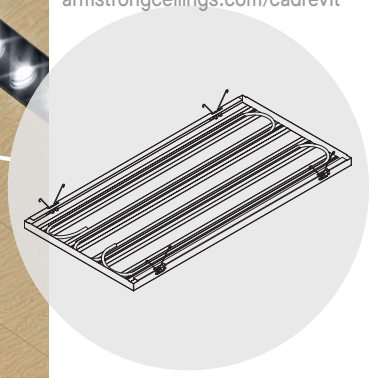
METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

CAD/Revit® drawings at:
armstrongceilings.com/cadrevit



MetalWorks™ Airtite® Radiant AR-B 2' × 4' panels in Effects Ginger with M17 perforation and black trim

Radiant ceiling panels circulate hot or cold water via concealed copper tubing to provide efficient thermal comfort.

KEY SELECTION ATTRIBUTES

- Efficient, lightweight radiant panel heats up and cools down quickly and uniformly
- Radiant panels provide 25-30% energy savings versus traditional HVAC systems
- Minimizes need for air filtration and eliminates drafts
- One convenient system includes oxygen barrier hoses with stainless steel sleeve, security clips and threaded adapters
- NRC of 0.70 for an active AR-B panel paired with a fiberglass infill panel
- Standard panel sizes include 2' × 2', 2' × 4', 2' × 6', and 2' × 8'; custom sizes and finishes available
- From panel design and layout to radiant performance and flow rate calculations, Armstrong works in coordination with engineers throughout the submittal process
- Effects™ wood-look finishes offer design options in bold and subtle wood grain looks; and custom non-metallic RAL® finishes are available upon request
- Interior panels feature swing-down accessibility
- Increased ceiling heights with reduced plenum depth
- Additional systems include:
  - AR-X Extruded Radiant Panel
  - AR-D Integral Diffuser Panel
  - AR-M Modular Panel
  - AR-L Radiant & Convection Panels
- Additional suspension designs (independently supported, t-grid, drywall concealed) available upon request
- new MetalWorks™ FASTPeel™ panels feature an easier-to-remove protective film

TechLine 877 276-7876
armstrongceilings.com/mwairtiteradiant

Armstrong® World Industries

METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

STANDARD COLORS & FINISHES Due to printing limitations, shade may vary from actual product.

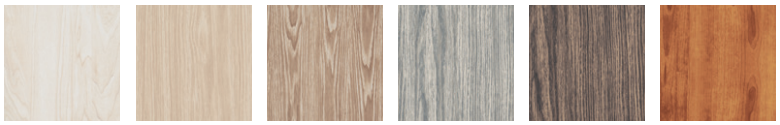
Painted

Whitelume (WHA)

Effects™ Classic Dye-Sublimation

Effects Cherry (FXCH) | Effects Dark Cherry (FXDC) | Effects Oak (FXOK) | Effects Walnut (FXWN) | Effects Walnut Espresso (FXWE)

Effects™ Bold Dye-Sublimation



Effects Sea Salt (FXSS) | Effects Ginger (FXGR) | Effects Nutmeg (FXNM) | Effects Poppy Seed (FXPS) | Effects Peppercorn (FXPC) | Effects Almond (FXAL)

Effects™ Subtle Dye-Sublimation

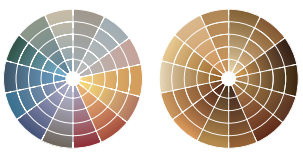
Effects Sesame (FXSE) | Effects Macadamia (FXMA) | Effects Cinnamon (FXCM) | Effects Flax (FXFL) | Effects Cocoa Bean (FXCB) | Effects Coriander (FXCO)

Contact ASQuote for custom size and perforation options.

STANDARD PERFORATION OPTIONS (1:2 scale shown)

M1 (Unperforated) | M14 (Rg 3205) | M15 (Rd 1612) | M16 (Rd 1607) | M17 (Rv 3223) | M18 (Rd 3210) | M19 (Rg 3220)

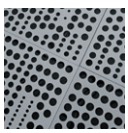
CUSTOM COLORS & FINISHES Due to printing limitations, shade may vary from actual product.



