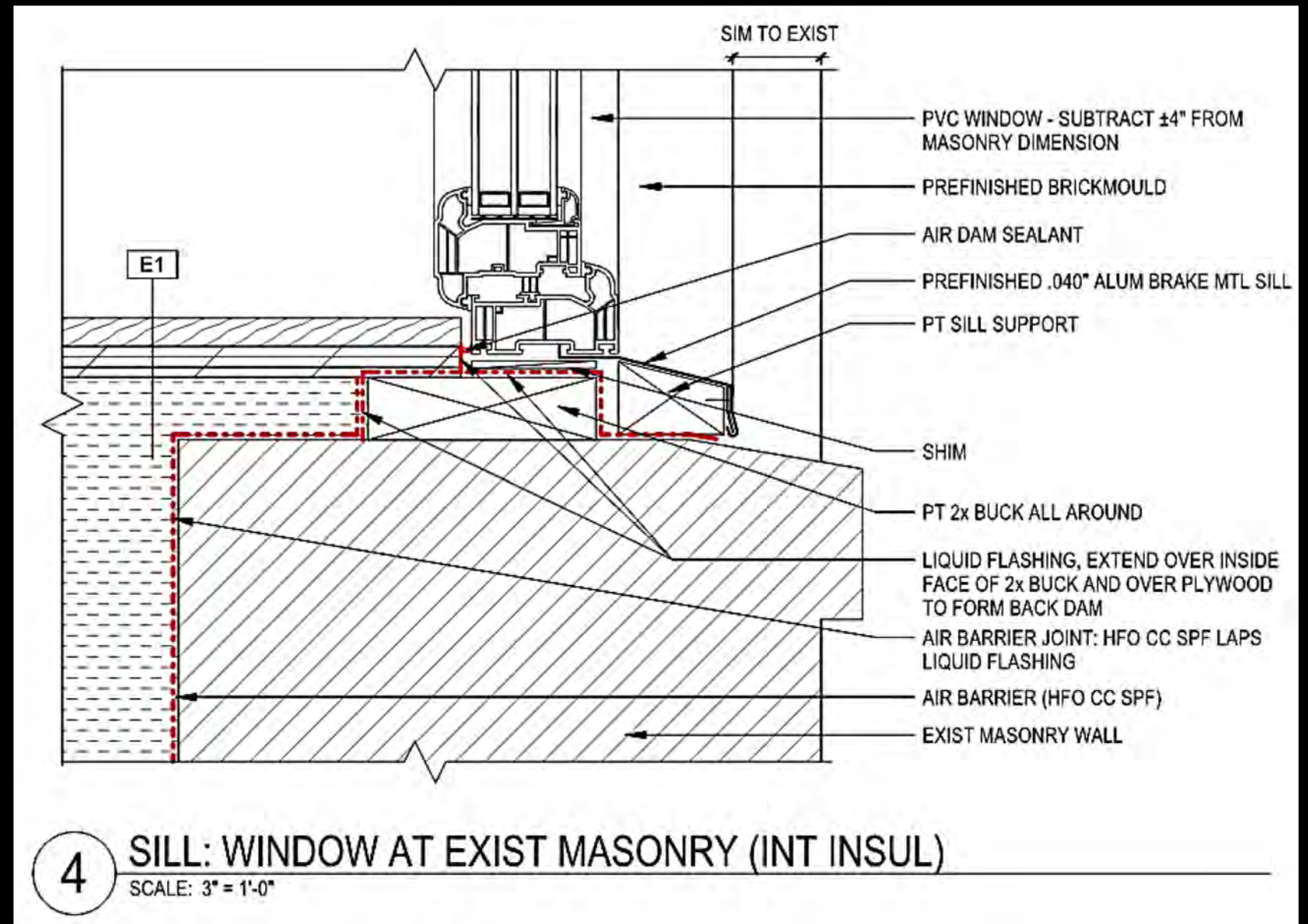
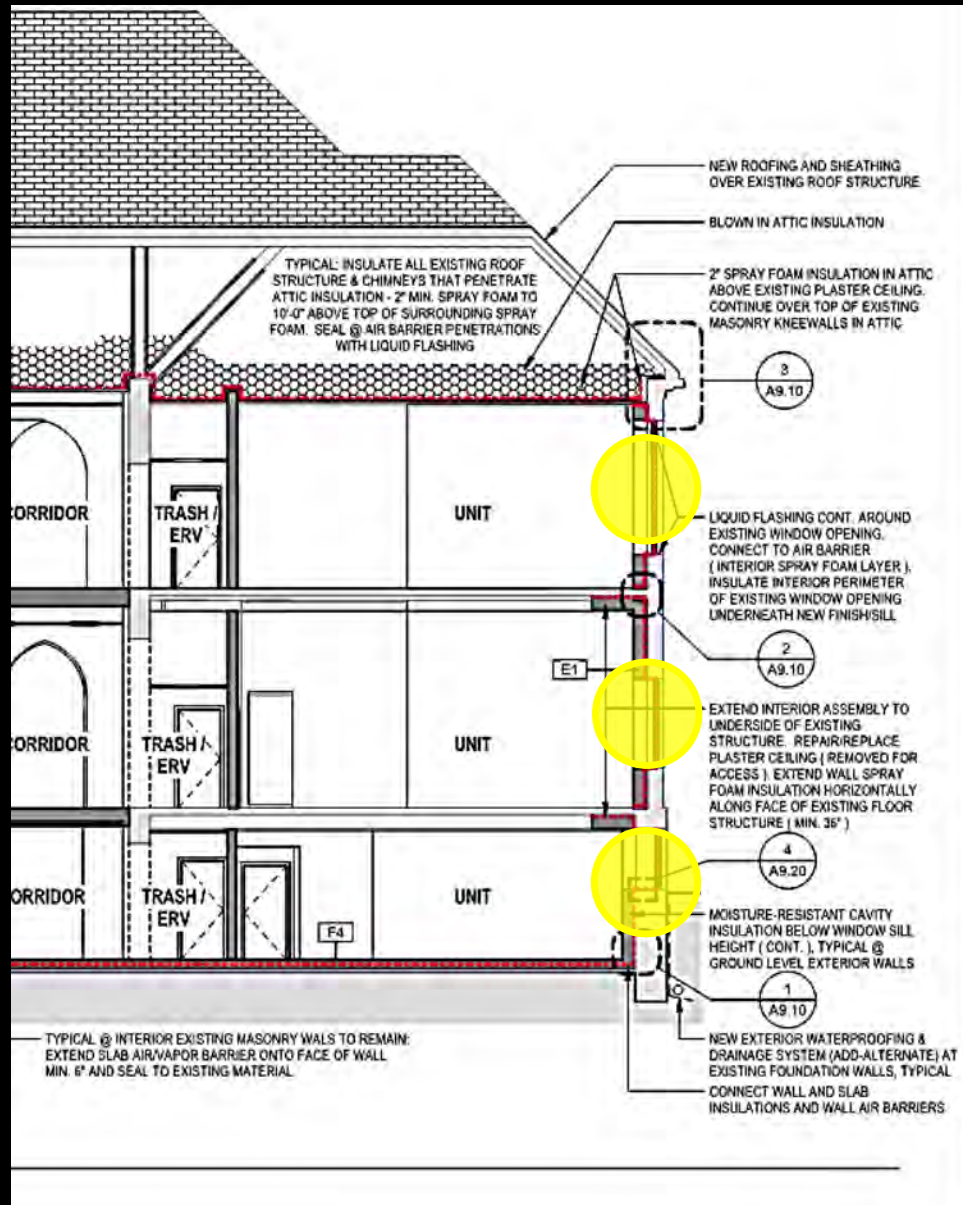


