



11.06.2024

## **D-Max Wall**

### Advantages compared to exterior insulation

- Can be sprayed regardless of temperature or wind (up to -20°C)
- No scaffolding or vessel necessary. Less machinery therefore less rental cost, logistics and risk of accident.
- Building insulation can be performed as the walls go up.
- Less materials therefore time and costs savings for execution.
- Important heating cost savings in winter.
- Avoids exterior compartmentalization (NBC Article 3.1.11.2.).
- CAN/ULC S101 tested assembly for high rise buildings (>3 storeys) (UL EW25).
- CAN/ULC S134 tested assembly for low rise buildings (NBC Art. 3.1.5.6.)
- Sequencing of work simpler and easier to manage for the superintendent since there are less workers to execute each step.
- Avoids overspray.
- Avoids having to install an interior furring in comparison with a wool insulated cavity where the electricity cannot run through the stud cavity.

### Assembly:

- Lightweight or brick siding
- Omega bars or brick ties
- Exterior sheathing with taped joints (Densglass Gold, Securock, Glasroc)
- Heatlok Soya HFO R-6/inch (variable thickness)
- Z girts (variable thickness)
- Steel stud 6" or 3 5/8"
- Interior gyprock

## PARTIAL LIST OF D-MAX PROJECTS

Name of Project
Le Saint-Philippe
Bâtiment K
Le Nicolas
Saphir
Liénard
Le Guillaume
Archipel
Circa Condo
800 Charest
Lokia
Réseau Sélection Mirabel
Viridi
Novit
Père Le Lièvre
Sir John
Maison de femmes autochtones
Satori
Lab École-Gatineau
Ilot St-Charles
Ilot St-Charles Phase 2
District Concorde (3 tours)
Mgr Plessis
Capella
Newman RPA Ph2
Maestria tour 1 (alcove)
Maestria tour 2 (alcove)
Maison Benoît Labre
Symposium
Medway (800 route des rivières)
Medway (Rivière St-Charles)
Medway Rivière du Loup
Medway (Pont Rouge - rue de la pinière))
Kepler
Le Courtemanche
Kozi
Fitz (3 tours 20 étages Levis)
Monarc?
St-Philippe 3
Huma 2
Charlie
Novi
Quartier Élévation
24 Poulin?
Cachia?
350 Père Marquette
UTILE

Solis (Lévis)
Liva Mirabel
Le Guillaume
Projet Commercial Millenium
Le Solis
Archipel Lévis
Le Liénard
Le Fitz
Place Frontenac

870 Curé Boivin, Boisbriand, Quebec, Canada J7G 2A7  
Tel: 450.437.0123 866.437.0223  
[www.huntsmanbuildingsolutions.com](http://www.huntsmanbuildingsolutions.com)

A business unit of Huntsman Corporation



Nicolas Project



K Building Project



Saint-Philippe Project











# D-MAX WALL

BEFORE THE START OF CONSTRUCTION OF THE WALL ASSEMBLY, A START-UP MEETING IS STRONGLY RECOMMENDED WITH THE DIFFERENT PROFESSIONALS TO COORDINATE CONSTRUCTION STEPS AND DETAILS. WE ARE AVAILABLE FOR THIS MEETING.

1) THE ADVANTAGE OF THIS WALL SECTION IS A MAXIMUM EFFECTIVE R VALUE IN A VERY THIN WALL. THIS INCREASES THE INHABITABLE FLOOR SPACE. THE STUD CAN BE A 92mm (3 5/8") OR A 152mm (6") DEPENDING ON THE DESIGNER'S CHOICE.

2) THIS WALL SECTION ALLOWS TO APPLY ALL THE INSULATION FROM THE INTERIOR, SHELTERED FROM THE WEATHER AND WITHOUT SCAFFOLDING.

3) THE OUTER Z BAR'S THICKNESS IS VARIABLE FROM 25mm (1") TO 125mm (5") ACCORDING TO THE DESIRED EFFECTIVE R VALUE AND DESIGN CHOICES.

4) A MINIMUM THICKNESS OF 38mm (1 1/2") IS RECOMMENDED TO COVER THE OUTER Z BAR FROM INSIDE TO CUT THE THERMAL BRIDGE.

5) WHEN THE INTERIOR AIR SPACE IS MORE THAN 25mm (1"), ARTICLE 3.1.11.2 APPLIES.

6) HUNTSMAN BUILDING SOLUTIONS IS AVAILABLE FOR REVIEWING PROJECT DETAILS, FOR A COORDINATION MEETING AT THE BEGINNING OF THE PROJECT AND FOR SITE INSPECTIONS DURING THE WORKS.

## NOTES

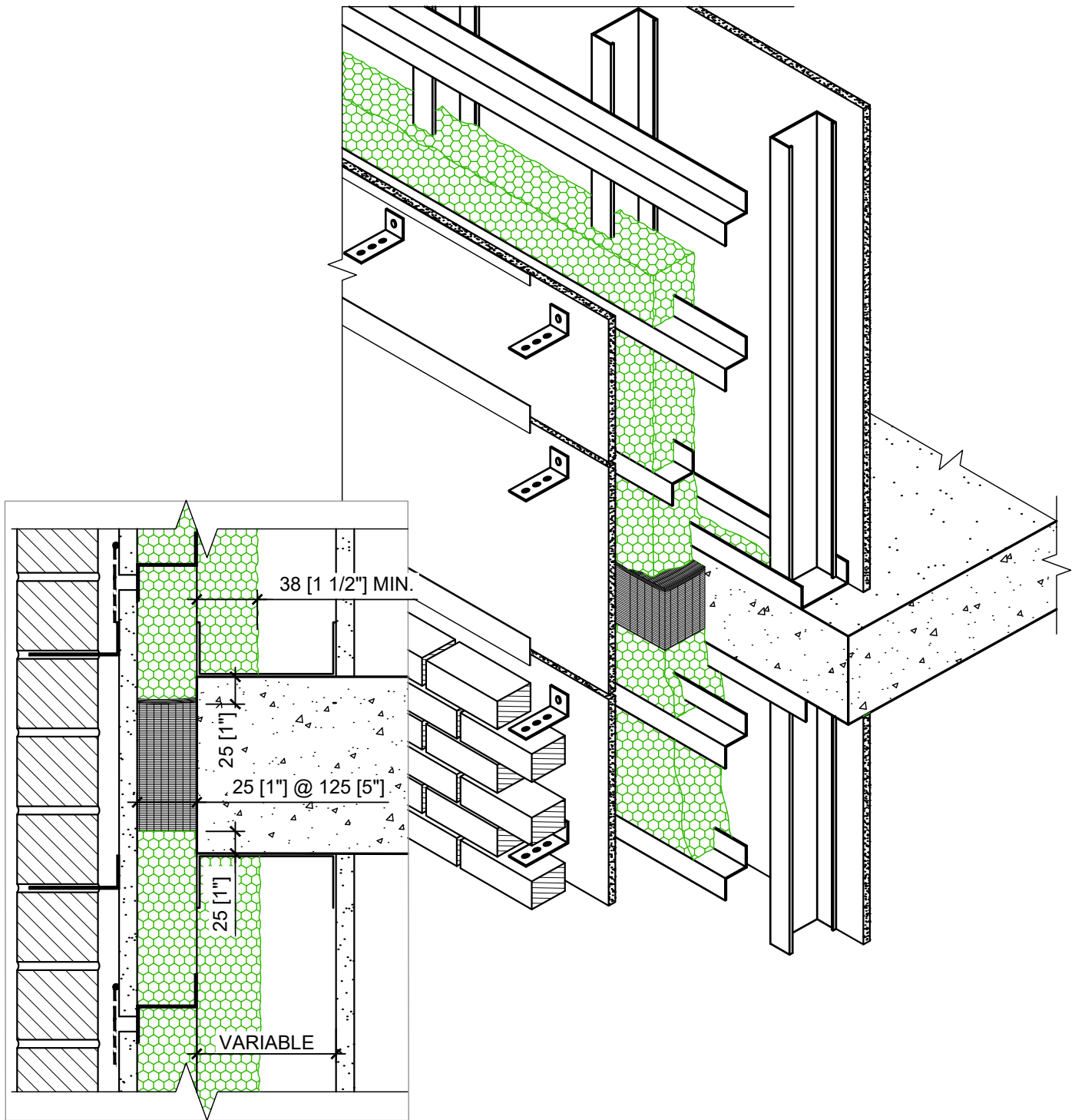
**A** THE FLEXIBLE FLASHING ABOVE OPENINGS MUST EXCEED 200mm (8") MIN. ON BOTH SIDES OF THE OPENING

**B** RAISE THE SELF-ADHESIVE MEMBRANE 75mm (3") ON THE JAMB

**C** MEMBRANES MUST BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS

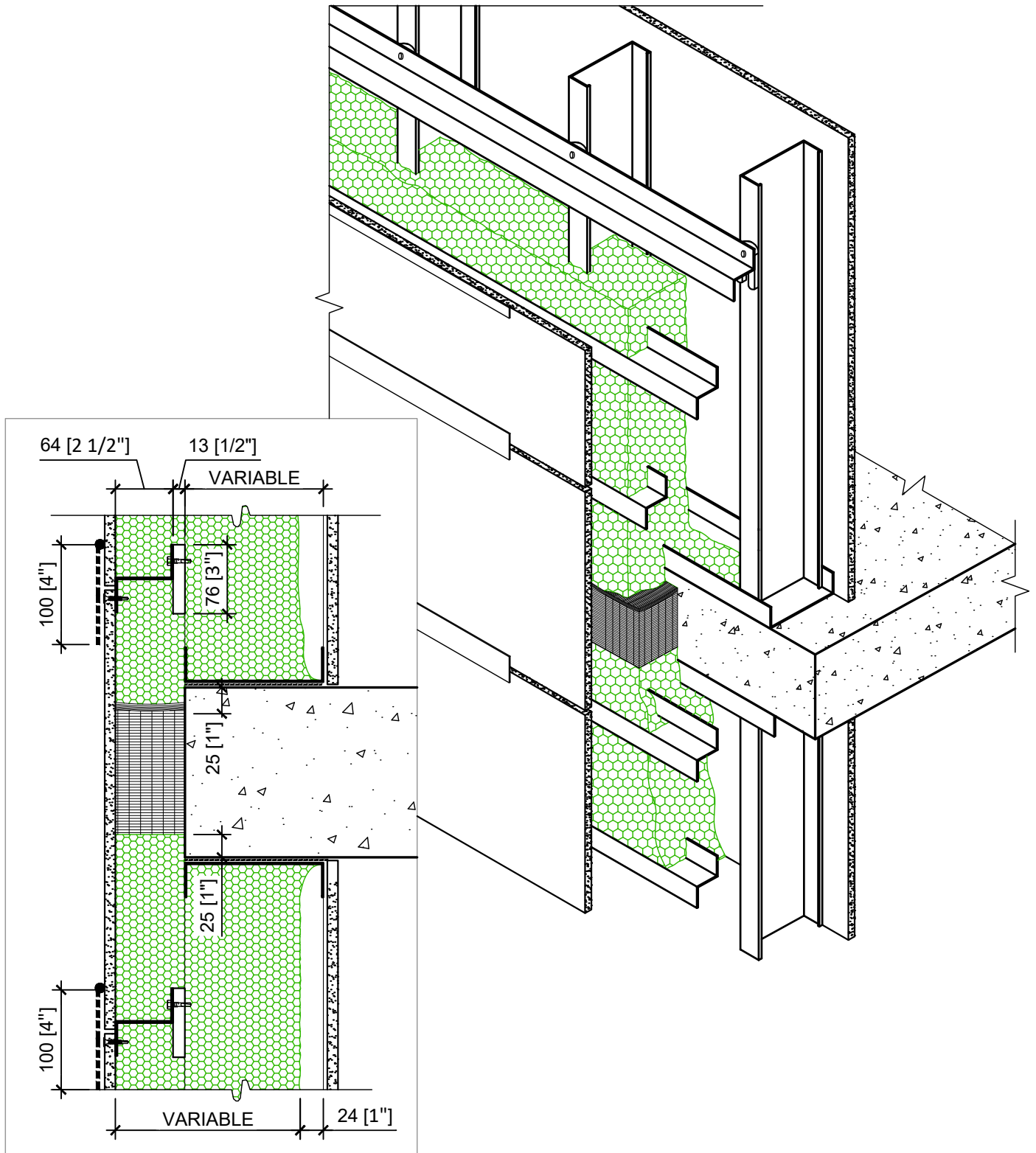
NOTES: A FULL SURFACE MEMBRANE CAN BE USED DEPENDING ON THE DESIGNER'S CHOICE (NON ILLUSTRATED)

**D** IT IS RECOMMENDED TO INSTALL AN OMEGA BAR ON THE EXTERIOR PANEL TO PREVENT THE URETHANE FROM PUSHING IN DURING THE INJECTION OF THE COLUMNS

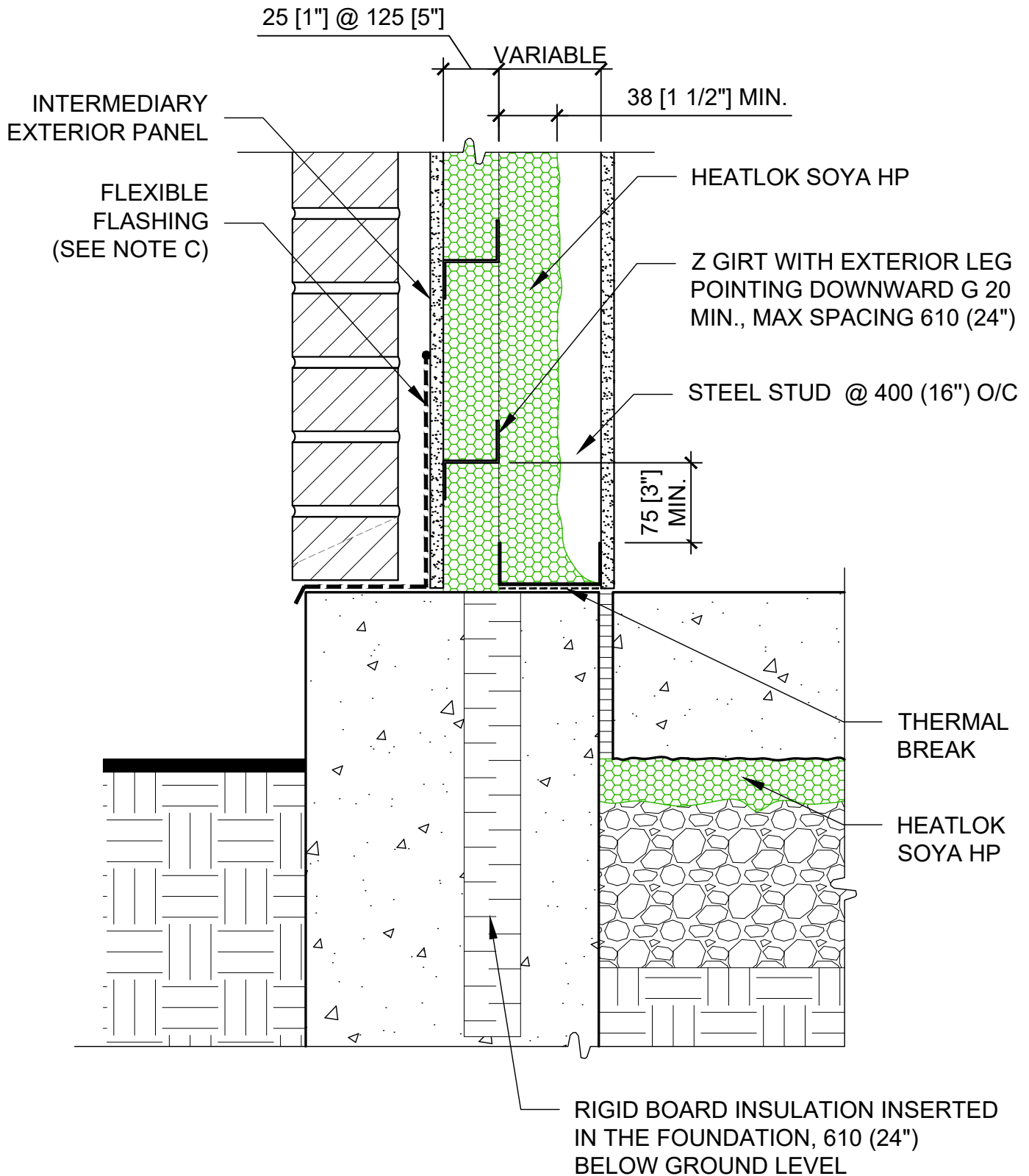


ISOMETRY  
BRICK SIDING

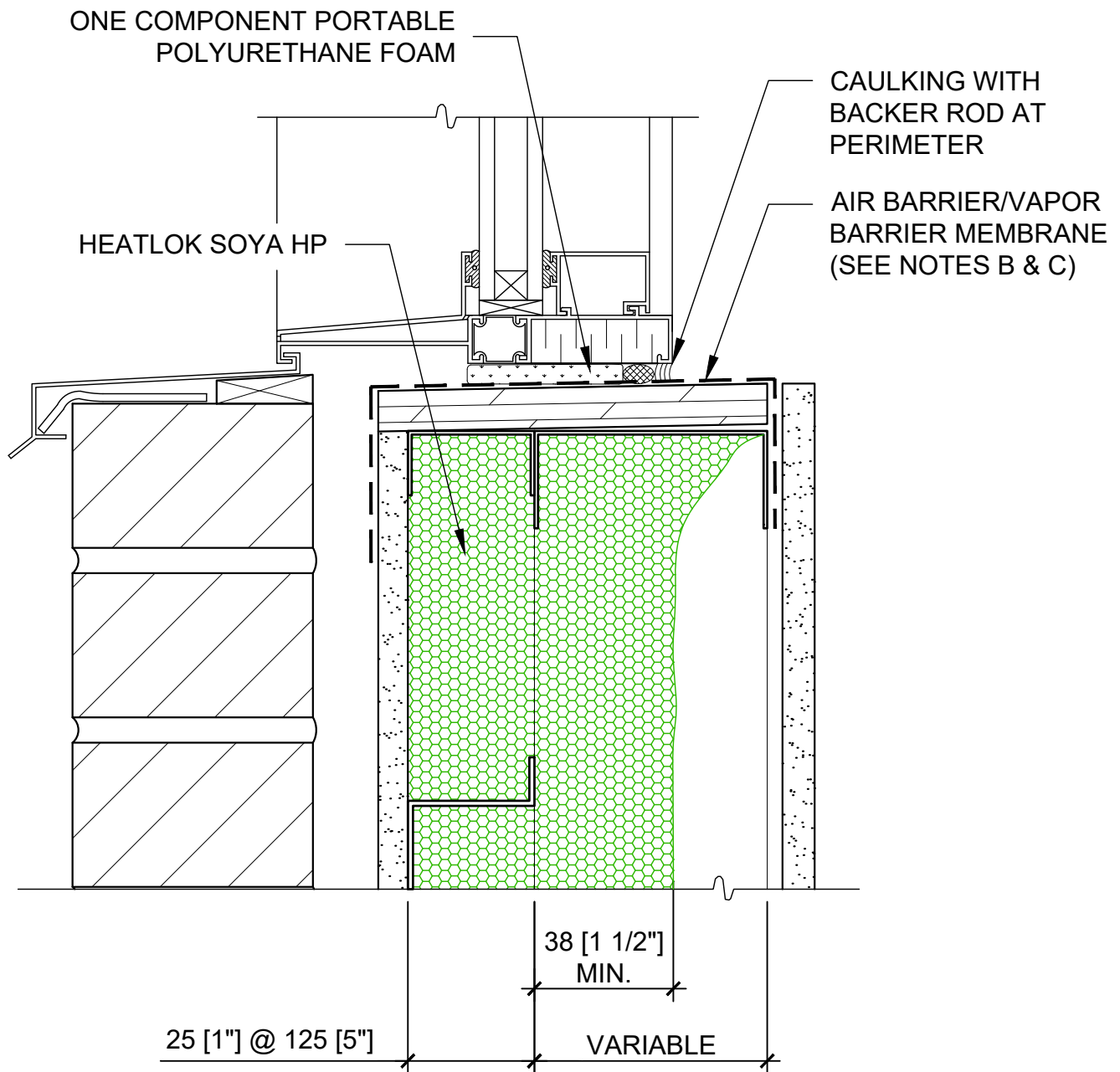




ISOMETRY  
Z-BAR WITH THERMAL BREAK

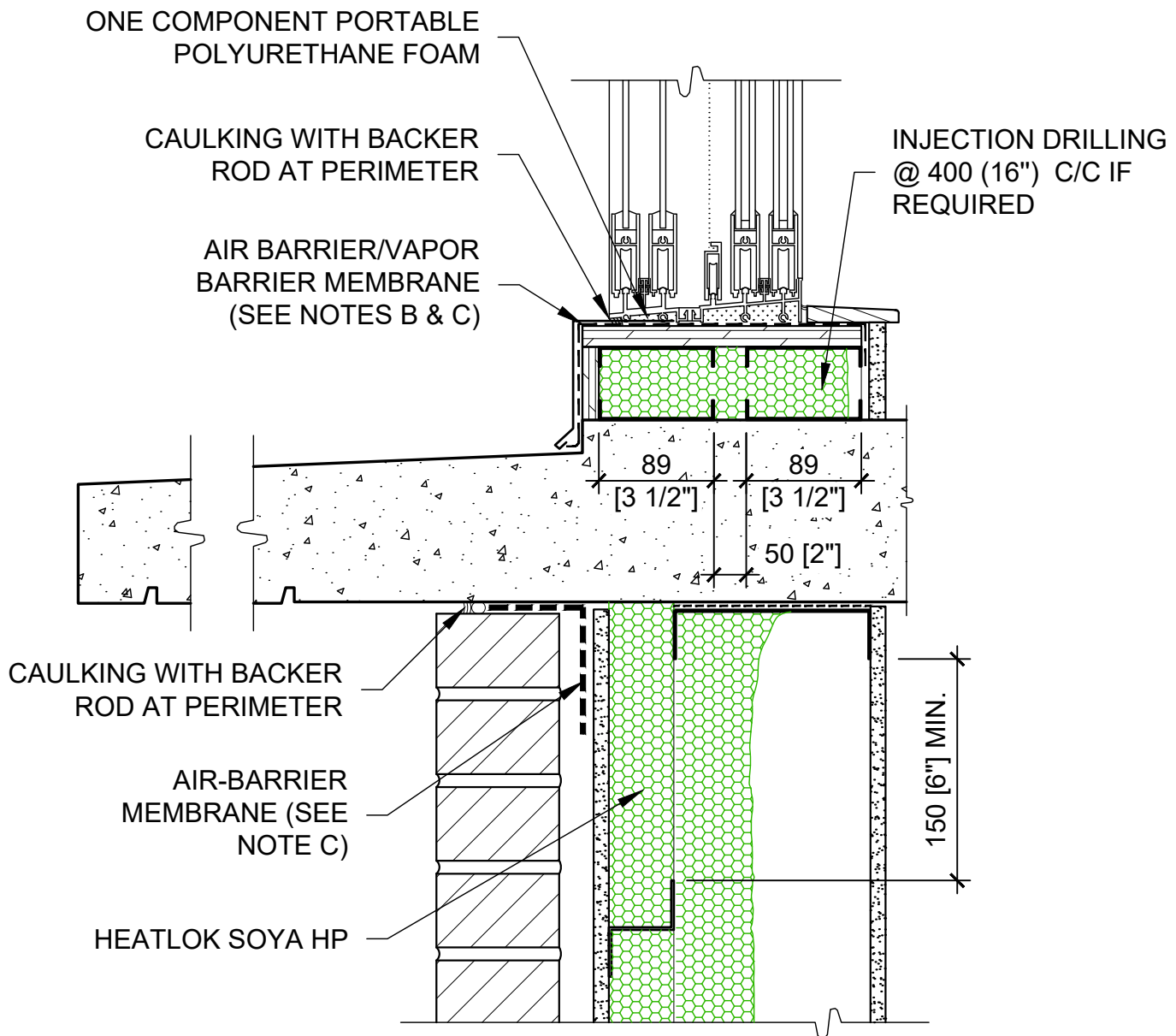


THROUGH WALL MEMBRANE AT FOUNDATION  
WALL JUNCTION - BRICK SIDING



WINDOW SILL  
BRICK SIDING





BALCONY/FLOOR SLAB JUNCTION  
BRICK SIDING

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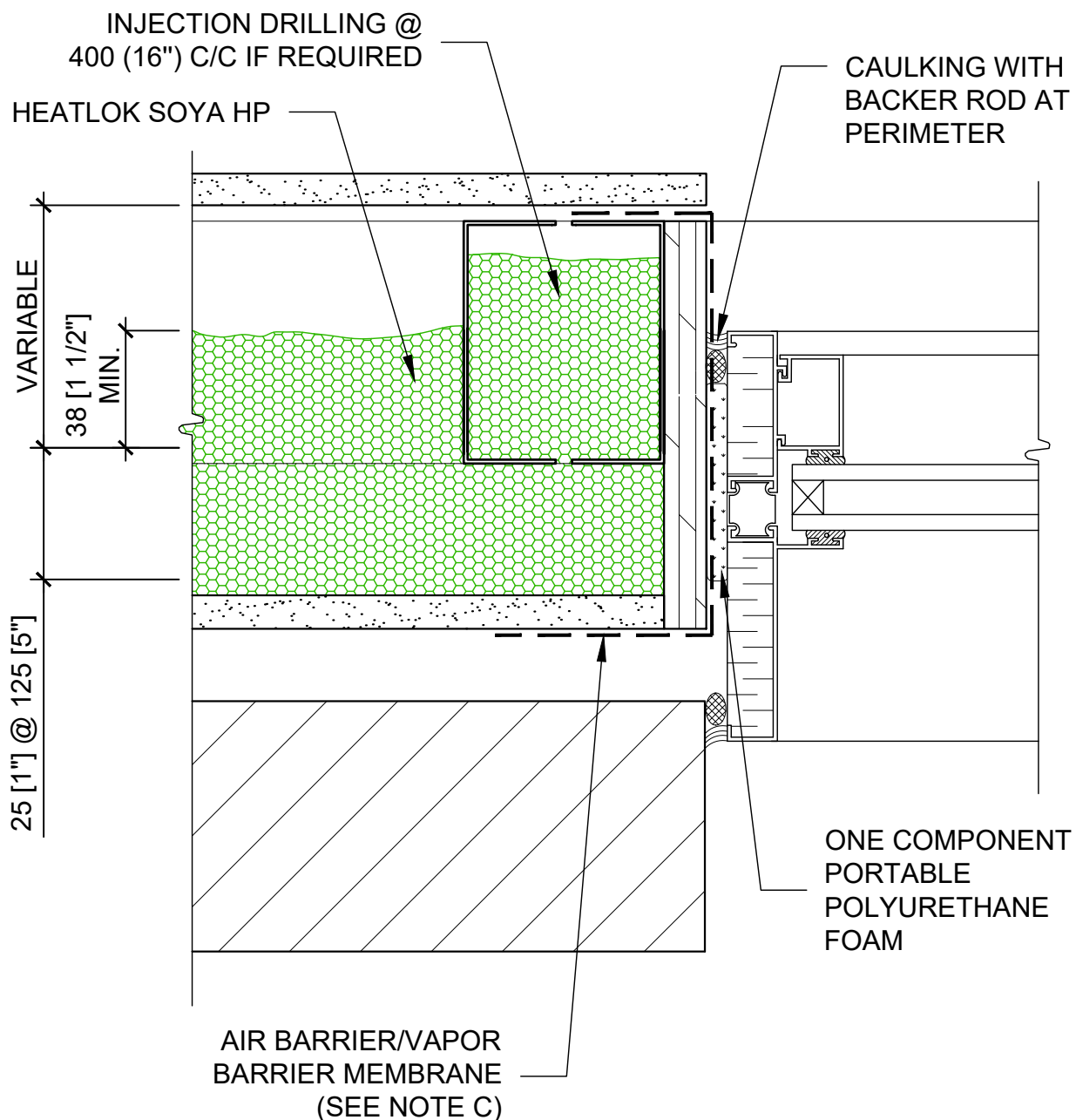
D-MAX WALL

