CASE NO. 25-08

NOTICE OF PUBLIC HEARING BY THE
TOWN OF BELMONT PLANNING BOARD

ON APPLICATION FOR THREE SPECIAL PERMITS

Notice is hereby given that the Planning Board will hold a public hearing on Tuesday, May 6, 2025 at 7:00 PM by a hybrid public hearing at the Select Board meeting Room on the first floor of the Town Hall, 455 Concord Ave., and by remote access through the Zoom app. to consider the application of Nathan Harrison, for three Special Permits under sections 1.5.4 A and 4.2 of the By-Law to construct a two story addition at 29 Trowbridge Street located in a General Residence (GR) zoning district. Special Permits: **1.-** §1.5.4A of the By-Law allows alteration and expansions in the General Residence district that exceed 300SF by a Special Permit granted by the Planning Board, the proposed expansion is 568.4SF and is allowed by a Special Permit. **2.-** §4.2 of the By-Law allows a maximum lot coverage of 30%, the existing lot coverage is 30.11% and proposed lot coverage is 33.80%. **3.-** §4.2 requires a minimum side setback of 10.0', the existing and proposed side setback is 8.1'.

Note: Application submittals, meeting agenda & instructions on remote access can be found on the Town's website: https://www.belmont-ma.gov/planning-board

TOWN OF BELMONT PLANNING BOARD

Town of Belmont

~~Zoning Board of Appeals~~
Family Board

APPLICATION FOR A SPECIAL PERMIT

Date: 2-7-25

Zoning Board of Appeals
Homer Municipal Building
19 Moore Street
Belmont, MA 02478

To Whom It May Concern:

Pursuant to the provisions of Massachusetts General Laws, Chapter 40A, Section 9, as amended, and the Zoning By-Laws of the Town of Belmont, I/we the undersigned, being the owner(s) of a certain parcel of land (with the buildings thereon) situated on 29 Trowbridge St Street/Road, hereby apply to your Board for a **SPECIAL PERMIT** for the erection or alteration on said premises or the use thereof under the applicable Section of the Zoning By-Law of said Town for alteration and expansion in general residence district. Existing and proposed lot coverage is 50.37%; the existing and proposed side setback is 8.1'

on the ground that the same will be in harmony with the general purpose and intent of said Zoning By-Law.

Signature of Petitioner Nathan P Harrisson (1)

Signature of Petitioner Sonia Kumar (2)

Print Name Nathan Harrisson + Sonia Kumar

Address 29 Trowbridge St
Belmont MA 02478

Daytime Telephone Number 512-689-2740

2/7/25

Nathan Harrison
Sonia Kumar
29 Trowbridge St
Belmont MA 02478

Town of Belmont
Zoning Board of Appeals
19 Moore Street
Belmont MA 02478

To Whom It May Concern:

I, Nathan Harrison, and Sonia Kumar, are petitioning the board to grant a special permit to add a proposed sunroom to 29 Trowbridge St, Belmont MA. I hereby grant permission to Brady Built, Inc and it's employees to represent us in this matter.

Homeowner

2/7/2025
Date

Homeowner

02-07-2025
Date

Brady-Built

Special Permit Criteria
Homeowner: Sonia Kumar & Nathan Harrison
Project Address: 29 Trowbridge St Belmont, MA 02478

Sonia Kumar & Nathan Harrison hired us to build a 14' x 20'4 two story addition on the back of their home. They have a rapidly growing family and are in desperate need of extra space. The situation has become critical because their son's bedroom on the second floor is the size of most people's walk in closet. They have virtually no use of their living room on the first floor because it is filled with clothes and miscellaneous items for the family, because they have run out of space.

The proposed addition will be a much needed expansion of the bedroom, bathroom and living space on the second floor. The first floor will be a dining and living room area. 3 special permits are required for the project because the house sits on a pre-existing, non-conforming lot. When they purchased the house, there was roughly 1,200 + SQ FT of paved cement area, which much of it is currently not being used.

The addition was carefully designed to match the look of the house and to keep it in harmony with the neighborhood and will be replacing 286 Sq Ft of the paved area, so they are not increasing the lot coverage.

The home is located in a General Residential District and is being used as a Single-Family residence. No change to the land use is proposed.

We are requesting 3 Special Permits;

1. **A Special Permit to expand on the existing home as required in a General Residential District under 1.5.4A of the Zoning By-Law.**
2. **A Special Permit to exceed the maximum lot coverage of 33% as required by section 4.2 of the Zoning By-Law. Current lot coverage is 50.37% and because the addition is not expanding on that it will remain 50.37% "See Attached Plot Plan"**
3. **A Special Permit to build within the minimum setback requirement of 10 FT as required by section 4.2 of the Zoning By-Laws. The currently house sits in the setback on two sides. The proposed addition is on the side that sits 8.1 FT from the lot line. The addition will be 4" back from that corner so it will not increase the Non-Conformity, and the setback will remain 8.1'**

The addition will not be offensive in any way to the neighboring properties and will not be visible from the street. In fact, we have discussed this project with the neighbors and they have no problem with the proposed addition. The proposed addition will not be detrimental to the public good of the neighborhood or create any nuisance.

The proposed addition is not encroaching any further on the side yard setbacks. We surmise the special permits can be granted without substantial detriment to the public good or without nullifying or substantially derogating from the purpose and intent of the by-law.

We respectfully request that the board grant the special permits so that Sonia & Nathan can proceed with their project.

