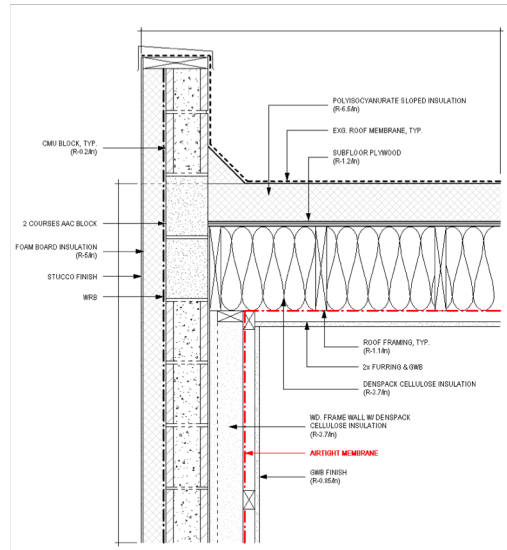


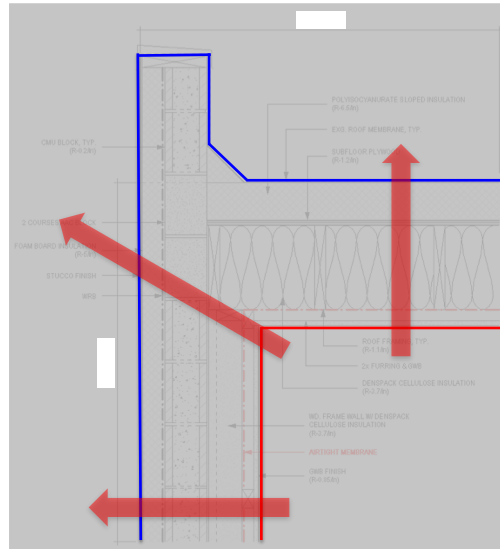
Parapets



Parapet with AAC Block

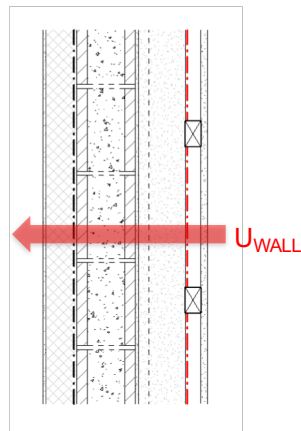


BC + U-Factor 'TAGS'