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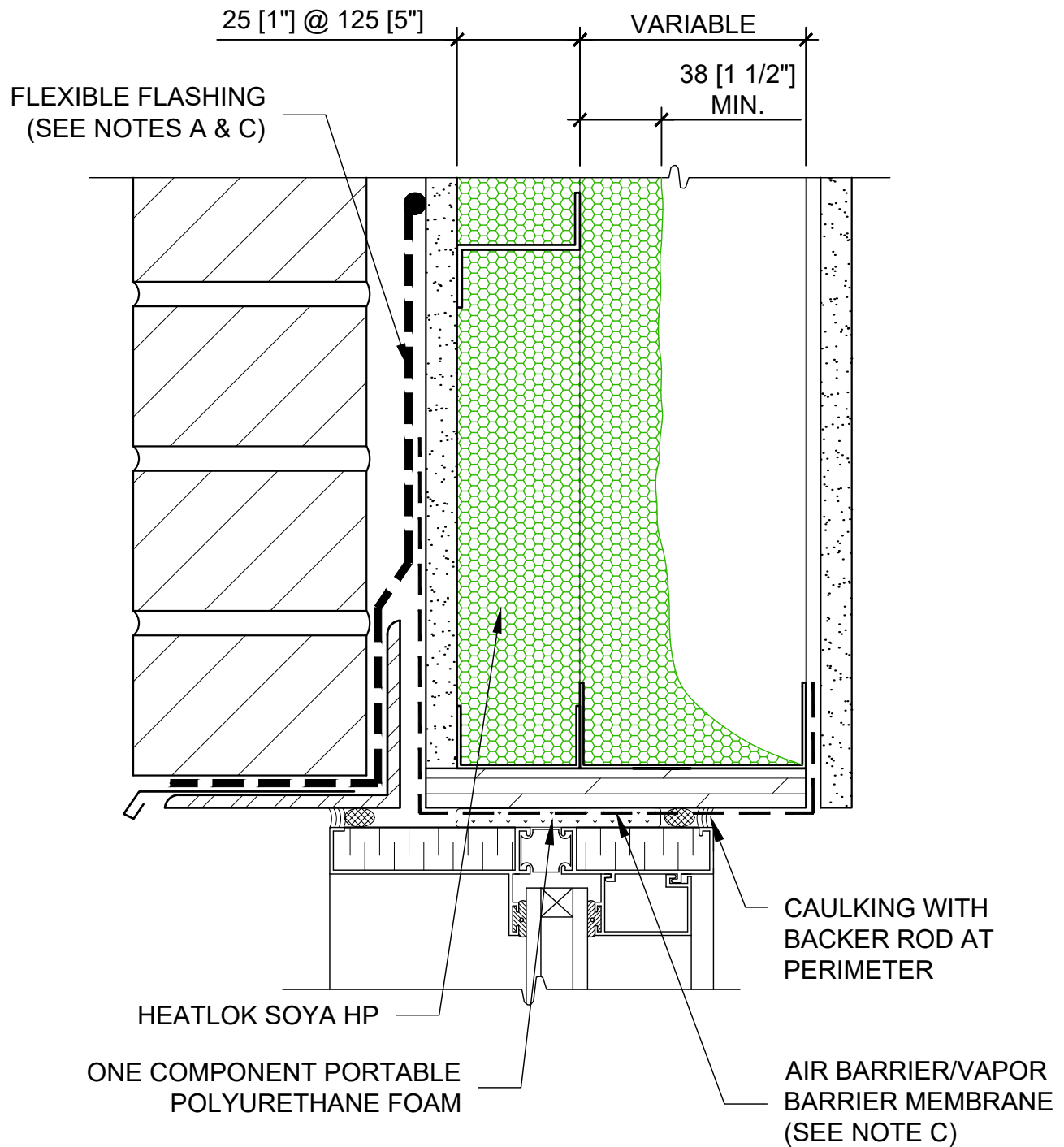
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NOTE: FOR SUPPORT PURPOSES AT OPENINGS, THE WINDOW SUPPORT POSTS MAY BE DOUBLED AND INJECTED WITH HEATLOK SOYA HP.

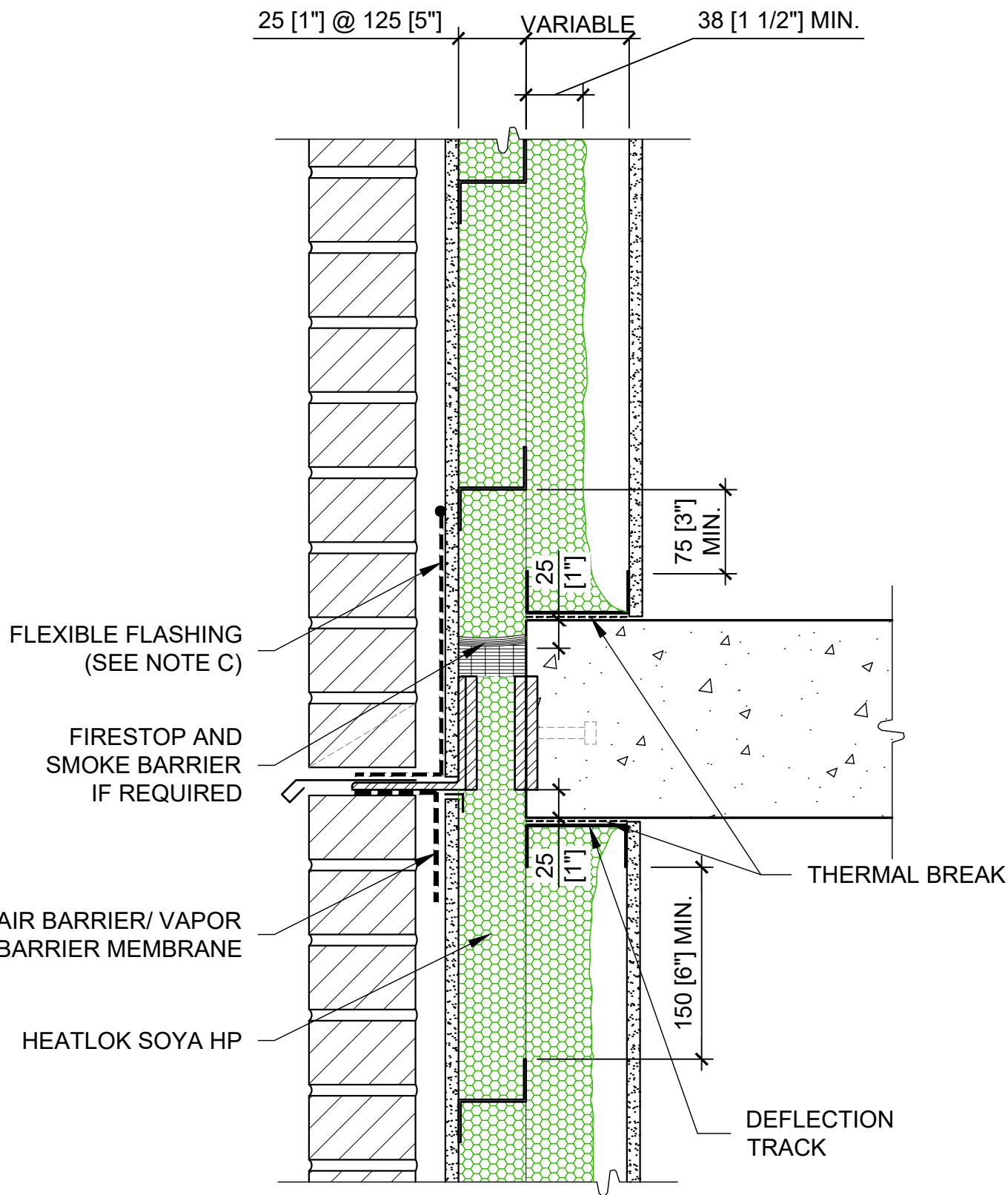


WINDOW JAMB  
BRICK SIDING

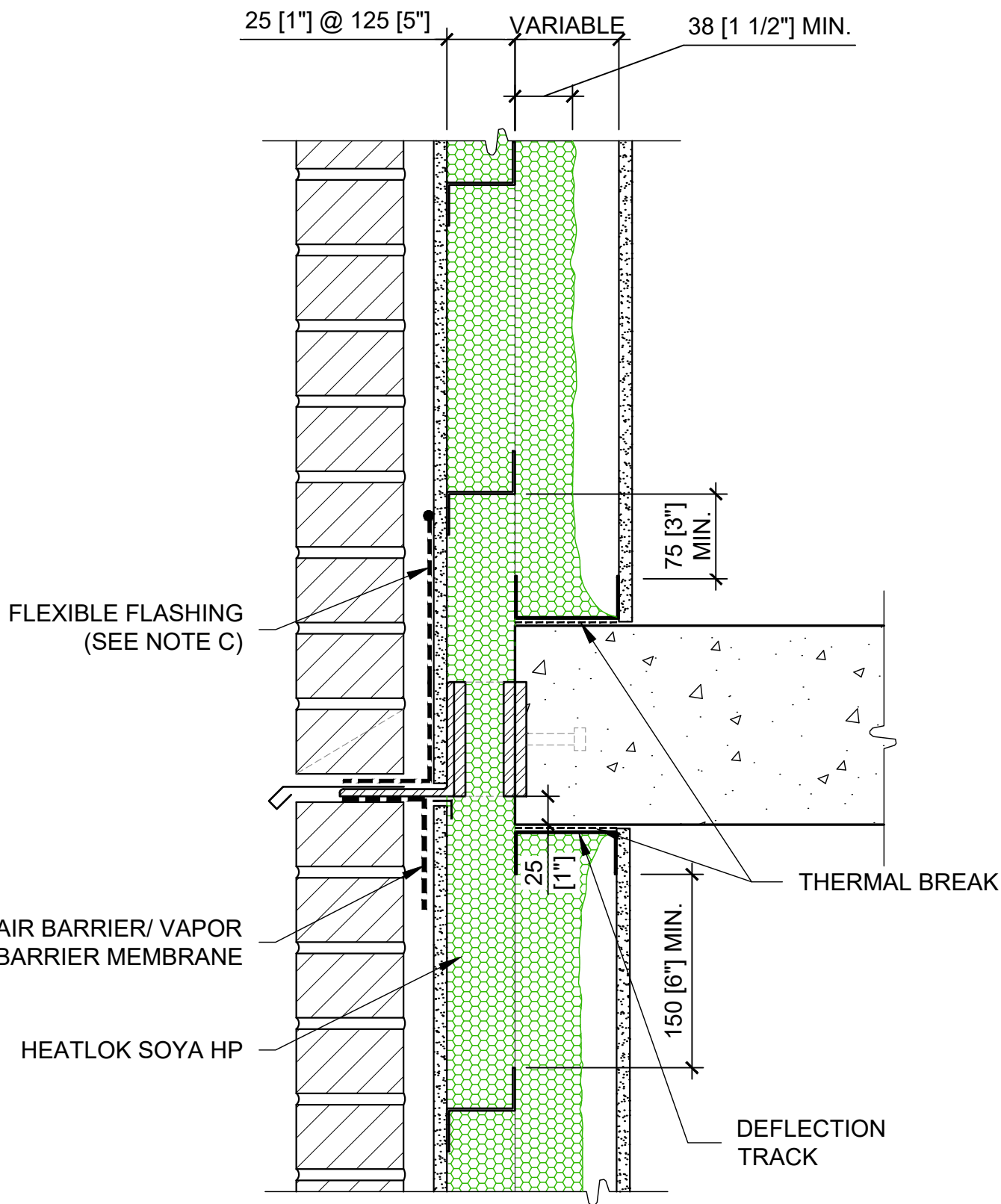


TOP OF WINDOW  
BRICK SIDING

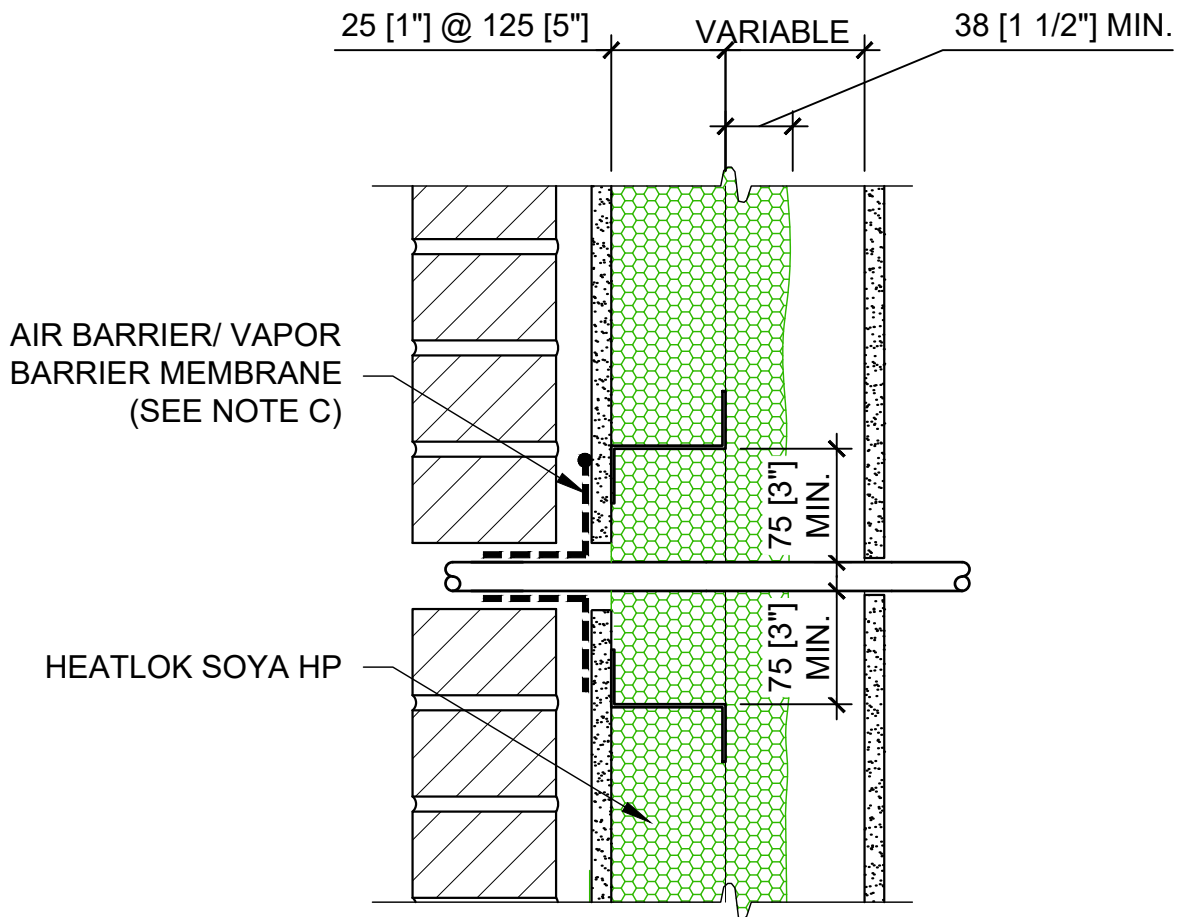




FLOOR JUNCTION  
BRICK SIDING

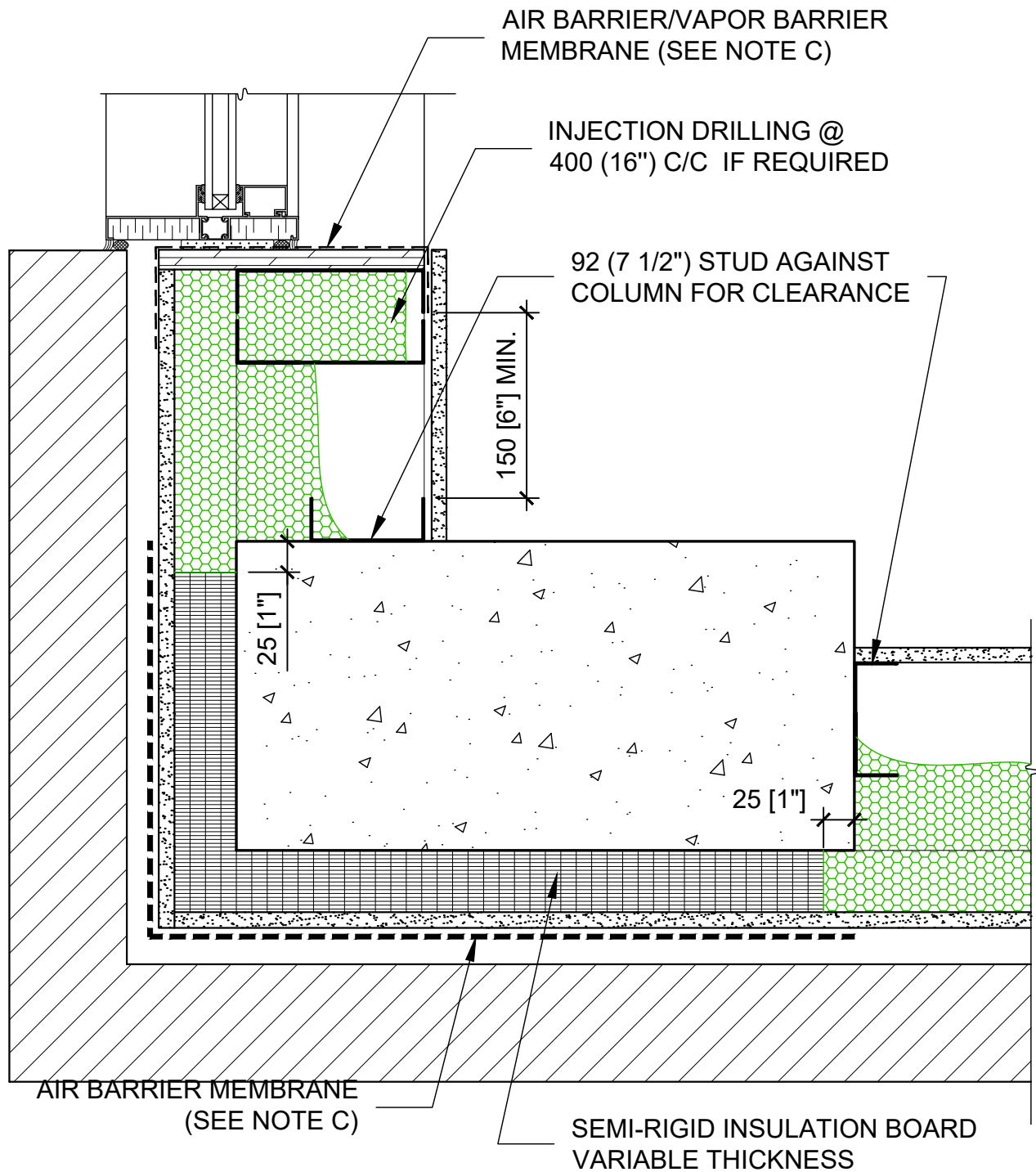


FLOOR JUNCTION  
BRICK SIDING

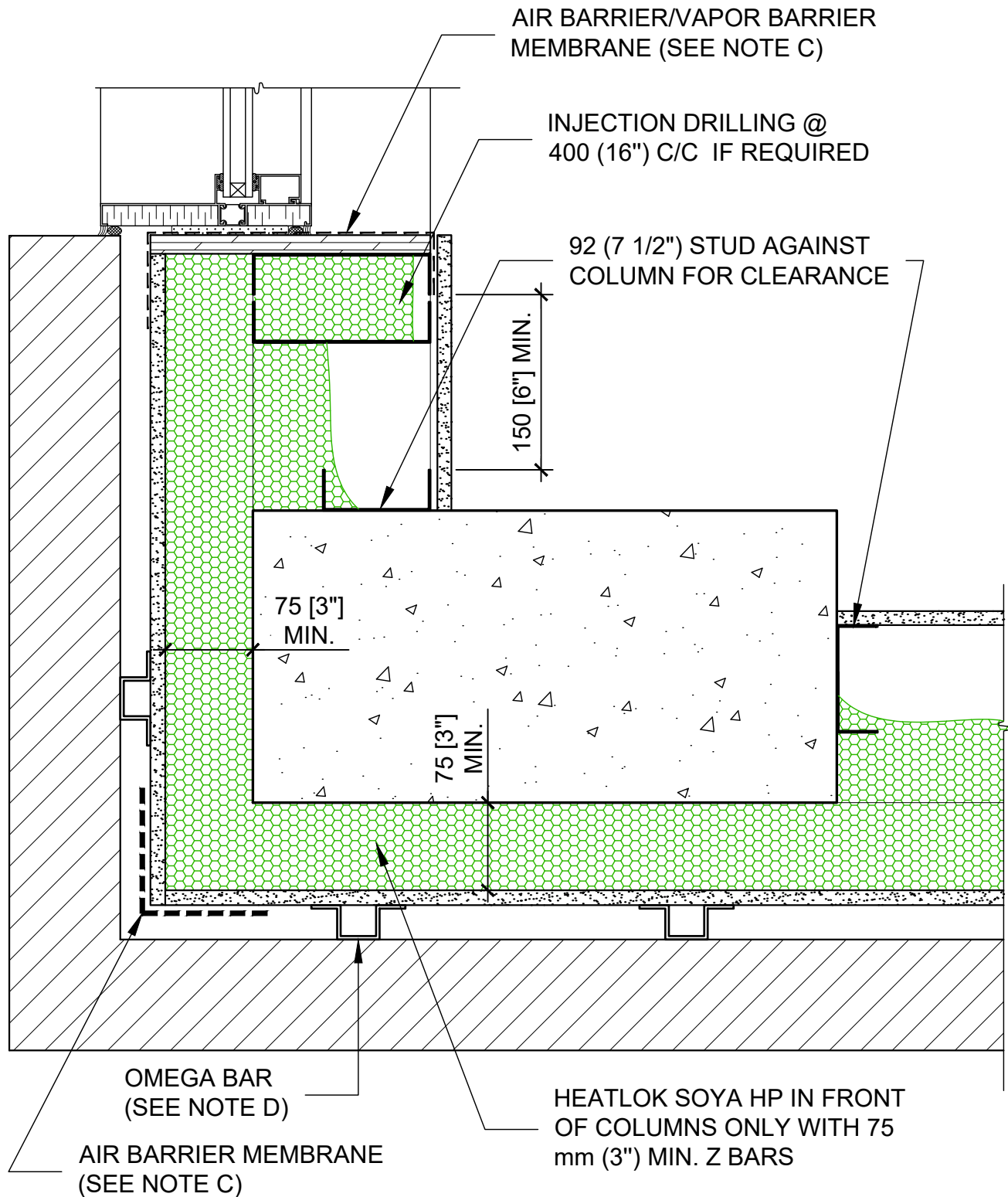


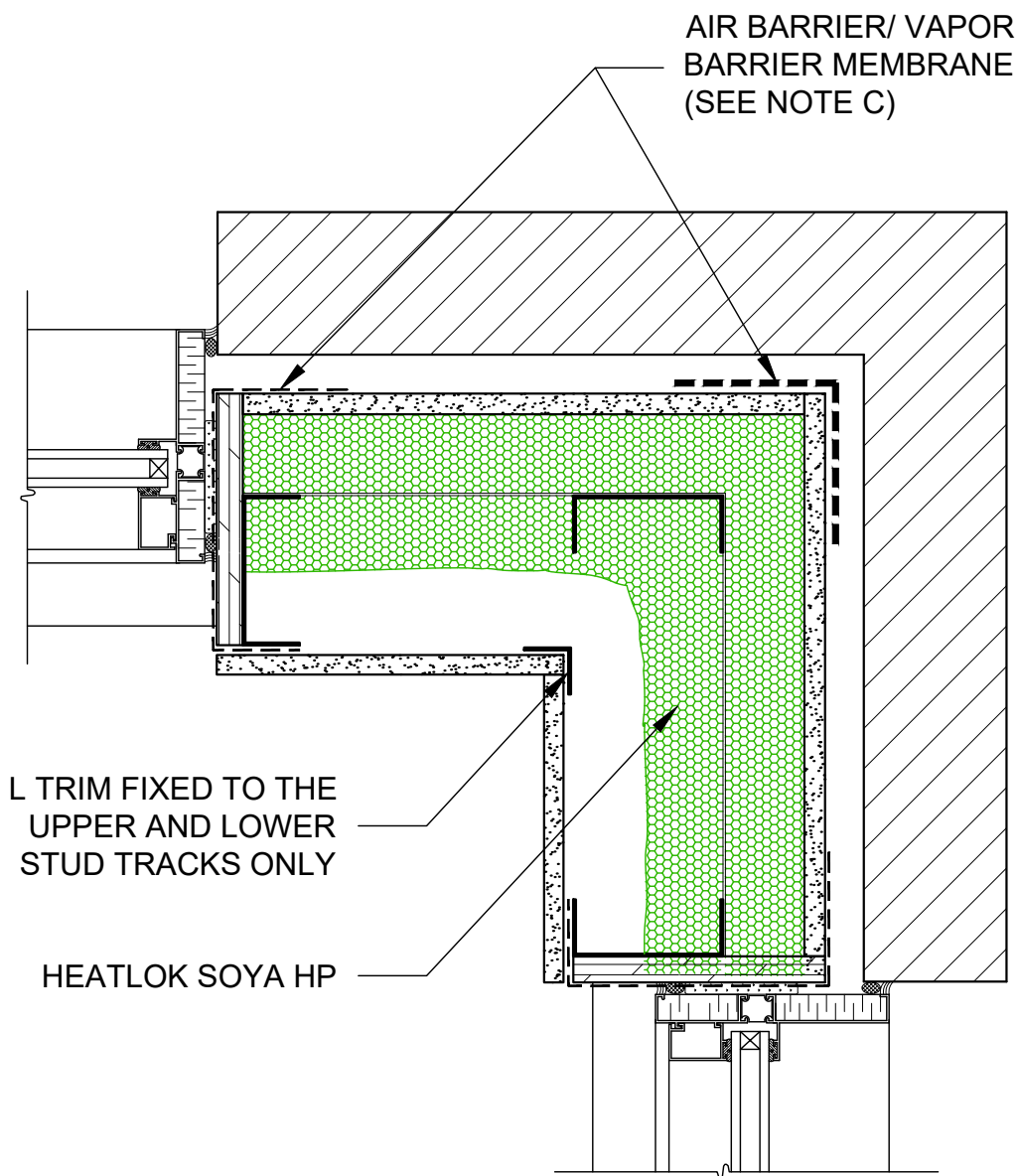
DETAIL AT WALL PENETRATION  
BRICK SIDING





