### **BUSINESS AS USUAL - DETAIL SET**

l-values of building	gasse	emblies		Passive House wi		
Climate: PHPP-Standard / TFA: 0 m² / Ov	erheating: %	/ PER: 0 kWh/(m²a)	Show on	ecial cases and secondary ca	loulations	on the right
			onow sp	eciai cases and secondary ca	iculations	on the right
Description of building assembly					Assembly n	0.
Business As Usual - Wall						1ud
Orientation of building assembly (or R <sub>si</sub> )	2 Wall	1		Interior	insulation?	
Adjacent to (or R <sub>se</sub> )	-	-		U-value supplemen	-	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]			Thickness [m
1/2" Drywall	0.180					13
5-1/2" Fibreglass batt insulation	0.054	2x6 framing @ 24" o.c.	0.130			140
1/2" OSB sheathing	0.130					13
Percentage of sec. 1:	94%	Percentage of sec. 2:	6.3%	Percentage of sec. 3:		
Heat transmission resista Interior R <sub>si</sub> : Exterior R <sub>so</sub> :	0.13	s m²K/W m²K/W		Total thickne U-value [V	,	16.6 0.365
Interior R <sub>si</sub> :	0.13	m²K/W			,	
Interior R <sub>si</sub> :	0.13	m²K/W			,	0.365
$\begin{array}{c} \text{Interior } R_{si}\text{:} \\ \\ \text{Exterior } R_{se}\text{:} \\ \\ \text{Description of building assembly} \end{array}$	0.13	m²K/W			V/(m²K)]:	0.365
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation	0.13 0.04	m²K/W		U-value [V	V/(m²K)]:	<b>0.365</b> o.
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.04	m²K/W		U-value [V	Assembly n  insulation?	<b>0.365</b> o.
Interior R <sub>ai</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13 0.04 2-Wall 2-Ground	m²K/W m²K/W	۵ DW/(mK)	U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365 o. 2ud
Interior $R_{ai}$ :  Exterior $R_{se}$ :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or $R_{si}$ )  Adjacent to (or $R_{se}$ )  Area section 1	0.13 0.04 2-Wall 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365 o. 2ud
Interior R <sub>al</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	0.13 0.04 2-Wall 2-Ground	m²K/W m²K/W  Area section 2 (optional)	λ [W/(mK)]	U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m
Interior R <sub>ai</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180	m²K/W m²K/W		U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	o. 2ud Thickness [m
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m     13     140
Interior $R_{ai}$ :  Exterior $R_{se}$ :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or $R_{si}$ )  Adjacent to (or $R_{se}$ )  Area section 1	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m     13     140     13
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m     13     140     13
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap  8" Concrete foundation	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300	m²K/W  Area section 2 (optional)  2x6 framing @ 24 o.c.	0.130	U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m     13     140     13
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  or insulation?  It [W/(m²K)]:	0.365  o. 2ud  Thickness [m     13     140     13
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap  8" Concrete foundation	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300	m²K/W m²K/W  Area section 2 (optional)  2x6 framing @ 24 o.c.  Percentage of sec. 2:	0.130	U-value [V	Assembly n  O  insulation?  at [W/(m/K)]  λ [W/(m/K)]	0.365  o. 2ud  Thickness [m     13     140     13
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Business As Usual - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  5-1/2" Fibreglass batt insulation  1/2" Air gap  8" Concrete foundation  Percentage of sec. 1:	0.13 0.04 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300	m²K/W m²K/W  Area section 2 (optional)  2x6 framing @ 24 o.c.  Percentage of sec. 2:	0.130	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly n  O  insulation?  It [W/(m²K)]  λ [W/(mK)]	0.365 o. 2ud Thickness [mr 13 140 13 203

Description of building assembly					Assembly	no.
Business As Usual - Header					C	3ud
Orientation of building assembly (or R <sub>si</sub> ,	2-Wall			Interior	r insulation?	
Adjacent to (or R <sub>se</sub> ,		-		U-value supplemen		
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)		Thickness [n
1/2" Dywall	0.180					13
2-1/2" Fibreglass batt insulation	0.054					64
3" Wood header	0.130					76
1/2" OSB sheathing	0.130					13
Percentage of sec. 1	100%	Percentage of sec. 2:		Percentage of sec. 3:		
reitenlage of set. I	. 100%	reiterlage of sec. 2.		r ercentage of sec. 3.	•	
Exterior R <sub>se</sub>	0.04	m²K/W		U-value [\	N/(m²K)]:	0.473
Exterior R <sub>se</sub>	0.04	m²K/W		U-value [\	W/(m²K)]:	0.473
	0.04	m²K/W		U-value [\	W/(m²K)]:	
Description of building assembly	0.04	m²K/W		U-value [\	Assembly I	
Description of building assembly Business As Usual - Slab		m²K/W			Assembly I	no. )4ud
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub>	3-Floor	m²K/W		Interior	Assembly I	no. )4ud
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>sl</sub> ,  Adjacent to (or R <sub>se</sub> ,	3-Floor	m²K/W  Area section 2 (optional)	λ [W/(mK)]		Assembly of Control of the Control o	no. )4ud
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub>	3-Floor 2-Ground		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)]		λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab	3-Floor 2-Ground λ [W/(mK)] 2.300	Area section 2 (optional)	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)	Assembly in C	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )	3-Floor 2-Ground λ [W/(mK)] 2.300		λ [W/(mK)]	Interior U-value supplemen	Assembly in C	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab	3-Floor 2-Ground λ [W/(mK)] 2.300	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)	Assembly in C	no. )4ud Thickness [m
Description of building assembly  Business As Usual - Slab  Orientation of building assembly (or R <sub>si</sub> Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  Percentage of sec. 1	3-Floor 2-Ground  \$\lambda [W/(mK)]\$ 2.300  100%  ance coefficients	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly in C	Thickness [m

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.365	15.56	2.74
Foundation	0.350	16.22	2.857
Window Header	0.473	12.0	2.114
Slab	4.665	1.217	0.2144

# NOTES:

# IN FORM

# ALBERTA

Project No.



