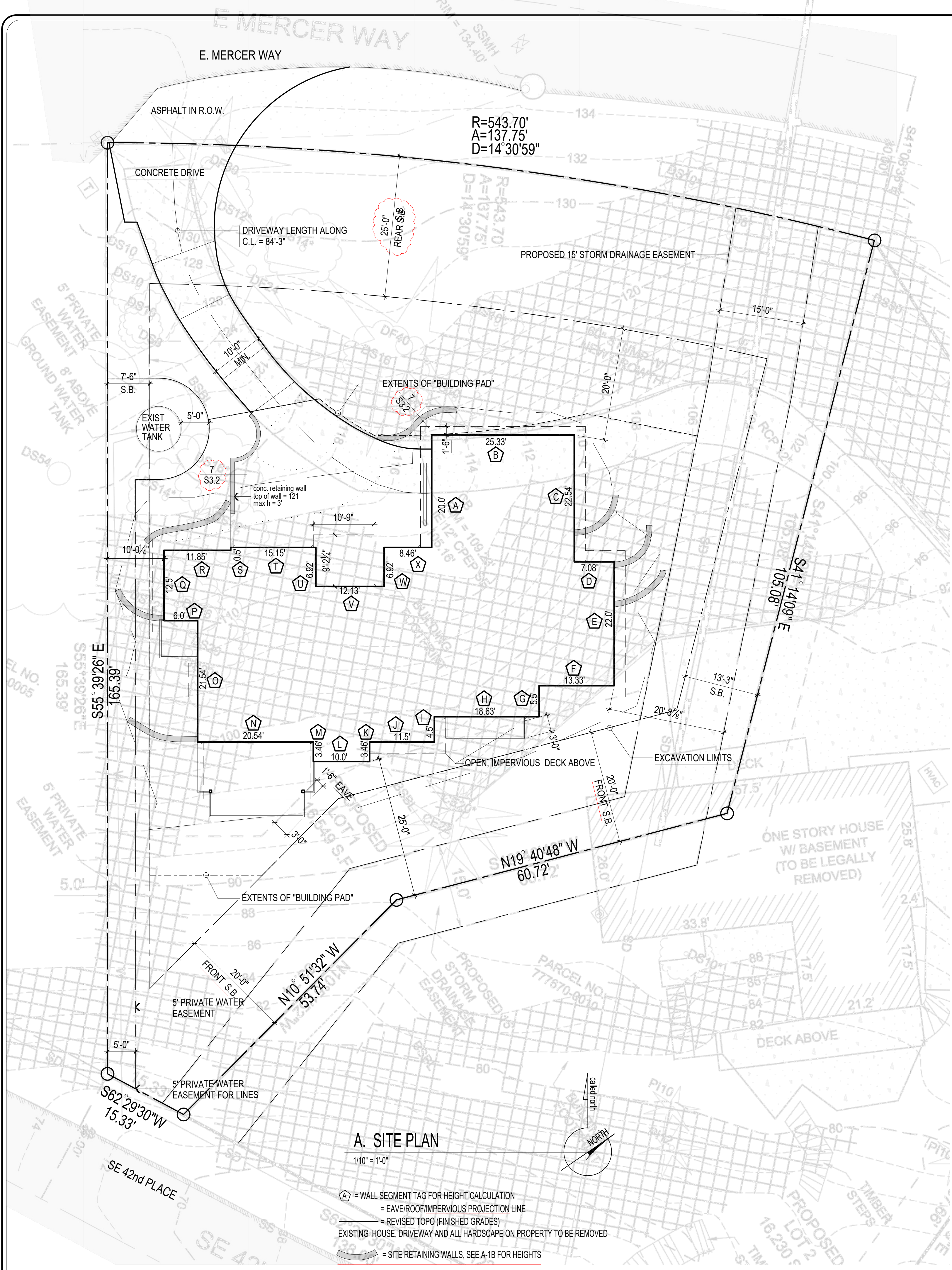
1 EXTERIOR ELEVATION - NORTH
SCALE: 3/16" = 1'-0"



2 EXTERIOR ELEVATION - EAST
SCALE: 3/16" = 1'-0"

Owner _____

Civil Engineer _____



CONTINUOUS GEOTECHNICAL INSPECTION IS REQUIRED DURING EXCAVATION.