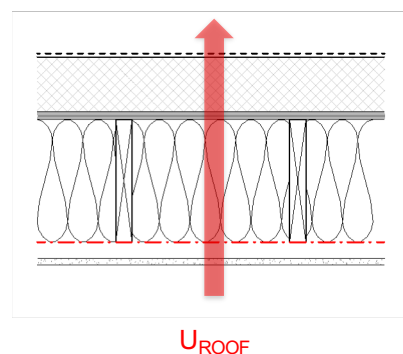


bldgtyp

Clear Field Assemblies



Wall Assembly
 $U_{WALL}: 0.0306 \text{ Btu/hr-ft}^2\text{-F}$

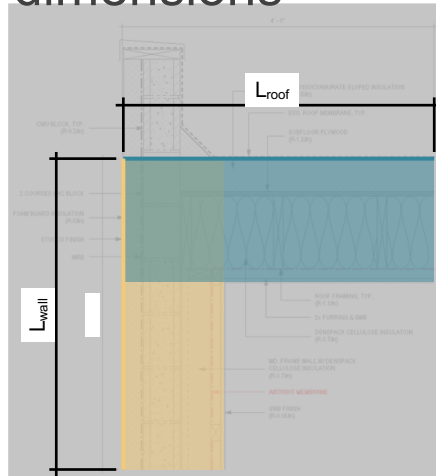


Roof Assembly
 $U_{ROOF}: 0.0152 \text{ Btu/hr-ft}^2\text{-F}$



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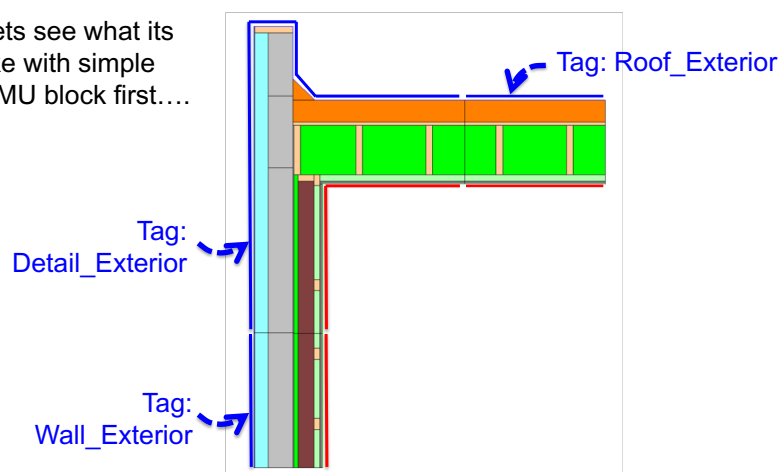
Measure 1D elements using 'exterior dimensions'



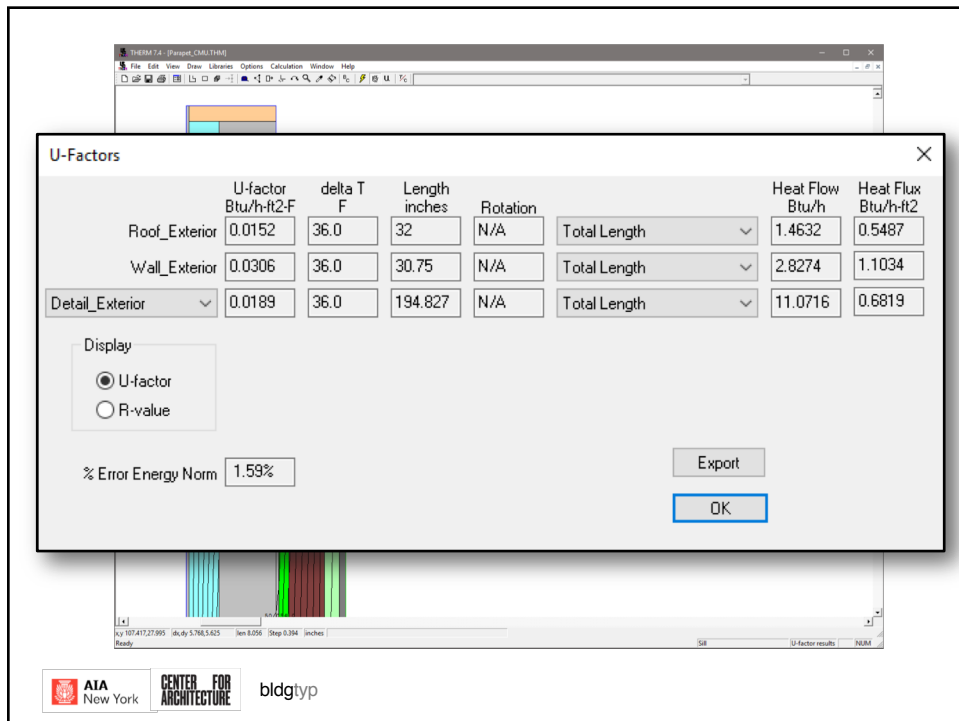
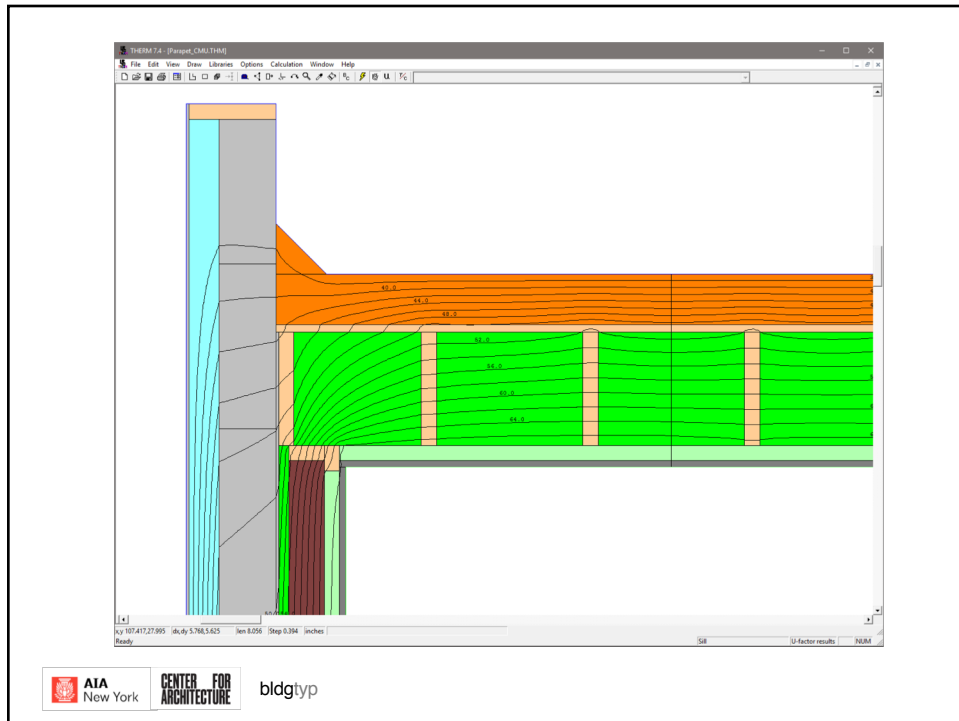
bldgtyp