Sincerely,
Kevin M. Kieler
Chief Designer
Brady-Built Sunrooms

160 Southbridge Street • Auburn MA 01501 • Tel: (508) 798-2600 • Fax: (508) 798-3058
sunroomsbybrady.com • additionsbybrady.com • bradyrooms.com

LOT COVERAGE:

12-3-2024

*NOT FOR REUSE

EXISTING:
HOUSE=806 S.F.
PAVEMENT=1,153 S.F.
PERGOLA=247 S.F.
SHEDS=147 S.F.
CONCRETE=578 S.F.
STAIRS=19 S.F.
WALKWAY=72 S.F.
TOTAL COVERAGE=3,022 S.F. (50.37%)
OPEN SPACE=49.63%

PROPOSED:
SUNROOM=284 S.F
SHED=125 S.F. (REMOVED WHERE SUNROOM IS).
PAVEMENT=869 S.F. (REMOVED WHERE SUNROOM IS)

TOTAL COVERAGE=3,022 S.F.(50.37%)
OPEN SPACE=49.63%

JARVIS LAND SURVEY, INC
29 GRAFTON CIRCLE
SHREWSBURY, MA 01545
TEL. (508) 842-8087
FAX. (508) 842-0661
KEVIN@JARVISLANDSURVEY.COM

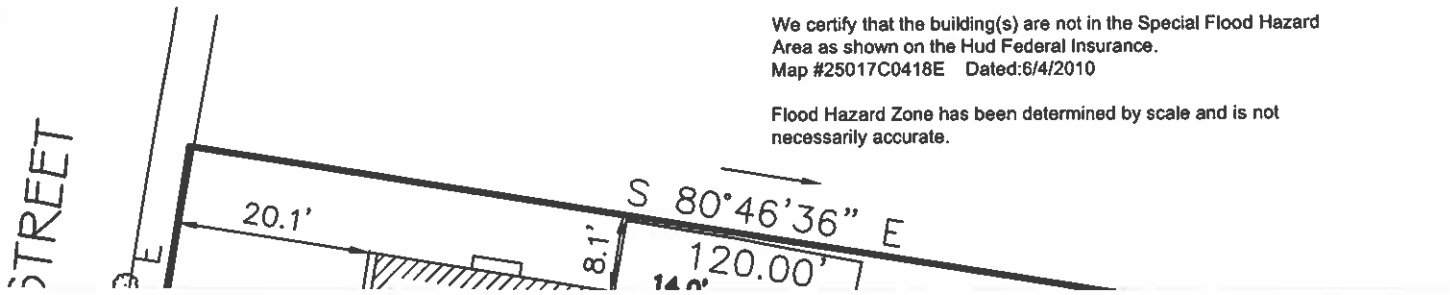
ZONING DATA:

GENERAL RESIDENCE

REQUIRED:
LOT AREA = 5,000 S.F.
MAX.LOT COVERAGE=30%
MINIMUM OPEN SPACE=40%
LOT FRONTAGE = 50'
FRONT YARD SETBACK = 20'
SIDE YARD SETBACK = 10'
REAR YARD SETBACK = 20' (DWELLING)
=12' (OTHER)

EXISTING:
LOT AREA = 6,000 S.F.
LOT COVERAGE=50.37%
MINIMUM OPEN SPACE=49.63%
LOT FRONTAGE = 50'
FRONT YARD SETBACK = 20.1'
SIDE YARD SETBACK = 8.1'
REAR YARD SETBACK = 74.5'

PROPOSED:
LOT AREA = 6,000 S.F.
LOT COVERAGE=50.37%
MINIMUM OPEN SPACE=49.63%
LOT FRONTAGE = 50'
FRONT YARD SETBACK = 20.1'
SIDE YARD SETBACK = 8.1'
REAR YARD SETBACK = 60.5'



We certify that the building(s) are not in the Special Flood Hazard Area as shown on the Hud Federal Insurance.
Map #25017C0418E Dated:6/4/2010

Flood Hazard Zone has been determined by scale and is not necessarily accurate.

DRAWING TABLE OF CONTENTS

SHEET NO.	DESCRIPTION
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12.	General Notes and Legend
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16.	1st Floor Framing Plan
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18.	D-205 Plan at Endwall Connection
19.	D-306 Section at Roof Connection
20.	D-313 Section at Foundation-Floor
21.	Shop Drawing B.a - Frame "A" Detail
22.	Shop Drawing B.b - Frame "B" Detail
23.	Shop Drawing S.a - 1st Floor Sill Detail
24.	Shop Drawing S.b - 2nd Floor Sill Detail
25.	Shop Drawing G.1 - Roof Framing & Glass Specs

12-26-24 For Construction

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Drawn: MG
Date: 12-26-24
Scale: NTS