All Japanese knotweed (*Polygonum cuspidatum*) and Regulated Class A, Regulated Class B, and Regulated Class C weeds identified on the King County Noxious Weed list, as amended, shall be removed from the property.

development proposals for a new single-family home shall remove japanese knotweed (*polygonum cuspidatum*) and regulated class a, regulated class b, and regulated class c weeds identified on the king county noxious weed list, as amended, from required landscaping areas established pursuant to subsection 19.02.020(f)(3)(a). new landscaping associated with new single-family home shall not incorporate any weeds identified on the king county noxious weed list, as amended, provided, that removal shall not be required if the removal will result in increased slope instability or risk of landslide or erosion.

Parcel Number/Legal

ABE CALCULATION

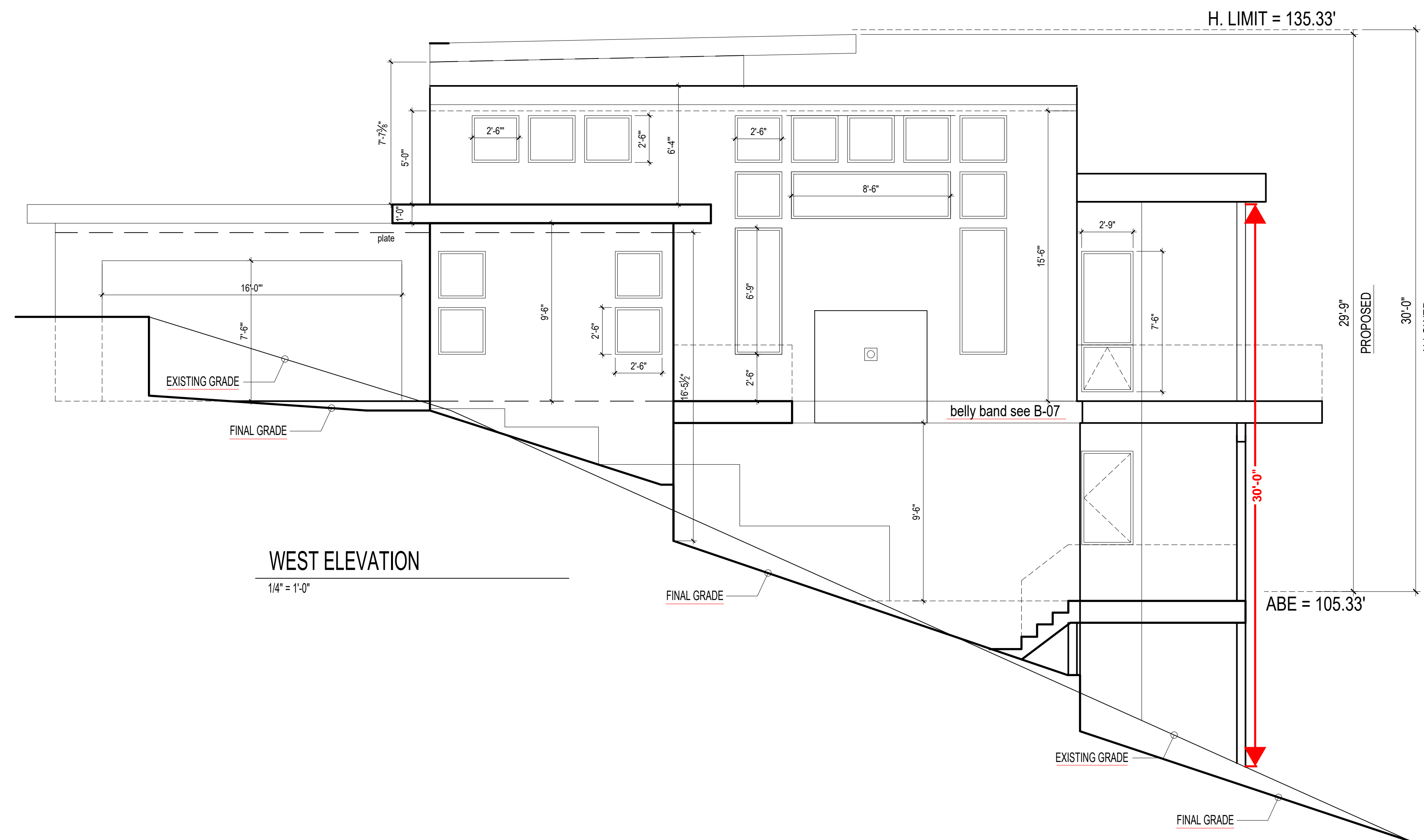
	EL @ MIDPOINT	segment	wtd sgmnt
A	115	20	2300.00
B	113	25.33	2862.29
C	108	22.54	2434.32
D	101.9	7.08	721.45
E	95	22	2090.00
F	92.5	13.33	1233.03
G	94	5.5	517.00
H	97	18.63	1807.11
I	98.1	4.5	441.45
J	97.2	11.5	1117.80
K	96.8	3.46	334.93
L	96.7	10	967.00
M	97.8	3.46	338.39
N	99	20.54	2033.46
O	105	21.54	2261.70
P	110.6	6	663.60
Q	112.7	12.5	1408.75
R	115.4	11.85	1367.49
S	114.8	0.5	57.40
T	114	15.15	1727.10
U	111.9	6.92	774.35
V	110.3	12.13	1337.94
W	112	6.92	775.04
X	113.3	8.46	958.52
Y			
	289.84	30530.11	