A

Notes

Project North



ale

Business As Usual

D 1.1
Sheet No. ©2020

### HIGH PERFORMANCE RETROFIT - DETAIL SET

J-values of building	g asse	mblies		Passive House wi	IIII PAPP V	0.0.011
Climate: PHPP-Standard / TFA: 0 m² / Ov	verheating: %	/ PER: 0 kWh/(m²a)				
			Show spo	ecial cases and secondary ca	lculations	on the right
Description of building assembly					Assembly r	10.
High Performance Retrofit - Wall						1ud
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interior	insulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value supplemen	nt [W/(m²K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	$\lambda$ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mr
1/2" Drywall	0.180					13
3-1/2" Fibreglass batt insulation	0.054	2x4 framing @ 24" o.c.	0.130			89
1/2" OSB sheathing	0.130					13
2" Rockwool ComfortBoard 80	0.033					51
2" Rockwool ComfortBoard 80	0.033					51
Percentage of sec. 1:	94%	Percentage of sec. 2:	6.3%	Percentage of sec. 3:		
Heat transmission resista Interior R <sub>si</sub> .	ance coefficients	-		Total thickne		
Heat transmission resista	ance coefficients	m²K/W		Total thickne		
Heat transmission resista	ance coefficients	m²K/W		Total thickne		0.197
Heat transmission resista Interior R <sub>se</sub> :	0.13 0.13	m²K/W		Total thickne	V/(m <sup>2</sup> K)]:	0.197
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Foundatio	nnce coefficients 0.13 0.13	m²K/W		Total thickne U-value [V	W/(m²K)]:  Assembly r 0	0.197
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.13	m²K/W		Total thickne U-value [V	W/(m²K)]:  Assembly r 0 insulation?	0.197
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	nnce coefficients 0.13 0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	<b>0.197</b> 10. 2ud
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13 0.13 0.13  2-Wall 2-Ground \(\lambda \cdots \(\mathbb{W}/(mK)\)]	m²K/W		Total thickne U-value [V	Assembly r 0 insulation?	0.197  io. 2ud  Thickness [mr
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	0.13 0.13 0.13  2-Wall 2-Ground \(\lambda \text{[W/(mK)]}\) 0.180	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  io. 2ud  Thickness [mi
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation	0.13 0.13 0.13 0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  io. 2ud  Thickness [mi 13 89
Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  1/2" Air gap	2-Wall 2-Ground λ [W/(mK)] 0.180 0.079	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  10.  2ud  Thickness [mt 13 89 13
Heat transmission resists Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation	0.13 0.13 0.13 0.13 0.13	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  io. 2ud  Thickness [mi 13 89
Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  1/2" Air gap	2-Wall 2-Ground λ [W/(mK)] 0.180 0.079	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  10.  2ud  Thickness [mr 13 89 13
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 1/2" Drywall 3-1/2" Fibreglass batt insulation 1/2" Air gap 8" Concrete foundation	0.13 0.13 0.13 0.13 0.13 0.18 0.180 0.054 0.079 2.300	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  10. 2ud  Thickness [mr 13 89 13 203
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 1/2" Drywall 3-1/2" Fibreglass batt insulation 1/2" Air gap 8" Concrete foundation 2" EPS type ii	2-Wall 2-Ground	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  Do. 2ud  Thickness [mi 13 89 13 203 51
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 1/2" Drywall 3-1/2" Fibreglass batt insulation 1/2" Air gap 8" Concrete foundation 2" EPS type ii	2-Wall 2-Ground	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  Do. 2ud  Thickness [mi 13 89 13 203 51
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 1/2" Drywall 3-1/2" Fibreglass batt insulation 1/2" Air gap 8" Concrete foundation 2" EPS type ii	2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300 0.036	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V  Interior  U-value supplemen	Assembly r 0 insulation?	0.197  Do. 2ud  Thickness [mi 13 89 13 203 51
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  1/2" Air gap  8" Concrete foundation  2" EPS type ii  2" EPS type ii	2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300 0.036	Area section 2 (optional)  2x4 framing @ 24" o.c.	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly r 0 insulation? at [W/(mK)]	0.197  No. 2ud  Thickness [mt 13 89 13 203 51 51
Heat transmission resists Interior R <sub>si</sub> Exterior R <sub>se</sub> :  Description of building assembly  High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  1/2" Air gap  8" Concrete foundation  2" EPS type ii  2" EPS type ii	2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.079 2.300 0.036 100%	Area section 2 (optional)  2x4 framing @ 24" o.c.  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)	Assembly r 0 insulation? at [W/(mK)]	0.197  10. 2ud  Thickness [mr 13 89 13 203 51
Description of building assembly High Performance Retrofit - Foundatio  Orientation of building assembly (or R <sub>se</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 1/2" Drywall 3-1/2" Fibreglass batt insulation 1/2" Air gap 8" Concrete foundation 2" EPS type ii 2" EPS type ii	2-Wall 2-Ground	Area section 2 (optional)  2x4 framing @ 24" o.c.  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly r 0 insulation? at [W/(m²K)] λ [W/(mK)]	0.197  no. 2ud  Thickness [mr 13 89 13 203 51 51

Description of building assembly					Assembly r	10.
High Performance Retrofit - Header					C	3ud
Orientation of heilding accomply (or D.)	0.147 II	I				
Orientation of building assembly (or R <sub>si</sub> )		-			insulation?	
Adjacent to (or R <sub>se</sub> )		J		U-value supplemer	- , ,-	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [m
1/2" Dywall	0.180					13
1/2" Fibreglass batt insulation	0.054					13
3" Wood header	0.130					76
1/2" OSB sheathing	0.130					13
2" Rockwool ComfortBoard 80	0.033					51
2" Rockwool ComfortBoard 80	0.033					51
Percentage of sec. 1:	100%	Percentage of sec. 2:		Percentage of sec. 3:		
Interior R <sub>si</sub> . Exterior R <sub>se</sub> .	0.13	m²K/W m²K/W		U-value [V	V/(m²K)]:	0.230
Exterior R <sub>se</sub> :		-		U-value [V		
		-		U-value [V	Assembly r	no.
		-		U-value [V	Assembly r	
Exterior R <sub>se</sub> .  Description of building assembly  High Performance Retrofit - Slab	0.13	-			Assembly r	10.
Exterior $R_{se}$ Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or $R_{si}$ )	0.13 3-Floor	-		Interior	Assembly r	no. 14ud
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>sl</sub> )  Adjacent to (or R <sub>se</sub> )	0.13  3-Floor 2-Ground	m²K/W	λ [W//mK)]	Interior U-value supplemer	Assembly r	no. 14ud
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13  3-Floor 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	Interior	Assembly r	no. 14ud Thickness [m
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m
Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii  2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m 20 51 51
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii  2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii  2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m 20 51 51
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii  2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m 20 51 51
Description of building assembly High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 3/4" Plywood 2" EPS type ii 2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly r	Thickness [m 20 51 51
Description of building assembly High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 3/4" Plywood 2" EPS type ii 2" EPS type ii 4" Concrete slab	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036  2.300	Area section 2 (optional)	λ [W/(mK)]	Interior U-value supplemer Area section 3 (optional)	Assembly in C	Thickness [m 20 51 51
Description of building assembly High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 3/4" Plywood 2" EPS type ii 2" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)]  0.130  0.036  0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemer	Assembly in C	Thickness [m 20 51 51
Exterior R <sub>se</sub> Description of building assembly  High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2" EPS type ii  2" EPS type ii  4" Concrete slab	3-Floor 2-Ground λ [W/(mK)] 0.130 0.036 0.036 2.300	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly in Continuous and Continuou	Thickness [m 20 51 102
Description of building assembly High Performance Retrofit - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 3/4" Plywood 2" EPS type ii 2" EPS type ii 4" Concrete slab	3-Floor 2-Ground λ [W/(mK)] 0.130 0.036 0.036 2.300	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplemer Area section 3 (optional)	Assembly in Continuous and Continuou	Thickness [m 20 51 102

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.197	28.82	5.076
Foundation	0.203	27.97	4.926
Window Header	0.230	24.69	4.348
Slab	0.312	18.2	3.205

# **NOTES:**

Project No.