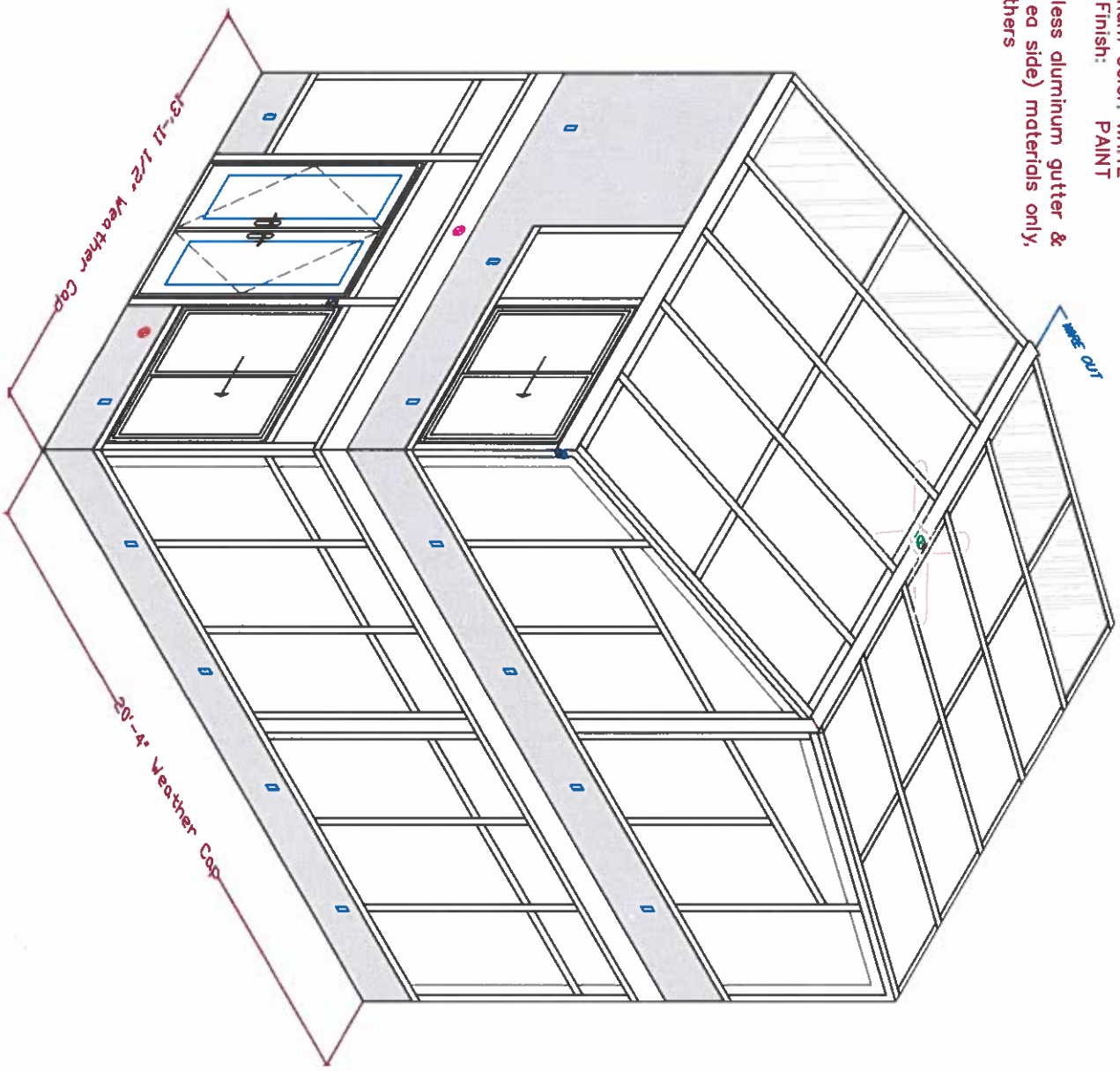
Cover

Brady-Built SUNROOMS
160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Sheet 1 of 25	11-19-24	Revision 2	12-13-24	Revision 4		
	11-27-24	Revision 3				

Exterior Aluminum Color: WHITE
Interior Wood Finish: PAINT

Includes seamless aluminum gutter & downspout (1 ea side) materials only, installed by others



Isometric View Front Left

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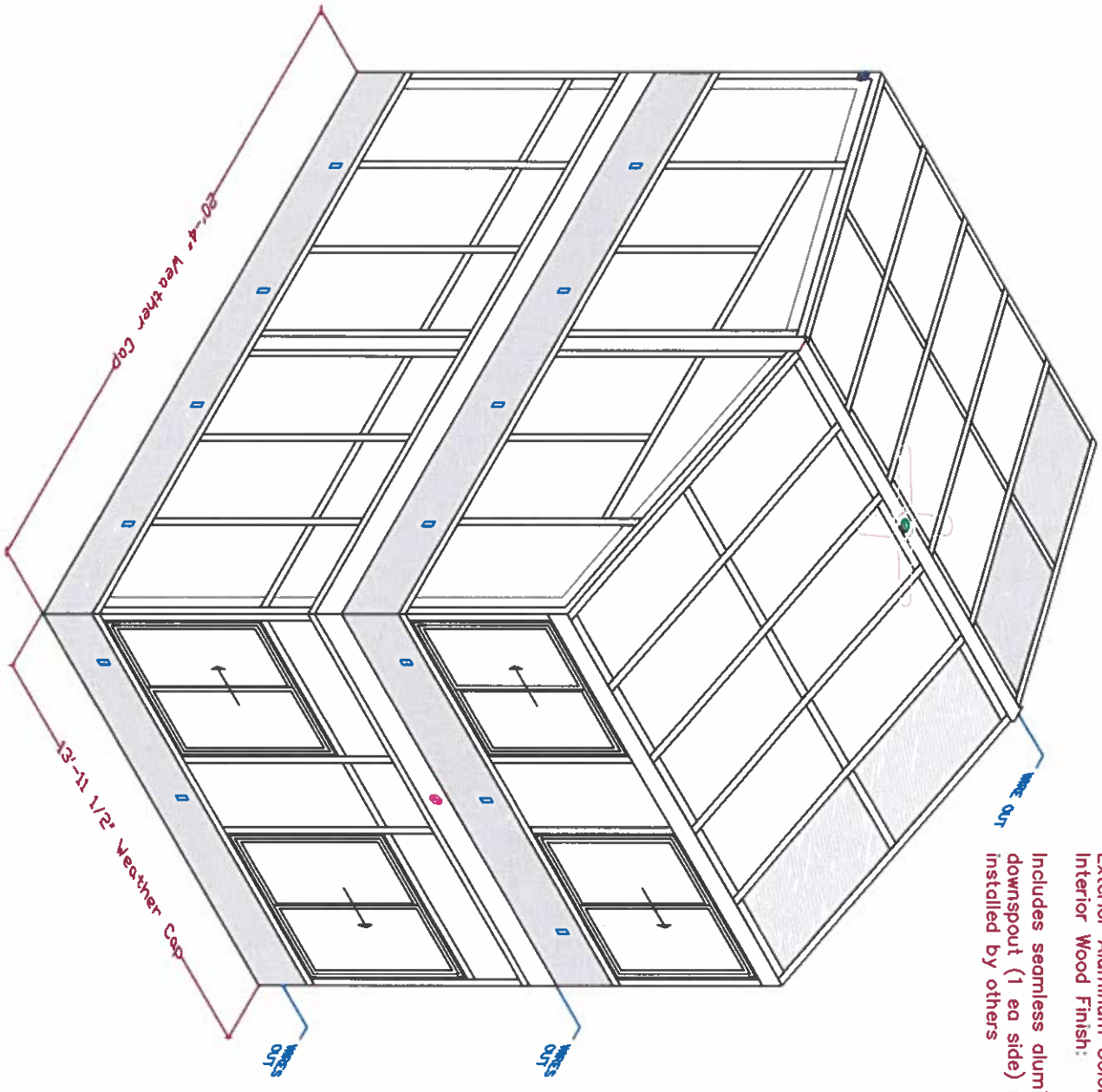
Brady-Built SUNROOMS