MORNINGSIDE WINDOW ADVENTURE

Our 1st Solution



MORNINGSIDE WINDOW ADVENTURE

A Wake Up Call



MORNINGSIDE WINDOW ADVENTURE

A Wake Up Call



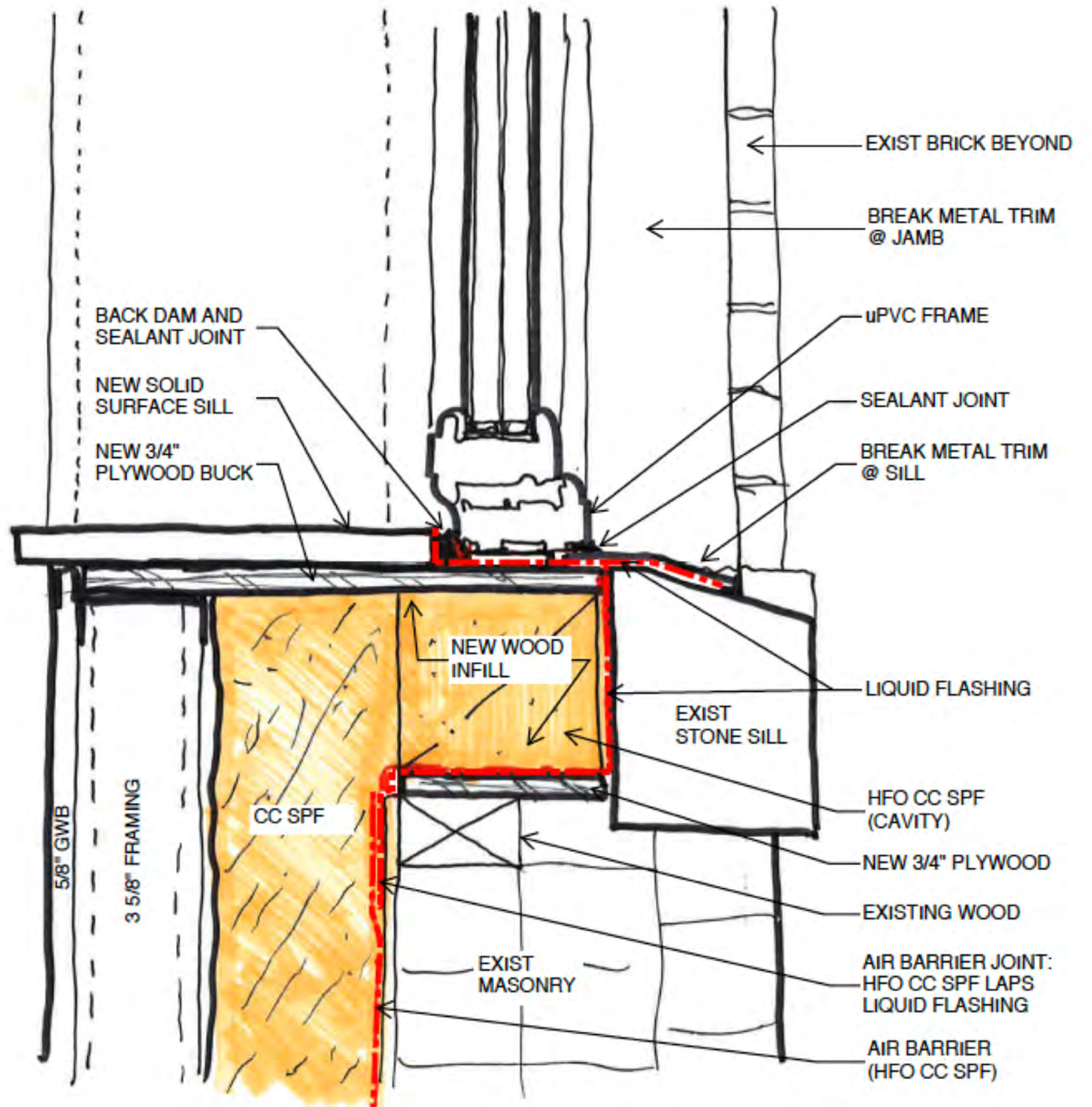
MORNINGSIDE WINDOW ADVENTURE

A Wake Up Call

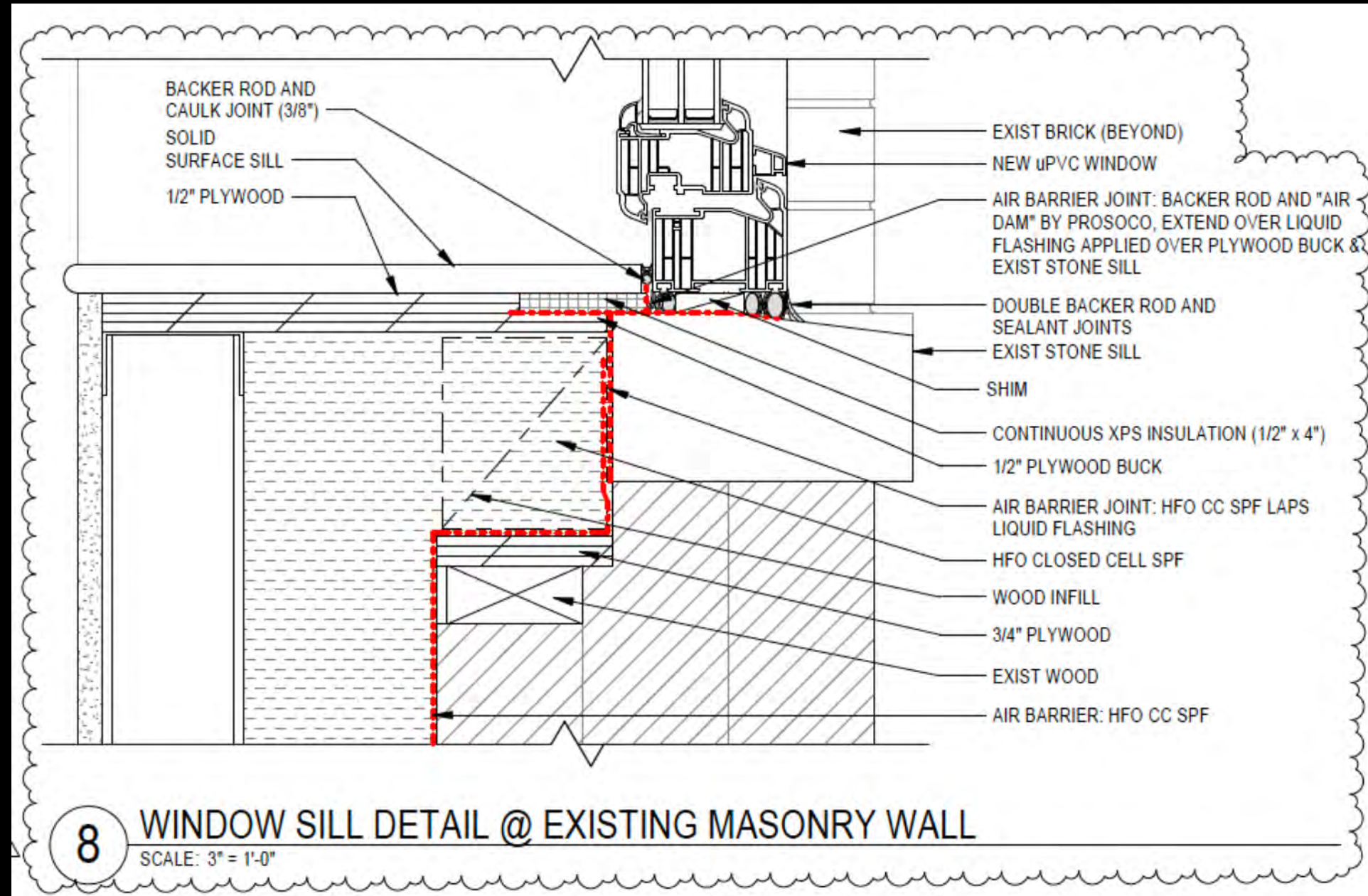


MORNINGSIDE WINDOW ADVENTURE

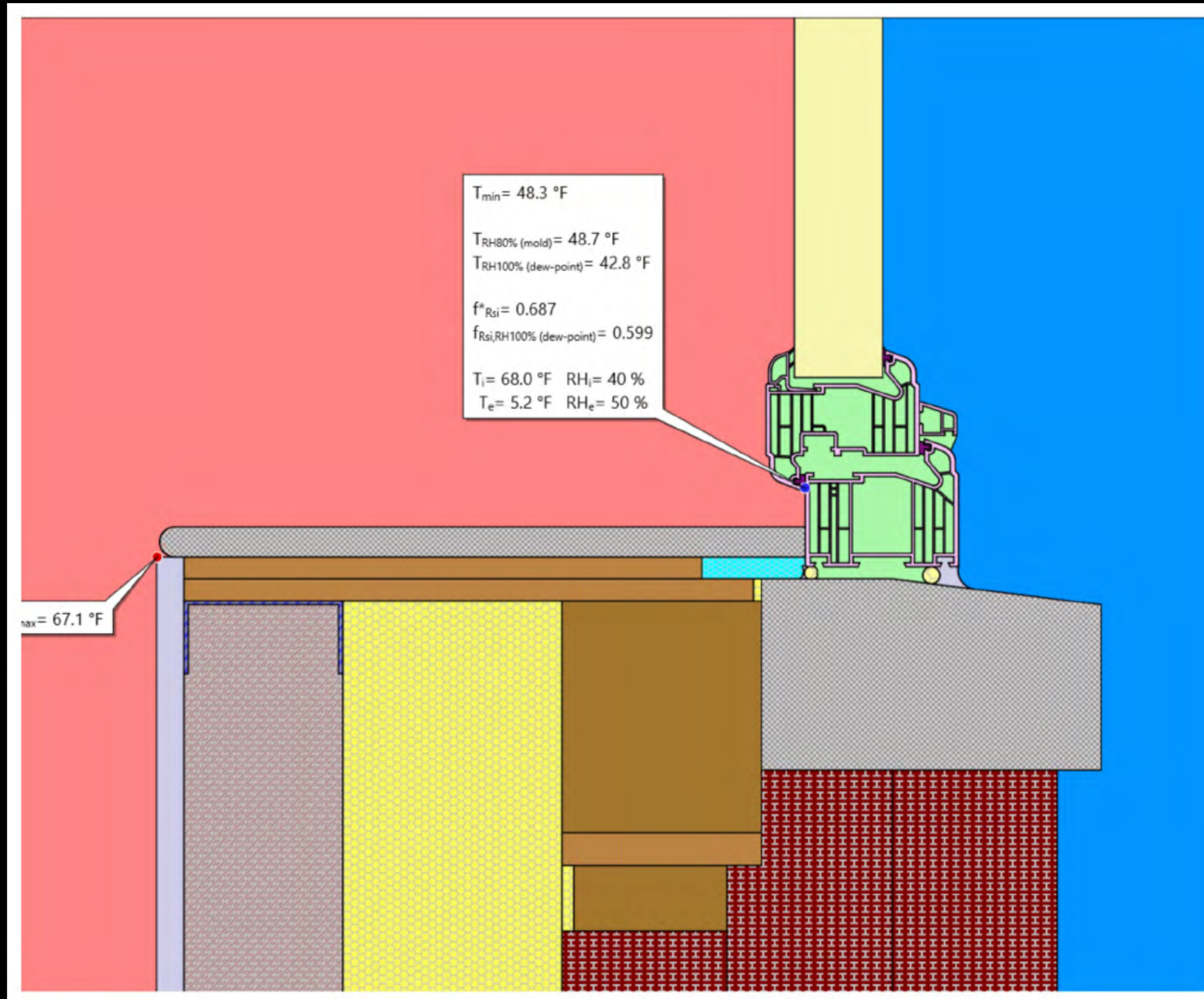
The Evolution



The Evolution

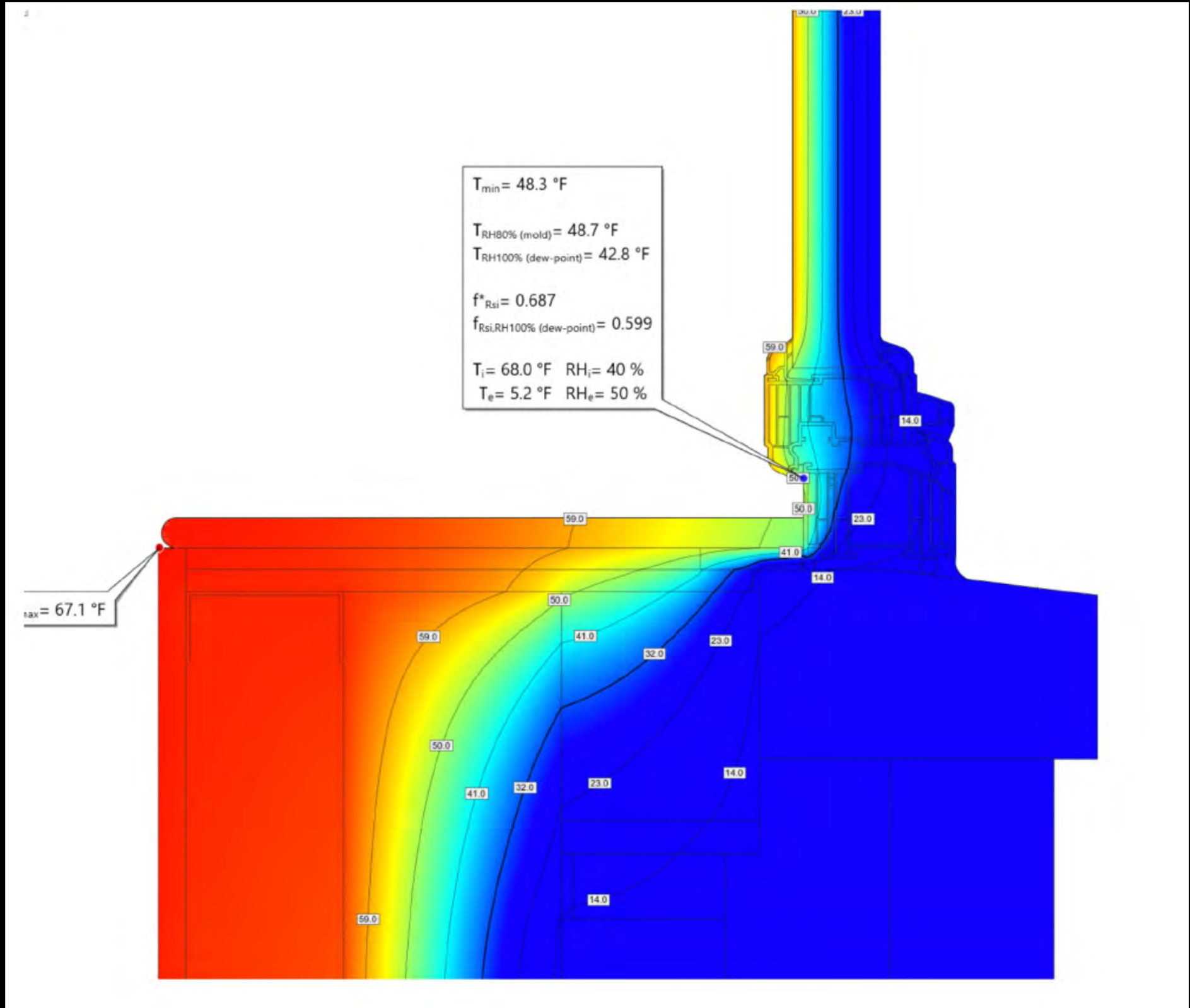


The Evolution

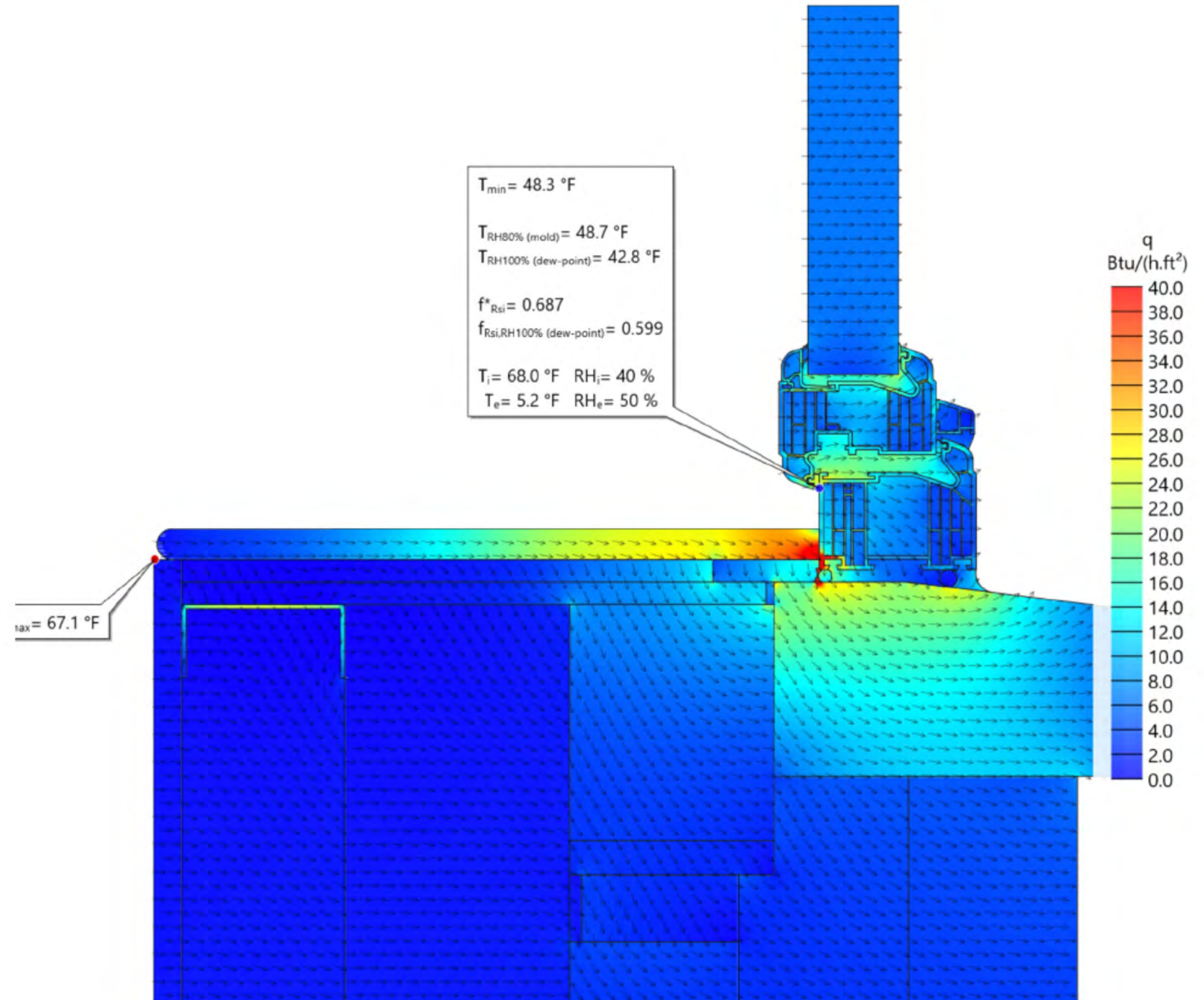


MORNINGSIDE WINDOW ADVENTURE

The Evolution



The Evolution



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The Evolution



MORNINGSIDE WINDOW ADVENTURE

The Evolution



10	Passive House Premium ROM			PH	PH	46		Comments
11				Upgrade	Upgrade	Cost per	Cost per	
12	C.S.I. Description			Cost	% Delta	SF	Unit	
13								
14	02	Existing Conditions		\$ -	No Change	\$ -	\$ -	