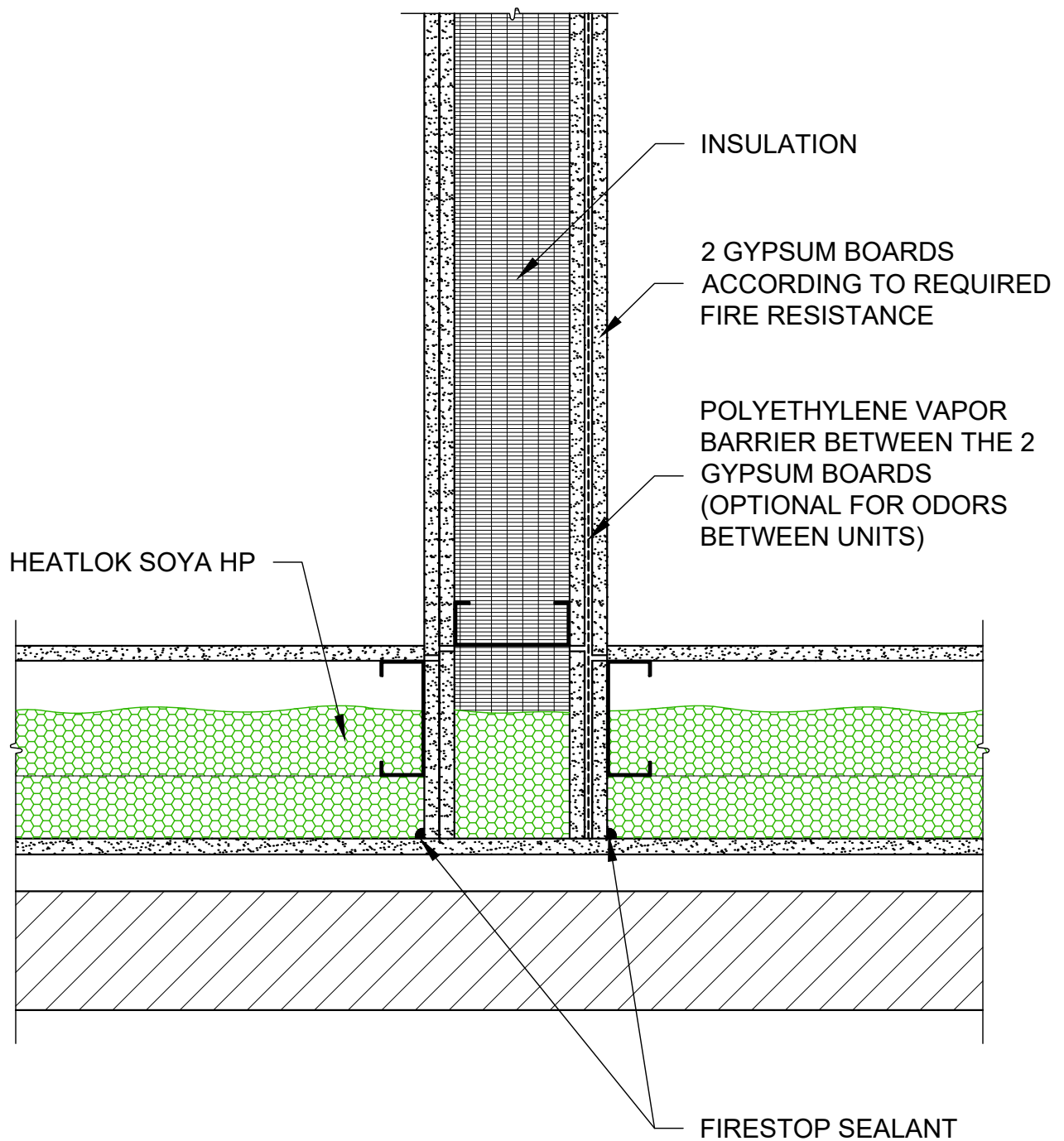
COLUMN AND WALL JUNCTION - BUILDING CORNER  
BRICK SIDING



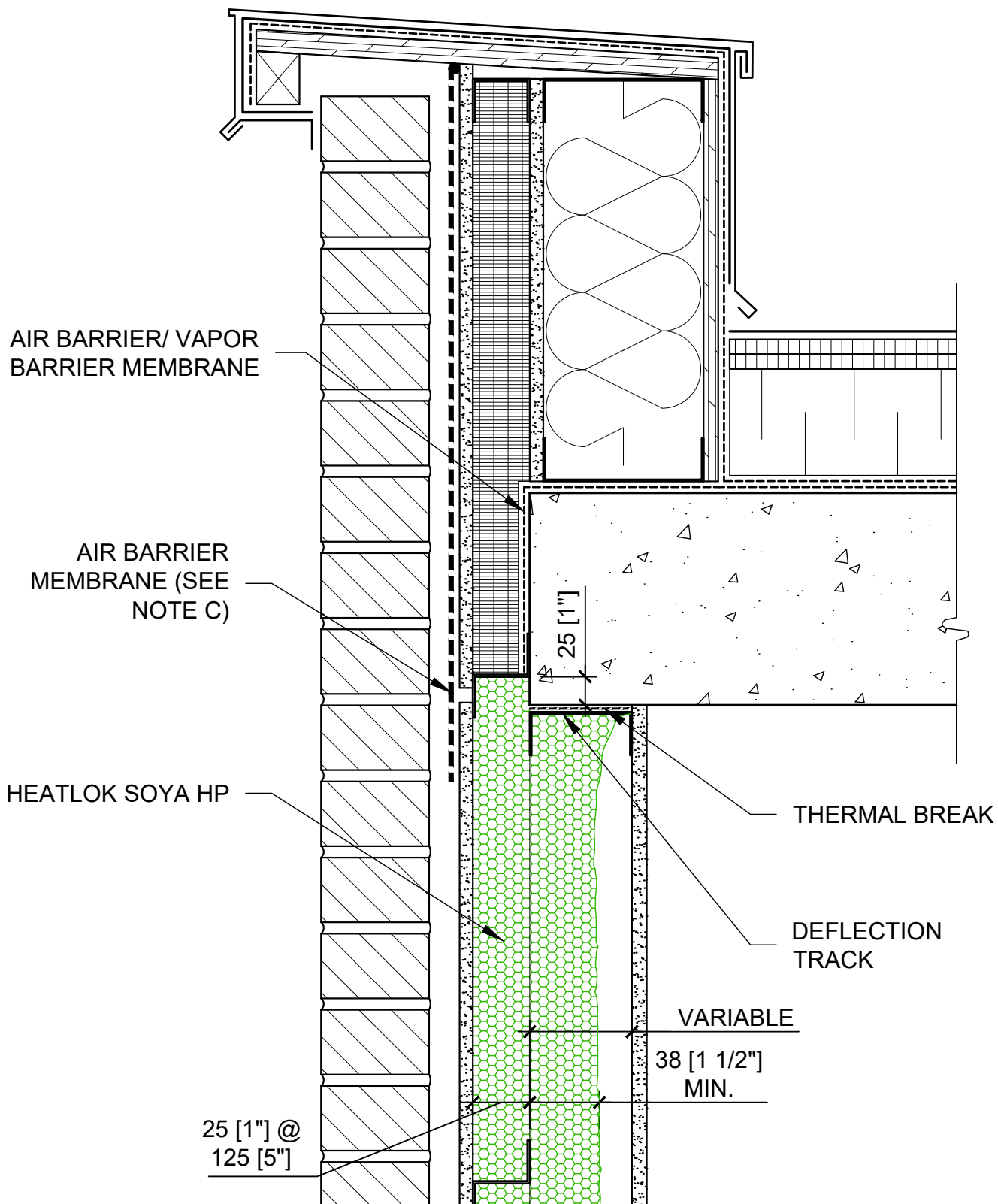


BUILDING CORNER STUD PLACEMENT  
BRICK SIDING

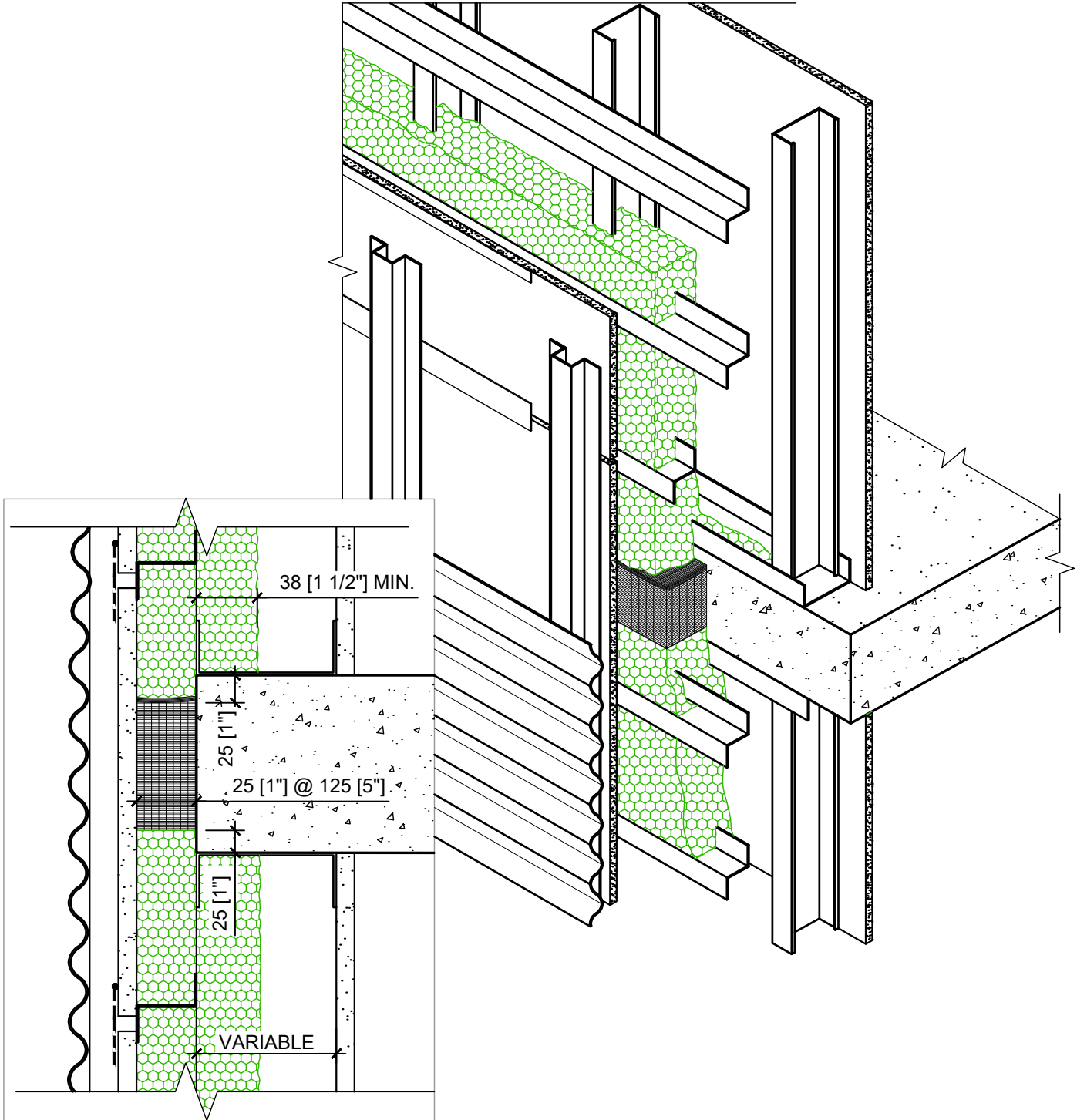




FIRE SEPARATION  
BRICK SIDING



DETAIL AT SUPPORT BEAM, PARAPET  
BRICK SIDING



ISOMETRY  
LIGHTWEIGHT SIDING

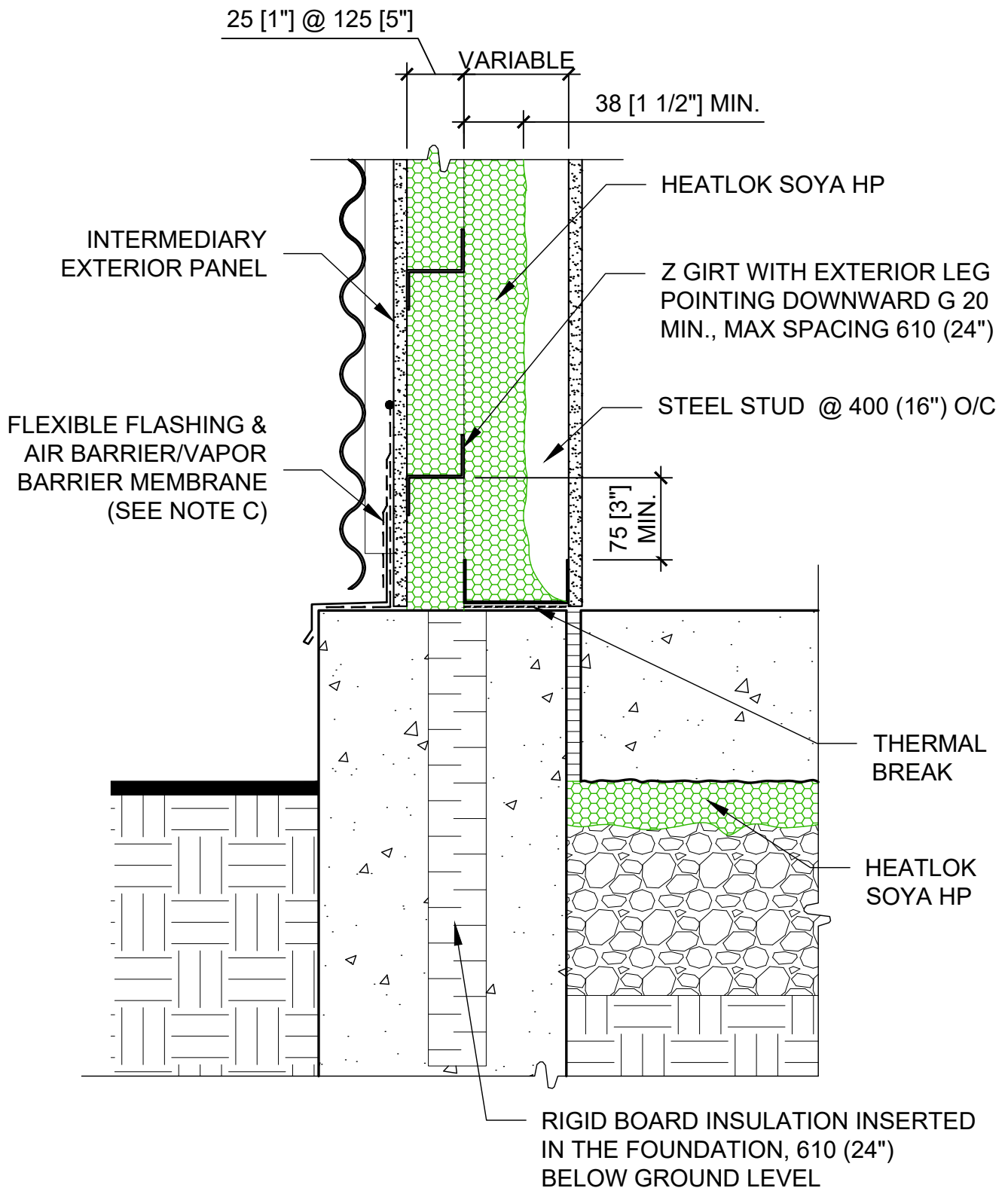
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D-MAX WALL

Scale: Variable

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THROUGH WALL MEMBRANE AT FOUNDATION  
WALL JUNCTION - LIGHTWEIGHT SIDING

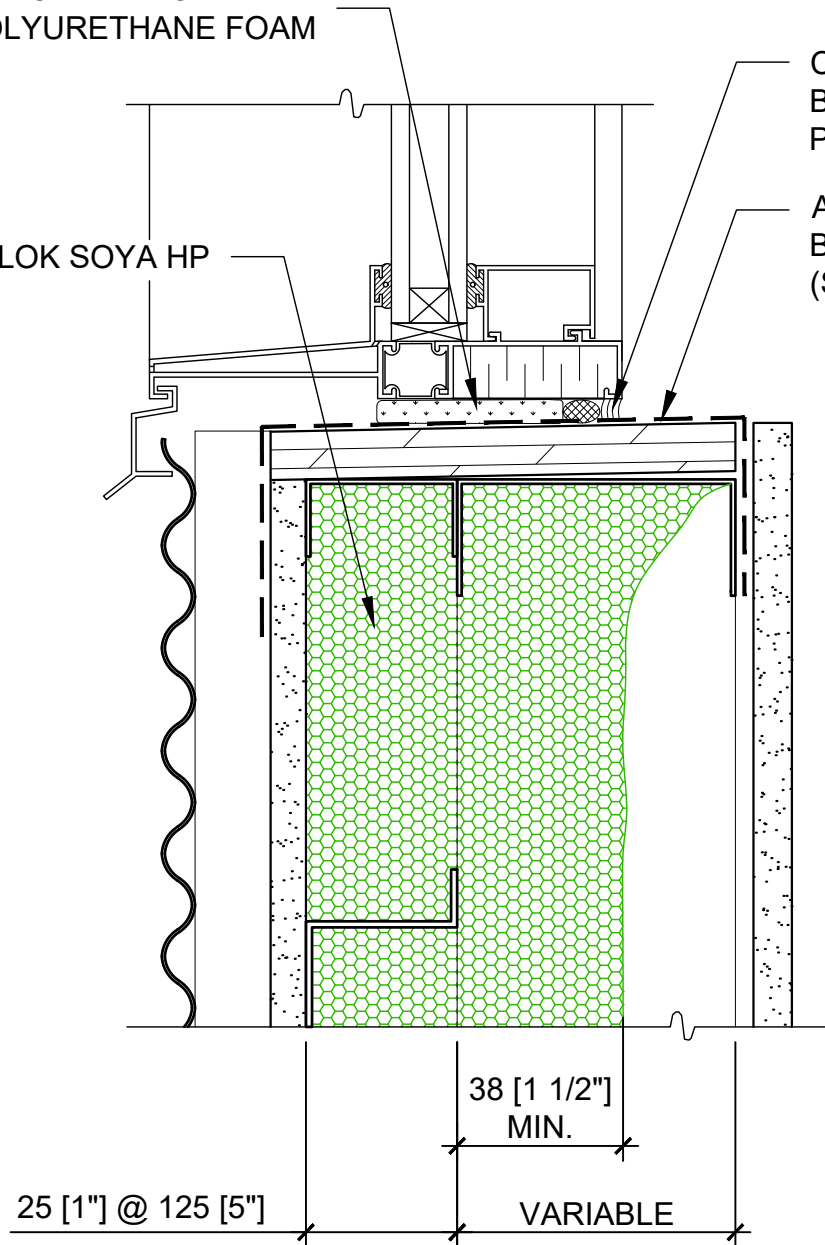


ONE COMPONENT PORTABLE  
POLYURETHANE FOAM

HEATLOK SOYA HP

CAULKING WITH  
BACKER ROD AT  
PERIMETER

AIR BARRIER/VAPOR  
BARRIER MEMBRANE  
(SEE NOTES B & C)



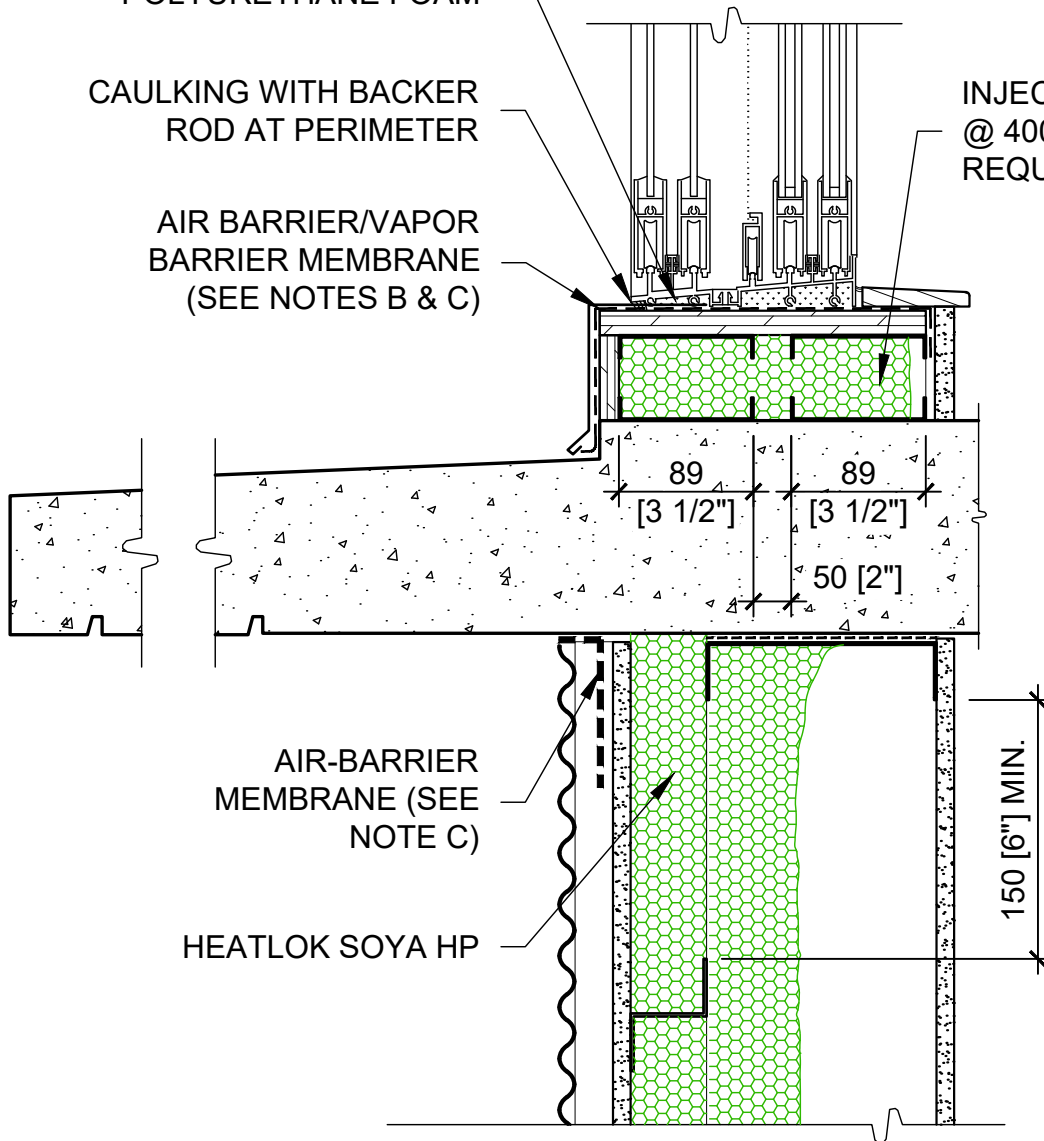
WINDOW SILL  
LIGHTWEIGHT SIDING

ONE COMPONENT PORTABLE  
POLYURETHANE FOAM

CAULKING WITH BACKER  
ROD AT PERIMETER

AIR BARRIER/VAPOR  
BARRIER MEMBRANE  
(SEE NOTES B & C)