Drawn:	MG
Date:	11-19-24
Scale:	0.019645
Iso	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 2 of 25	11-19-24	Revision 2	12-13-24	Revision 4		
	11-27-24	Revision 3				



Isometric View Front Right

Exterior Aluminum Color: WHITE
Interior Wood Finish: PAINT

Includes seamless aluminum gutter & downspout (1 ea side) materials only, installed by others

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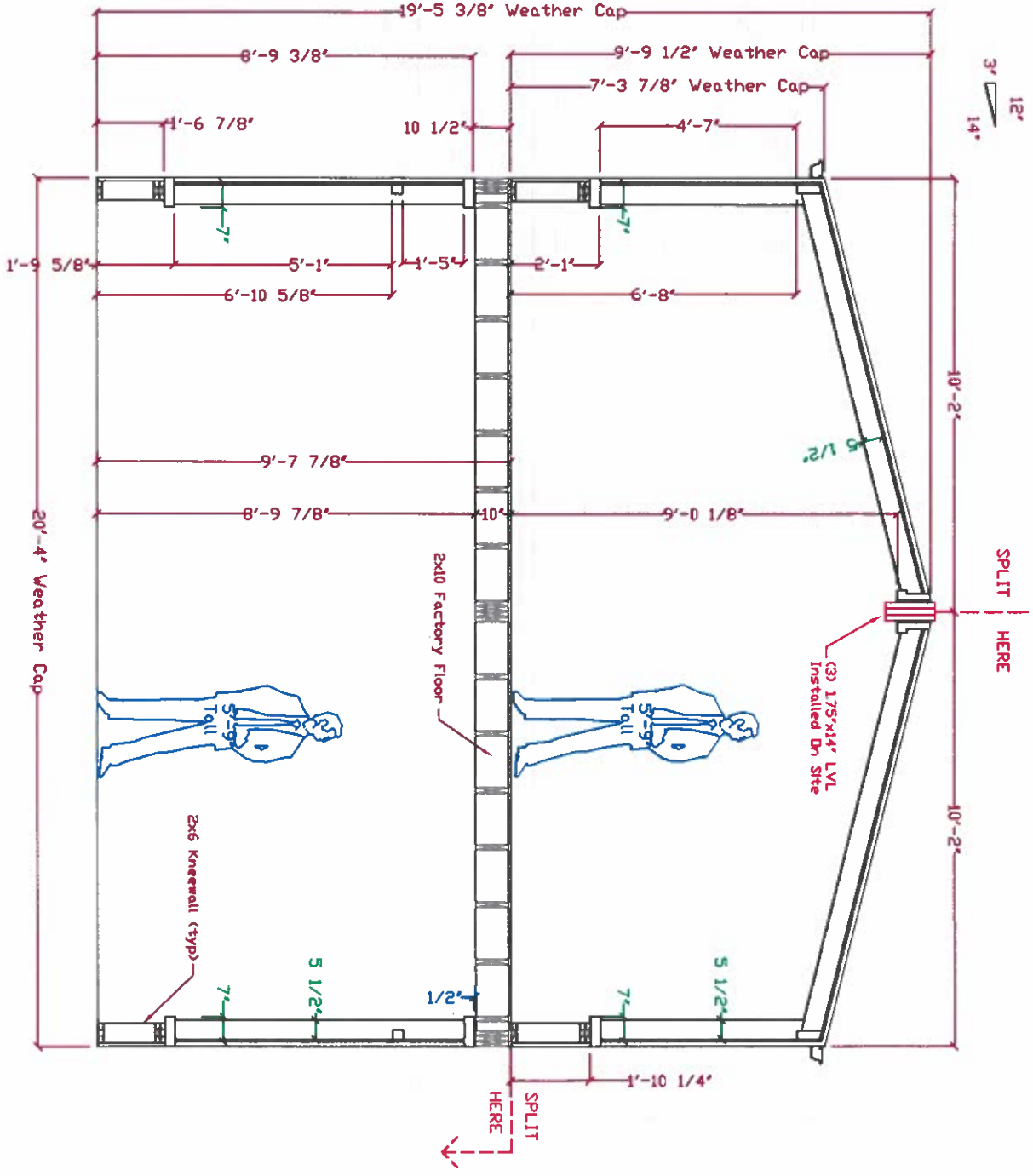
Brady-Built SUNROOMS

Drawn:	MG
Date:	11-19-24
Scale:	0.019645
Iso2	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 3 of 25	10-29-24	Preliminary Drawing				
	11-8-24	Revision 1				