Revisions

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1. . 2. . 3.

Project North



Scale

High-Perform. Retrofit

D1.2

Sheet No. ©2020

### **PASSIVE HOUSE - DETAIL SET**

J-values of building	g asse	mblies		Passive House w	idiriii v	
Climate: PHPP-Standard / TFA: 0 m² / Ov	erheating: %	/ PER: 0 kWh/(m²a)				
			Show sp	ecial cases and secondary ca	alculations	on the right
Description of building assembly					Assembly r	10.
Passive House - Wall					<u> </u>	1ud
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interior	r insulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value supplemen	nt [W/(m²K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mr
1/2" Drywall	0.180					13
3-1/2" Service cavity	0.483	2x4 framing @ 24" o.c.	0.130			89
1/2" Plywood	0.130					13
3-1/2" Cellulose	0.039	2x4 framing @ 24" o.c.	0.130			89
3-3/4" Cellulose	0.039					95
5-1/2" Cellulose	0.039	2x6 framing @ 24" o.c	0.130			140
1/2" Plywood sheathing	0.130					13
3" Rockwool ComfortBoard 80  Percentage of sec. 1:	0.033 94%	Percentage of sec. 2:	6.3%	Percentage of sec. 3:		76
Heat transmission resista Interior R <sub>si</sub> . Exterior R <sub>se</sub> .	0.13	m²K/W m²K/W		Total thickne	ess [cm]:	52.8 0.093
Interior R <sub>si</sub> :	0.13	m²K/W			ess [cm]:	
$\begin{array}{c} \text{Interior $R_{s_0}$:} \\ \\ \text{Exterior $R_{s_0}$:} \\ \\ \\ \text{Description of building assembly} \end{array}$	0.13	m²K/W			ess [cm]:  N/(m²K)]:  Assembly r	0.093
Interior R <sub>se</sub> :	0.13	m²K/W			ess [cm]:  N/(m²K)]:  Assembly r	0.093
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation	0.13 0.13	m²K/W		U-value [V	ess [cm]:  N/(m²K)]:  Assembly r	0.093
	0.13 0.13	m²K/W		U-value [V	ess [cm]:  N/(m²K)]:  Assembly r  0	0.093
	0.13 0.13	m²K/W m²K/W	λ IW/(mK)	U-value [V	Assembly root insulation?	0.093
	0.13 0.13 2-Wall 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093  no. 2ud  Thickness [mr
	0.13 0.13	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093
	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093 no. 2ud Thickness [mr
Interior R <sub>sg</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093 no. 2ud Thickness [mr 13 70
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093  no. 2ud  Thickness [mr 13 70 203
Description of building assembly Passive House - Foundation  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036 0.036	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093  10. 2ud  Thickness [mr 13 70 203 70 51
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly root insulation?	0.093  10. 2ud  Thickness [mr 13 70 203 70
Description of building assembly Passive House - Foundation  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036 0.036	m²K/W m²K/W	λ [W/(mK)]	U-value [V	Assembly r 0  r insulation? λ [W/(m²K)]	0.093  10. 2ud  Thickness [mr 13 70 203 70 51
Interior R <sub>se</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS  2" EPS  2" EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)	λ [W/(mK)]	U-value [V	Assembly r 0  r insulation? λ [W/(m²K)]	0.093  Thickness [mr 13 70 203 70 51 51
Interior R <sub>se</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS  2" EPS  2" EPS	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value [V	Assembly r 0  r insulation?  λ [W/(mK)]	0.093  10. 2ud  Thickness [mr 13 70 203 70 51
Interior R <sub>se</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Foundation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS  2" EPS  Percentage of sec. 1:	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value [V	Pess [cm]:  N/(m²K)]:  Assembly r 0  r insulation? nt [W/(m²K)]  λ [W/(mK)]	0.093  no. 2ud  Thickness [mr 13 70 203 70 51 51 45.8

Description of building assembly					Assembly r	10.
Passive House - Header					0	3ud
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interio	r insulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value suppleme	nt [W/(m²K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness
1/2" Drywall	0.180					13
3-1/2" Service cavity	0.483	2x6 @ 24" o.c	0.130			89
1/2" Plywood	0.130					13
9-3/4" Cellulose	0.039					248
3" Wood header	0.130					76
1/2" Plywood sheathing	0.130					13
3" Rockwool ComfortBoard 80	0.033					76
Percentage of sec. 1:	94%	Percentage of sec. 2:	6.3%	Percentage of sec. 3		
Interior R <sub>se</sub> : Exterior R <sub>se</sub> :	0.13	m²K/W m²K/W		U-value [\	<b>W</b> /(m²K)]:	0.100
				U-value [۱	W/(m²K)]:	
Exterior R <sub>se</sub> :				U-value [\	Assembly r	
	0.13				Assembly r	10.
Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Slab	0.13 3-Floor				Assembly r 0	no. 14ud
Exterior R <sub>se</sub> :  Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )	0.13 3-Floor		λ [W/(mK)]	Interio	Assembly r 0	no. 14ud
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13  3-Floor 2-Ground	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	no. 14ud
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13  3-Floor 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	no. 14ud Thickness
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab	0.13  3-Floor 2-Ground  \(\lambda \text{[W/(mK)]}\) 2.300	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	Thickness
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	Thickness
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	Thickness 104 102
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	Thickness 104 102
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0	Thickness
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii  4" EPS type ii	3-Floor 2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)	λ [W/(mK)]	Interio U-value suppleme Area section 3 (optional)	Assembly r 0  r insulation?  nt [W/(m²K)]	Thickness
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii	0.13  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interio U-value suppleme	Assembly r 0  r insulation?  nt [W/(m²K)]	Thickness 104 102
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii  4" EPS type ii	3-Floor 2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interio U-value suppleme Area section 3 (optional)  Percentage of sec. 3	Assembly r 0 r insulation? nt [W/(m²K)] λ [W/(mK)]	Thickness 104 102 102
Description of building assembly  Passive House - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete slab  4" EPS type ii  4" EPS type ii  Percentage of sec. 1:	3-Floor 2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interio U-value suppleme Area section 3 (optional)	Assembly r 0 r insulation? nt [W/(m²K)] λ [W/(mK)]	Thickness

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.093	61.05	10.75
Foundation	0.143	39.71	6.993
Window Header	0.102	55.67	9.804
Slab	0.170	33.40	5.882

# **NOTES:**

# IN FORM

# ALBERTA

Project No.