INJECTION DRILLING  
@ 400 (16") C/C IF  
REQUIRED



BALCONY/FLOOR SLAB JUNCTION  
LIGHTWEIGHT SIDING

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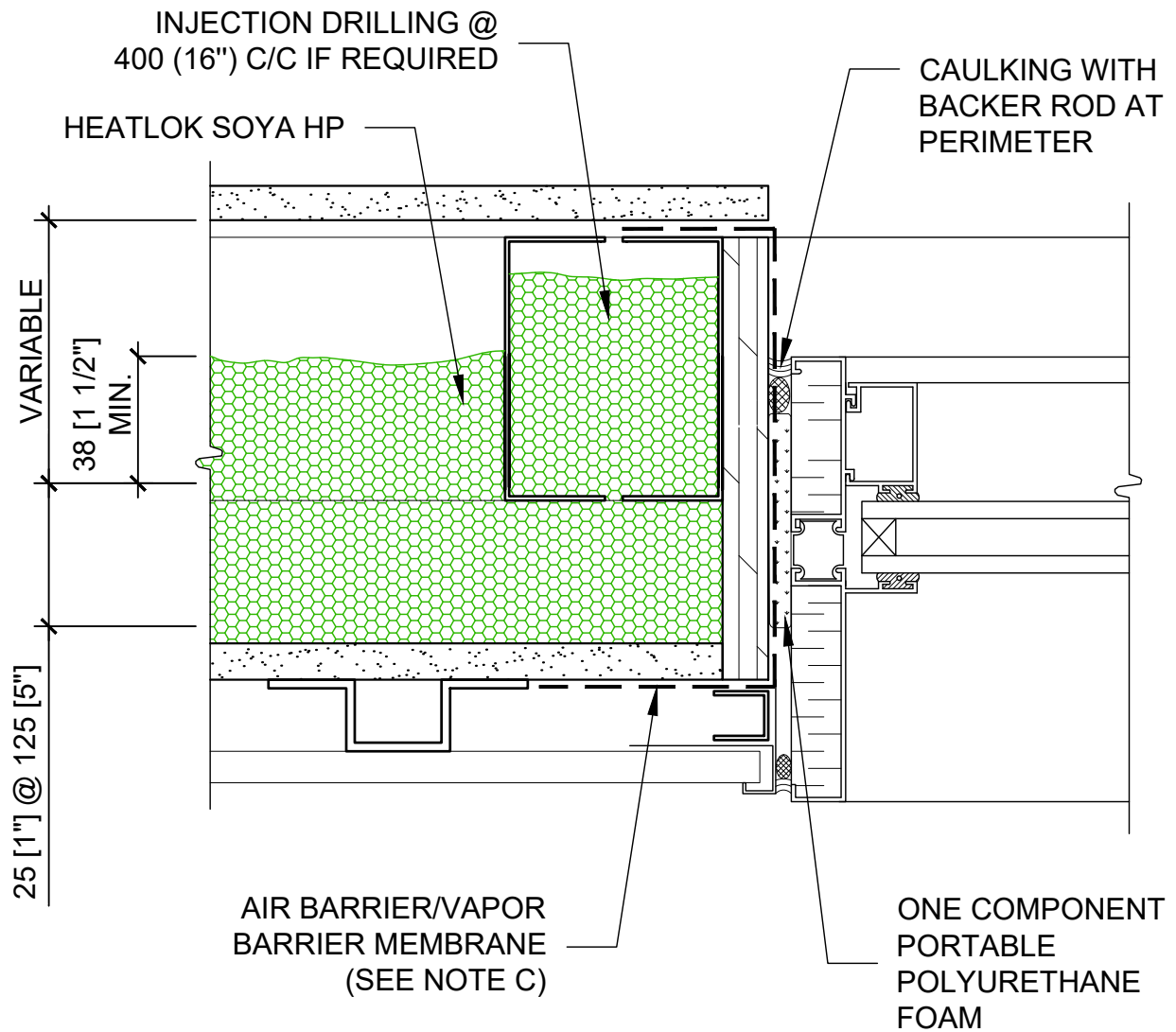
D-MAX WALL

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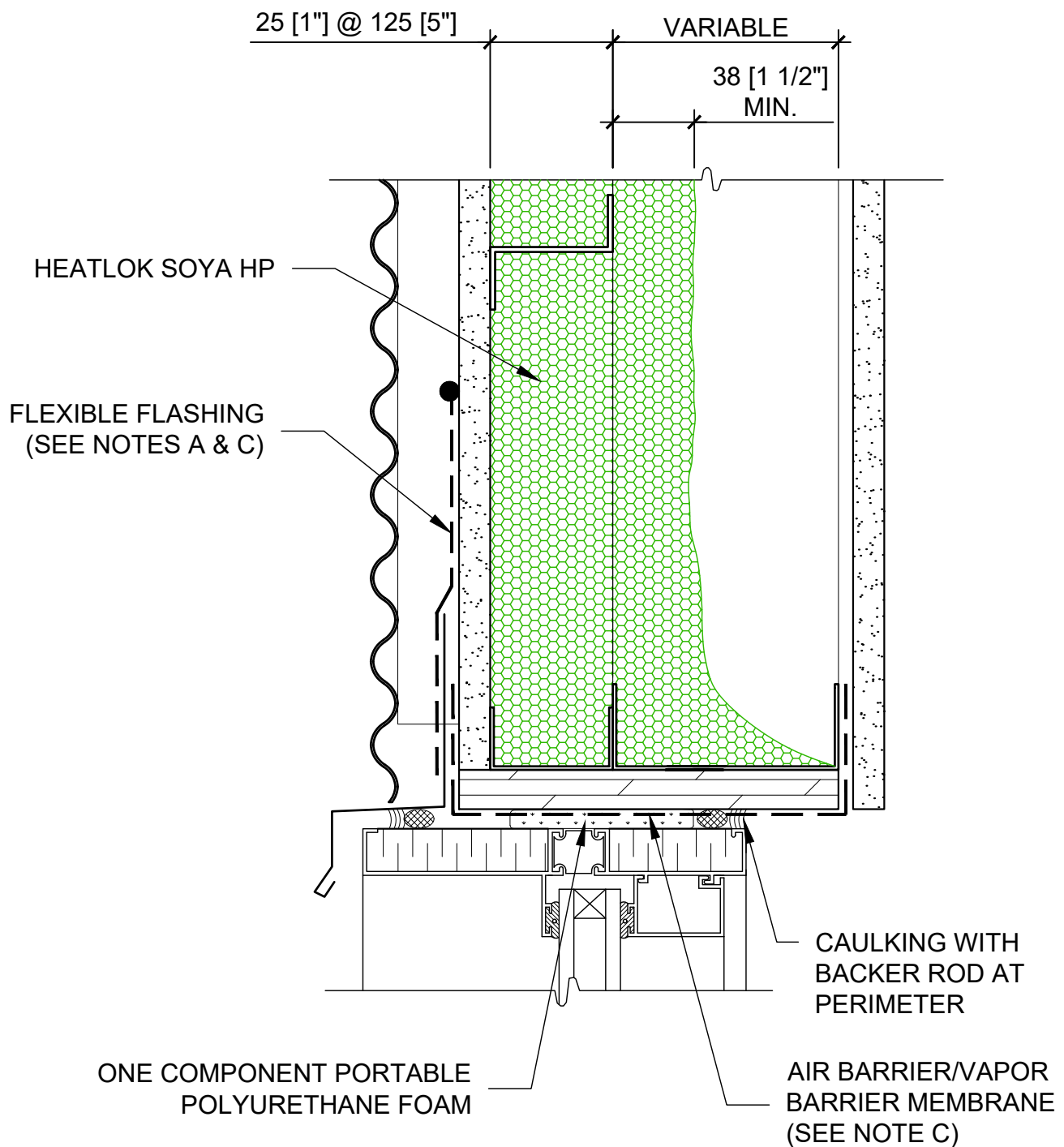
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NOTE: FOR SUPPORT PURPOSES AT OPENINGS, THE WINDOW SUPPORT POSTS MAY BE DOUBLED AND INJECTED WITH HEATLOK SOYA HP.