15	03	Concrete		\$ 91,054	+19.2%	\$ 1.55	\$ 1,979.42	4" insul + 3" SOG overlay
16	04	Masonry		\$ -	No Change	\$ -	\$ -	
17	05	Metals		\$ 11,300	+3.8%	\$ 0.19	\$ 245.65	Thermal break steel connections
18	06	Wood, Plastics, and Composites		\$ 44,144	+5.0%	\$ 0.75	\$ 959.65	Additional flooring overlay, window bucks, ZIP VB premium
19	07	Thermal and Moisture Protection		\$ 218,432	+26.7%	\$ 3.71	\$ 4,748.52	Roof Insulation 70, Podium Insulation 40, Spray insulation @ attic ceilings 20, Spray at building walls ILO fiberglass 42, Exterior Additon 2" - 24; misc caulking/sealing 12
20	08	Openings		\$ 57,118	+10.1%	\$ 0.97	\$ 1,241.70	PH windows premium
21	09	Finishes		\$ -	No Change	\$ -	\$ -	
22	10	Specialties		\$ -	No Change	\$ -	\$ -	
23	11	Equipment		\$ -	No Change	\$ -	\$ -	
24	12	Furnishings		\$ -	No Change	\$ -	\$ -	
25	13	Special Construction		\$ -	No Change	\$ -	\$ -	
26	14	Conveying Equipment		\$ -	No Change	\$ -	\$ -	
27	21	Fire Suppression		\$ -	No Change	\$ -	\$ -	
28	22	Plumbing		\$ -	No Change	\$ -	\$ -	
29	23	Heating Ventilating and Air Conditioning		\$ (110,000)	(15.3%)	\$ (1.87)	\$ (2,391.30)	Ballpark
30	25	Integrated Automation		\$ -	No Change	\$ -	\$ -	

30	25	Integrated Automation	\$ -	No Change	\$ -	\$ -
31	26	Electrical	\$ -	No Change	\$ -	\$ -
32	31	Earthwork	\$ -	No Change	\$ -	\$ -
33	32	Exterior Improvements	\$ -	No Change	\$ -	\$ -
34	33	Utilities	\$ -	No Change	\$ -	\$ -
35						
36		Subtotal Trades Cost	\$ 312,048	3.6%	\$ 5.30	\$ 6,783.65
37						
38		Fabreeka Pads	\$ 9,481	N/A	\$ 0.16	\$ 206.12
39		Added Sealing Existing Building	\$ 16,839	N/A	\$ 0.29	\$ 366.06
40		Polyiso @ Specific Walls	\$ 16,225	N/A	\$ 0.28	\$ 352.72
41		Ceiling Modifications @ Existing	\$ 8,640	N/A	\$ 0.15	\$ 187.83
42		Insulated Headers	\$ 3,870	N/A	\$ 0.07	\$ 84.13
43		2 pass spray foam	\$ 8,727	N/A	\$ 0.15	\$ 189.72
44		Added Liquid Flashing	\$ 12,840	N/A	\$ 0.22	\$ 279.13
45						
46		Subtotal Cost	\$ 76,622	0.9%	\$ 1.30	\$ 1,665.70
47						
48						
49		Total Cost	\$ 388,670	4.5%	\$ 6.60	\$ 8,449.35

PENNSYLVANIA

Policy Context: PHFA

Pennsylvania Housing Finance Agency

Passive House confers advantage in competition for LIHTCs (Low Income Housing Tax Credits).

PHFA's LIHTCs are highly competitive: only 1 in 4 project proposals are awarded LIHTCs.

Projects that pursue Passive House earn 10 bonus points out of a total of 130 possible points.

59 of 179 projects pursued Passive House during first two years of PHFA's new policy.

Competition spurred innovation. Innovation cut costs.