A

Notes

IOT EOD CONSTBILLT

Project North



Passive House

### HIGH PERFORMANCE POLYCORE - DETAIL SET

l-values of building	y asse					
Climate: PHPP-Standard / TFA: 0 m² / Ov	erheating: %	/ PER: 0 kWh/(m²a)	Show sp	ecial cases and secondary ca	lculations	on the right
				,		_
Description of building assembly					Assembly n	10.
High Performance PolyCore - Wall						1ud
Orientation of building assembly (or R <sub>si</sub> )	2 Mall	T		Interior	insulation?	
Adjacent to (or R <sub>se</sub> )		-		U-value supplemer		
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)		Thickness [m
1/2" Drywall	0.180	/ usu seedon 2 (opusiiai)	/ [**/(III.()]	/ nod occurs o (optional)	, [W(IIIV)]	13
1/2" Drywall	0.180					13
3-1/2" EPS	0.036	2x4 steel stud @ 16" o.c.	50.000			89
9-1/2" EPS	0.036					241
1" EPS	0.036	1x1 steel stud @ 16" o.c.	50.000			25
Percentage of sec. 1:	100%	Percentage of sec. 2:	0.0%	Percentage of sec. 3:		
Heat transmission resista Interior R <sub>se</sub> : Exterior R <sub>se</sub> :				Total thickne		38.1
Interior R <sub>si</sub> :	nce coefficients	s m²K/W		Total thickne		
Interior $R_{\text{st}}$ : Exterior $R_{\text{se}}$ : Description of building assembly	nce coefficients 0.13 0.13	s m²K/W		Total thickne	V/(m²K)]:	0.099
Interior R <sub>si</sub> :	nce coefficients 0.13 0.13	s m²K/W		Total thickne	V/(m²K)]:	0.099
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati	nce coefficients 0.13 0.13	s m²K/W		Total thickne U-value [V	V/(m²K)]:	0.099
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> )	nce coefficients 0.13 0.13 on	s m²K/W		Total thickne U-value [V	W/(m²K)]:  Assembly n 0 insulation?	0.099
Interior R <sub>ai</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	on  2-Wall 2-Ground	m²K/W m²K/W		Total thickne  U-value [V	Assembly n  O  insulation?	0.099
Interior R <sub>al</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	nce coefficients 0.13 0.13 on 2-Wall 2-Ground λ [W/(mK)]	s m²K/W		Total thickne U-value [V	Assembly n  O  insulation?	0.099  io. 2ud  Thickness [m
Interior R <sub>al</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180	m²K/W m²K/W		Total thickne  U-value [V	Assembly n  O  insulation?	0.099
Interior R <sub>al</sub> : Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  1/2" Drywall	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.180	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V	Assembly n  O  insulation?	0.099 io. 2ud Thickness [m
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1 1/2" Drywall 1/2" Drywall 3-1/2" EPS	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.180 0.036	m²K/W m²K/W		Total thickne  U-value [V	Assembly n  O  insulation?	0.099  o. 2ud  Thickness [m     13     13     89
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1 1/2" Drywall 1/2" Drywall 3-1/2" EPS 3-1/2" EPS	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 0.036	Area section 2 (optional)  2x4 steel stud @ 16" o.c.	λ [W/(mK)] 50.000	Total thickne  U-value [V	Assembly n  O  insulation?	0.099  10. 2ud  Thickness [m  13  13  89  89
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1 1/2" Drywall 1/2" Drywall 3-1/2" EPS 3-1/2" EPS	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.180 0.036	m²K/W m²K/W	λ [W/(mK)]	Total thickne  U-value [V	Assembly n  O  insulation?	0.099  o. 2ud  Thickness [m 13 13 89
Interior R <sub>al</sub> : Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  1/2" Drywall	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 0.036	Area section 2 (optional)  2x4 steel stud @ 16" o.c.	λ [W/(mK)] 50.000	Total thickne  U-value [V	Assembly n  O  insulation?	0.099  10. 2ud  Thickness [m  13  13  89  89
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1 1/2" Drywall 1/2" Drywall 3-1/2" EPS 3-1/2" EPS	nce coefficients 0.13 0.13  on  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 0.036	Area section 2 (optional)  2x4 steel stud @ 16" o.c.	λ [W/(mK)] 50.000	Total thickne  U-value [V	Assembly n  O  insulation?	0.099  10. 2ud  Thickness [m  13  13  89  89
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> )  Area section 1 1/2" Drywall 1/2" Drywall 3-1/2" EPS 3-1/2" EPS 1" EPS	nce coefficients 0.13 0.13  0.13  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 0.036 100%	Area section 2 (optional)  2x4 steel stud @ 16" o.c.  1x1 steel stud @ 16" o.c.  Percentage of sec. 2:	λ [W/(mK)] 50.000	Interior U-value supplement V-value Supplement V-va	Assembly n 0 insulation? at [W/(mK)]	0.099  o. 2ud  Thickness [m 13 13 89 89 25
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Foundati  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  1/2" Drywall  3-1/2" EPS  3-1/2" EPS	nce coefficients 0.13 0.13  0.13  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 0.036 100%	Area section 2 (optional)  2x4 steel stud @ 16" o.c.  1x1 steel stud @ 16" o.c.  Percentage of sec. 2:	λ [W/(mK)] 50.000	Interior U-value [V  U-value [	Assembly n 0 insulation? at [W/(mK)]	0.099  10. 2ud  Thickness [mr 13 13 89 89

Description of building assembly					Assembly r	no.
High Performance PolyCore - Header					C	3ud
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interior	insulation?	
Adjacent to (or R <sub>se</sub> )		-		U-value supplemen		
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	
1/2" Drywall	0.180					13
1/2" Drywall	0.180					13
3-1/2" EPS	0.036	2x4 steel stud @ 16" o.c.	50.000			89
9-1/2" EPS	0.036					241
1" EPS	0.036	1x1 steel stud @ 16" o.c.	50.000			25
Percentage of sec. 1:	100%	Percentage of sec. 2:	0.0%	Percentage of sec. 3:		
r crosmage or cost in	1.00%	i diddinage of oddi 2.	0.070	, orderinge or oder or		
Heat transmission resista	ince coefficients	<b>3</b>		Total thickne	ess [cm]:	38.1
Interior R.:	0.13	m²K/W				
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :	0.13 0.13	m²K/W m²K/W		U-value [\		
		-		U-value [\	<b>N</b> /( <b>m</b> <sup>2</sup> <b>K</b> )]:	
Exterior R <sub>se</sub> :		-		U-value [\	Assembly r	
Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Slab	0.13	-			Assembly r	no. )4ud
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )	0.13 3-Floor	-		Interior	Assembly r	no. )4ud
Exterior R <sub>se</sub> :  Description of building assembly  High Performance PolyCore - Slab	0.13  3-Floor 2-Ground	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly r	no. )4ud
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13 3-Floor	-	λ [W/(mK)]	Interior	Assembly r	no. )4ud
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13  3-Floor 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly r	no. )4ud Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2-1/2" EPS	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2-1/2" EPS	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2-1/2" EPS	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2-1/2" EPS	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly  High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  3/4" Plywood  2-1/2" EPS	0.13  3-Floor 2-Ground λ [W/(mK)] 0.130 0.036	Area section 2 (optional)		Interior U-value supplemen	Assembly r	Thickness
Description of building assembly High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>so</sub> ) Area section 1  3/4" Plywood 2-1/2" EPS 3" EPS	3-Floor 2-Ground λ [W/(mK)] 0.130 0.036 0.036	Area section 2 (optional)  2-1/2" steel stringer  Percentage of sec. 2:	50.000	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly in C	Thickness 19 64 76
Description of building assembly High Performance PolyCore - Slab  Orientation of building assembly (or R <sub>si</sub> ) Adjacent to (or R <sub>se</sub> ) Area section 1 3/4" Plywood 2-1/2" EPS 3" EPS  Percentage of sec. 1:	3-Floor 2-Ground λ [W/(mK)] 0.130 0.036 0.036	Area section 2 (optional)  2-1/2" steel stringer  Percentage of sec. 2:	50.000	Interior U-value supplement Area section 3 (optional)	Assembly in C	Thickness