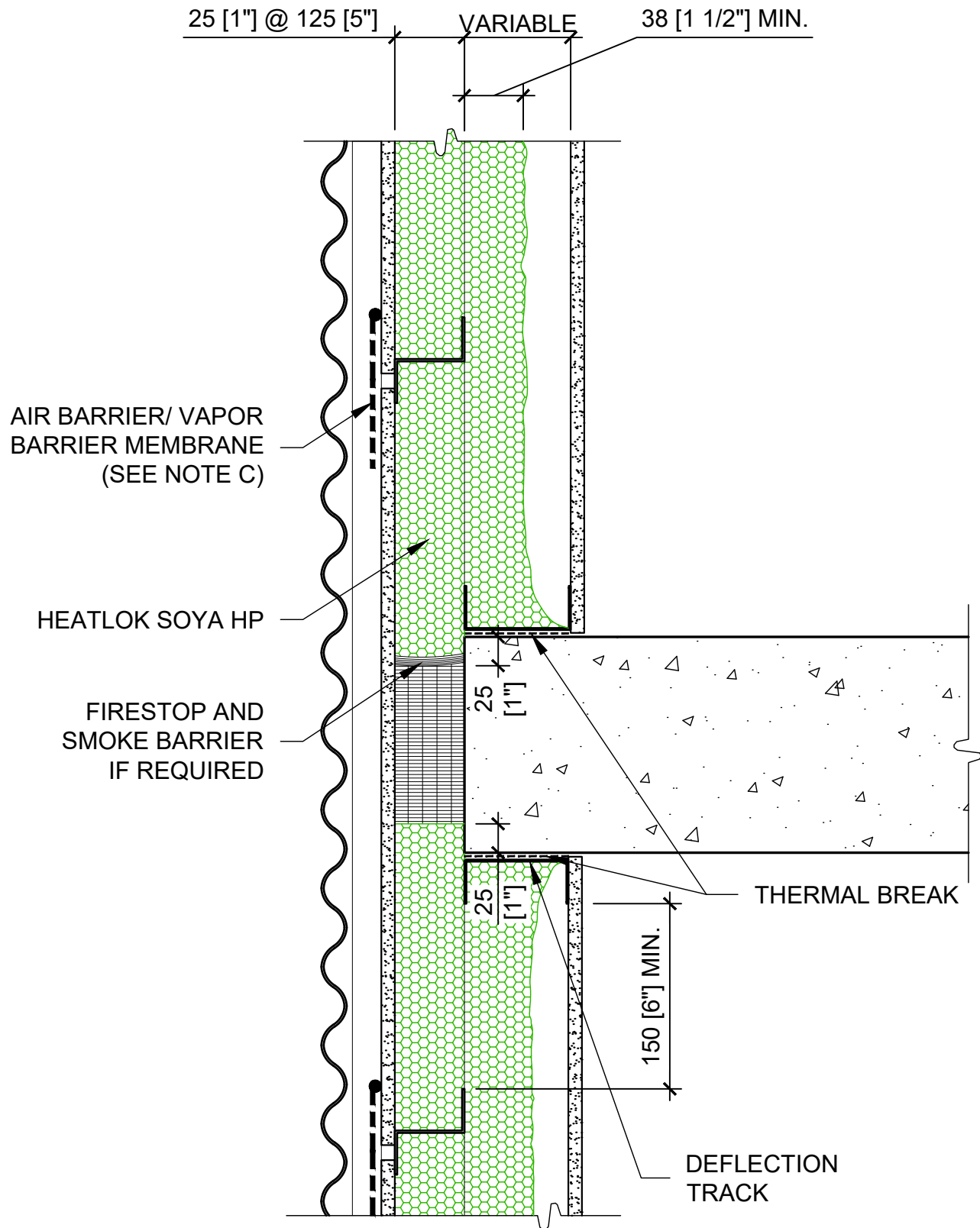


WINDOW JAMB  
LIGHTWEIGHT SIDING

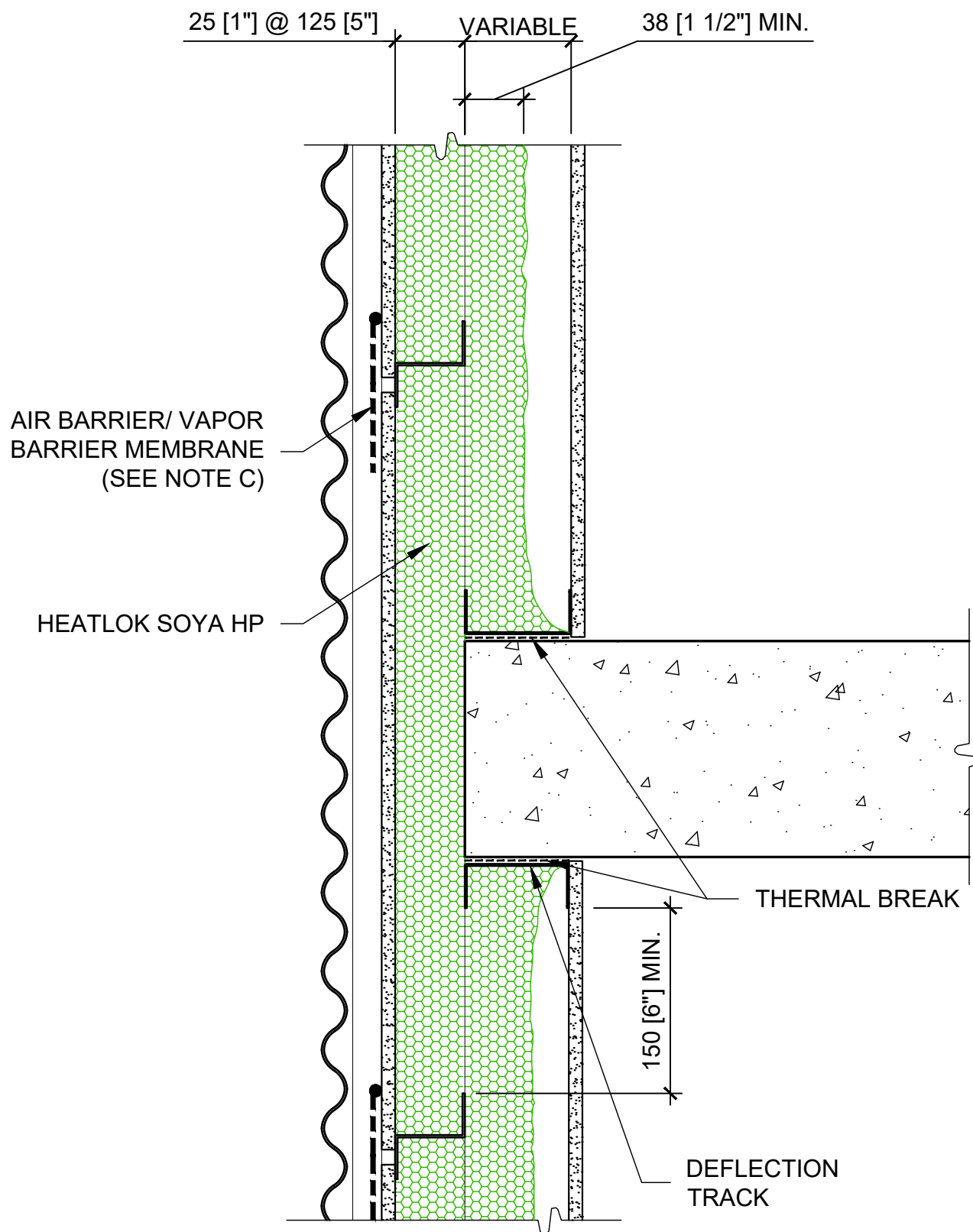


TOP OF WINDOW  
LIGHTWEIGHT SIDING

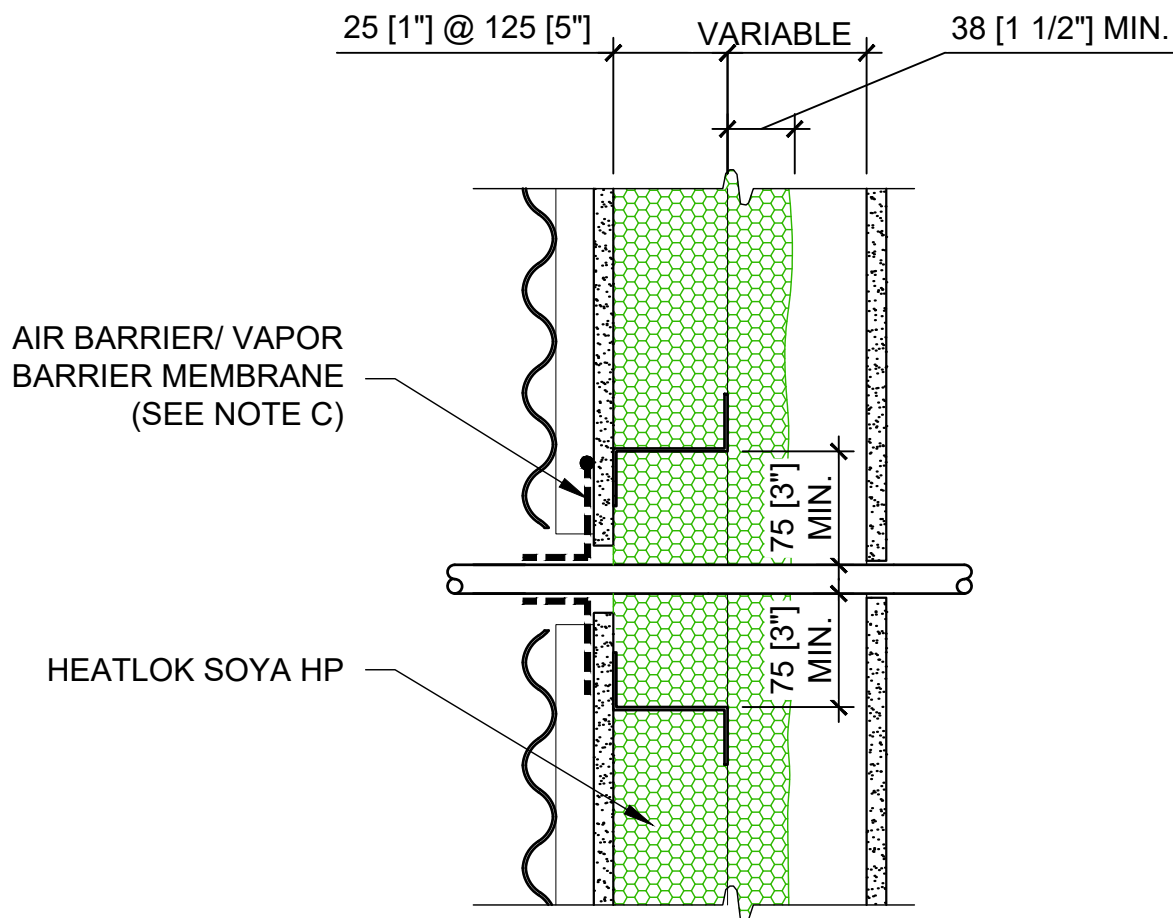




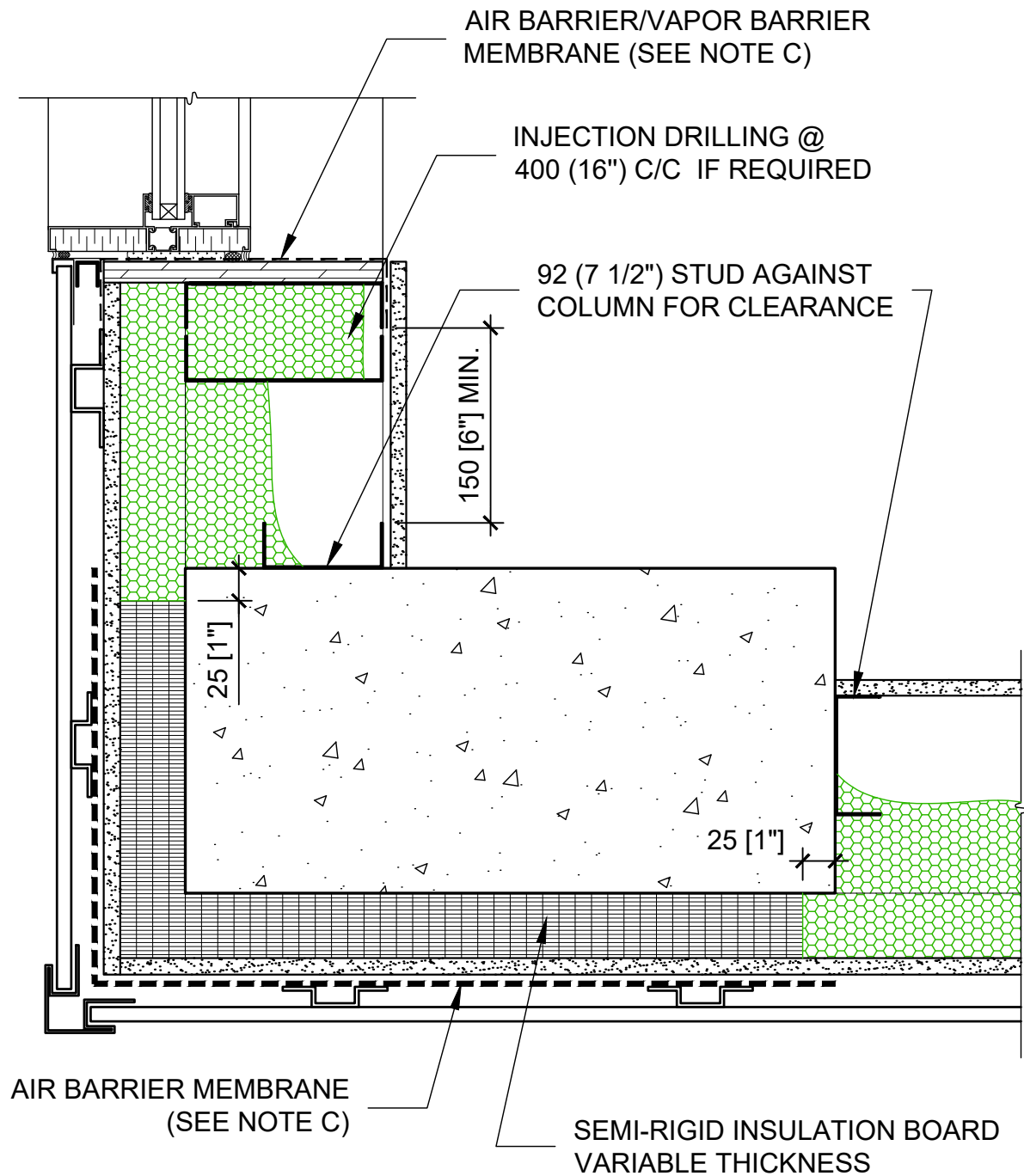
FLOOR JUNCTION  
LIGHTWEIGHT SIDING



FLOOR JUNCTION  
LIGHTWEIGHT SIDING

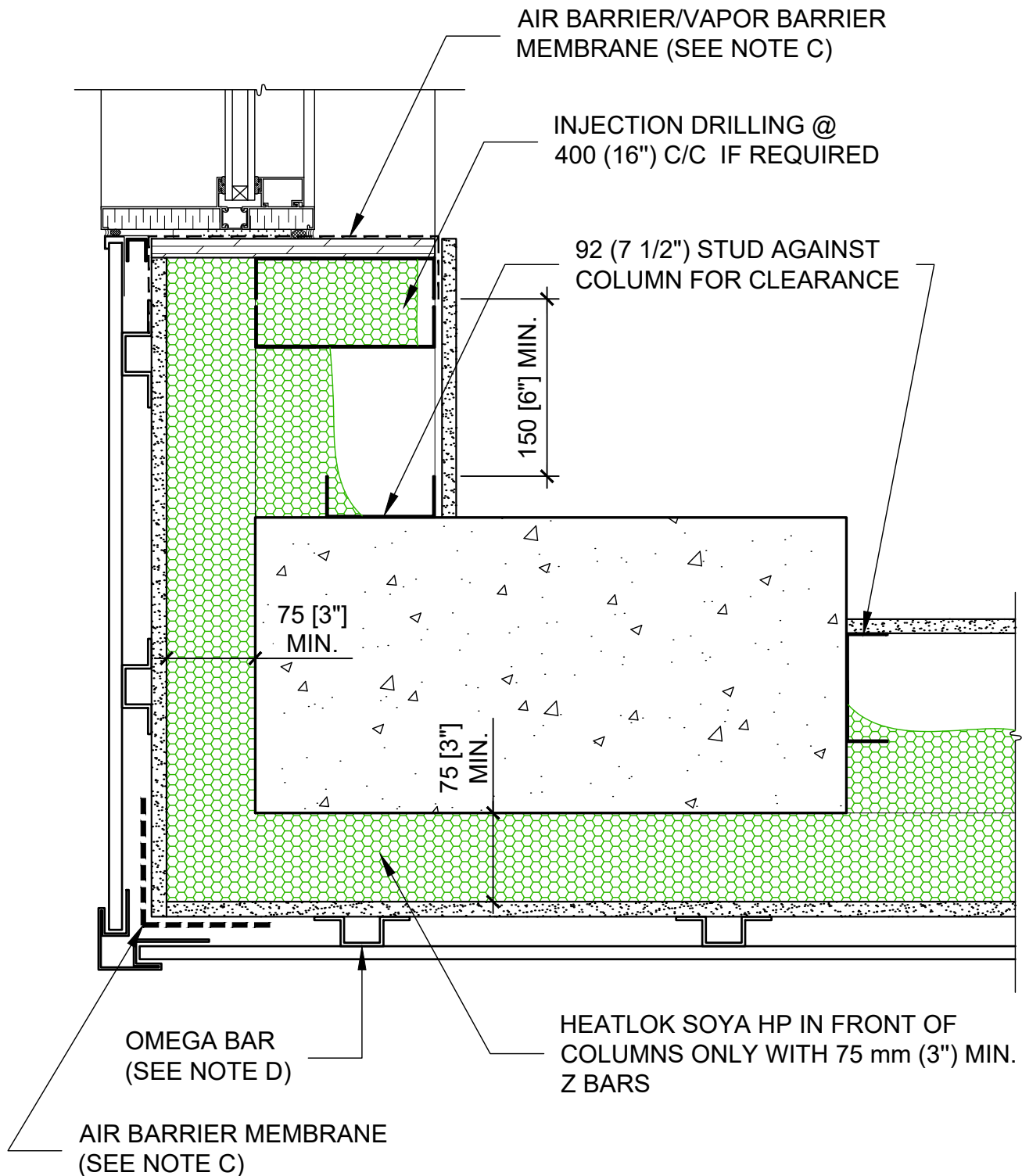


DETAIL AT WALL PENETRATION  
LIGHTWEIGHT SIDING

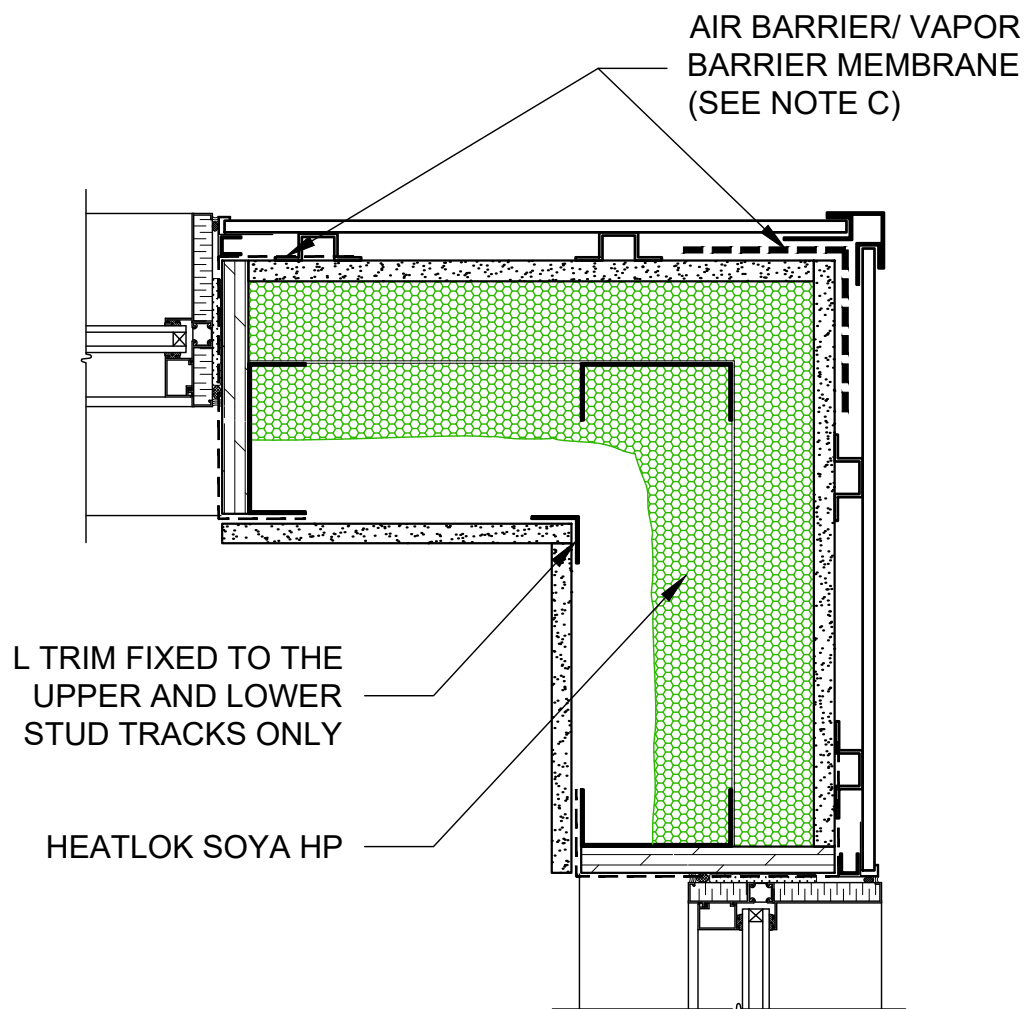


COLUMN AND WALL JUNCTION - BUILDING CORNER  
LIGHTWEIGHT SIDING

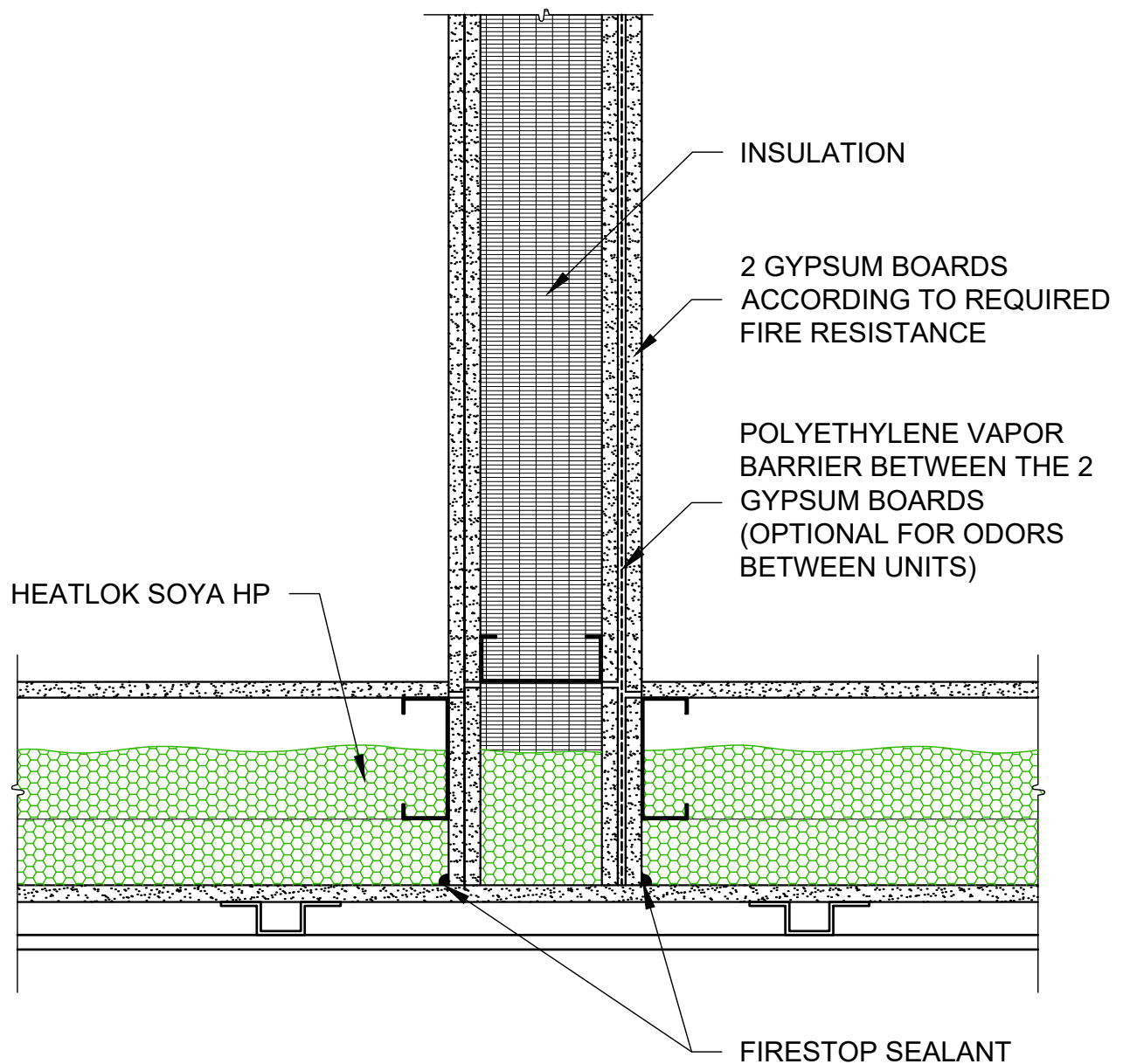




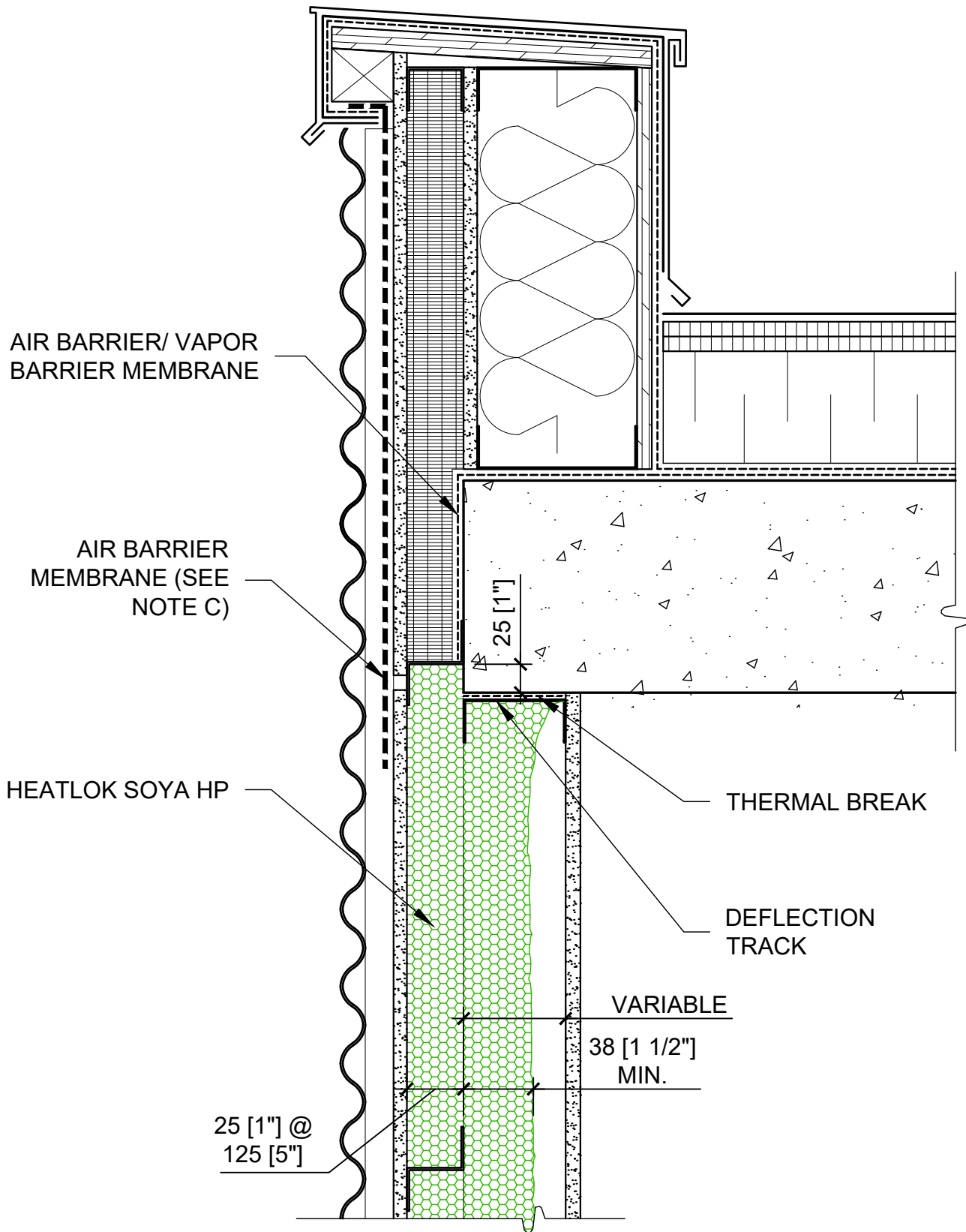
COLUMN AND WALL JUNCTION - BUILDING CORNER  
LIGHTWEIGHT SIDING



BUILDING CORNER STUD PLACEMENT  
LIGHTWEIGHT SIDING



FIRE SEPARATION  
LIGHTWEIGHT SIDING

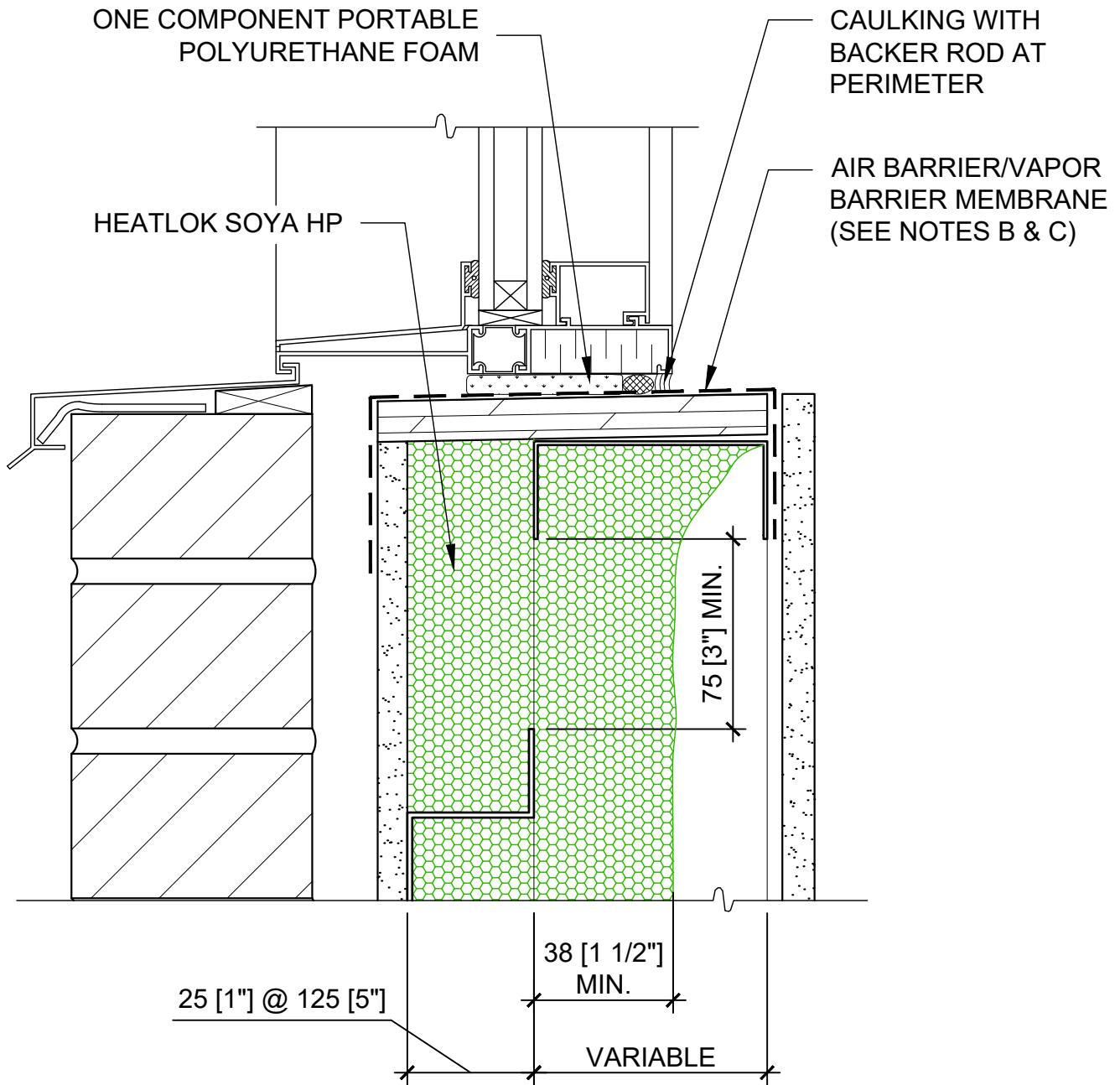


DETAIL AT SUPPORT BEAM, PARAPET  
LIGHTWEIGHT SIDING



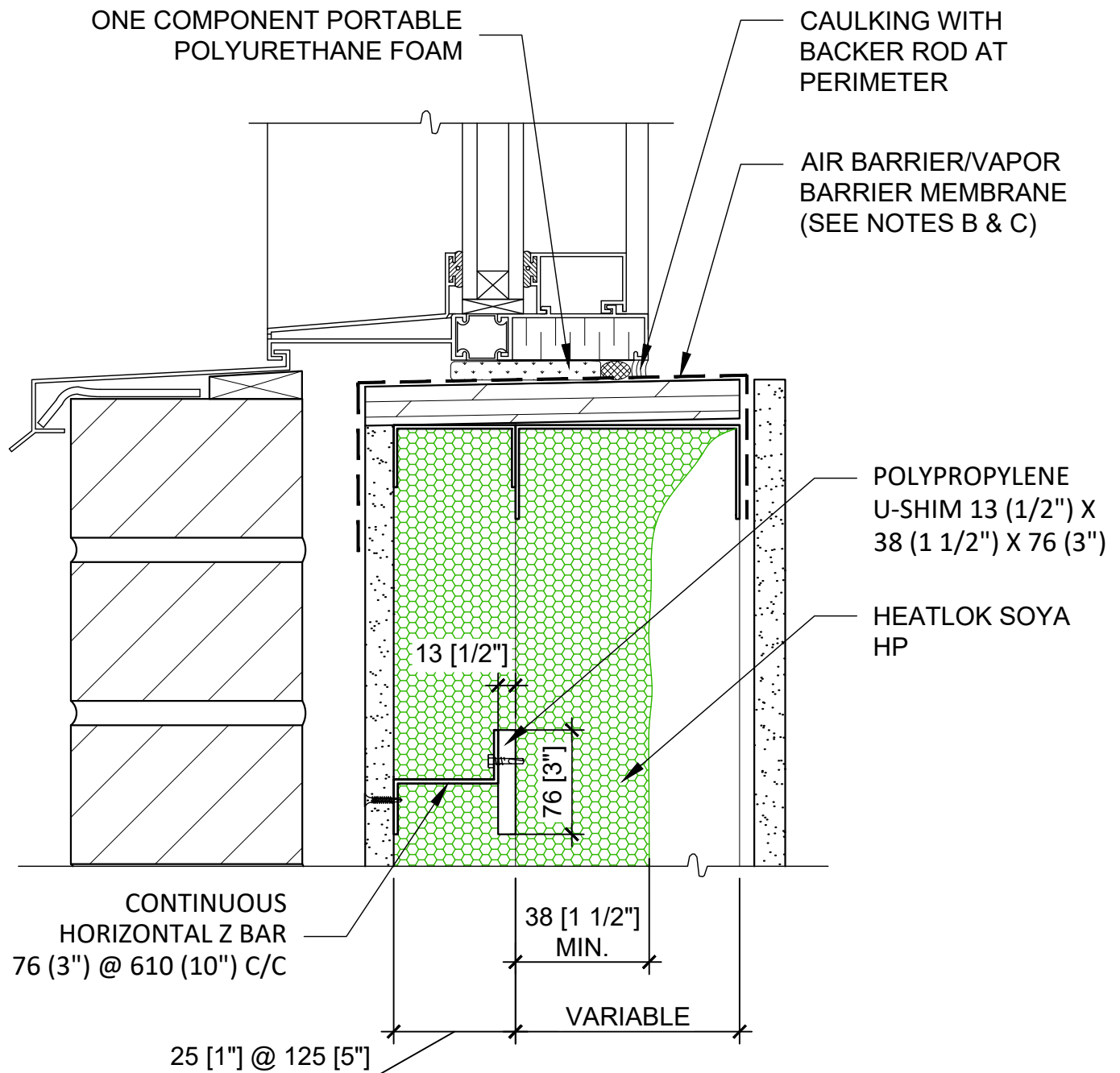
# OPTIONS

# OPTION



WINDOW SILL  
BRICK SIDING

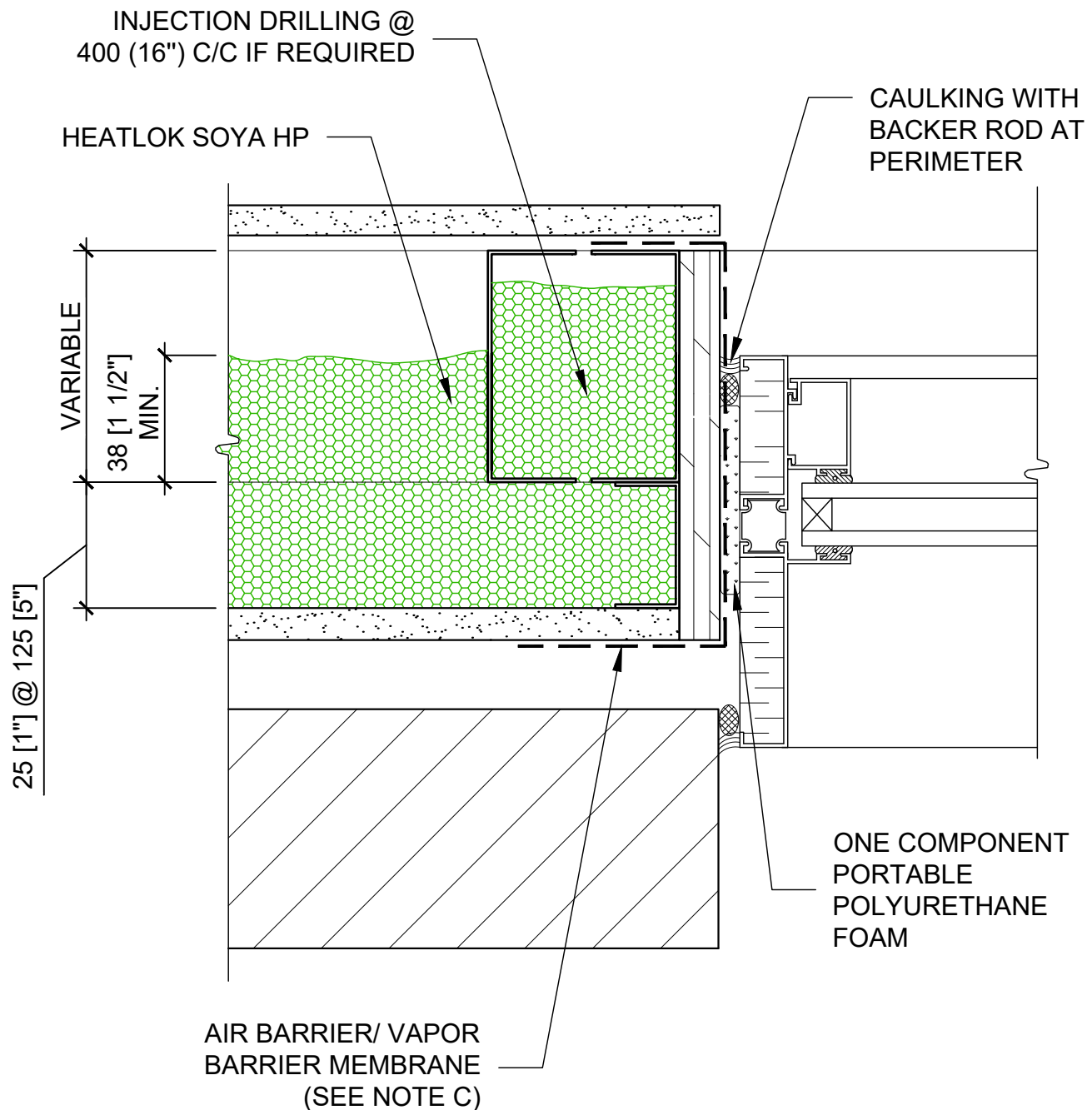
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WINDOW SILL - Z-BAR WITH THERMAL BREAK  
BRICK SIDING

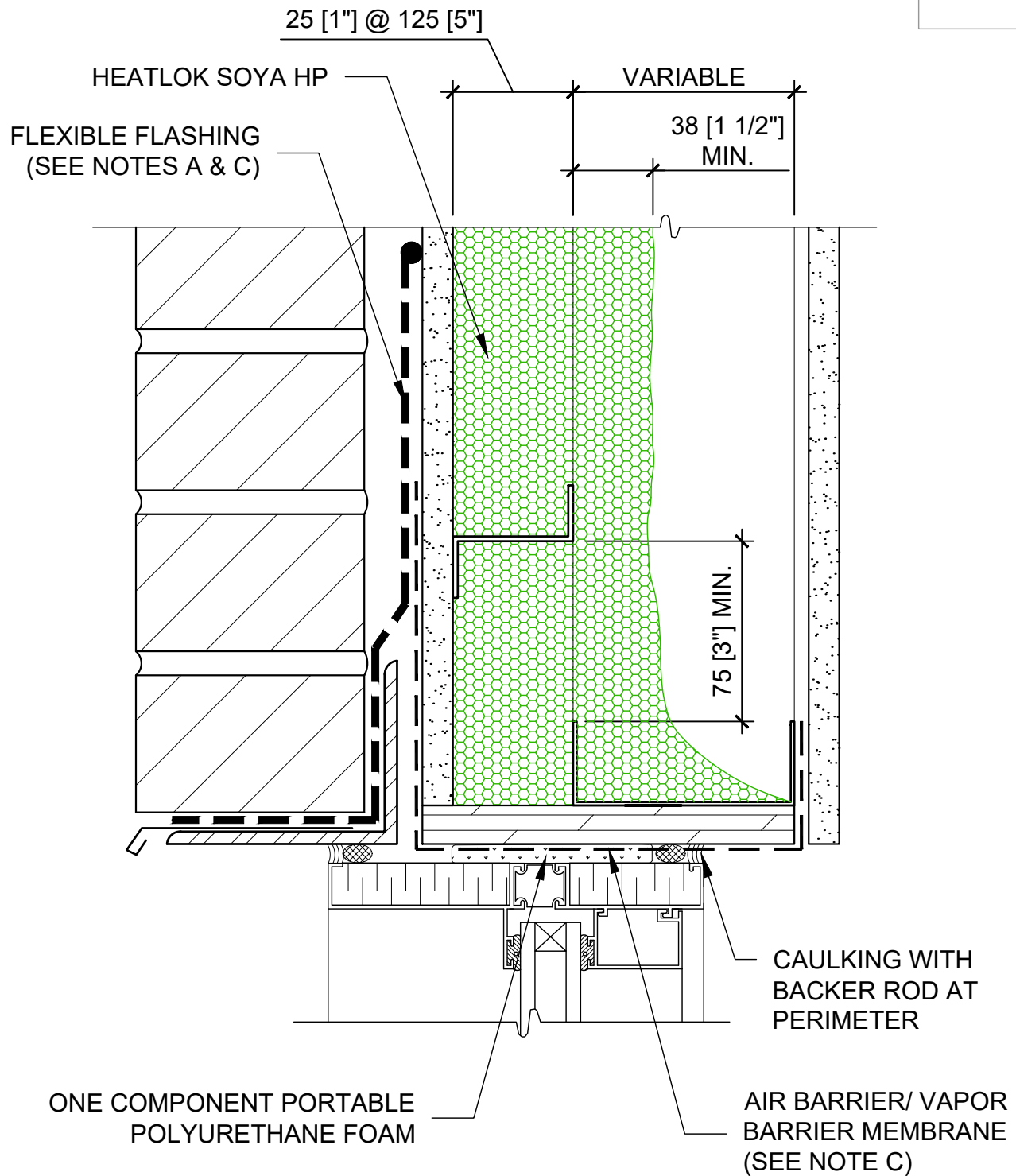
NOTE: FOR SUPPORT PURPOSES AT OPENINGS, THE WINDOW SUPPORT POSTS MAY BE DOUBLED AND INJECTED WITH HEATLOK SOYA HP.