Cross Section at Frame

160 Southbridge St.
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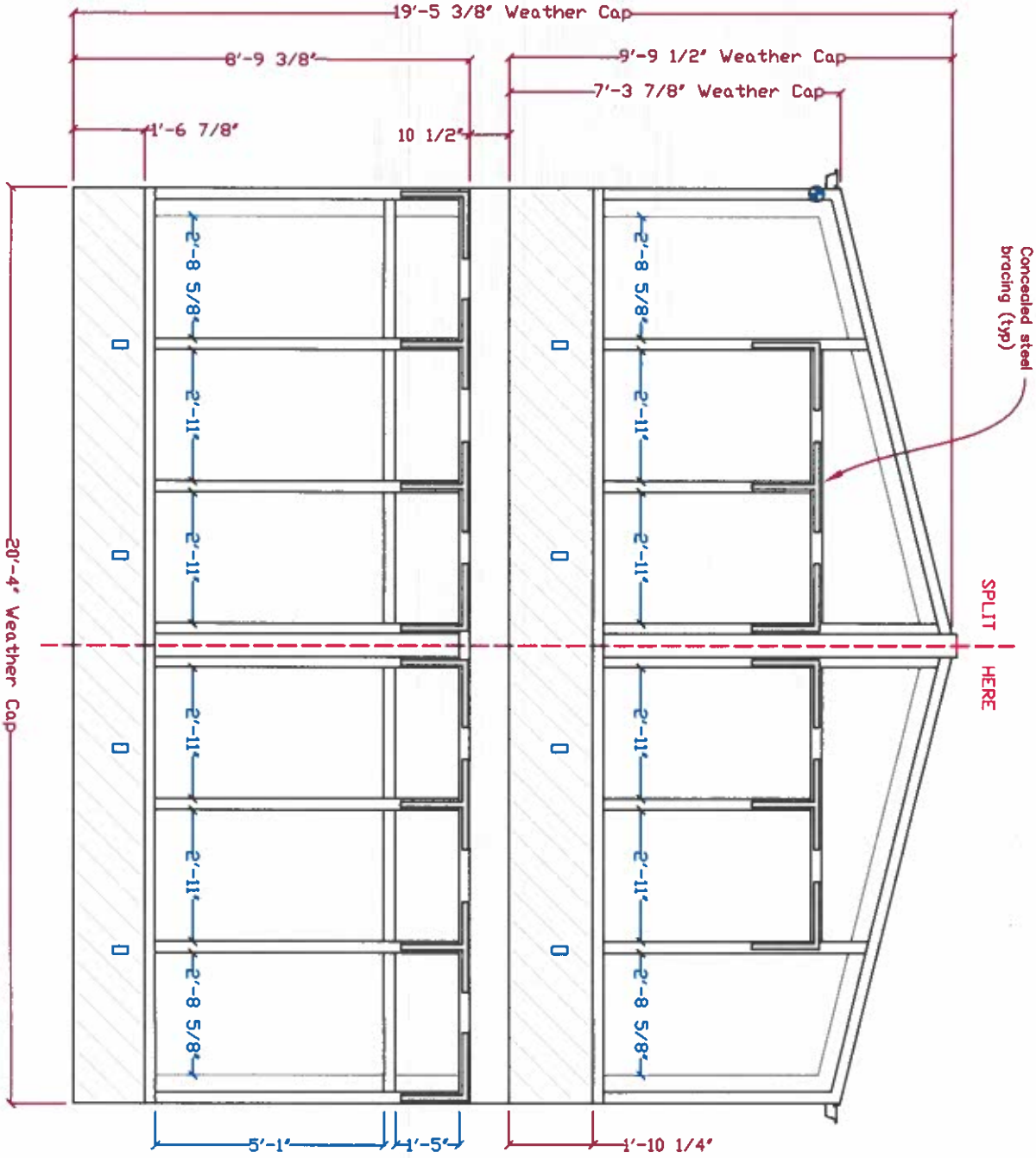
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	0.022645
Beam	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 4 of 25	10-29-24	Preliminary Drawing	12-20-24	Add steel		
	11-8-24	Revision 1				



Front Elevation

160 Southbridge St.
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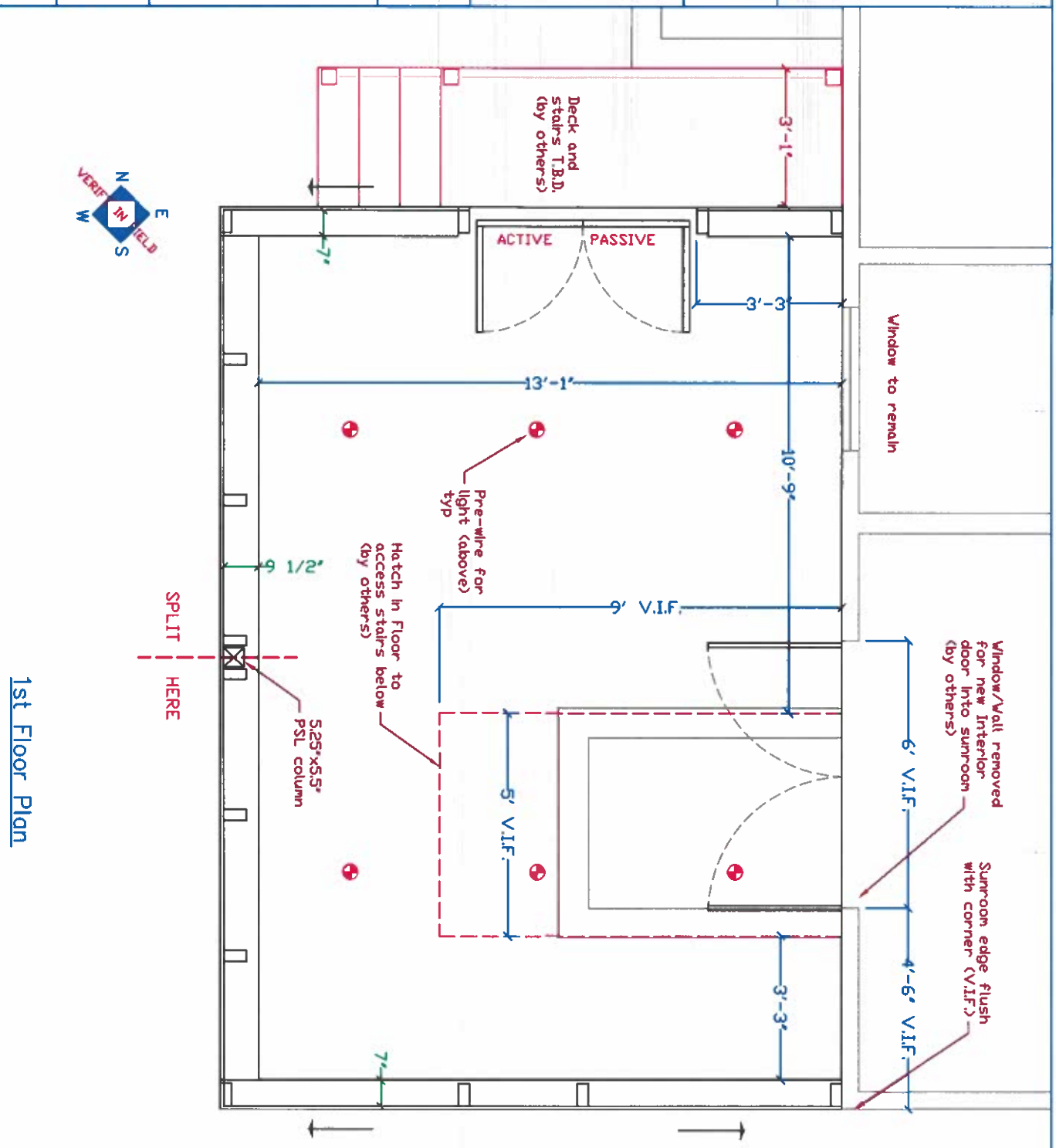
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	0.023540
Front	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 8 of 25	10-29-24	Preliminary Drawing	12-12-24	Remeasure house		
	11-8-24	Revision 1	12-13-24	Revision 4		