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.099	57.35	10.1
Foundation	0.175	32.45	5.714
Window Header	0.099	57.35	10.1
Slab	0.244	23.27	4.098

# **NOTES:**



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Scale
Poly-Core

### NET ZERO DOUBLE STUD - DETAIL SET

J-values of building	g asse	mblies		Passive House wi	th PHPP V	ersion 10.6 E
/ Climate: PHPP-Standard / TFA: 0 m² / Ov						
			Show sp	ecial cases and secondary ca	lculations	on the right
Description of building assembly					Assembly r	10.
Net Zero Double Stud - Wall						1ud
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interior	insulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value supplemen	t [W/(m²K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	$\lambda$ [W/(mK)]	Thickness [mn
1/2" Drywall	0.180					13
1-1/2" Service cavity	0.206			2x4 on flat @ 16" o.c.	0.130	38
1/2" Plywood	0.130					13
3-1/2" Cellulose	0.039	2x4 framing @ 16" o.c.	0.130			89
2" Cellulose	0.039					51
3-1/2" Cellulose	0.039	2x4 framing @ 16" o.c.	0.130			89
1/2" Plywood sheathing	0.130					13
	000/	Percentage of sec. 2:	9.4%	Percentage of sec. 3:	21.9%	
Percentage of sec. 1:  Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :	nce coefficients		61.70	Total thickne	ess [cm]:	30.6
Heat transmission resista	nce coefficients	m²K/W	<b>9</b>	Total thickne	ess [cm]:	
Heat transmission resista $ \text{Interior } R_{si}. $ $ \text{Exterior } R_{se}. $ $ \text{Description of building assembly} $	0.13 0.13	m²K/W		Total thickne	ess [cm]: V/(m²K)]: Assembly r	<b>0.169</b>
Heat transmission resista $ \text{Interior } R_{\text{si}}. $ $ \text{Exterior } R_{\text{se}}. $	0.13 0.13	m²K/W		Total thickne	ess [cm]: V/(m²K)]: Assembly r	0.169
Heat transmission resista Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Double Stud - Foundation -	0.13 0.13	m²K/W		Total thickne U-value [V	ess [cm]: W/(m²K)]: Assembly r	<b>0.169</b>
Heat transmission resista Interior R <sub>si</sub> . Exterior R <sub>se</sub> .  Description of building assembly  Net Zero Double Stud - Foundation -  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.13	m²K/W		Total thickne U-value [V	ess [cm]: W/(m²K)]: Assembly r 0 insulation?	<b>0.169</b>
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resista Interior R <sub>si</sub> .  Exterior R <sub>se</sub> .  Description of building assembly  Net Zero Double Stud - Foundation -  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.13	m²K/W		Total thickne U-value [V	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	<b>0.169</b> 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	<b>0.169</b> 2ud
Heat transmission resistation for the sistensis of the si	0.13 0.13 0.13 N/A λ [W/(mK)]	m²K/W m²K/W		Total thickne  U-value [V  Interior  U-value supplement	Assembly r  or o	0.169 no. 2ud
Heat transmission resistatinterior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Double Stud - Foundation -  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13 0.13 0.13  N/A  λ [W/(mK)]	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:		Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	PSS [cm]:  W/(m²K)]:  Assembly r 0  insulation?  It [W/(m²K)]  λ [W/(mK)]	0.169 no. 2ud
Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Double Stud - Foundation -  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13 0.13 0.13  N/A  λ [W/(mK)]	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:		Interior U-value supplement Area section 3 (optional)	PSS [cm]:  W/(m²K)]:  Assembly r 0  insulation?  It [W/(m²K)]  λ [W/(mK)]	<b>0.169</b>
Heat transmission resistation interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Double Stud - Foundation -  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  Percentage of sec. 1:	0.13 0.13 0.13  N/A  λ [W/(mK)]	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:		Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Pass [cm]:  Assembly r  0  insulation?  It [W/(m²K)]  λ [W/(mK)]	0.169 no. 2ud

				Assembly r	10.
				0	3ud
2-Wall			Interior	insulation?	
	-		U-value supplemen	nt [W/(m²K)]	
λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness
0.180					13
0.206	2x4 @ 16" o.c.	0.130			38
0.130					13
0.039	2x4 @ 16" o.c.	0.130			89
0.039					64
0.130					76
0.130					13
91%	Percentage of sec. 2:	9.4%	Percentage of sec. 3:		
				Assembly r	
					o. 4ud
3-Floor			Interior		
3-Floor 2-Ground			Interior U-value supplemer	0 insulation?	4ud
3-Floor 2-Ground λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]		0 insulation?	4ud
2-Ground	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	4ud
2-Ground λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	4ud Thickness
2-Ground λ [W/(mK)] 2.300	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	4ud Thickness 152
2-Ground λ [W/(mK)] 2.300 0.036	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	Thickness 152 102
2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	Thickness 152 102 203
2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	Thickness 152 102 203
2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)	λ [W/(mK)]	U-value supplemen	r insulation?	Thickness 152 102 203
2-Ground λ [W/(mK)] 2.300 0.036 0.036 0.036		λ [W/(mK)]	U-value supplement Area section 3 (optional)	r insulation?	Thickness 152 102 203
2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value supplemen	r insulation?	Thickness 152 102 203
2-Ground λ [W/(mK)] 2.300 0.036 0.036 0.036	Percentage of sec. 2:	λ [W/(mK)]	U-value supplement Area section 3 (optional)	nt [W/(m²K)]	Thickness 152 102 203
	0.180 0.206 0.130 0.039 0.039 0.130 0.130	3-Ventilated  λ [W/(mK)] Area section 2 (optional)  0.180  0.206 2x4 @ 16" o.c.  0.130  0.039 2x4 @ 16" o.c.  0.130  0.130  91% Percentage of sec. 2:  nce coefficients  0.13 m²K/W	3-Ventilated  λ [W/(mK)] Area section 2 (optional) λ [W/(mK)]  0.180  0.206 2x4 @ 16" o.c. 0.130  0.039 2x4 @ 16" o.c. 0.130  0.130  0.130  91% Percentage of sec. 2: 9.4%  nce coefficients  0.13 m²K/W	3-Ventilated  λ [W/(mK)] Area section 2 (optional) λ [W/(mK)] Area section 3 (optional)  0.180  0.206 2x4 @ 16" o.c. 0.130  0.039 2x4 @ 16" o.c. 0.130  0.130  0.130  91% Percentage of sec. 2: 9.4% Percentage of sec. 3:  Total thickness  Total thickness	2-Wall