Do three calculations at once

Lets see what its
like with simple
CMU block first....



bldgtyp



Calculating Psi (Ψ)

$$\text{Psi Value} = \frac{\text{Losses}_{2D} - \sum \text{Losses}_{1D}}{\Delta T}$$

$$\text{Losses}_{2D} = \text{U-factor}_{2D} \times (L_{\text{EXTERIOR LENGTH}}) \times \Delta T$$

$$\text{Losses}_{1D} = (\text{U-factor}_{\text{Wall}} \times L_{\text{Wall}} \times \Delta T) + (\text{U-factor}_{\text{Roof}} \times L_{\text{Roof}} \times \Delta T)$$

INPUTS		
U-factor _{2D}	=	0.0189 Btu/hr·ft ² ·F
U-factor _{Wall}	=	0.0306 Btu/hr·ft ² ·F
U-factor _{Roof}	=	0.0152 Btu/hr·ft ² ·F
L _{Wall}	=	8.41' (100.87")
L _{Roof}	=	6.67' (80.00")
L _{EXTERIOR LENGTH}	=	16.24' (194.83")
ΔT	=	36°F



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Calculating Psi (Ψ)

Losses _{2D}	Σ Losses _{1D}
U-factor _{2D} × L _{EXTERIOR LENGTH} × ΔT	(U-factor _{Wall} × L _{Wall} × ΔT) +
	(U-factor _{Roof} × L _{Roof} × ΔT)
0.0189 × 16.24' × 36°	(0.0306 × 8.41' × 36°) +
	(0.0152 × 6.67' × 36°)
= 11.05 BTU/hr·ft	= 12.91 BTU/hr·ft