1st Floor Plan

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Fax: 508-798-3034
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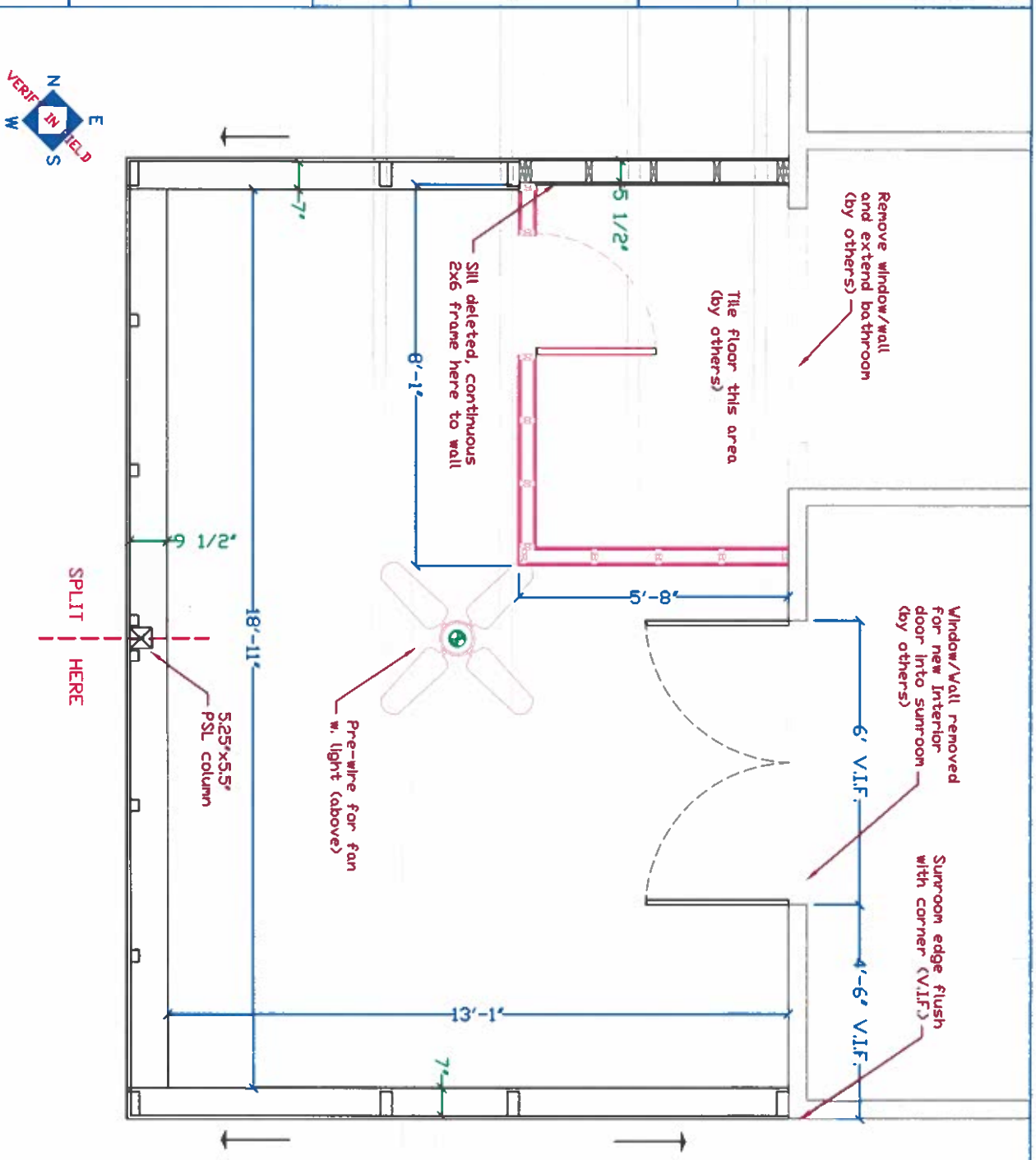
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	5/16"=1'-0"
Sill1	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 9 of 25	10-29-24	Preliminary Drawing	11-27-24	Revision 3		
	11-8-24	Revision 1	12-13-24	Revision 4		



2nd Floor Plan

160 Southbridge St.
Auburn, MA 01501
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Fax: 508-798-3034
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Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	5/16"=1'-0"
Sill2	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

To whom it may concern,

I own 25-27 Trowbridge St which is next door to 29 Trowbridge St. I understand they are asking for a special permit for an addition to their house. I have no objection to this and wish them the best of Luck.

Leo Rozzi

LEO ROZZI

Town of Belmont
Office of Planning & Building
Homer Municipal Building, 19 Moore Street
Belmont, Massachusetts 02478

Dear Members of the Zoning Board of Appeals:

This letter is in support of the special permit request of Nathan Harrison and Sonia Kumar of 29 Trowbridge St., Belmont, Massachusetts.

We are neighbors of Mr. Harrison and Ms. Kumar as our lot borders their lot to the rear and we share a fence line. The rear of their house (which is the proposed location of the addition) is visible from our house. We have no objections to the proposed addition and support their request for a special permit.

