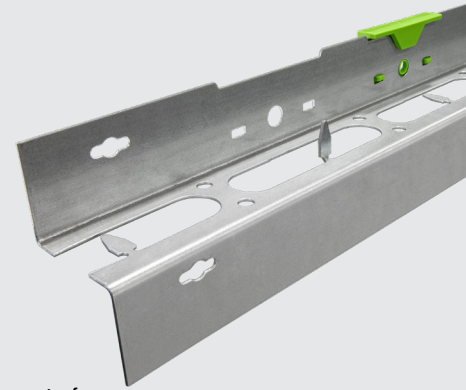


Static Thermal Performance Summary

GreenGirt Steel is a new continuous insulation system by Advanced Architectural Products, designed to enhance structural integrity and improve building energy efficiency. With thermal efficiencies of up to 97%, GreenGirt Steel utilizes perforated steel Z-girts fastened to the backup wall through composite thermal pads and fasteners.

The effective R-values and overall assembly efficiency of exterior insulated steel-frame, wood-frame, and concrete wall assemblies featuring the GreenGirt Steel cladding support system were evaluated using both 3D thermal simulations and approximations derived from those simulations. These 3D simulations were conducted using Siemens' NX and SimCenter 3D software package. The thermal solver and modeling procedures employed were calibrated/validated to within +/-5% of hotbox testing, as referenced in ASHRAE Research Project 1365-RP Thermal Performance of Building Envelope Details for Mid- and High-Rise Construction and the Building Envelope Thermal Bridging Guide 1, and also meet the CSA Z5010 standard for thermal simulations of opaque building envelope assemblies.

This complete static thermal performance analysis was conducted by Morrison Hershfield/Stantec at the request of Advanced Architectural Products. A summary of results is provided here; further details are available upon request.



Analysis Results

Steel-frame wall assembly includes:

1/2 inch gypsum, 6 inch steel stud at 16 inch o.c. with uninsulated stud cavity, 5/8 inch gypsum sheathing, horizontal and vertical stainless steel and galvanized steel GreenGirt Steel system at various spacing, and exterior mineral wool insulation (R-4.3/in) at various thicknesses.

Horizontal Continuous GreenGirt Steel™ System on Steel-Frame Wall Assembly

Vertical Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2.°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2.°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2.°F/Btu	Overall Assembly Efficiency
16	1.5	6.5	8.4	87%	8.9	92%
	2	8.6	10.0	84%	10.8	91%
	2.5	10.8	11.4	82%	12.6	90%
	3	12.9	12.8	80%	14.5	90%
	3.5	15.1	14.2	78%	16.3	89%
	4	17.2	15.7	77%	18.2	89%
	4.5	19.4	17.1	76%	20.0	89%
	5	21.5	18.5	75%	21.9	88%
24	1.5	6.5	8.8	91%	9.2	95%
	2	8.6	10.5	89%	11.1	94%
	2.5	10.8	12.1	87%	13.0	93%
	3	12.9	13.7	85%	15.0	93%
	3.5	15.1	15.4	84%	16.9	93%
	4	17.2	17.0	83%	18.8	92%
	4.5	19.4	18.6	82%	20.8	92%
	5	21.5	20.1	82%	22.7	92%
32	1.5	6.5	9.0	93%	9.3	96%
	2	8.6	10.8	91%	11.3	95%
	2.5	10.8	12.5	90%	13.3	95%
	3	12.9	14.3	89%	15.2	95%
	3.5	15.1	16.0	88%	17.2	94%
	4	17.2	17.7	87%	19.2	94%
	4.5	19.4	19.4	86%	21.2	94%
	5	21.5	21.1	85%	23.2	94%

Vertical Continuous GreenGirt Steel™ System on Steel-Frame Wall Assembly

Horizontal Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2.°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2.°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2.°F/Btu	Overall Assembly Efficiency
16	1.5	6.5	8.4	87%	8.9	92%
	2	8.6	10.0	84%	10.8	91%
	2.5	10.8	11.4	82%	12.6	90%
	3	12.9	12.8	80%	14.5	90%
	3.5	15.1	14.2	78%	16.3	89%
	4	17.2	15.7	77%	18.2	89%
	4.5	19.4	17.1	76%	20.0	89%
	5	21.5	18.5	75%	21.8	88%
32	1.5	6.5	9.0	93%	9.3	96%
	2	8.6	10.8	91%	11.3	95%
	2.5	10.8	12.5	90%	13.3	95%
	3	12.9	14.3	89%	15.2	95%
	3.5	15.1	16.0	88%	17.2	94%
	4	17.2	17.7	87%	19.2	94%
	4.5	19.4	19.4	86%	21.2	94%
	5	21.5	21.1	85%	23.2	94%

* This value is the nominal R-value of the exterior insulation ONLY. Additional components, such as the gypsum, stud cavity, exterior sheathing, and air films all contribute an additional R-3.2 towards the nominal R-value of the entire assembly.