AVG. EL = **105.3343**
all midpoints are existing grade
all final grades same or higher than existing

FAR CALCULATION

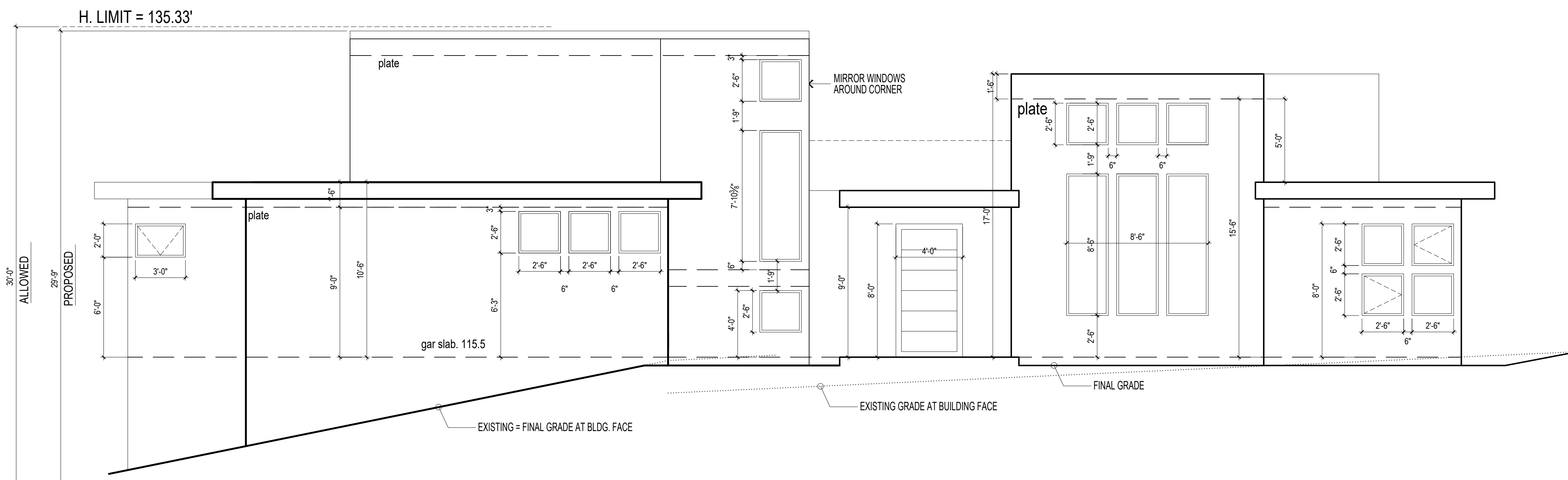
Main Floor = 2280.5 sf
Lower Floor = 1893.8 sf
Upper Floor = 414 sf
Garage = 570 sf
12'16" clg = 301 sf
covered decks = 220 sf
stairs = (-88)

TOTAL = 5591.3 sf
allowable = 16,549 x .4 = 6619.6 sf



WEST ELEVATION

1/4" = 1'-0"



NORTH ELEVATION

1/4" = 1'-0"