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.169	33.60	5.917
Foundation	n/a	n/a	n/a
Window Header	0.203	27.97	4.926
Slab	0.070	81.11	14.29

# **NOTES:**

# IN FORM

# ALBERTA

Project No.



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Project North



Scale

Net-Zero Double Stud

### NET ZERO DOUBLE STUD - DETAIL SET

J-values of building	g asse	mblies		Passive House with	FIIFF VE	
Climate: PHPP-Standard / TFA: 0 m² / Ov	erheating: %					
			Show spe	cial cases and secondary calcu	ulations o	on the right
Description of building assembly				As	ssembly no	).
Net Zero Steel Stud Exterior Insulation	- Wall					ud
Orientation of building assembly (or R <sub>si</sub> )		-		Interior ins	sulation?	
Adjacent to (or R <sub>se</sub> )				U-value supplement [V		
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional) λ [	[W/(mK)] T	Thickness [mi
1/2" Drywall	0.180					13
3-1/2" Structrue - service cavity	0.483	2x4 steel stud @ 16" o.c.	50.000			89
1/2" Plywood sheathing	0.130					13
2" GPS exterior insulation	0.030					51
2" GPS exterior insulation	0.030					51
Percentage of sec. 1:	100%	Percentage of sec. 2:	0.0%	Percentage of sec. 3:		
Heat transmission resista $ \text{Interior } R_{si}. $ $ \text{Exterior } R_{se}. $	0.13	m²K/W m²K/W		Total thickness U-value [W/(		21.7
Heat transmission resista	0.13	m²K/W				
Heat transmission resista $ \text{Interior } R_{si}. $ $ \text{Exterior } R_{se}. $ $ \text{Description of building assembly} $	0.13 0.13	m²K/W m²K/W		U-value [W/(	(m²K)]:	0.249
Heat transmission resista Interior R <sub>si</sub> :	0.13 0.13	m²K/W m²K/W		U-value [W/(	(m²K)]:	0.249
Heat transmission resista Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation	0.13 0.13 - Foundation	m²K/W m²K/W		U-value [W/(	(m²K)]:	0.249
Heat transmission resista Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.13 - Foundation 2-Wall	m²K/W m²K/W		U-value [W/(	(m²K)]: ssembly no 02 sulation?	0.249
Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13 0.13 - Foundation 2-Wall 2-Ground	m²K/W m²K/W	λ [W//(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249 o. 2ud
Heat transmission resista Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )	0.13 0.13 - Foundation 2-Wall	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249 o. 2ud
Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)]	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249
Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	0.13 0.13 - Foundation  2-Wall  2-Ground  λ [W/(mK)]  0.180	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	O.249  O. Chickness [mi 13
Heat transmission resista Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS	0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249 D. Pud Thickness [mi 13 70
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation	0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249  D. 2ud  Chickness [m 13 70 203
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation	0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249  D. 2ud  Chickness [mi 13 70 203
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation	0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300	m²K/W m²K/W	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [N	ssembly no 02 sulation?	0.249  D. 2ud  Chickness [mt 13 70 203
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [  Area section 3 (optional) \( \lambda \) [  Percentage of sec. 3:	(m²K)]: [ sssembly no 02 sulation? W/(m²K)] [W/(m/K)] 1	0.249  Chickness [mt 13 70 203 70
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS  Heat transmission resista	0.13 0.13 0.13 0.13  - Foundation  2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [v  Area section 3 (optional) \( \lambda \)	(m²K)]: [ sssembly no 02 sulation? W/(m²K)] [W/(m/K)] 1	0.249  D. 2ud  Chickness [mr 13 70 203
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>se</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  2-3/4" Quadlock ICF - EPS  8" Concrete foundation  2-3/4" Quadlock ICF - EPS	0.13 0.13 0.13 - Foundation 2-Wall 2-Ground λ [W/(mK)] 0.180 0.036 2.300 0.036	m²K/W m²K/W  Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value [W/(  As  Interior ins  U-value supplement [  Area section 3 (optional) \( \lambda \) [  Percentage of sec. 3:	ssembly no 02 sulation? W/(m²K)] [ [W/(m²K)] 1	0.249  Chickness [mr 13 70 203 70  35.6

Description of building assembly					Assembly I	no.
Net Zero Steel Stud Exterior Insulation	- Header				C	3ud
Orientation of building assembly (or R <sub>si</sub> )	2 \\/all	<u> </u>		Interior	r insulation?	
		-				
Adjacent to (or R <sub>se</sub> )		Area costion 2 (ontional)	2 DA////C)1	U-value supplemen		
	λ [W/(mK)] 0.180	Area section 2 (optional)	λ [vv/(mk)]	Area section 3 (optional)	λ [VV/(IIIK)]	Thickness [
1/2" Drywall		0.4 -41 -41 0.40"	E0 000			
3-1/2" Structure -service cavity	0.483	2x4 steel stud @ 16" o.c.	50.000			89
1/2" Plywood sheathing	0.130					13
2" GPS exterior insulation	0.030					51
2" GPS exterior insulation	0.030					51
Percentage of sec. 1:	91%	Percentage of sec. 2:	9.4%	Percentage of sec. 3:		
Interior $R_{se}$ :	0.13	m²K/W m²K/W		U-value [\	W/(m²K)]:	0.255
	0.13	-		U-value [\	Assembly I	no.
Exterior R <sub>se</sub> :	0.13	-		U-value [\	Assembly I	
Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Steel Stud Exterior Insulation	0.13 - Slab	-			Assembly I	no. )4ud
	0.13 - Slab 3-Floor	-			Assembly (	no. )4ud
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )	0.13 - Slab 3-Floor	-	λ [W/(mK)]	Interior	Assembly of Control of the Control o	no. 04ud
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.13  - Slab  3-Floor 2-Ground	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>st</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.13  - Slab  3-Floor 2-Ground λ [W/(mK)]	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	no. )4ud Thickness [
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>st</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete	0.13  - Slab  3-Floor 2-Ground λ [W/(mK)] 2.300	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	Thickness [
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete  2" EPS type ii	0.13  - Slab  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	m²K/W	λ [W/(mK)]	Interior U-value supplemen	Assembly of Control of the Control o	Thickness [i
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete 2" EPS type ii 2" EPS type ii	0.13  - Slab  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036	Area section 2 (optional)	λ [W/(mK)]	Interior U-value supplemen	Assembly in Continuous	Thickness [i
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete  2" EPS type ii	- Slab  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly in C	Thickness [i 102 51 51
Description of building assembly  Net Zero Steel Stud Exterior Insulation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  4" Concrete  2" EPS type ii  2" EPS type ii  Percentage of sec. 1:	- Slab  3-Floor 2-Ground λ [W/(mK)] 2.300 0.036 0.036	Area section 2 (optional)  Percentage of sec. 2:	λ [W/(mK)]	U-value supplement Area section 3 (optional)	Assembly in C	Thickness [I 102 51 51

