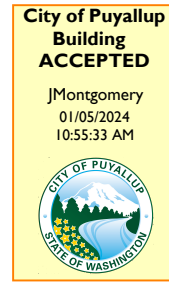
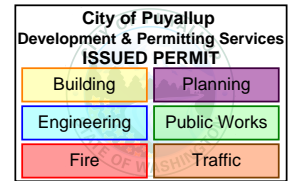


PRDK20231750

Structural Calculations for:  
Home addition  
23818 Sumner Buckley Hwy East  
Buckley, WA 98321



12/07/2023



EXPIRES JULY 18, 2024

Designed By:  
Craig A Vernon, PE  
2314 263<sup>rd</sup> St. Ct E.  
Spanaway, WA 98387

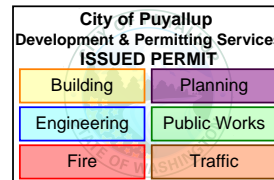
craigavernon@outlook.com

**REPORT IS REQUIRED TO BE PROVIDED  
BY THE PERMITTEE ON SITE FOR ALL  
INSPECTIONS**

PRDK20231750

**Applicable Codes and Specifications:**

- 2018 International Building Code [IBC]
- 2018 International Residential Code [IRC]
- ASCE 7-10 [ASCE]
- Simpson Strong-Tie Wood Construction Connectors



**Risk Category:** II 1.5-1&IBC

**Vertical Loads:**

	<b>Dead Loads</b>	<b>Live Loads</b>	
Roof	15 psf	25 psf	[ASCE Tbl 4-1]
Floor	12 psf	40 psf	[ASCE Tbl 4-1]
Deck or Balcony	12 psf	40 psf	[ASCE Tbl 4-1]
Storage	12 psf	15 psf	[ASCE Tbl 4-1]
Timber Wall	10 psf	n/a	
Concrete	150 pcf	n/a	

**Snow Loads**

Ground Snow Load,  $p_g$  25 psf [ASCE Fig 7-1]

**Lateral Loads:**

Seismic Category	D	[ASCETbl 11.6-1]
Wind Speed, V	85 mph	
Wind Speed, $V_{ult}$	110 mph	[ASCE fig 26.5-1A,B,C]
Exposure Category	B	[ASCE 6.5.6.3]

**Site Condition:**

Soil bearing	1500 psf
Frost Depth	18 inches

**Lateral Loading**  
**WIND LOADS**

Wind loads for the MWFRS (Main Wind-Force Resisting System) shall be determined in accordance with Chapter 26-30 of ASCE 7.

[IBC 1609.1.1]

Risk Category	II
Basic Wind Speed, Vult	85 MPH
Wind Directionality Factor, $K_d$	0.85
Exposure Category	B
Topographic Factor, $K_{zt}$	1.0
Enclosure Classification	Enclosed
net pressure top, $p_h$	19.60 psf
net pressure bot, $p_0$	18.10 psf
net pressure roof, $p_z$	13.97 psf
Minimum design wind load shall be:	
walls	16.0 psf
roof	8.0 psf
Basic Load Combination	= 0.6D + 1.0W

[ASCE table 26.6-1]

[ASCE 26.7]

[ASCE 26.8]

[ASCE 26.10]

[ASCE table 27.6-1]

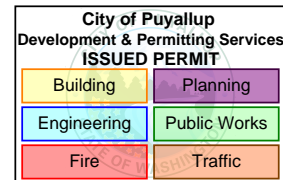
[ASCE table 27.6-1]

[ASCE table 27.6-2]

[ASCE 27.4.7]

Cal Contr

c <sub>ph</sub> =		19.6	16.0	19.6 psf
Mi	p <sub>0</sub> =	18.1	16.0	18.1 psf
n	p <sub>z</sub> =	14.0	8.0	14.0 psf

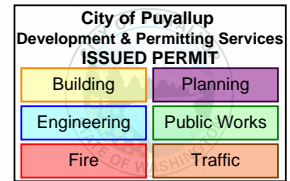
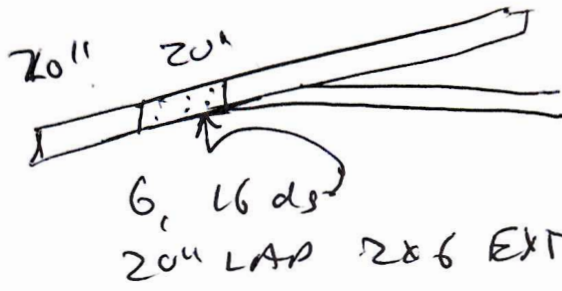


2x40 RAFTERS 2' O.C. 11'-6" SPAN 5' OVERHANG  
 40 PSF COMBINED LOAD

TRUSS TAIL EXTENSIONS

$$\frac{20}{12} (40) (2) = 133 \# @ 0.83'$$

6 16d. NAILS



BEAMS:

$$l = 13.6' \quad w = \frac{10.75(40)}{12} = 36 \text{ pl'}$$

$$\Delta = \frac{163}{360} = 0.45'' \quad I = \frac{5wl^4}{384E\Delta} = \frac{5(36)(163^4)}{384(1.9 \times 10^6)(0.45''}$$

$I = 387$  5.5 x 10.5 GLB OR 5.5 x 13.5 FOR FIT/ARCH

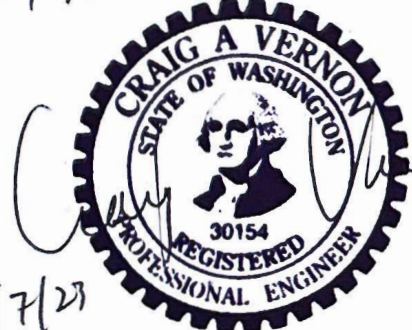
$0(11.5)(40) = 3,700 \#$  POINT LOAD FOR BEAM  
 SUPPORTING RIDGE  $l = 264$   $\frac{Pl^3}{48E\Delta} = I$

$$I = \frac{3,700(264^3)}{48(1.9 \times 10^6)(0.73)} = 1,023 \quad 5.5 \times 13.5$$

FTG:  $6(0)40 = 2400 \#$   
 $13(0)40 = 5,200 \#$

$$\frac{5,200}{1500} \approx 3.5 \text{ SF } 2 \times 2 \times 2$$

LATERAL 70(8) = 560 \#  
 CARRIED BY ROOF DIAPHRAGM TO  
 EXISTING



12/7/23