OPTION



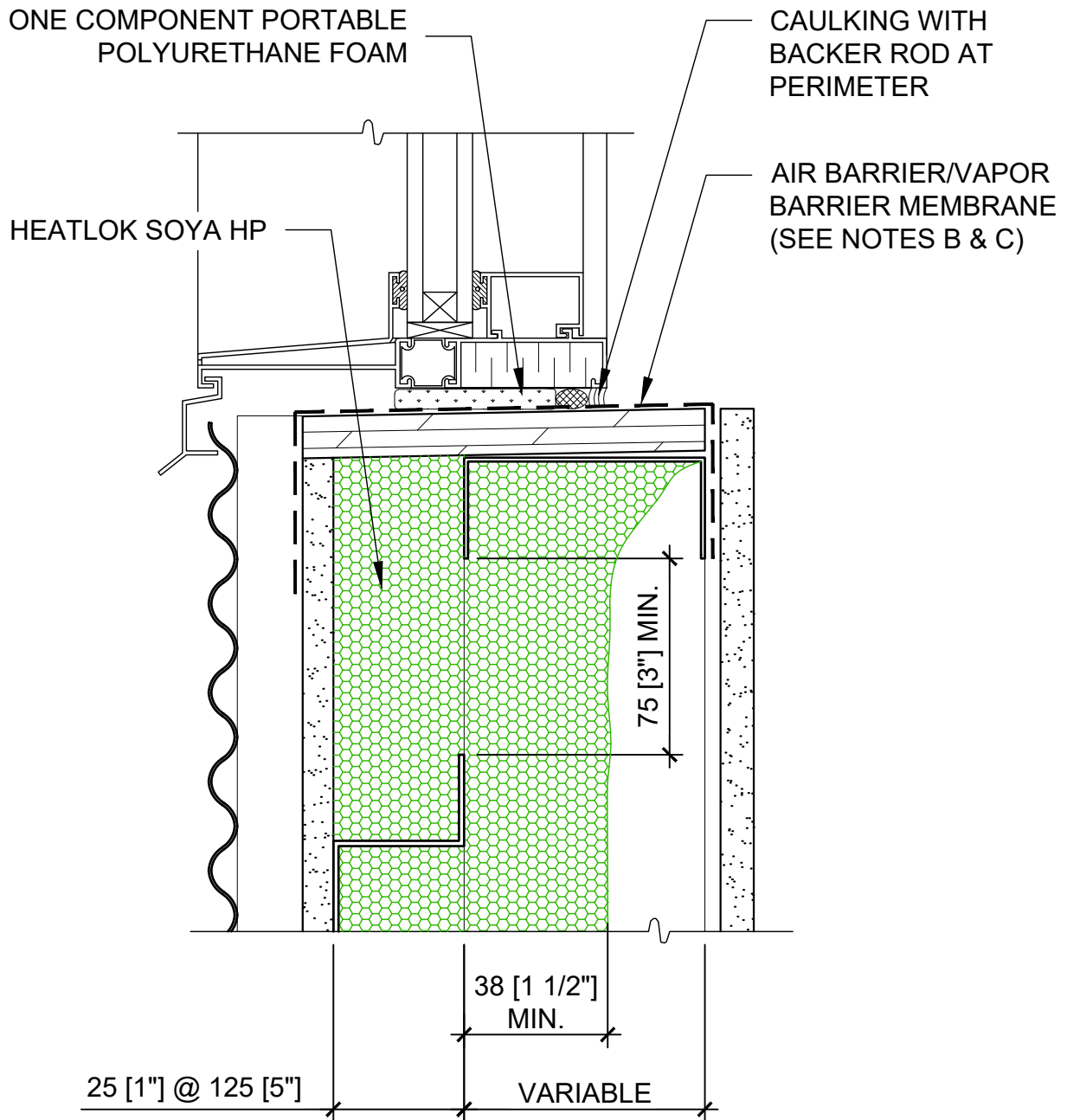
WINDOW JAMB  
BRICK SIDING

# OPTION

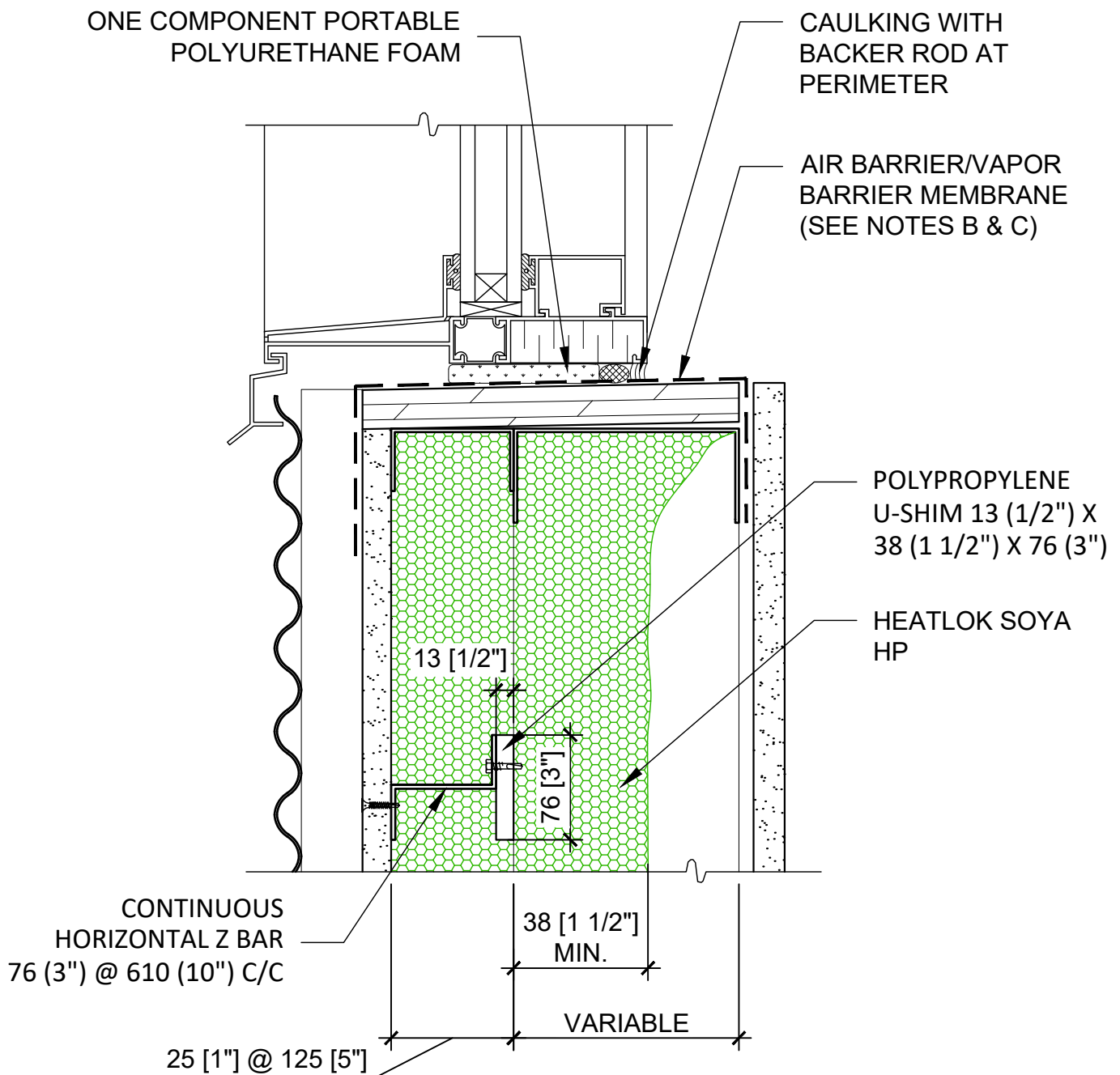




# OPTION



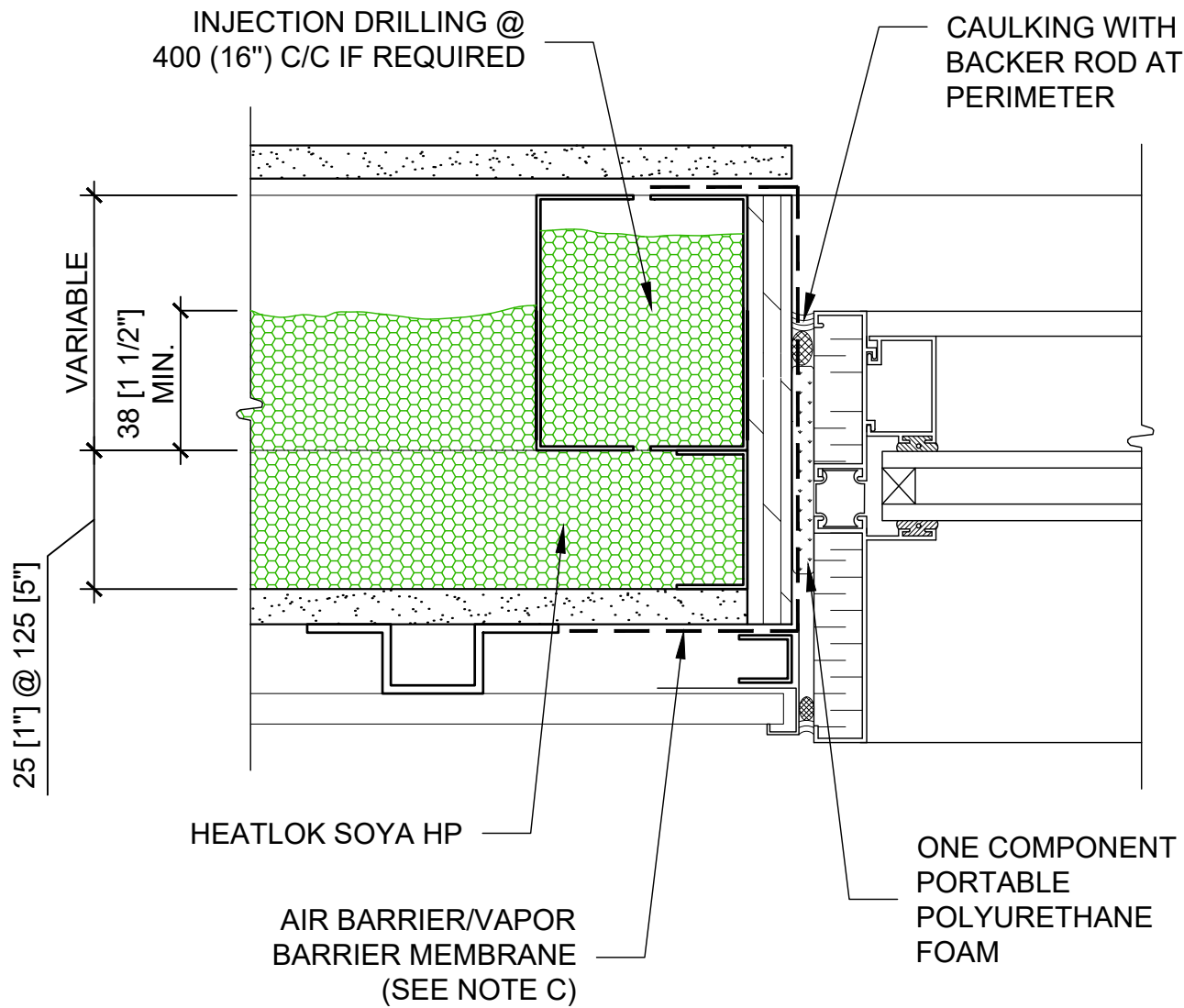
WINDOW SILL  
LIGHTWEIGHT SIDING



WINDOW SILL - Z-BAR WITH THERMAL BREAK  
LIGHTWEIGHT SIDING

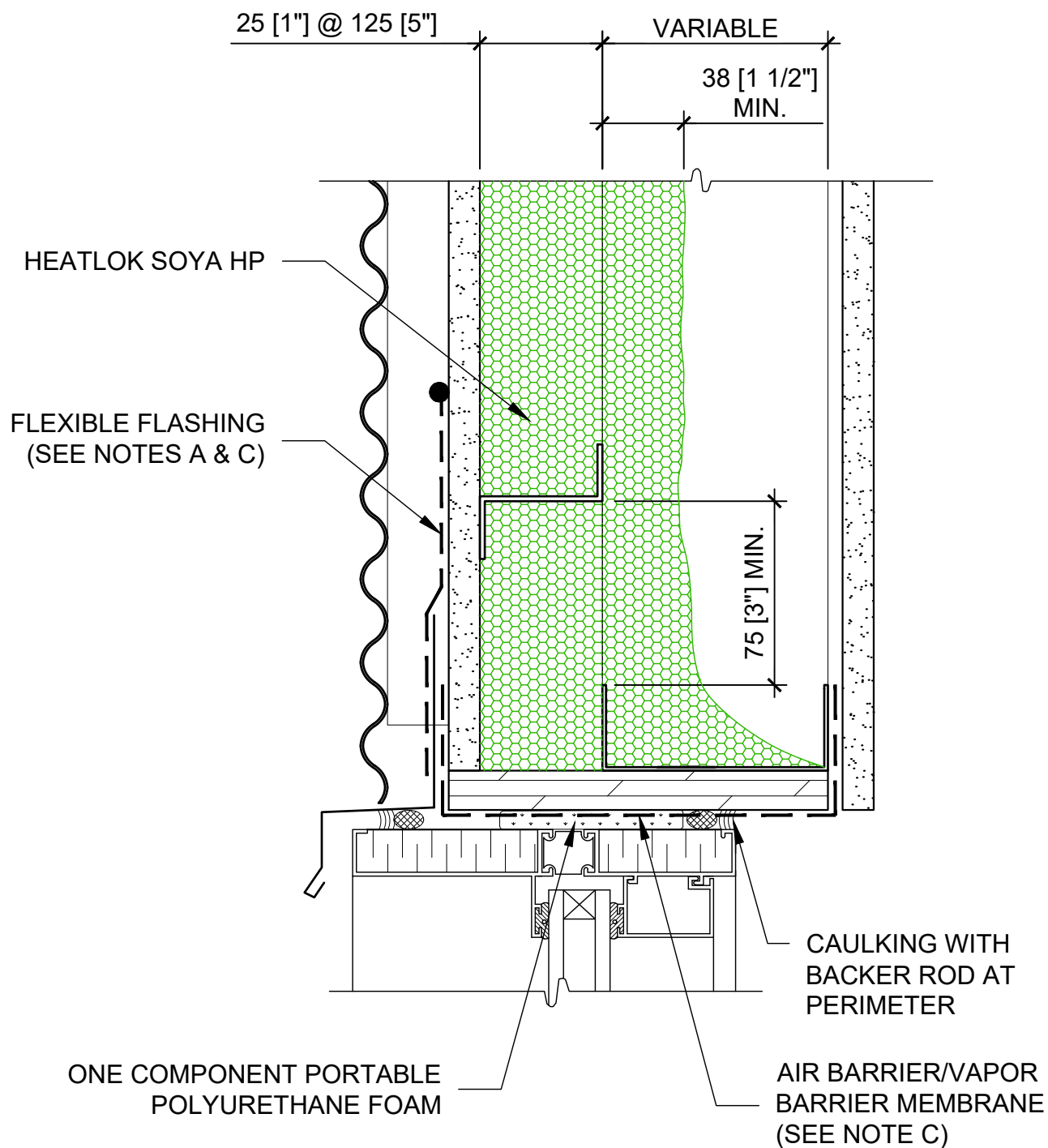
NOTE: FOR SUPPORT PURPOSES AT OPENINGS, THE WINDOW SUPPORT POSTS MAY BE DOUBLED AND INJECTED WITH HEATLOK SOYA HP.

OPTION



WINDOW JAMB  
LIGHTWEIGHT SIDING

# OPTION



TOP OF WINDOW  
LIGHTWEIGHT SIDING

25 [1"] @ 125 [5"]

VARIABLE

38 [1 1/2"] MIN.

OPTION

50% COMPRESSED INTERIOR  
ROCK WOOL FIRESTOP. ONLY  
REQUIRED IF AIR SPACE  
GREATER THAN 25mm (1")  
AND MORE THAN 3m (9'-10")  
FROM SLAB TO SLAB

FLEXIBLE FLASHING  
(SEE NOTE C)

FIRESTOP AND  
SMOKE BARRIER  
IF REQUIRED

AIR BARRIER/ VAPOR  
BARRIER MEMBRANE

HEATLOK SOYA HP

THERMAL BREAK

DEFLECTION  
TRACK

FLOOR JUNCTION  
BRICK SIDING

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D-MAX WALL

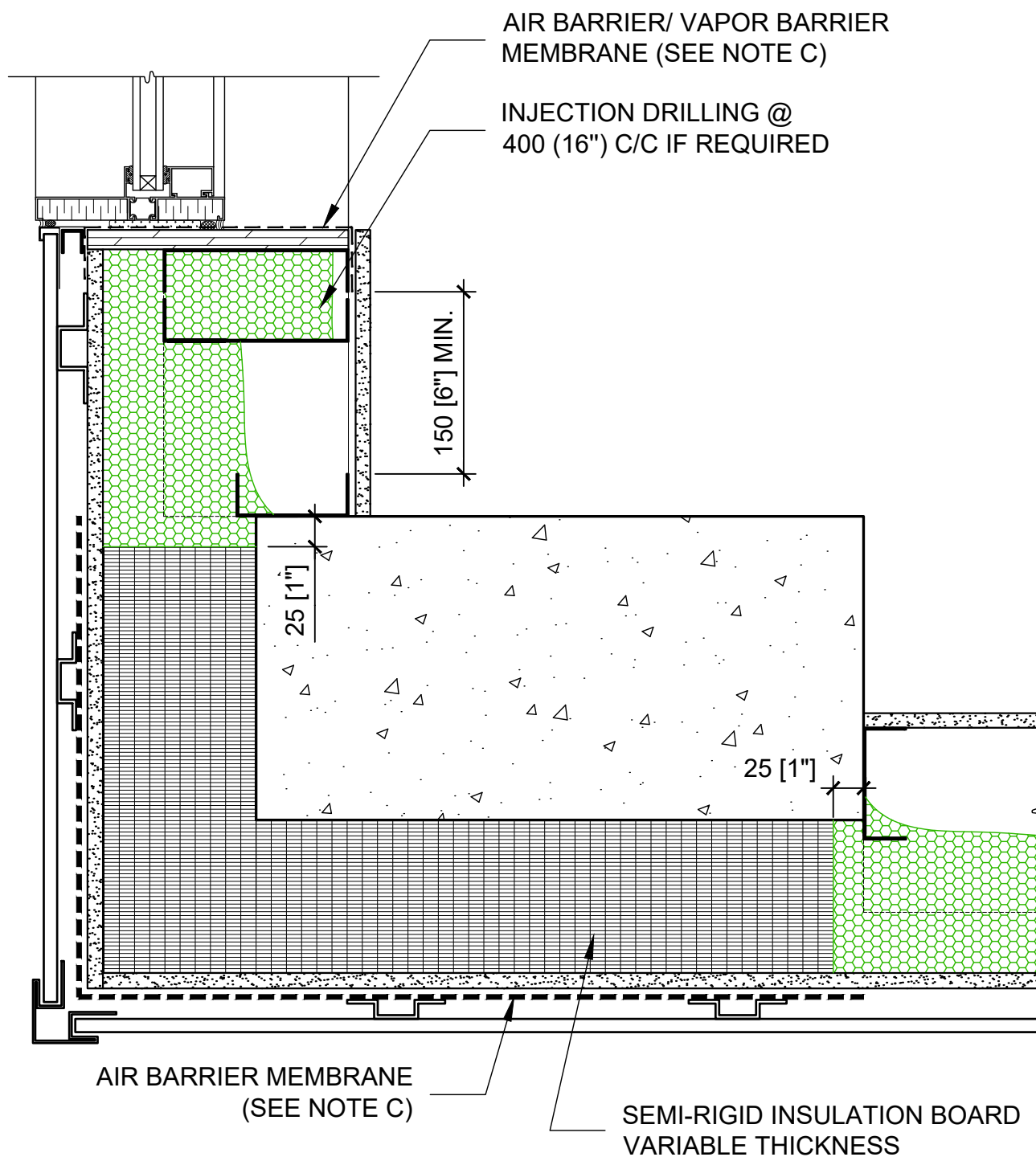
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# OPTION



COLUMN AND WALL JUNCTION - BUILDING CORNER  
LIGHTWEIGHT SIDING

August 28<sup>th</sup> 2019

A/S Maxime Duzyk  
Demilec  
870, Curé Boivin  
Boisbriand, Québec  
J7G 2A7

**Project: Z Bar wall section -- Demilec**

As per your request and our discussions, you will find below our preliminary recommendation concerning the required Z bar thickness spaced at 24" c/c for different depth that varies from 1" to 5".

Design dead load: 6 lb/ft<sup>2</sup>

- Steel cladding: 1.5 lb/ft<sup>2</sup>
- 5/8" Glasroc pannel: 2.5 lb/ft<sup>2</sup>
- Omega bar: 0.5 lb/ft<sup>2</sup>
- Z bar: 0.5 lb/ft<sup>2</sup>
- Insulation: 1.0 lb/ft<sup>2</sup>

Z bar thickness required according to depth

- Depth from 1" to 2" : 20 gage required (0.0359")
- Depth from 2" to 3 1/2" : 18 gage required (0.0478")
- Depth from 3 1/2" to 5" : 16 gage required (0.0598")

These recommendations must be confirmed by the project stud wall structural engineer. He has to consider the project wind load acting on walls and dead load. The calculation of Z bar connexion to stud wall is the responsibility of the project stud wall structural engineer.

If you have any question, do not hesitate to contact the undersigned.