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.249	22.80	4.016
Foundation	0.239	23.76	4.184
Window Header	0.249	22.80	4.016
Slab	0.328	17.31	3.049

# **NOTES:**

Project No.



<u>A</u>

Notes

OT FOR CONSTRICT

Project North



Scale

Net-Zero Steel Stud

D1.6
Sheet No. ©2020

J-values of building	g asse	mblies		Passive House wi	th PHPP V	ersion 10.6 El
Climate: PHPP-Standard / TFA: 0 m² / Ov	erheating: %	/ PER: 0 kWh/(m²a)				
	-		Show spe	ecial cases and secondary ca	lculations	on the right -
Description of building assembly					Assembly n	
Net Zero Retrofit - Wall						1ud
THE ZEIG FRENCH WAII						iuu
Orientation of building assembly (or R <sub>si</sub> )	2-Wall			Interior	insulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value supplemen	t [W/(m²K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
1/2" Drywall	0.180					13
3-1/2" Old cavity insulation	0.055	2x4 framing @ 16" o.c.	0.130			89
1/2" Wood slat sheathing	0.130					13
1-1/2" Cellulose	0.039	1-1/2" exterior frame	0.130			38
4-1/2" Cellulose	0.039					114
1-1/2" Cellulose	0.039	1-1/2" exterior frame	0.130			38
Percentage of sec. 1:	91%	Percentage of sec. 2:	9.4%	Percentage of sec. 3:		
Heat transmission resista	ince coefficients	_		Total thickne	ss [cm]:	30.5
Heat transmission resista Interior R <sub>si</sub> :	0.13	m²K/W				
		1		Total thickne U-value [V		
Interior R <sub>si</sub> :	0.13	m²K/W				
Interior R <sub>si</sub> :	0.13	m²K/W				
$\begin{array}{c} \text{Interior $R_{si}$:} \\ \text{Exterior $R_{sc}$:} \\ \\ \text{Description of building assembly} \end{array}$	0.13	m²K/W			W/(m²K)]:	0.154
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :	0.13	m²K/W			W/(m²K)]:	0.154
$\begin{array}{c} \text{Interior $R_{si}$:} \\ \text{Exterior $R_{se}$:} \\ \\ \text{Description of building assembly} \\ \\ \text{Net Zero Retrofit - Foundation} \\ \end{array}$	0.13 0.13	m²K/W		U-value [V	W/(m²K)]:	0.154
	0.13 0.13	m²K/W		U-value [V	Assembly n  0  insulation?	0.154
	0.13 0.13 2-Wall 2-Ground	m²K/W m²K/W		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154
	0.13 0.13 2-Wall 2-Ground \$\triangle [W/(mK)]	m²K/W	λ [W/(mK)]	U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154
	0.13 0.13  2-Wall  2-Ground  \$\lambda [W/(mK)]  0.180	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  no. 2ud  Thickness [mm
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054	m²K/W m²K/W	λ [W/(mK)] 0.130	U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154 no. 2ud Thickness [mm 13 89
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii	0.13 0.13 2-Wall 2-Ground \$\lambda\$ [W/(mK)] 0.180 0.054 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii	0.13 0.13 2-Wall 2-Ground $\lambda$ [W/(mK)] 0.180 0.054 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51 51
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii	0.13 0.13 2-Wall 2-Ground \$\lambda\$ [W/(mK)] 0.180 0.054 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii	0.13 0.13 2-Wall 2-Ground $\lambda$ [W/(mK)] 0.180 0.054 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51 51
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii	0.13 0.13 2-Wall 2-Ground $\lambda$ [W/(mK)] 0.180 0.054 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51 51
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii	0.13 0.13 2-Wall 2-Ground $\lambda$ [W/(mK)] 0.180 0.054 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51 51
Interior R <sub>si</sub> :  Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii	0.13 0.13 2-Wall 2-Ground $\lambda$ [W/(mK)] 0.180 0.054 0.036 0.036	m²K/W m²K/W  Area section 2 (optional)		U-value [V	Assembly n  0  insulation?  it [W/(m²K)]	0.154  10. 2ud  Thickness [mm 13 89 51 51
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii  8" Concrete foundation	0.13 0.13 2-Wall 2-Ground λ [W/(mK)] 0.180 0.054 0.036 0.036 2.300	m²K/W m²K/W  Area section 2 (optional)  2x4 framing @ 24" o.c.	0.130	U-value [V  Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly n 0 insulation? t [W/(m²K)] λ [W/(mK)]	0.154  no. 2ud  Thickness [mm
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii  8" Concrete foundation	0.13 0.13 0.13 2-Wall 2-Ground \$\lambda[W/(mK)]\$ 0.180 0.054 0.036 0.036 2.300	m²K/W m²K/W  Area section 2 (optional)  2x4 framing @ 24" o.c.  Percentage of sec. 2:	0.130	U-value [V  Interior  U-value supplement  Area section 3 (optional)	Assembly n 0 insulation? t [W/(m²K)] λ [W/(mK)]	0.154  no. 2ud  Thickness [mm] 13 89 51 51
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Foundation  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  3-1/2" Fibreglass batt insulation  2" EPS type ii  2" EPS type ii  8" Concrete foundation  Percentage of sec. 1:	0.13 0.13 0.13 2-Wall 2-Ground \$\lambda[W/(mK)]\$ 0.180 0.054 0.036 0.036 2.300	m²K/W m²K/W  Area section 2 (optional)  2x4 framing @ 24" o.c.  Percentage of sec. 2:	0.130	U-value [V  Interior U-value supplement Area section 3 (optional)  Percentage of sec. 3:	Assembly n 0 insulation? t [W/(m²K)] λ [W/(m²K)]	0.154  no. 2ud  Thickness [mm. 13 89 51 51 203

# **ASSEMBLY VALUES**

	U - Value	R - Value	RSI
Wall Assembly	0.154	36.87	6.494
Foundation	0.214	26.53	4.673
Window Header	0.170	33.40	5.882
Slab	0.310	18.32	3.226
Roof	0.124	45.79	8.065