PENNSYLVANIA

Policy Context

179 Projects Proposed to Pennsylvania Housing Finance Agency, 2015-2016.

Projected Construction Cost

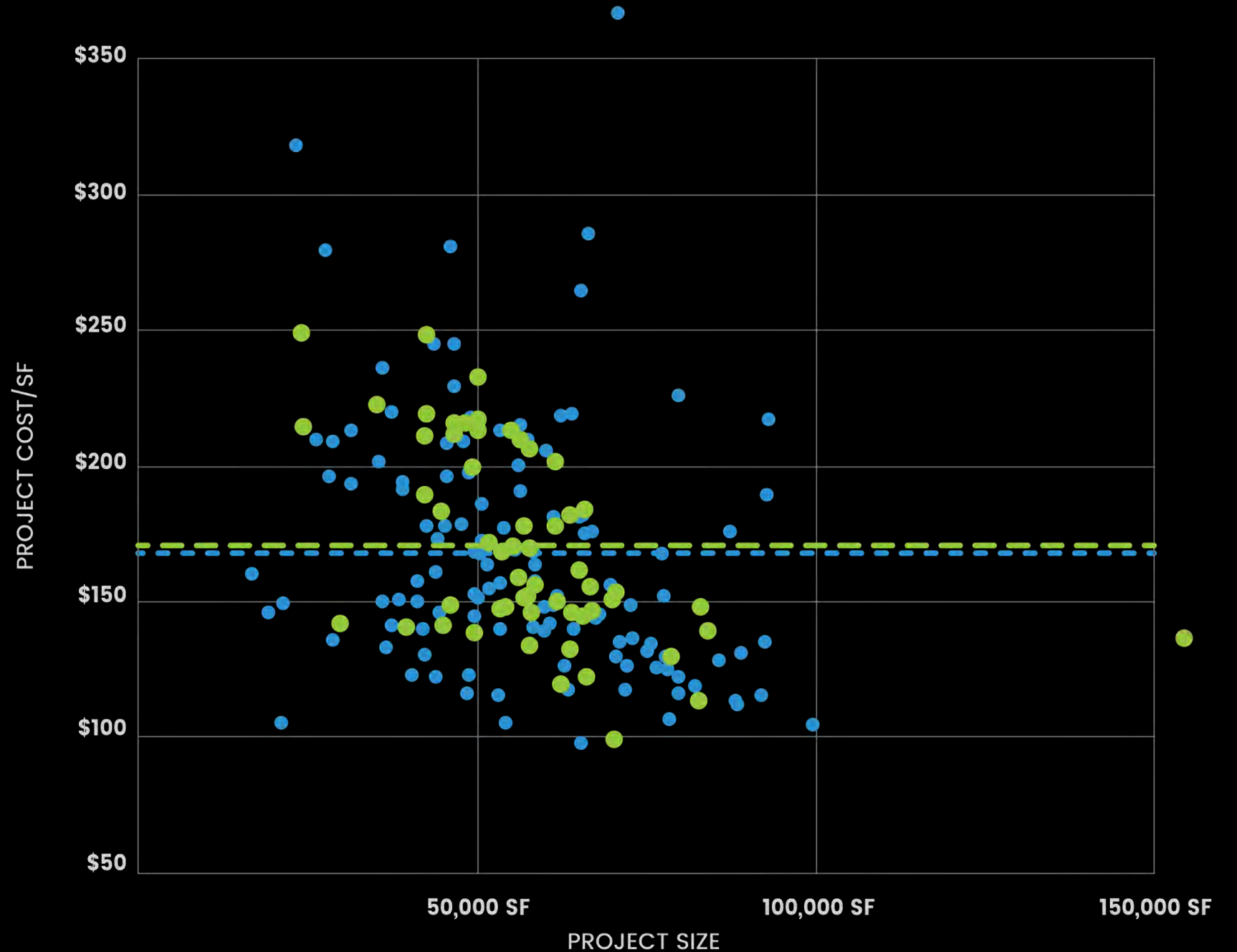


PENNSYLVANIA

Policy Context

59 Passive House Projects Proposed to PHFA, 2015-2016.

Passive House vs. Conventional –
Less than 2% Difference in Construction Cost.



■ PASSIVE HOUSE (Total=59)

■ CONVENTIONAL (Total=120)