$$\Psi = (\text{Losses}_{2D} - \sum \text{Losses}_{1D}) \div \Delta T$$

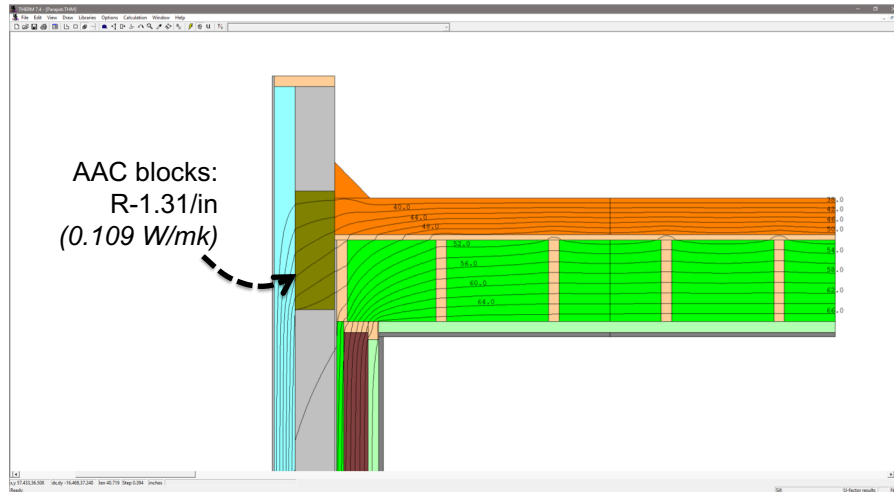
$$\Psi = (11.05 - 12.91) \div 36^\circ$$

$$\Psi = -0.052 \text{ BTU/hr·ft·F}$$



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Now lets try it with AAC Blocks...



U-Factors							
	U-factor Btu/h-ft ² -F	delta T F	Length inches	Rotation		Heat Flow Btu/h	Heat Flux Btu/h-ft ²
Roof_Exterior	0.0152	36.0	32	N/A	Total Length	1.4632	0.5487
Wall_Exterior	0.0312	36.0	30.75	N/A	Total Length	2.8774	1.1229
Detail_Exterior	0.0173	36.0	194.827	N/A	Total Length	10.0916	0.6216

Display
☒ U-factor
☐ R-value

% Error Energy Norm 1.42%

Export
OK

Calculating Psi (Ψ)

$$\text{Psi Value} = \frac{\text{Losses}_{2D} - \sum \text{Losses}_{1D}}{\Delta T}$$

$$\text{Losses}_{2D} = \text{U-factor}_{2D} \times (L_{\text{EXTERIOR LENGTH}}) \times \Delta T$$

$$\text{Losses}_{1D} = (\text{U-factor}_{\text{Wall}} \times L_{\text{Wall}} \times \Delta T) + (\text{U-factor}_{\text{Roof}} \times L_{\text{Roof}} \times \Delta T)$$

INPUTS		
U-factor_{2D}	=	0.0173 Btu/hr·ft ² ·F (Our NEW U-Factor)
$\text{U-factor}_{\text{Wall}}$	=	0.0306 Btu/hr·ft ² ·F
$\text{U-factor}_{\text{Roof}}$	=	0.0152 Btu/hr·ft ² ·F
L_{Wall}	=	8.41' (100.87")
L_{Roof}	=	6.67' (80.00")
$L_{\text{EXTERIOR LENGTH}}$	=	16.24' (194.83")
ΔT	=	36°F



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Calculating Psi (Ψ)

Losses_{2D}	$\sum \text{Losses}_{1D}$
$\text{U-factor}_{2D} \times L_{\text{EXTERIOR LENGTH}} \times \Delta T$	$(\text{U-factor}_{\text{Wall}} \times L_{\text{Wall}} \times \Delta T)$ +
	$(\text{U-factor}_{\text{Roof}} \times L_{\text{Roof}} \times \Delta T)$
$0.0173 \times 16.24' \times 36^\circ$	$(0.0306 \times 8.41' \times 36^\circ)$ +
	$(0.0152 \times 6.67' \times 36^\circ)$
= 10.11 BTU/hr·ft	= 12.91 BTU/hr·ft

$$\Psi = (\text{Losses}_{2D} - \sum \text{Losses}_{1D}) \div \Delta T$$

$$\Psi = (10.11 - 12.91) \div 36F$$

$$\Psi = -0.078 \text{ BTU/hr·ft·F}$$

So we went from -0.052 to -0.078



bldgtyp