Custom Colors Available | Custom Wood-look Finishes Available

For custom options contact ASQuote, ASQuote@armstrongceilings.com

PERFORATION OPTIONS



Custom Perforations Available

TechLine 877 276-7876
armstrongceilings.com/mwairtiteradiant

Armstrong® World Industries

METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

AR-B COOLING PERFORMANCE

Cooling performance for modular panels

- AR-B panel performance based on 98% active surface area
- Perimeter (exterior) condition considered for outside wall to 15' into room space
- Emissivity of coating is at or greater than 0.93

		ROOM CONDITIONS AND GLASS PERCENTAGE					
		Interior Room	No Glass In Sun Or Fully Shaded Glass & Wall	25% Clear Exterior Wall In Sun	50% Clear Exterior Wall In Sun	75% Clear Exterior Wall In Sun	100% Clear Exterior Wall In Sun
ROOM AIR TEMPERATURE (MINUS MWT °F)	10	17	21	28	35	38	40
	11	19	23	30	37	40	42
	12	21	25	31	38	41	43
	13	22	27	33	40	43	45
	14	24	28	35	42	45	47
	15	26	30	38	44	47	48
	16	28	32	39	45	48	50
	17	30	34	41	47	50	52
	18	31	36	43	49	52	53
	19	33	38	45	50	54	55
	20	35	40	46	52	55	57
	21	37	42	48	54	57	58

Performance shown in BTUH/SF.

AR-B HEATING PERFORMANCE

Heating performance

- AR-B panel performance based on 98% active surface area
- Perimeter (exterior) condition considered for outside wall to 15' into room space
- Emissivity of coating is at or greater than 0.93
- Glazing condition has negligible impact on exterior zoned heating

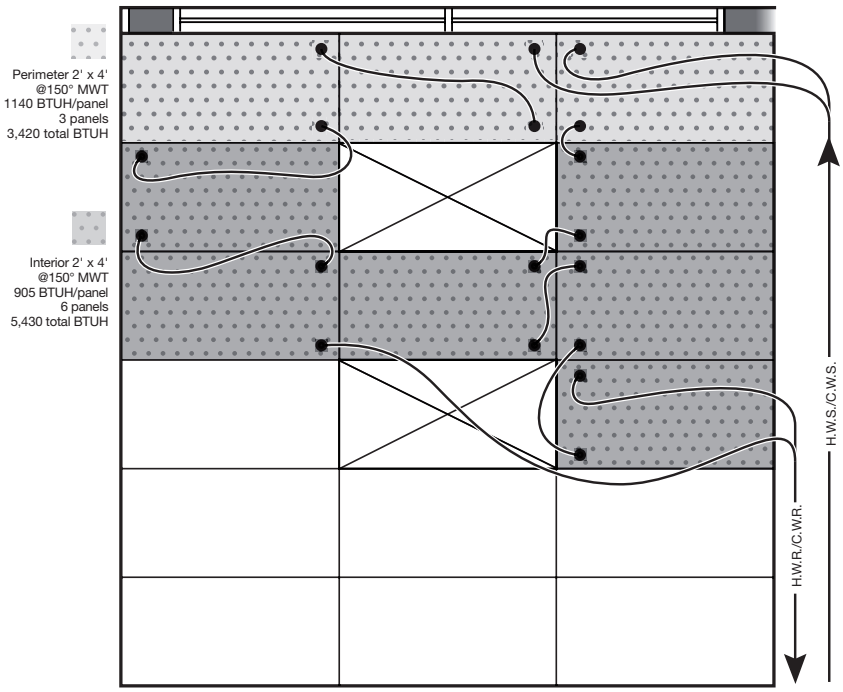
		PANEL LOCATION		
		Mean Water Temperature (MWT)	Interior	Exterior
ROOM AIR TEMPERATURE (MINUS MWT °F)	30	100	41	46
	35	105	48.3	53.3
	40	110	55.5	60.5
	45	115	62.8	67.8
	50	120	70	75
	55	125	76.9	86.3
	60	130	84.4	97.5
	65	135	91.3	108.8
	70	140	98.8	120
	75	145	106.3	131.3
	80	150	113.1	142.5
	85	155	120	153.8
	90	160	128.1	165
	95	165	135.6	176.3
	100	170	142.5	187.5
	105	175	150	198.8
	110	180	158.1	210
	115	185	165	221.3
	120	190	171.9	231.3
	125	195	180	243.8
	130	200	186.9	255
	135	205	195	266.3
	140	210	201.9	277.5
	145	215	N/A	288.8
	150	220	N/A	300

Performance shown in BTUH/SF.

METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

PANEL DESIGN



DESIGN PROCEDURE

The design of a radiant ceiling panel heating system should follow the usual guidelines of a closed water system. To design such a system, we need to find the following:

1. Calculate the heat loss per zone or room
2. Determine the number of 2' × 2' or 2' × 4' modular panels
3. Determine the panel layout and water flow
4. Calculate the water pressure drop based upon panel layout and piping arrangement

DESIGN EXAMPLE: RECTANGULAR BUILDING

Given conditions:

- 100'. × 150' floor plan
- 12 FT. floor-to-floor
- Inside design = 72°F Dry Bulb
- Supply Water Temp = 180°F
- Return Water Temp = 160°F
- Heat loss for each floor = 175,000 BTUH

1. Calculate the heat loss per zone per linear foot of perimeter, and per zone.

$$\text{Heat loss/LF of perimeter} = \frac{175{,}000 \text{ BTUH}}{500 \text{ LF}} = 350 \text{ BTUH/LF}$$

$$\text{50 LF zone heat loss} = 50 \text{ LF} \times 350 \text{ BTUH/LF} = 17{,}500 \text{ BTUH}$$

2. Determine the number of panels.

The ceiling has a 2' × 4' grid layout. The perimeter performance of a 2' × 4' modular panel at 170°F MWT is 1,500 BTUH per panel.