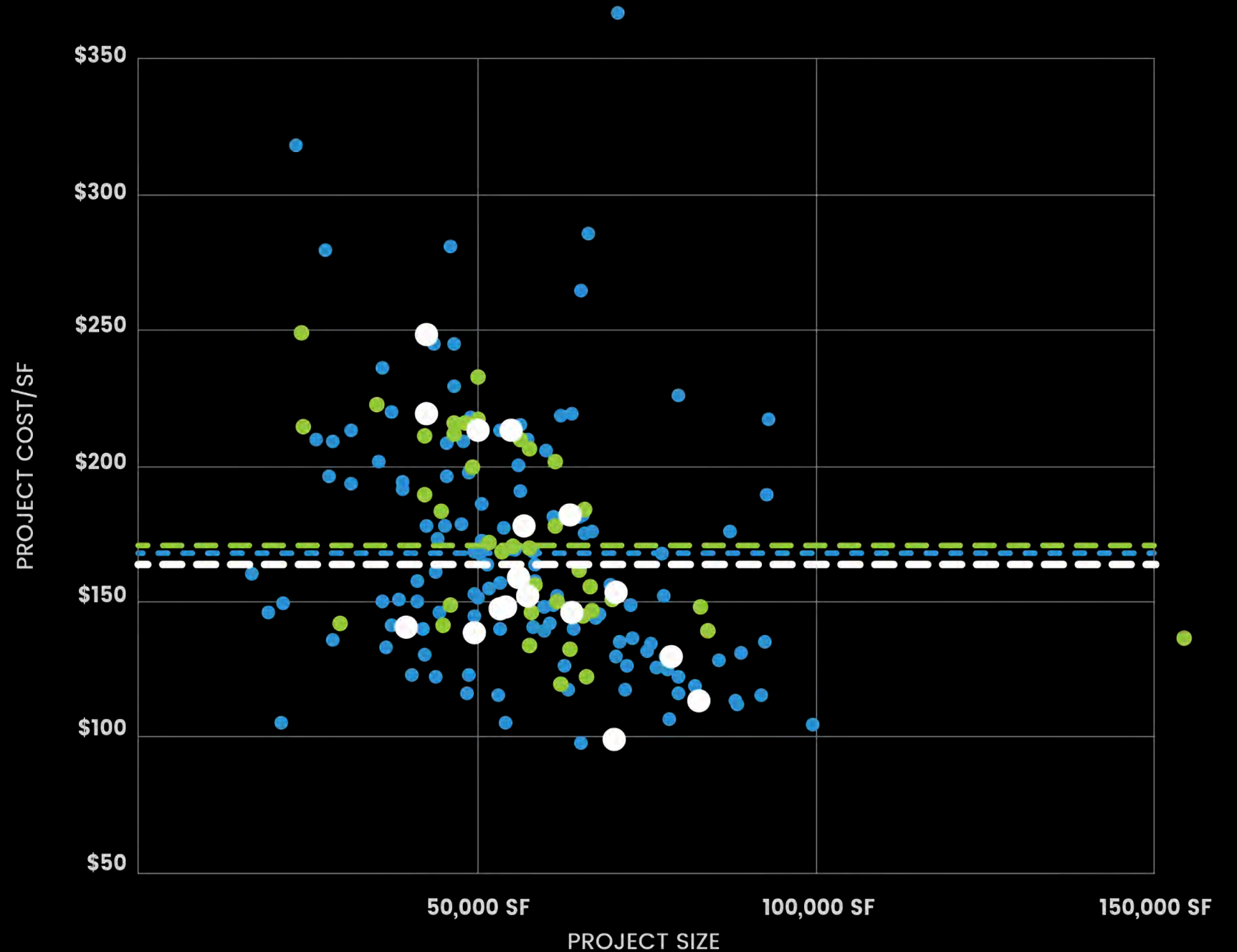
--- AVG PASSIVE HOUSE = \$171/SF

--- AVG CONVENTIONAL = \$168/SF

PENNSYLVANIA

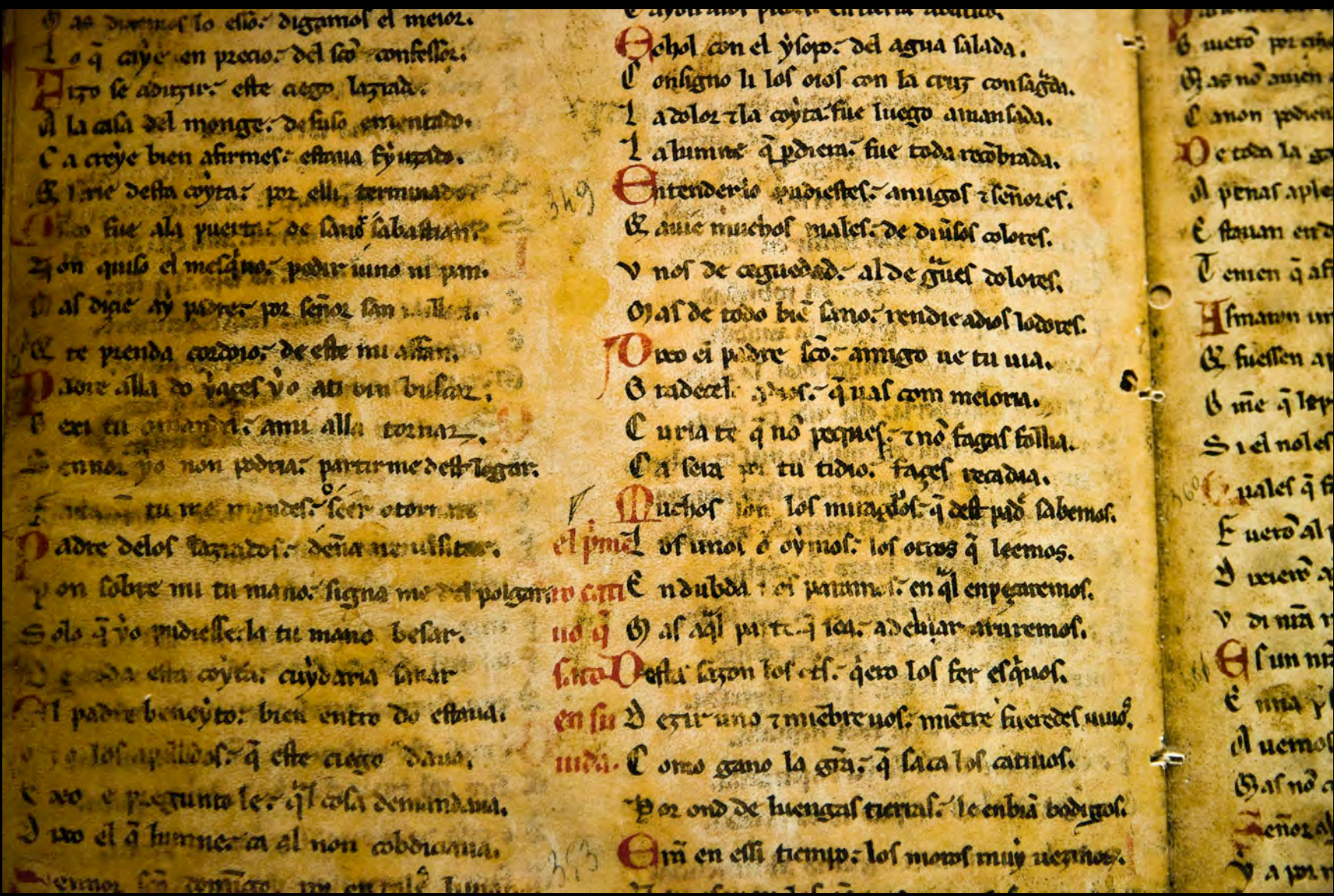
Policy Context

18 Passive House Projects Awarded by PHFA, 2015-2016.



- PASSIVE HOUSE (Total=59)
- PH AWARDED (Total=18)
- CONVENTIONAL (Total=120)
- AVG PASSIVE HOUSE = \$171/SF
- AVG CONVENTIONAL = \$168/SF
- AVG PH AWARDED = \$163.50/SF

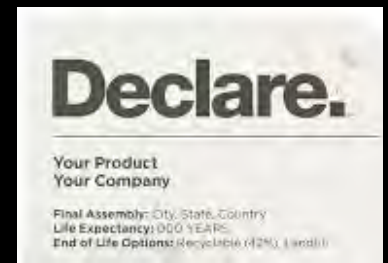
The Market Is Changing...



The Market Is
Changing...



The Market Is Changing...



Thank you.



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