Wood-frame assembly includes:

1/2 inch gypsum, 2x6 wood studs at 16 inch o.c. with uninsulated stud cavity, 5/8 inch plywood sheathing, horizontal and vertical stainless steel and galvanized steel GreenGirt Steel system at various spacing, and exterior mineral wool insulation (R-4.3/in) at various thicknesses.

Horizontal Continuous GreenGirt Steel™ System on Wood-Frame Wall Assembly

Vertical Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2-°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency
24	1.5	6.5	9.4	94%	9.7	97%
	2	8.6	11.1	91%	11.6	96%
	2.5	10.8	12.7	89%	13.6	95%
	3	12.9	14.4	87%	15.5	94%
	3.5	15.1	16.0	86%	17.4	94%
	4	17.2	17.6	85%	19.4	93%
	4.5	19.4	19.2	84%	21.3	93%
	5	21.5	20.8	83%	23.3	93%

Vertical Continuous GreenGirt Steel™ System on a Wood-Frame Wall Assembly

Horizontal Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2-°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency
16	1.5	6.5	9.1	91%	9.5	95%
	2	8.6	10.7	88%	11.4	94%
	2.5	10.8	12.1	85%	13.2	93%
	3	12.9	13.6	83%	15.1	92%
	3.5	15.1	15.1	81%	16.9	91%
	4	17.2	16.5	80%	18.8	91%
	4.5	19.4	17.9	78%	20.6	90%
	5	21.5	19.3	77%	22.5	90%

* This value is the nominal R-value of the exterior insulation ONLY. Additional components, such as the gypsum, stud cavity, exterior sheathing, and air films all contribute an additional R-3.6 towards the nominal R-value of the entire assembly.

Concrete wall assembly includes:

8 inch concrete wall, horizontal and vertical stainless steel and galvanized steel GreenGirt Steel system at various spacing, and exterior mineral wool insulation (R-4.3in) at various thicknesses.

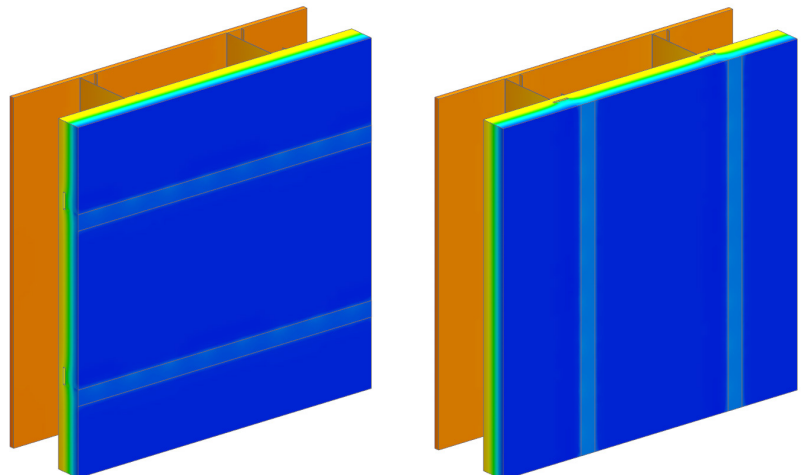
Horizontal Continuous GreenGirt Steel™ System on Concrete Wall Assembly

Vertical Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2-°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency
24	1.5	6.5	7.6	90%	8.0	94%
	2	8.6	9.2	87%	9.9	94%
	2.5	10.8	10.8	85%	11.9	93%
	3	12.9	12.4	83%	13.8	93%
	3.5	15.1	14.0	82%	15.7	92%
	4	17.2	15.6	81%	17.7	92%
	4.5	19.4	17.2	81%	19.6	92%
	5	21.5	18.8	80%	21.5	92%

Vertical Continuous GreenGirt Steel™ System on a Concrete Wall Assembly

Horizontal Girt Spacing (inch)	Exterior Insulation Thickness (inch)	Exterior Insulation R-Value* h.ft2-°F/Btu	GALVANIZED STEEL		STAINLESS STEEL	
			Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency	Assembly Effective R-Value h.ft2-°F/Btu	Overall Assembly Efficiency
16	1.5	6.5	7.2	85%	7.7	91%
	2	8.6	8.7	82%	9.6	90%
	2.5	10.8	10.1	79%	11.4	90%
	3	12.9	11.5	77%	13.3	89%
	3.5	15.1	12.9	76%	15.1	89%
	4	17.2	14.3	75%	17.0	88%
	4.5	19.4	15.7	74%	18.8	88%
	5	21.5	17.1	73%	20.6	88%

* This value is the nominal R-value of the exterior insulation ONLY. Additional components, such as the gypsum, stud cavity, exterior sheathing, and air films all contribute an additional R-2.0 towards the nominal R-value of the entire assembly.



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959 Industrial Drive, Allegan, MI 49010 • (269) 355-1818

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