3. Determine panel layout and water flow

Based on either room size or zone size, determine modular arrangement. Therefore, a 50-FT. zone (circuit) without perimeter walls would have 12 – 2' × 4' modular panels in series.

$$\text{Total GPM} = \frac{\text{Total BTUH/zone}}{500 \times \text{water temp. drop °F}}$$

$$\text{GPM} = \frac{17{,}500 \text{ BTUH}}{500 \times 20°\text{F}} = 1.75 \text{ GPM}$$

This zone will be divided up into two circuits of six – 2' × 4' modular panels.

4. Calculate the water pressure drop based upon piping arrangement.

Each circuit of six – 2' × 4' modular panels would have a flow of 0.9 GPM per the pressure drop table.

Per the pressure drop table, at .9 GPM shows .67 FT. of W.P.D. per panel.

Pressure drop for the panels on this circuit:

$$6 \times 0.67 = 4.02 \text{ FT. of water}$$

Per the pressure drop table, for 3/8" L copper at 0.9 GPM shows 5.81 of WPD per 100 ft. of tube.

Per example below, there will be 45 LF of 3/8" L copper:

$$\frac{45 \times 5.81}{100} = 2.61 \text{ ft. of water}$$

$$\text{Total pressure drop} = 4.02 + 2.61 = 6.34 \text{ ft. of water}$$

METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

ACOUSTIC INFORMATION

Perforation		NRC with acoustical fleece	NRC with 1" fiberglass infill †
M17†  Rv 3223	ARB Active	0.65	0.70 •
	ARB Inactive	0.70 •	0.90 •

† Maximum NRC achieved with acoustical infill (Item 8200T10 or 5823).
For infill panel information, visit armstrongceilings.com/mwaccessories

ACCESSORIES

	Item No.◆	Description	Dimensions (Inches) Nominal W x L x H	Color	Pieces/ Carton
Wall-to-Wall Installs	**7147_ _**	Torsion Spring Perimeter Trim (Extruded)	1 × 120 × 4"	WH, SG, MY, BL* Available in Effects™ panel as custom finish	6
	7131_ _ _	Torsion Spring Perimeter Trim (Formed)	1 × 96 × 4-1/4"	LMA, BAA, SAA	6
Other Accessories	**7129**	Torsion Spring Hook Access Tool	N/A	N/A	1
	7130	Torsion Spring Suction Access Tool (for unperforated panels only)	N/A	N/A	1
	7126	Spreader Hold Down	1 × 10-5/8 × 1-1/2"	N/A	50
	BERC2	2" Beam End Retaining Clip	N/A	Mill Finish	200

◆ When specifying or ordering, include the appropriate color code with the item number (e.g. 7131 L M A)
* Coordinates with WHA, SIA, MYA Torsion Spring panel finishes.
NOTE: Accessory quantities to be designed, coordinated and confirmed during shop drawing process.
Custom box molding is available in .50 aluminum

SUSPENSION SYSTEMS

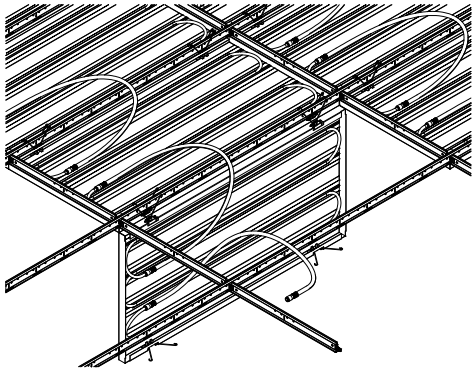
	Item No.	Description	Dimensions (Inches)
15/16" Prelude® XL® Suspension System	**7301TS**	Prelude XL 12' HD Main Beam – slotted for Torsion Spring	144 × 15/16 × 1-11/16"
	XL8320	Prelude XL 2' Cross Tee	24 × 15/16 × 1-11/16"

NOTE: Suspension layout to be designed during shop drawing process.