Ronald Beaucage eng.  
Beaucage Experts-Conseils



Above-ground Opaque Building Assembly	NECB 2017 U-Value Requirements (W/m <sup>2</sup> ·K)/W/m <sup>2</sup> ·K)					
	Heating Degree-Days (Celsius)					
	Zone 4 <3000	Zone 5 3000 to 3999	Zone 6 4000 to 4999	Zone 7A 5000 to 5999	Zone 7B 6000 to 6999	Zone 8 ≥7000
Walls	0.315	0.278	0.247	0.210	0.210	0.183
Roofs	0.193	0.156	0.156	0.138	0.138	0.121
Floors	0.227	0.183	0.183	0.162	0.162	0.142

Z-Bar Thickness		Z-Bar Spacing		Total Thickness of Heatlok Soya HP		Nominal or Total Thermal Resistance		Effective Thermal Resistance		U-Value	
Inches	mm	Inches	mm	Inches	mm	R	RSI	R	RSI	Imperial	Metric
3"	75	24" c/c	600 c/c	4.5	114.3	26.9	4.73	19.7	3.47	0.051	0.288
				5	127	29.9	5.26	20.7	3.65	0.048	0.274
				6	152.4	35.8	6.31	22.4	3.94	0.045	0.254
				6.5	165.1	38.8	6.83	23.2	4.08	0.043	0.245
				7.5	190.5	44.8	7.89	25	4.41	0.040	0.227
		16" c/c	400 c/c	4.94	125.4	29.5	5.19	17.8	3.14	0.056	0.318
				5.92	150.4	35.3	6.23	19.2	3.39	0.052	0.295
				6.75	171.5	40.3	7.1	20.4	3.59	0.049	0.279
				7	177.8	41.8	7.36	20.9	3.68	0.048	0.272
				8.5	215.9	50.7	8.94	23.3	4.11	0.043	0.243
2.25"	57	24" c/c	600 c/c	3.75	95.3	22.4	3.94	17.8	3.13	0.056	0.319
				5.5	139.7	32.8	5.78	20.7	3.65	0.048	0.274
				6	152.4	35.8	6.31	21.5	3.79	0.047	0.264
				7	177.8	41.8	7.36	23	4.05	0.043	0.247
				7.5	190.5	44.8	7.89	23.8	4.2	0.042	0.238
		16" c/c	400 c/c	3.75	95.3	22.4	3.94	15.6	2.75	0.064	0.364
				6	152.4	35.8	6.31	18.9	3.33	0.053	0.303
				7.25	184.2	43.3	7.62	20.7	3.64	0.048	0.262
				8	203.2	47.8	8.41	21.7	3.82	0.046	0.262
				9	228.6	53.7	9.46	24.3	4.28	0.041	0.234

- \* With generic exterior finish (exterior finish has negligible impact on the results)
- \* Steel studs @ 16" c/c (the thickness of the framing has negligible impact on the results)
- \* Values for opaque wall only



Climate Zones	Ontario U-Value Requirements			
	Imperial		Metric	
	Residential	Non-Residential	Residential	Non-Residential
5	0.055	0.055	0.31	0.31
6	0.055	0.055	0.31	0.31
7	0.037	0.055	0.21	0.31

Z-Bar Thickness		Z-Bar Spacing		Total Thickness of Heatlok Soya HP		Nominal or Total Thermal Resistance		Effective Thermal Resistance		U-Value	
Inches	mm	Inches	mm	Inches	mm	R	RSI	R	RSI	Imperial	Metric
3"	75	24" c/c	600 c/c	4.5	114.3	26.9	4.73	19.7	3.47	0.051	0.288
				5	127	29.9	5.26	20.7	3.65	0.048	0.274
				6	152.4	35.8	6.31	22.4	3.94	0.045	0.254
				6.5	165.1	38.8	6.83	23.2	4.08	0.043	0.245
				7.5	190.5	44.8	7.89	25	4.41	0.040	0.227
		16" c/c	400 c/c	4.94	125.4	29.5	5.19	17.8	3.14	0.056	0.318
				5.92	150.4	35.3	6.23	19.2	3.39	0.052	0.295
				6.75	171.5	40.3	7.1	20.4	3.59	0.049	0.279
				7	177.8	41.8	7.36	20.9	3.68	0.048	0.272
				8.5	215.9	50.7	8.94	23.3	4.11	0.043	0.243
2.25"	57	24" c/c	600 c/c	3.75	95.3	22.4	3.94	17.8	3.13	0.056	0.319
				5.5	139.7	32.8	5.78	20.7	3.65	0.048	0.274
				6	152.4	35.8	6.31	21.5	3.79	0.047	0.264
				7	177.8	41.8	7.36	23	4.05	0.043	0.247
				7.5	190.5	44.8	7.89	23.8	4.2	0.042	0.238
		16" c/c	400 c/c	3.75	95.3	22.4	3.94	15.6	2.75	0.064	0.364
				6	152.4	35.8	6.31	18.9	3.33	0.053	0.303
				7.25	184.2	43.3	7.62	20.7	3.64	0.048	0.262
				8	203.2	47.8	8.41	21.7	3.82	0.046	0.262
				9	228.6	53.7	9.46	24.3	4.28	0.041	0.234

\* With generic exterior finish (exterior finish has negligible impact on the results)  
 \* Steel studs @ 16" c/c (the thickness of the framing has negligible impact on the results)  
 \* Values for opaque wall only

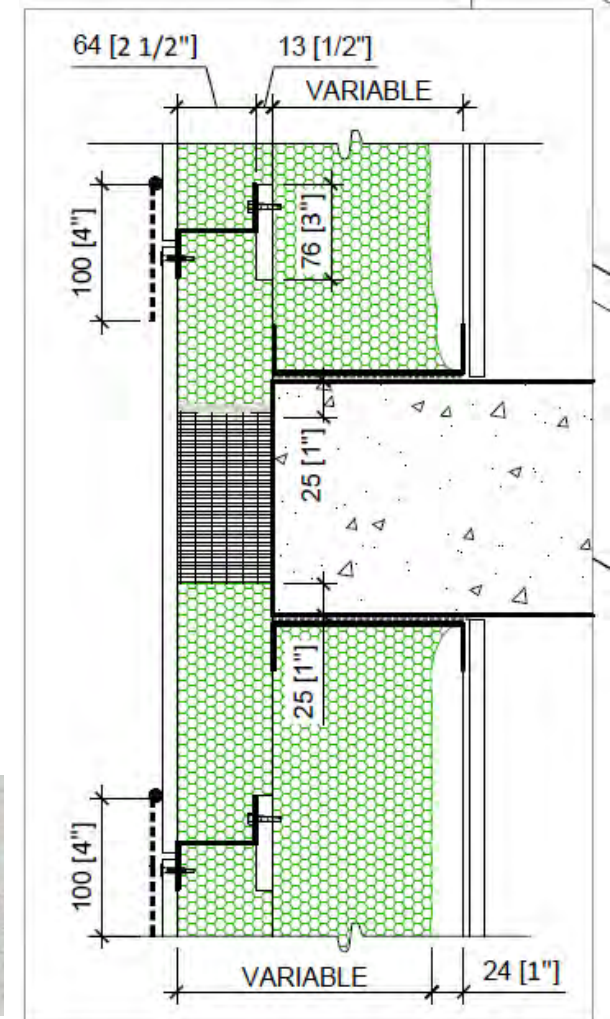
# HUNTSMAN

## BUILDING SOLUTIONS

Climate Zones	Ontario U-Value Requirements			
	Imperial		Metric	
	Residential	Non-Residential	Residential	Non-Residential
5	0.055	0.055	0.31	0.31
6	0.055	0.055	0.31	0.31
7	0.037	0.055	0.21	0.31

Z-Bar Thickness		Z-Bar Spacing		Stud Dimension (406 c/c)		Total Thickness of Heatlok Soya HP*		Effective Thermal Resistance		U-Value	
Inches	mm	Inches	mm	Inches	mm	Inches	mm	R	RSI	Imperial	Metric
3	76	24" c/c	610 c/c	3.5	89	6.0	152	28.73	5.06	0.0348	0.1976
2.5	64	24" c/c	610 c/c	6	152	6.0	152	29.07	5.12	0.0344	0.1953
2.5	64	24" c/c	610 c/c	6	152	5.0	129	26.97	4.75	0.0371	0.2105

\* Results according to CAN/ULC S770-09

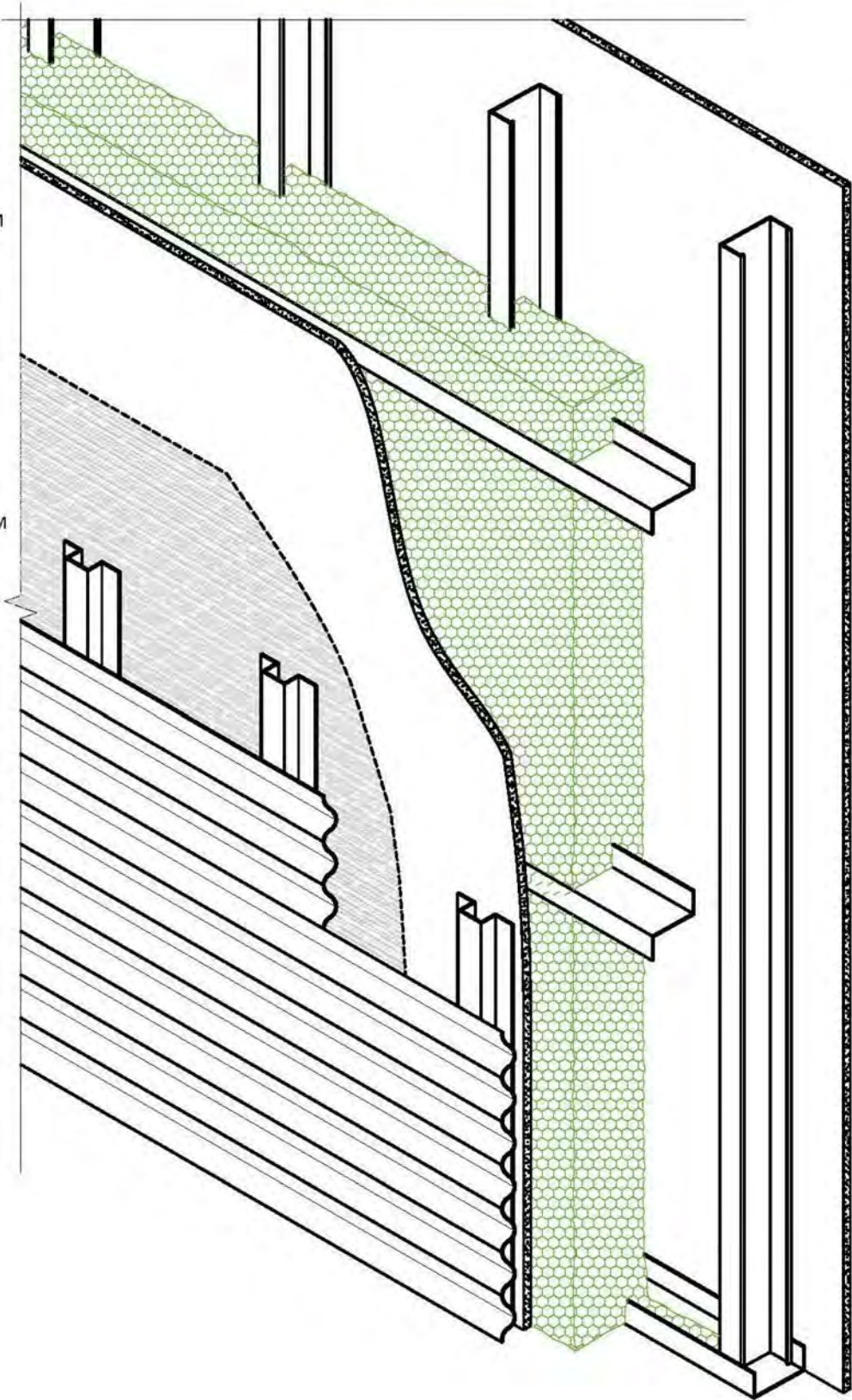


\* With generic exterior finish (exterior finish has negligible impact on the results)  
 \* Steel studs @ 16" c/c (the thickness of the framing has negligible impact on the results)  
 \* Values for opaque wall only



ASSEMBLY

- LIGHTWEIGHT SIDING
- HAT CHANNEL 25 MM
- TYVEK FULL SURFACE MEMBRANE OR TRANSITION MEMBRANE AT JOINTS ONLY
- EXTERIOR GYPSUM SHEATHING 12.7MM
- CONTINUOUS HORIZONTAL Z BAR 75MM G 18 @ 610 C/C FIXED WITH SELF-TAPING no.14x1" SCREW @ THE STUDS
- STEEL STUD 90MM @ 406 C/C
- SPF HEATLOK SOYA HP 125MM SPRAYED BETWEEN THE STUDS AND Z BAR
- AIR CAVITY 40MM
- REG. INTERIOR GYPSUM BOARD 12.7MM



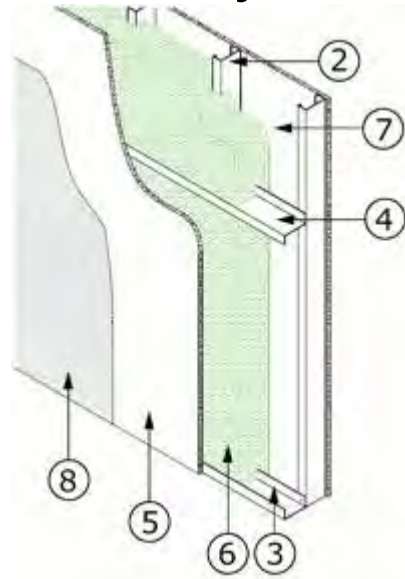
ISOMETRY SCENARIO 3-3.5  
LIGHTWEIGHT SIDING

## System No. EW25

October 17, 2023

## Exterior Wall Systems Certified for Canada

Tested in accordance with a fifteen minute fire exposure as per: National Building Code of Canada 2020, clause 3.2.3.8(1)(b), National Building Code of Canada 2015, clause 3.2.3.8(1)(b), and National Building Code of Canada 2010, clause 3.2.3.8(1)(b)



1. **Floor and Ceiling Tracks** — (not shown) 92 mm deep by 32 mm wide channel, 0.48 mm thick galvanized steel, attached to masonry or concrete with fasteners spaced 610 mm OC.
2. **Steel Studs** — 92 mm deep by 38 mm wide channel, with 6 mm lip, 0.48 mm thick galvanized steel, spaced 406 mm OC, fastened to the floor and ceiling tracks. Steel stud depth may vary depending on installed thickness of Item 6.
3. **C-channel** — 127 mm deep by 38 mm wide C-channel, 0.91 mm thick galvanized steel, 3050 mm long, fastened to Item 2. C-channel located along the perimeter of the wall assembly. C-channel depth may be reduced depending on installed thickness of Item 6.

4. **Z-bar** — 127 mm deep by 38 mm wide Z-bar, 0.91 mm thick galvanized steel, 3050 mm long, fastened to Item 2. Z-bar located at maximum 610 mm OC. Z-bar oriented horizontally. Z-bar depth may be reduced depending on installed thickness of Item 6. Z-bar must extend a minimum of 25 mm above the finished surface of Item 6.

5. **Gypsum Sheathing** — Minimum one layer of minimum 12.7 mm thick, UL Classified or ULC Listed, exterior gypsum sheathing, attached to steel studs and floor and ceiling track with Type S screws, 25 mm long, spaced 305 mm OC along edges of board in the field of the board.

**CERTAINTED GYPSUM INC** — GlasRoc

**GEORGIA-PACIFIC GYPSUM L L C** — Type DGG, DensGlass Gold Sheathing

**UNITED STATES GYPSUM CO** — USG SECUROCK® Sheathing

6. **Foamed Plastic** — Spray applied, foamed plastic insulation, maximum 32.7 kg/m<sup>3</sup>, to a maximum depth of 204 mm.

**HUNTSMAN BUILDING SOLUTIONS** — Airmetic Soya, Heatlok Soya, Polarfoam Soya, Airmetic Soya HFO, Heatlok Soya HFO, Polarfoam Soya HFO, Airmetic Soya HP, Heatlok Soya HP

7. **Gypsum Wallboard** — Minimum one layer of minimum 12.7 mm thick, UL Classified or ULC Listed, interior gypsum wallboard, attached to steel studs and floor and ceiling track with 3 mm diameter self-drilling screws, 25 mm long, spaced 305 mm OC along edges of board and in the field of the board.

8. **Weather Protection Membrane** — One layer of peel and stick vapor barrier, with 50 mm (maximum) overlap on all joints. Adhered with manufacturer's recommended primer at full coverage. Full surface or transitional.

Last Updated on 2023-10-17

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The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL Solutions' Follow - Up Service. Only those products bearing the UL Mark should be considered to be Certified and covered under UL Solutions' Follow - Up Service. Always look for the Mark on the product.

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# CERTIFICATE OF COMPLIANCE

**Certificate Number** R39727  
**Report Reference** R39727-20231013  
**Date** 2023-October-17

**Issued to:** Huntsman Building Solutions  
870 Cure-Boivin  
Boisbriand QC J7G 2A7 CA

**This is to certify that  
representative samples of**

EXTERIOR WALL SYSTEM COMPONENTS CERTIFIED  
FOR CANADA

Foamed plastic "B" component designated "Heatlok Soya  
HP" and "Airmetic Soya HP".

Have been evaluated by UL in accordance with the  
Standard(s) indicated on this Certificate.


**Standard(s) for Safety:** CAN/ULC-S101, Standard Methods of Fire Endurance  
Tests of Building Construction and Materials.

**Additional Information:** See the UL Online Certifications Directory at  
<https://iq.ulprospector.com> for additional information

This Certificate of Compliance indicates that representative samples of the product described in the certification report have met the requirements for UL certification. It does not provide authorization to apply the UL Mark. Only the Authorization Page that references the Follow-Up Services Procedure for ongoing surveillance provides authorization to apply the UL Mark.

Only those products bearing the UL Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Certification Mark on the product.

  
Deborah Jennings-Conner, VP Regulatory Services

UL LLC



Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



Varenes, August 14<sup>th</sup>, 2023

**Huntsman Building Solutions**

c/o Mr. François Lalande  
870 Curé Boivin, Boisbriand, Qc, J7G 2A7

**Subject:** Air Barrier Testing as per *CAN/ULC-S741 – Heatlok Soya HP™ (Polyurethane)*  
and as per *CAN/ULC S742 for Air Barrier Systems X-Wall™ / D-Max Wall™*  
Reference File Number: AS-01798

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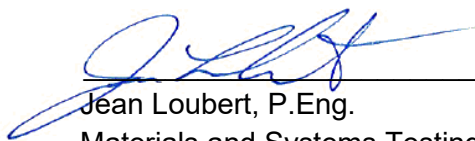
Mr. Lalande,

As per your request, *UL Laboratory Canada Inc.* conducted air barrier testing as per *CAN/ULC S741* on the *Heatlok Soya HP™ (Polyurethane)*, and as per *CAN/ULC S742* for the Air Barrier Systems *X-Wall™* and *D-Max Wall™*. The tests were performed from May 31<sup>st</sup>, 2023 to August 10<sup>th</sup>, 2023.

Based on the test results, *Heatlok Soya HP™* material meets the performance requirements of *CAN/ULC-S741-08 (R2020) (Standard for Air Barrier Materials – Specification)*. Air Barrier Systems *X-Wall™* and *D-Max Wall™* meet the requirements of *CAN/ULC-S742:2020, Standard for Air Barrier Assemblies - Specification* and *ASTM E2357-18, Standard Test Method for Determining Air Leakage of Air Barrier Assemblies*, and meet the recommendations of *NBC 2010, NBC 2015*, and the *ABAA* requirements for air barrier systems.

We trust the above is satisfactory. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,



Jean Loubert, P.Eng.  
Materials and Systems Testing, Manager  
UL Laboratory Canada Inc.

LABORATORY, FIELD TESTING AND ADVISORY SERVICES FOR THE BUILDING ENVELOPE.

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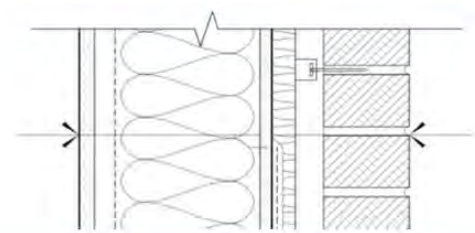
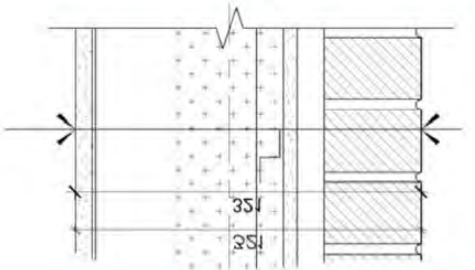
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E: BuildingEnvelopeEurope@ul.com

W: [ul.com/buildingenvelope](http://ul.com/buildingenvelope)



## D-Max Wall Assembly – Acoustical Testing

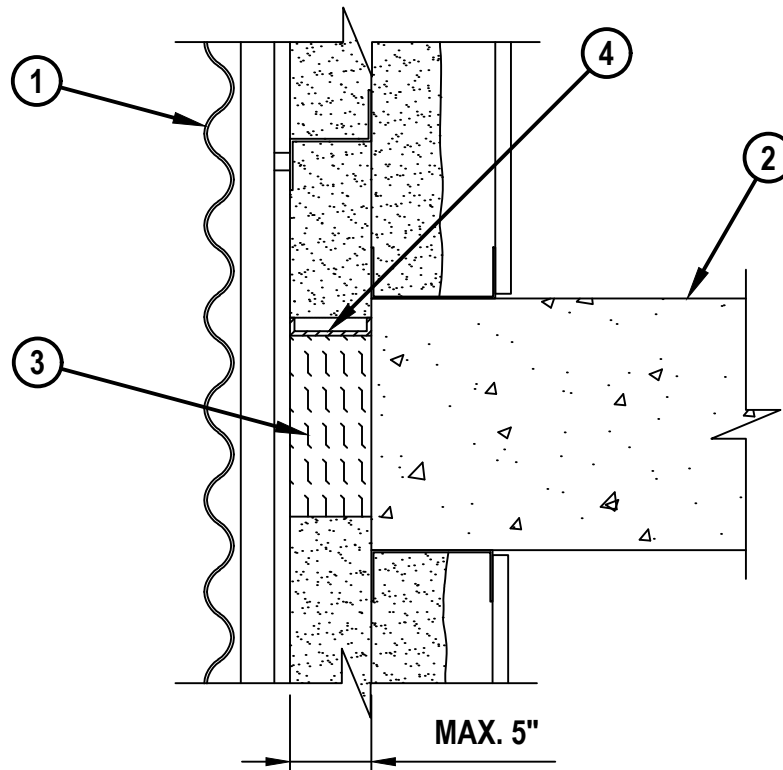
AOITC (Apparent Outside Inside Transmission Class) : represents sound loss expressed in decibels (dB) depending on a source with a precise reference spectrum. This value corresponds to the difference between the sound pressure level emitted by a sound source on a facade of a building and a room inside it. Since no sound source is the same, the calculation is based on a source with virtual frequency behavior established in the E1332 standard and is done in accordance with ASTM E 966.

Test	Units	Cut	Assemblies	AOITC
#1 <u>Marc-Aurèle</u> (Mineral wool)	721	M-1		42
#2 <u>Saphir</u> (D-Max Wall)	GF Bathroom	M-2		45

With an average difference of 3 dB, the M-2 composition can attenuate twice as much sound energy as the M-1 composition.

**ENGINEERING JUDGMENT FIRESTOP DETAIL**

PROJECT : D-MAX WALL  
 CONTRACTOR : HUNTSMAN BUILDING SOLUTIONS  
 F-RATING = 1-HR. OR 2-HR. (SEE NOTE NO. 2 BELOW)

**CROSS-SECTIONAL VIEW**

1. EXTERIOR DENSGLASS CURTAIN WALL ASSEMBLY WITH MAXIMUM 8" STEEL STUD FRAMING AND [OPTIONAL, NOT SHOWN] EIFS (NON FIRE-RATED).
2. CONCRETE FLOOR ASSEMBLY (MINIMUM 5" THICK) (1-HR. OR 2-HR. FIRE-RATING).
3. MINIMUM 4" THICKNESS MINERAL WOOL SAFING (MIN. 4 PCF DENSITY) COMPRESSED 33%. MINERAL WOOL MAY BE RECEESED BELOW TOP SURFACE OF FLOOR ASSEMBLY MAXIMUM 1".
4. MINIMUM 1/8" (WET) THICKNESS HILTI CFS-SP WB FIRESTOP JOINT SPRAY OR MINIMUM 2mm (WET) THICKNESS HILTI CFS-SP SIL FIRESTOP SILICONE JOINT SPRAY TO COMPLETELY COVER MINERAL WOOL, OVERLAPPING MINIMUM 1/2" ONTO ADJACENT ASSEMBLIES.

NOTES : 1. MAXIMUM WIDTH OF JOINT = 4".  
 2. FIRE-RATING OF ASSEMBLY IS DEPENDENT UPON THE PERFORMANCE OF CURTAIN WALL ASSEMBLY UNDER FIRE CONDITIONS.  
 3. THIS SYSTEM IS DESIGNED BASED UPON CANADIAN TEST STANDARD CAN/ULC-S115-2018 AND IN ACCORDANCE WITH ASTM E2307.

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED.  
 (REFERENCE : INTERTEK SYSTEM NO. HI/BP 120-04 & HI/BP 120-03)



**Hilti Firestop Systems**

HILTI, Inc.  
 Plano, Texas USA (800) 879-8000

Designed by

*Nathan Jennings*

Sheet 1 of 1

Scale 3/16" = 1"

Date Mar. 29, 2021

Drawing No.