Net Zero Retrofit - Header					Assembly n	
					0;	Bud
Orientation of building assembly (or $R_{si}$ )	2-Wall			Interior i	nsulation?	
Adjacent to (or R <sub>se</sub> )	3-Ventilated			U-value supplement	[W/(m <sup>2</sup> K)]	
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)] <sup>1</sup>	Thickness [n
1/2" Drywall	0.180		. , ,	· · · · · · · · · · · · · · · · · · ·		13
•	0.055					13
1/2" Old cavity insulation						
3" Wood header	0.130					76
1/2" Wood slat sheathing	0.130					13
1-1/2" Cellulose	0.039	1-1/2" exterior frame	0.130			38
4-1/2" Cellulose	0.039					114
1-1/2" Cellulose	0.039	1-1/2" exterior frame	0.130			38
1-1/2 Cellulose	0.039	1-1/2 exterior frame	0.130			30
Percentage of sec. 1:	91%	Percentage of sec. 2:	9.4%	Percentage of sec. 3:		
Heat transmission resista	nce coefficients			Total thicknes	ss [cm]:	30.5
Interior R <sub>si</sub> :	0.13	m²K/W			,	
Exterior R <sub>se</sub> :	0.13	m²K/W		U-value [W	//m²K\1.	0.170
EXICITO IN <sub>Se</sub> .	0.13	Im row		O-value [vv	/(III IX)]. [	0.170
Description of building assembly				,	Assembly n	<b>)</b> .
Net Zero Retrofit - Slab					04	lud
Orientation of building assembly (or R <sub>si</sub> )	3-Floor			Interior i	nsulation?	
Adjacent to (or R <sub>se</sub> )					-	
		<u> </u>		U-value supplement		
Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [n
3/4" Plywood	0.130					20
3/4" EPS between strips	0.036	3/4x3 embeded plywood	0.130			20
3-1/4" EPS	0.036					83
4" Concrete slab	2.300					102
4 Concrete slab	2.500					102
Percentage of sec. 1:	100%	Percentage of sec. 2:		Percentage of sec. 3:		
reiceillage of sec. 1.	100%	Percentage of Sec. 2.		reiteillage of sec. 5.		
Heat transmission resista				Total thicknes	ss [cm]:	22.5
	0.17	m²K/W			1	
Interior R <sub>si</sub> :					1	
Interior R <sub>si</sub> : Exterior R <sub>se</sub> :	0.00	m²K/W		U-value [W		0.310
		+		U-value [W		0.310
		+		U-value [W		0.310
Exterior R <sub>ee</sub> .		+			//(m²K)]:	
		+			//(m²K)]:	D.
		+			//(m²K)]:	
		+			//(m²K)]:	D.
	0.00	+		,	//(m²K)]:	D.
	0.00	+		Interior i	Assembly n	D.
Exterior R <sub>se</sub> :  Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )	0.00  1-Roof 3-Ventilated	m <sup>2</sup> K/W	2 BANGERO	Interior i U-value supplement	Assembly n  0:  nsulation? [W/(m²K)]	o. Sud
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	1-Roof 3-Ventilated	+	λ [W/(mK)]	Interior i U-value supplement	Assembly n  0:  nsulation? [W/(m²K)]	o. 5ud Thickness [n
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	0.00  1-Roof 3-Ventilated  \(\lambda \text{[W/(mK)]}\)  0.180	m <sup>2</sup> K/W	λ [W/(mK)]	Interior i U-value supplement	Assembly n  0:  nsulation? [W/(m²K)]	5. 5ud Thickness [n
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall	1-Roof 3-Ventilated	m <sup>2</sup> K/W	λ [W/(mK)]	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	o. 5ud Thickness [n
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1	0.00  1-Roof 3-Ventilated  \(\lambda \text{[W/(mK)]}\)  0.180	m <sup>2</sup> K/W	λ [W/(mK)]	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	5. 5ud Thickness [n
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>so</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing	0.00  1-Roof 3-Ventilated λ [W/(mK)] 0.180 0.000 0.130	m²K/W  Area section 2 (optional)		Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	5. 5ud Thickness [n 13 610 13
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose	0.00  1-Roof 3-Ventilated λ [W/(mK)] 0.180 0.000 0.130 0.039	m <sup>2</sup> K/W	λ [W/(mK)] 0.130	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	5. 5ud  Thickness [n 13 610 13 44
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated  \$\lambda [W/(mK)]\$  0.180  0.000  0.130  0.039  0.039	Area section 2 (optional)  1-3/4" i-joist cord	0.130	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose	0.00  1-Roof 3-Ventilated λ [W/(mK)] 0.180 0.000 0.130 0.039	m²K/W  Area section 2 (optional)		Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	5. 5ud  Thickness [n 13 610 13 44
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated  \$\lambda [W/(mK)]\$  0.180  0.000  0.130  0.039  0.039	Area section 2 (optional)  1-3/4" i-joist cord	0.130	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated  \$\lambda [W/(mK)]\$  0.180  0.000  0.130  0.039  0.039	Area section 2 (optional)  1-3/4" i-joist cord	0.130	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated  \(\lambda \left[W/(mK)]\)  0.180  0.000  0.130  0.039  0.039  0.039	Area section 2 (optional)  1-3/4" i-joist cord  1-3/4" i-joist cord	0.130	Interior i U-value supplement Area section 3 (optional)	Assembly n  05  nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated  \$\lambda [W/(mK)]\$  0.180  0.000  0.130  0.039  0.039	Area section 2 (optional)  1-3/4" i-joist cord	0.130	Interior i U-value supplement	Assembly n  05  nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose  1-3/4" Cellulose  Percentage of sec. 1:	0.00  1-Roof 3-Ventilated λ [W/(mK)] 0.180 0.000 0.130 0.039 0.039 100%	Area section 2 (optional)  1-3/4" i-joist cord  1-3/4" i-joist cord	0.130	Interior is U-value supplement Area section 3 (optional)	Assembly n 05 nsulation? [W/(m²K)]	5.5ud  Thickness [n 13 610 13 44 213 44
Description of building assembly  Net Zero Retrofit - Roof  Orientation of building assembly (or R <sub>si</sub> )  Adjacent to (or R <sub>se</sub> )  Area section 1  1/2" Drywall  Empty attic cavity - average  1/2" Plywood sheathing  1-3/4" Cellulose  8-3/8" Cellulose	0.00  1-Roof 3-Ventilated λ [W/(mK)] 0.180 0.000 0.130 0.039 0.039 100%	Area section 2 (optional)  1-3/4" i-joist cord  1-3/4" i-joist cord	0.130	Interior i U-value supplement Area section 3 (optional)	Assembly n 05 nsulation? [W/(m²K)]	Thickness [n 13 610 13 44 213



REVISIONS A

Notes

1. . 2. . 3.

Project North



Scale

Net-Zero Retrofit