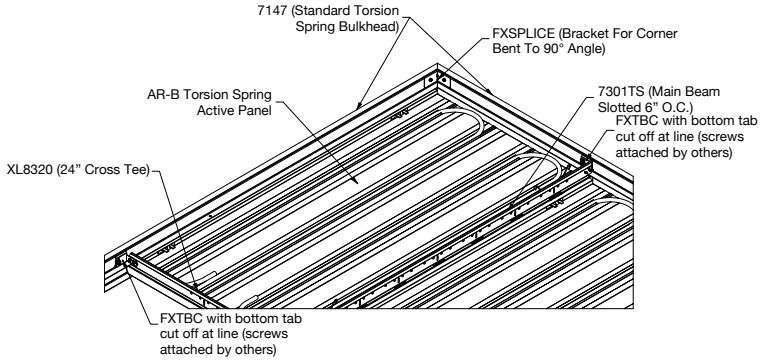
METALWORKS™ Airtite® Radiant

AR-B Torsion Spring Ceiling Panels
smooth texture

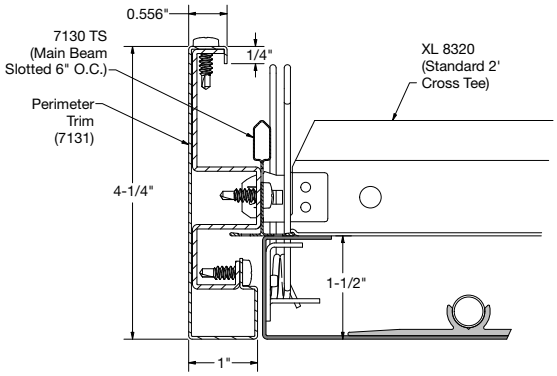
INSTALLATION DETAILS



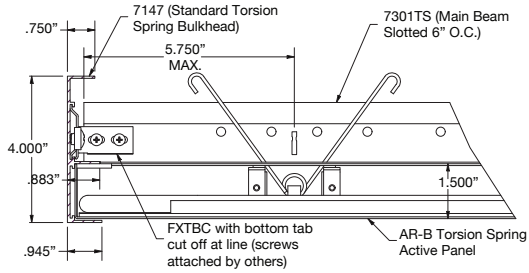
1 Circuited Radiant Panels Allow Plenum Access



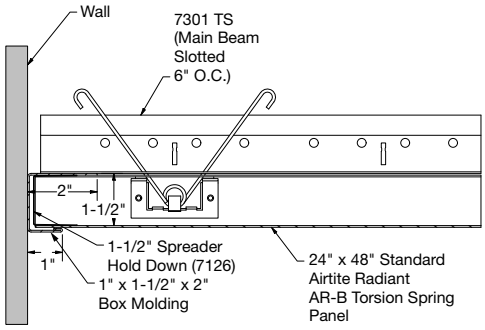
2 Discontinuous Cloud Installation



3 Formed Perimeter Trim for Discontinuous/Cloud Conditions



4 Extruded Perimeter Trim for Discontinuous/Cloud Conditions



5 Wall Perimeter

PHYSICAL DATA

Material
Aluminum – 0.050"

Surface Finish
Painted: Factory-applied polyester paint
Effects: Powder-coated, dye-sublimation, post-production

Custom colors and finishes available.

Fire Performance
Class A: ASTM E84. Flame Spread Index 25 or less. Smoke Developed Index 50 or less.

CAN/ULC S102: Flame Spread Rating 25 or less. Smoke Developed Classification 50 or less.

ASTM E1264 Classification
Unperforated: ASTM E1264 Type XX Pattern G Fire Class A
Perforated - ASTM E1264 Type XX Pattern C Fire Class A

Acoustical Options
Perforated panels are supplied with a black fiberglass fleece to absorb sound.

Design Considerations
Natural (Anodized, Lacquer Mill) and metallic finishes (Silverlume, Gun Metal) are not recommended for radiant ceilings due to their de-rating of the radiant performance.

MetalWorks™ steel and aluminum panels are made at different manufacturing facilities that use different paint systems. Because of this, similar colors, i.e., White and Whitelume, are not exact color matches. Please consider this when designing adjacent spaces with multiple MetalWorks products.

Installation Considerations
Panels with certain product finishes, e.g., Effects™ and Natural Reflections, are not MetalWorks™ FASTPeel™ panels and will be protected by other means for packaging and handling purposes.

Seismic Restraint
MetalWorks™ Airtite® Radiant panels have been engineered, tested, and approved for application in all seismic areas when installed per Armstrong Ceilings installation instructions.

Cleaning and Disinfecting
Cleaning and CDC-approved disinfecting options available on armstrongceilings.com/cleaning

Warranty
One (1) year limited warranty.
Details at armstrongceilings.com/warranty

Weight
2' × 2': 2.33 LBS/SF
2' × 4': 2.24 LBS/SF
2' × 6': 2.21 LBS/SF
2' × 8': 2.20 LBS/SF

TechLine / 1 877 276-7876
armstrongceilings.com/mwairtiteradiant

BPCS-6253-1024

Armstrong® World Industries