**378451b**

*Saving Lives through Innovation and Education*

# ENGINEERING JUDGMENT FIRESTOP DETAIL

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT  
WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED

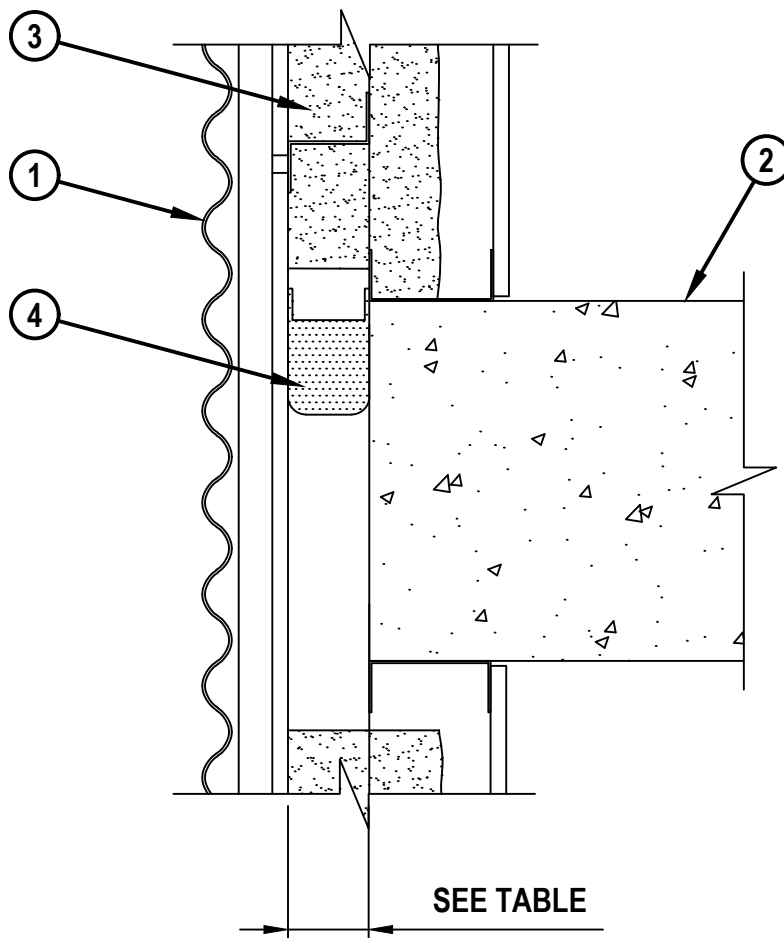
PROJECT : UTILE TROIS-RIVIÈRES

ISSUED TO : -CONSTRUCTION MGP

Ratings

F-RATING = 1-HR. OR 2-HR. (SEE NOTE NO. 1 BELOW)

## CROSS-SECTIONAL VIEW



SEE TABLE



Hilti Firestop Systems

HILTI, Inc.  
Plano, Texas USA (800) 879-8000

Designed by Hilti FPE

Jessica Starks

Drafter

TT

Sheet

1 of 2

Scale

3/16" = 1"

Date

Dec. 12, 2023

Drawing No.

577616e

*Saving Lives through Innovation and Education*

# ENGINEERING JUDGMENT FIRESTOP DETAIL

THIS ENGINEERING JUDGMENT REPRESENTS A FIRESTOP SYSTEM THAT  
WOULD BE EXPECTED TO PASS THE STATED RATINGS IF TESTED

PROJECT : UTILE TROIS-RIVIÈRES

ISSUED TO : -CONSTRUCTION MGP

Ratings

F-RATING = 1-HR. OR 2-HR. (SEE NOTE NO. 1 BELOW)

1. EXTERIOR DENSGLASS CURTAIN WALL ASSEMBLY WITH MAXIMUM 8" STEEL STUD FRAMING AND [OPTIONAL] EIFS (NON FIRE-RATED).
2. CONCRETE FLOOR ASSEMBLY (MIN. 12" THICK) (1-HR. OR 2-HR. FIRE-RATING).
3. SPRAY FOAM INSULATION (PROVIDED BY OTHERS) TO BE DISCONTINUOUS THROUGH JOINT.
4. COMPRESS THE APPROPRIATE SIZED EDGE OF SLAB QUICKSEAL (CFS-EOS QS) PRODUCT (PER TABLE BELOW) INTO PERIMETER JOINT. REMOVE PAPER FROM ADHESIVE AND ADHERE FLAPS FIRMLY TO ADJACENT SUBSTRATES. SPLICES (BUTT JOINTS) IN THE LENGTH OF EDGE OF SLAB QUICKSEAL (CFS-EOS QS) ARE TO BE TIGHTLY COMPRESSED TOGETHER (MIN. 1/4" COMPRESSION). EDGE OF SLAB QUICKSEAL (CFS-EOS QS) MAY BE RECESSED MAXIMUM 8" FROM TOP SURFACE OF FLOOR. BOTTOM OF (CFS-EOS QS) TO BE MINIMUM 1" FROM BOTTOM OF FLOOR.

PRODUCT	ALLOWABLE JOINT WIDTH	
	MINIMUM	MAXIMUM
CFS-EOS QS SMALL	1-1/2"	3"
CFS-EOS QS MEDIUM	2"	4"
CFS-EOS QS LARGE	3"	5"

NOTES : 1. FIRE-RATING OF ASSEMBLY IS DEPENDENT UPON THE PERFORMANCE OF CURTAIN WALL ASSEMBLY UNDER FIRE CONDITIONS.  
2. THIS SYSTEM IS DESIGNED TO PREVENT INTERIOR PASSAGE OF FLAME IN ACCORDANCE WITH ASTM E2307.  
3. [NOT SHOWN] HILTI CFS-EOS WS BEARING AN INTERTEK CERTIFIED LABEL. APPLY MINIMUM 2 MM WET THICKNESS OVER ANY SEAMS AND OVERLAP A MINIMUM OF 1" ONTO EDGE OF SLAB QUICKSEAL AND ADJACENT ASSEMBLIES.

## Referenced Tested Systems

(REFERENCE : INTERTEK DESIGN NO. HI/BP 120-04 & HI/BPF 120-18; INTERNAL TESTING)

## Project Application Details

CS0203929

## Applicable Test Method

CAN/ULC S115-18



Hilti Firestop Systems

HILTI, Inc.  
Plano, Texas USA (800) 879-8000

Designed by Hilti FPE

Jessica Starks

Drafter

TT

Sheet

2 of 2

Scale

-

Date

Dec. 12, 2023

Drawing No.

577616e

*Saving Lives through Innovation and Education*

# EDGE OF SLAB QUICKSEAL CFS-EOS QS

## Product description

- The industry's first preformed solution for edge of slab and curtain wall firestopping, the new CFS-EOS QuickSeal represents Hilti's leading innovation that is redefining the future of firestop safety.

## Applications for use

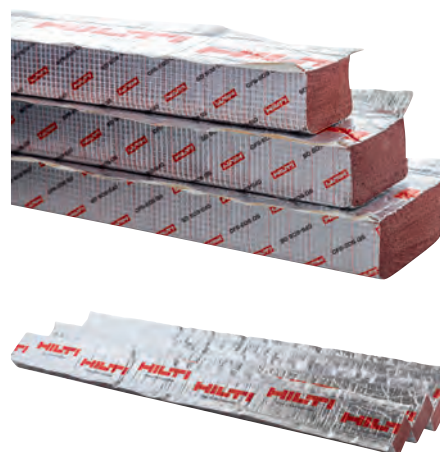
- Sealing building perimeter gaps between floor slabs and exterior curtain wall facades

## Advantages

- Easy, dry, and clean installation — no mineral wool fiber, spray or equipment required.
- Fast inspection — preformed firestop solutions may not require destructive testing
- Zero waste — controlled material cost / easy to bid
- Superior temperature ranges compared to traditional sprays and sealants
- Low VOC to meet owners sustainability requirements — LEED V4 and Living Building Challenge

## Installation instructions

- Use minimum 1" width metal roller for concrete floor and pre-cast concrete walls to ensure flap glue adhesion. See Hilti's literature for third-party listings for complete application and installation for use.



## Technical Data

Chemical basis	Polyurethane foam
Color	Silver/ Red
Recommended Application temperature	23° to 122°F (-5° to 50°C)
Storage and transportation temperature range	14° to 122°F (-10° to 50°C)
Temperature resistance range	-31° to 140°F (-35° to 60°C)
Movement	Yes
Mold and mildew performance	Class 1 (ASTM G21-96)
Tested in accordance with	ASTM E2307, CAN/ULC S115, ASTM D6904 (rain resistance)
LEEDv4.1 Compliant	CDPH Standard Method v1.2-2017
LEED VOC	2 g/L
Length	60 in (5ft)
Acoustics performance	52 (relates to specific construction) ASTM E90
Shelf Life	24 months at 23°F - 122°F
Joint Width	1.5" - 5" (compatible with Hilti Spray for joints outside the allowable range)

## Specifications

- For the edge of slab conditions use pre-formed polyurethane foam based material for use as part of a perimeter fire barrier between fire resistance rated floors and exterior wall assemblies. Use tested systems HI/BPF 120-18 and 19, HI/BPF 120-20 and 21, HI/BPF 120-22 & 23, and HI/BPF 120-27 issued by Intertek Laboratories.

Order designation	Sales pack quantity	Item number
CFS-EOS QS Small (Joints 1.5" - 3")	28	2223950
CFS-EOS QS Medium (Joints 2" - 4")	21	2223951
CFS-EOS QS Large (Joints 3" - 5")	15	2223952



Instructions above are general guidelines – Always refer to 3rd party published listings or Hilti firestop system guide for complete installation information

## Optional Water Tightness:

- CFS-EOS WS Edge of Slab WaterStop (for QuickSeal only)



Order designation	Item number
CFS-EOS WS	2242385

## Specified Divisions

- DIV. 7: 07 84 43 Joint Firestopping
- DIV. 7: 07 84 53 Building Perimeter Firestopping
- DIV. 8: 08 44 00 Curtain Wall and Glazed Assemblies



# Fire Protection Products



## ENGINEERING JUDGMENT FOR:

9/3/2020

Marc Simard

3M Canada Company

<b>Project:</b> Mur D-Max	<b>Contractor:</b> TBD
<b>Firestopping Category:</b> Joints / Perimeter	<b>Hourly Rating Requested / Type:</b> 1 and 2 Hour / F
<b>Joint Type:</b> Perimeter	<b>Obtainable Rating:</b> *see below
<b>Curtain Wall:</b> Exterior Grade Fiberglass Sheathed Gypsum Board	<b>Maximum Joint Width:</b> 4 Inch
<b>Type of Movement:</b> Dynamic	<b>Slab Assembly:</b> Concrete Floor

**Special Conditions:** Field conditions like Intertek Design 3MU/JS 120-22 with deviation of spray foam in lieu of the optional mineral wool batt curtain wall insulation. Steel studs terminate at top and bottom of concrete floor instead of passing through joint, and are tied to exterior wall with horizontal Z-shaped framing. Firestop may be recessed up 1 in. below top surface of concrete floor.

**Application Details:** To firestop this application, install in accordance with Intertek Design 3MU/JS 120-22 with the following modifications/clarifications:

1. Install min 4 in. depth of min 4 pcf mineral wool compressed min 33% within the joint. Mineral wool may be recessed below top surface of floor assembly maximum 1 in.
2. Install one of the following over the mineral wool:
  - Install a 1/10 in. wet thickness of Watertight Spray or 1/8 in. wet thickness of FireDam Spray 200 over the mineral wool.
    - o Watertight Spray or FireDam Spray 200 to overlap minimum ½ in. onto all surrounding substrates.
  - Install a minimum ¼ in. depth of sealant to completely cover the mineral wool. Sealant to be level with the top surface of the floor.
  - Install Fire and Water Barrier Tape to completely cover the mineral wool.
    - o Tape to overlap minimum 1 in. onto all surrounding substrates.
    - o Splices in the tape system to overlap minimum ½ in.
3. \*The obtainable rating in this scenario is reduced to "Up to 1- or 2-hour F only or as long as the entire assembly remains fully intact in a fire scenario".

**3M Fire Barrier Material:** FireDam Spray 200, FB 1003SL Silicone Sealant, Fire and Water Barrier Tape, 3M Fire Barrier Watertight Spray

**Based On:** 3MU/JS 120-22

**Additional Referenced System(s):** (See Attached Drawing)

This Engineering Judgment (EJ) is based upon the sole and exclusive use of 3M brand Fire Protection Products as described within. Modification of any of the parameters of this EJ, including, without limitation, the use of non-3M brand Fire Protection Products, shall render this EJ null and void. This perimeter fire barrier design is expected to achieve the hourly rating indicated above. This engineering judgment is based on performance results obtained in testing with independent laboratories which have been tested in accordance to ASTM E 2307 and / or internal 3M fire tests, and CAN/ULC-S115.



Engineering Judgment Prepared By:



Paul Fannin  
Senior Application Engineer

Reviewed By:

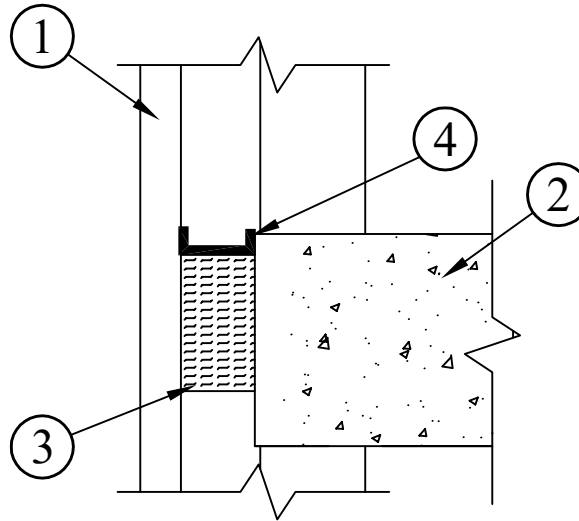


610333  
cc: Bethany Turowec  
Email: bturowec@mmm.com

#### Technical Information, Product Selection and Use

The technical information, guidance and other statements contained in this document are based upon records, tests or experience that 3M believes are reliable, but the accuracy or completeness of such information is not guaranteed and may not be indicative of field conditions. Many factors beyond 3M's control and uniquely within user's knowledge and control can affect the use and performance of a 3M product in a particular application. As a result, customer is solely responsible for evaluating the 3M product and determining whether it is appropriate and suitable for customer's application. 3M product purchases are subject to the terms, conditions and limitations set forth in the applicable Technical Data Sheet

3M ENGINEERING JUDGEMENT NO. 610333  
 MODIFIED SYSTEM NO. 3MU/JS 120-22  
 REQUESTED F RATING - 1 & 2 HR  
 OBTAINABLE RATING: \*SEE BELOW



1. EXTERIOR GRADE FIBERGLASS SHEATHED GYPSUM BOARD..
2. CONCRETE FLOOR.
3. 4 PCF MINERAL WOOL.
4. FIRESTOP SEALANT/SPRAY AS OUTLINED IN APPROPRIATE VERSION OF CORRESPONDING EJ. (SPRAY DEPICTED)

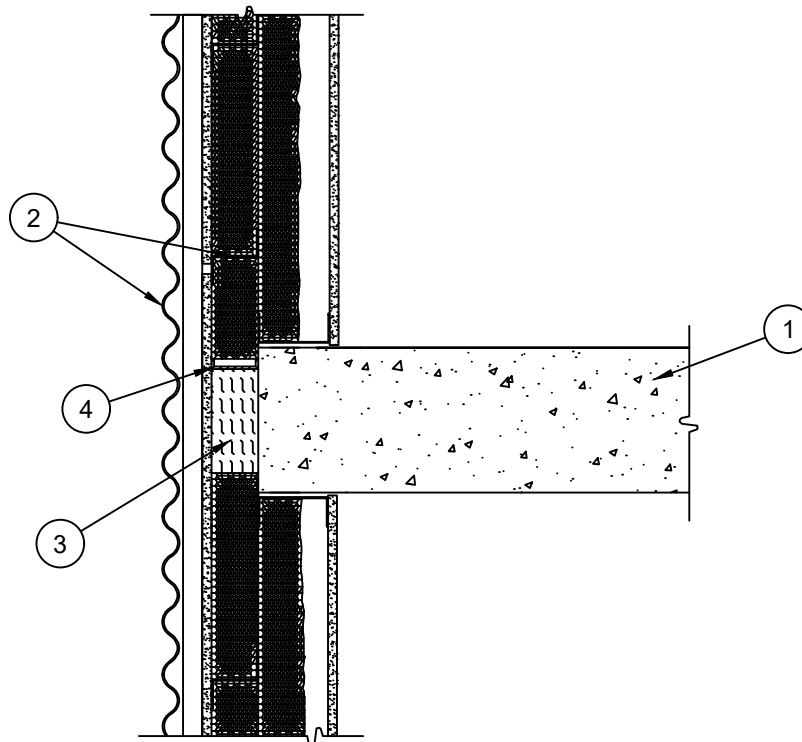
\*THE OBTAINABLE RATING IN THIS SCENARIO IS REDUCED TO "UP TO 1- OR 2-HOUR F ONLY OR AS LONG AS THE ENTIRE ASSEMBLY REMAINS FULLY INTACT IN A FIRE SCENARIO".

SEE APPLICATION DETAIL NOTES ON APPROPRIATE VERSION OF CORRESPONDING EJ.

CONFIGURATION OR ORIENTATION OF PENETRANT(S)/OPENING(S) MAY NOT MATCH SITE CONDITION(S).

CONSULT CURRENT INDEPENDENT TESTING LABORATORIES (UL/INTERTEK) FOR SYSTEMS OR DESIGN DETAILS

PROJECT: <b>MUR D-MAX</b>				SIGNATURE: <i>Bruce Fitzwater</i>		
REV:	DATE:	DESCRIPTION	DRWN BY:	THIS ELEMENTARY FIRESTOP DRAWING IS TO BE USED ALONG WITH THE CORRESPONDING ENGINEERING JUDGMENT AND REFERENCED LISTED/TESTED SYSTEMS FROM INDEPENDENT TESTING LABORATORIES (UL/INTERTEK). DRAWING NOT TO SCALE.	DWG. LOCATION:	DATE:
0	09-03-20	ORIGINAL ISSUE	BLF		610333.DWG	09-03-20
					ALL STATEMENTS, TECHNICAL INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED ON TEST: WE BELIEVE TO BE RELIABLE. HOWEVER, SINCE THE CONDITION OF USE AND APPLICATION ARE BEYOND OUR CONTROL, 3M SHALL NOT BE LIABLE FOR ANY DAMAGE, DIRECT OR CONSEQUENTIAL, RESULTING FROM THE USE OF THIS MATERIAL OR DESIGN. 3M'S ONLY WARRANTY SHALL BE TO REPLACE ANY OF OUR PRODUCTS PROVED TO BE DEFECTIVE.	
<b>3M</b> Fire Protection Products						



1. **Floor Assembly (2 Hr)** - Min 5" thick concrete floor assembly.
2. **Curtain Wall Assembly (Non Fire Rated)** - Exterior densglass curtain wall assembly with max 8" steel stud framing. Max width of joint is 4".
3. **Packing Material** - Min 4 pcf density mineral wool batt insulation compressed a min 33% and installed within joint to a min 4" depth, flush with top surface of floor. When sealant is used, recess to accommodate for the required depth of sealant.
4. **Spray** - SpecSeal® AS200, Fast Tack, or SFS Safing Spray applied to completely cover mineral wool to a min 1/8" wet thickness, overlapping onto surrounding substrates a min 1/2".
5. **Sealant (Optional)** - In lieu of spray, SpecSeal® SIL300SL Sealant applied within joint to a min 1/2" depth. Sealant to be flush with top surface of floor.

**\*Notes: 1** - Rating of the firestop system is dependent on the performance of the surrounding construction under fire exposure with a max possible F rating of 2 Hr.

THIS DESIGN REPRESENTS A FIRESTOP SYSTEM EXPECTED TO PASS THE STATED RATINGS IF TESTED

Project: Huntsman Building Solutions

Project Address:

Designed by: Joe Potts

Contractor/  
Architect: Hunstman Building Services

Scale: N.T.S.

Signature:

System Reference:  
CW-D-1011

Date: 3/31/2021

PAGE 1 OF 1

Based on testing to ASTM E2307 and CAN/ULC-S115  
Standard Test Method of Fire Tests of Through-Penetration  
and Joint Firestops



**Specified Technologies Inc.**

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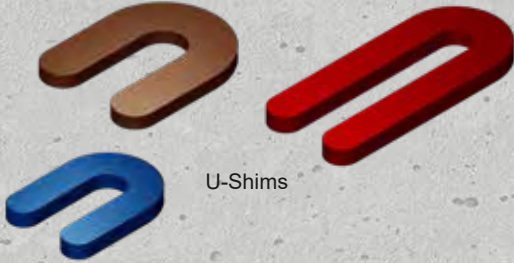
All statements, technical information, and recommendations contained herein are based upon tests we believe to be accurate; however since the conditions of use and application are beyond our control, STI shall not be liable for any damage, direct or consequential, resulting from the use of this material or design. STI's sole warranty shall be to refund or replace materials found to be defective.



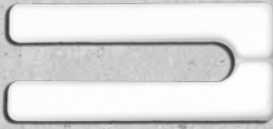


# GROVE SHIMS™

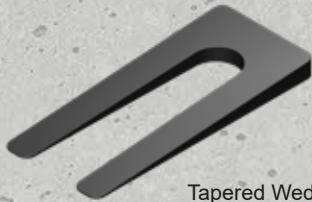
RUGGED, INEXPENSIVE, AND CONVENIENT LEVELING AND ALIGNMENT AIDS FOR THE GLASS AND CONSTRUCTION INDUSTRY



U-Shims



Tapered Snap-Apart Wedge



Tapered Wedge



Key Slot



Horseshoe



U-Shim

Thickness	Size	Bolt Hole	Color	Pack
1/16"	1-1/2" x 2"	1/2"	Blue	1M/cs
1/8"	1-1/2" x 2"	1/2"	Red	1M/cs
3/16"	1-1/2" x 2"	1/2"	Orange	500/cs
1/4"	1-1/2" x 2"	1/2"	Black	1M/cs
3/8"	1-1/2" x 2"	1/2"	White	1M/cs
1/2"	1-1/2" x 2"	1/2"	Brown	500/cs

1/32"	1-1/2" x 3-1/2"	1/2"	Green	1M/cs
1/16"	1-1/2" x 3-1/2"	1/2"	Blue	1M/cs
1/8"	1-1/2" x 3-1/2"	1/2"	Red	1M/cs
3/16"	1-1/2" x 3-1/2"	1/2"	Orange	1M/cs
1/4"	1-1/2" x 3-1/2"	1/2"	Black	1M/cs
3/8"	1-1/2" x 3-1/2"	1/2"	White	500/cs
1/2"	1-1/2" x 3-1/2"	1/2"	Brown	500/cs

1/16"	1-7/8" x 2-5/8"	5/8"	Blue	1M/cs
1/8"	1-7/8" x 2-5/8"	5/8"	Red	1M/cs
1/4"	1-7/8" x 2-5/8"	5/8"	Black	1M/cs

1/16"	2-5/16" x 3"	13/16"	Blue	1M/cs
1/8"	2-5/16" x 3"	13/16"	Red	1M/cs
1/4"	2-5/16" x 3"	13/16"	Black	1M/cs
3/8"	2-5/16" x 3"	13/16"	White	500/cs

Item	Thickness	Size	Bolt Hole	Color	Pack
Tapered Wedge	1/32" x 1/4"	1-1/2" x 3-3/8"	1/2"	Black	1M/cs
Lg. Tapered Wedge	1/32" x 3/8"	1-1/2" x 6"	1/2"	Gray	600/cs
8" Solid Wedge	1/16" x 1/4"	1-1/2" x 8"	N/A	Black	1M/cs
TW-24	3/4"-5/16"	2" x 4"	N/A	Gray	350/cs
Snap-Apart Wedge	1/4" x 1/16"	1-1/2" x 3-1/4"	1/2"	White	1M/cs

Item	Thickness	Size	Bolt Hole	Color	Pack
Key Slot	1/16"	3" x 3-1/2"	7/16"	Blue	1M/cs
	1/8"	3" x 3-1/2"	7/16"	Red	1M/cs
	1/4"	3" x 3-1/2"	7/16"	Black	500/cs
U	1/32"	3" x 4"	7/8"	Green	1M/cs
	1/16"	3" x 4"	7/8"	Blue	1M/cs
	1/8"	3" x 4"	7/8"	Red	1M/cs
	3/16"	3" x 4"	7/8"	Orange	1M/cs
	1/4" (Solid)	3" x 4"	7/8"	Black	500/cs
	3/8"	3" x 4"	7/8"	White	360/cs
	1/2"	3" x 4"	7/8"	Brown	250/cs
	5/8"	3" x 4"	7/8"	Grape	225/cs
	3/4"	3" x 4"	7/8"	Cyan	200/cs

M = 1,000

Typically withstanding ten tons of compressed force, light weight "U" shaped Grove Shims™ are offered in eight sizes ( 1-1/2" x 2", 1-1/2" x 3-1/2", 1-7/8" x 2-5/8", 2-5/16" x 3", Wedge, 3" x 3-1/2", Key Slot and 3" x 4") and up to nine thicknesses (1/32" green, 1/16" blue, 1/8" red, 3/16" orange, 1/4" black, 3/8" white, 1/2" brown, 5/8" grape, and 3/4" cyan), supplied bulk packed in boxes. Independent laboratory testing reports are available on our web site.

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