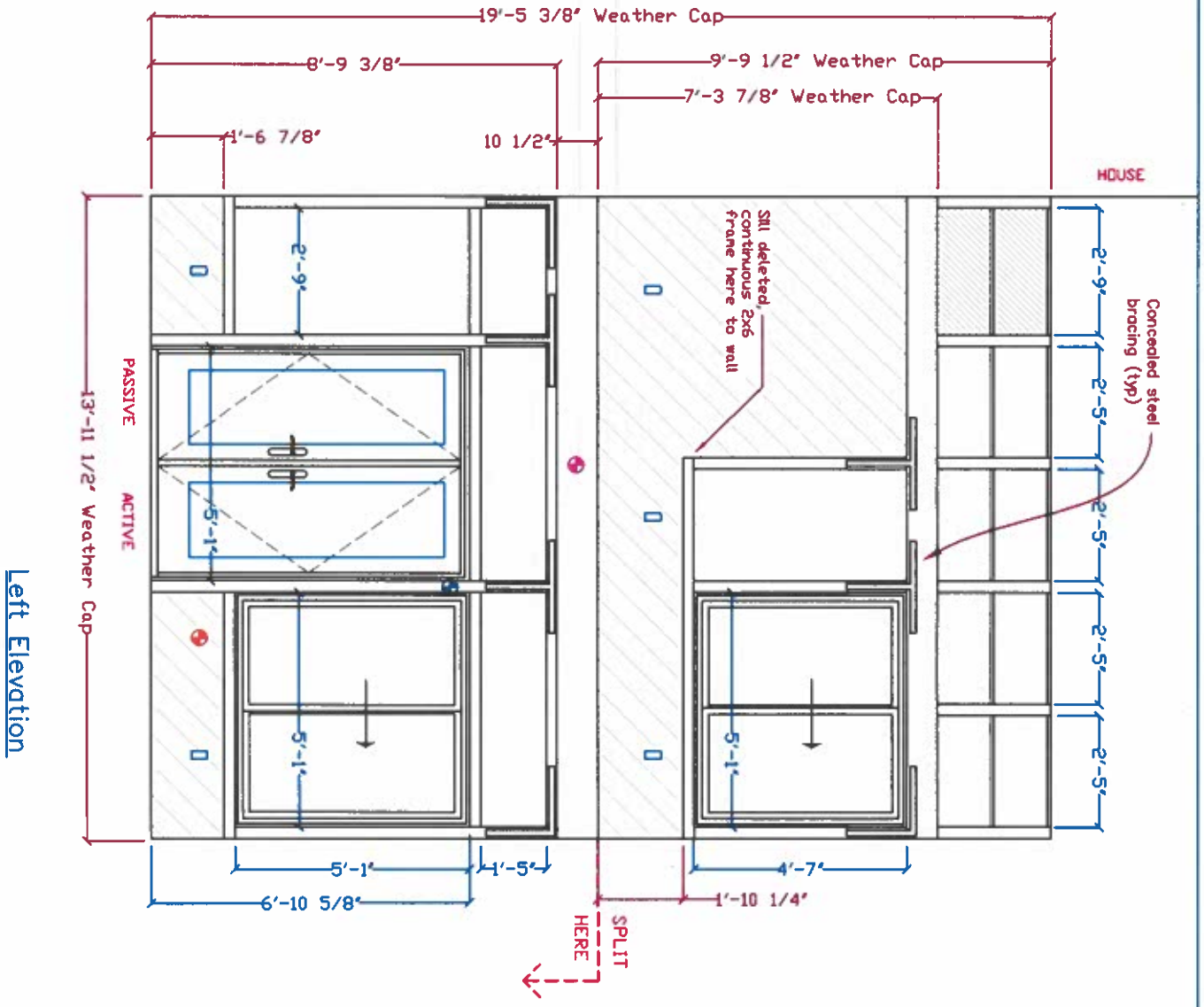
Thank you,

03/02/2025

Georges Brun Cottan and Catherine Brun Cottan

34 Baker Street, Owners

Sheet 5 of 25	10-29-24	Preliminary Drawing	11-19-24	Revision 2	12-20-24	Add steel
	11-8-24	Revision 1	11-27-24	Revision 3		



Left Elevation

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Fax: 508-798-3034
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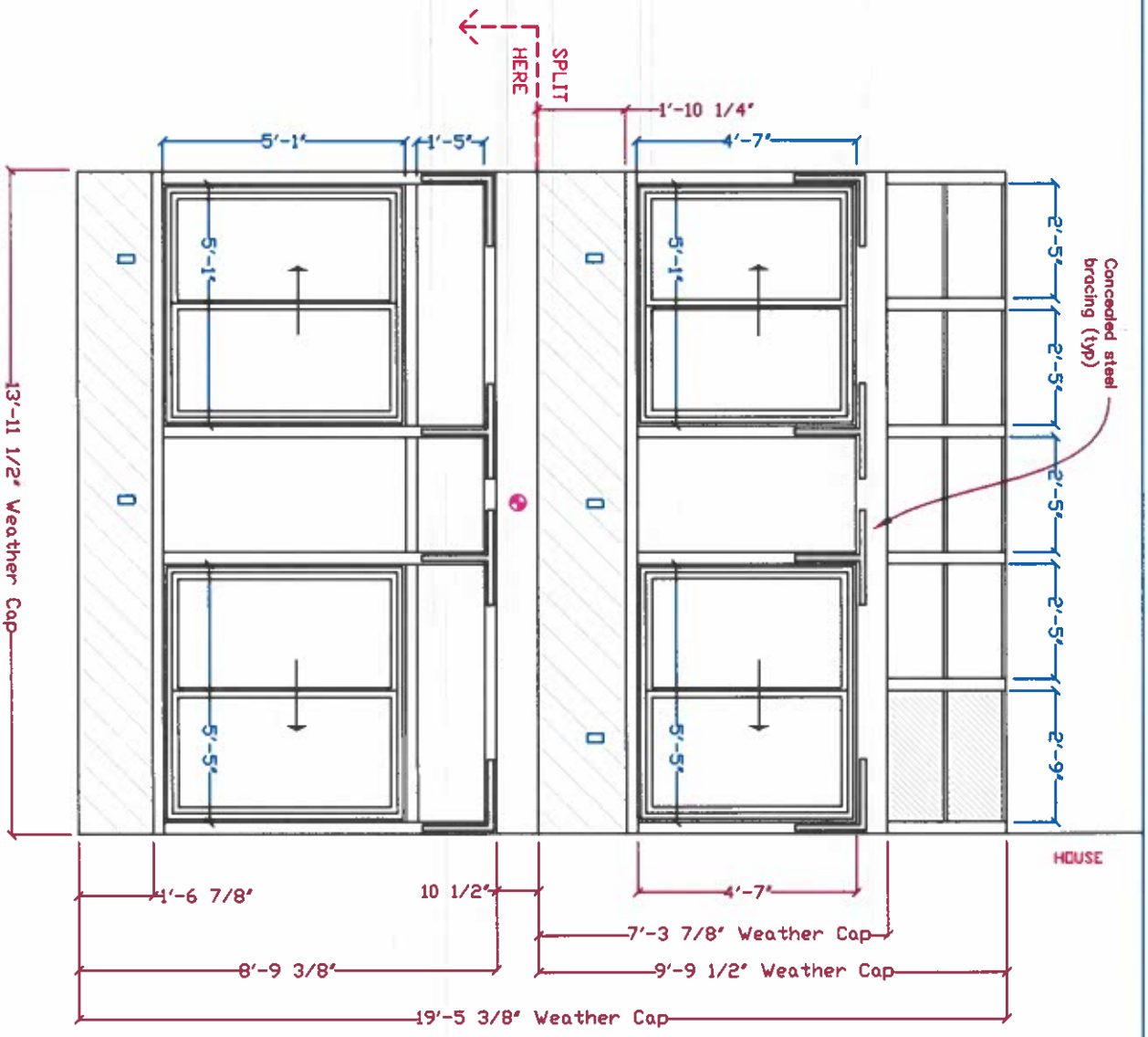
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	0.023540

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Left

Sheet 6 of 25	10-29-24	Preliminary Drawing	11-19-24	Revision 2	12-20-24	Add steel
	11-8-24	Revision 1	11-27-24	Revision 3		



Right Elevation

160 Southbridge St.
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Fax: 508-798-3034
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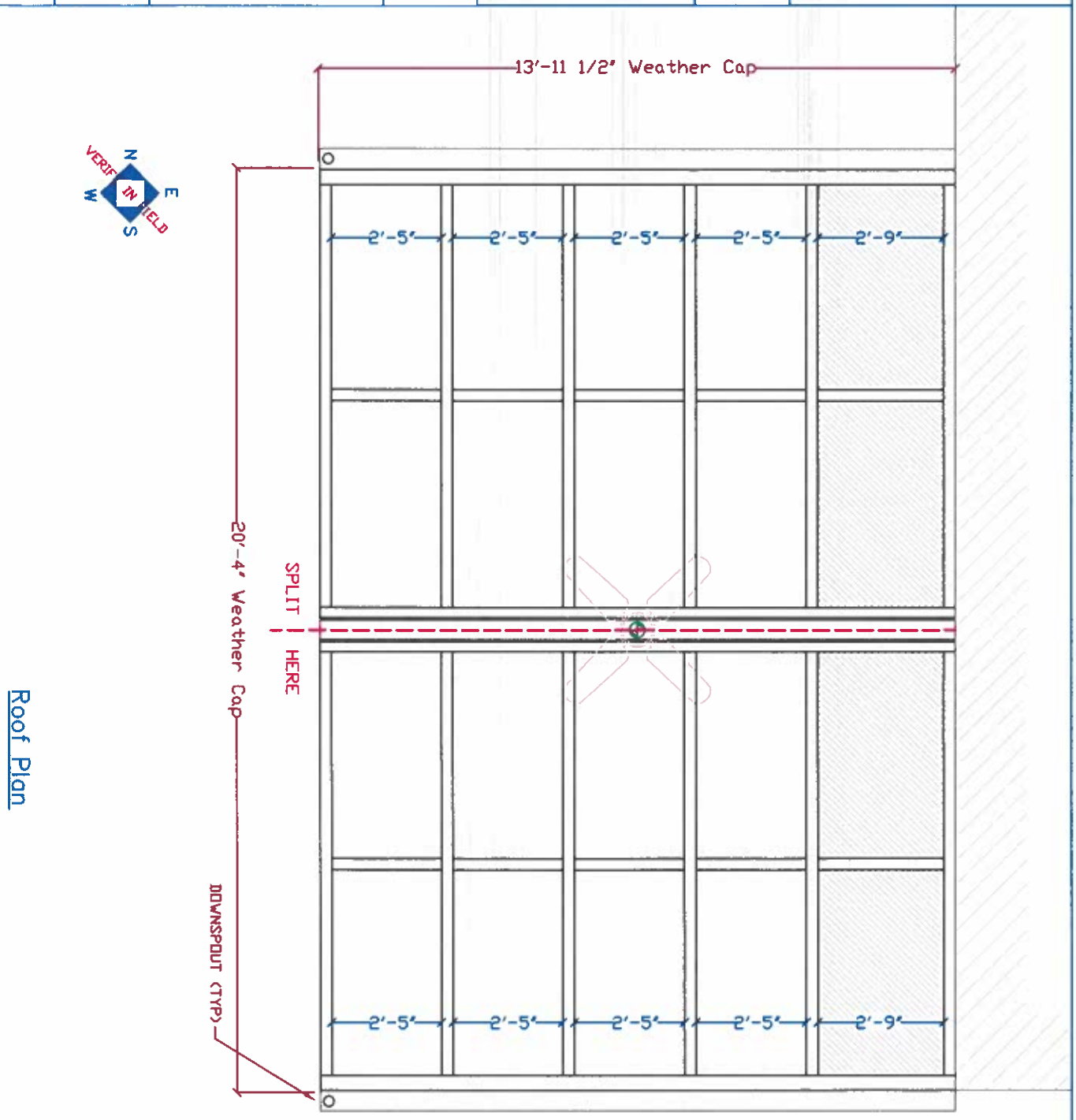
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	0.023540
Right	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 7 of 25	10-29-24	Preliminary Drawing	12-13-24	Revision 4		
	11-8-24	Revision 1				



Roof Plan

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Fax: 508-798-3034
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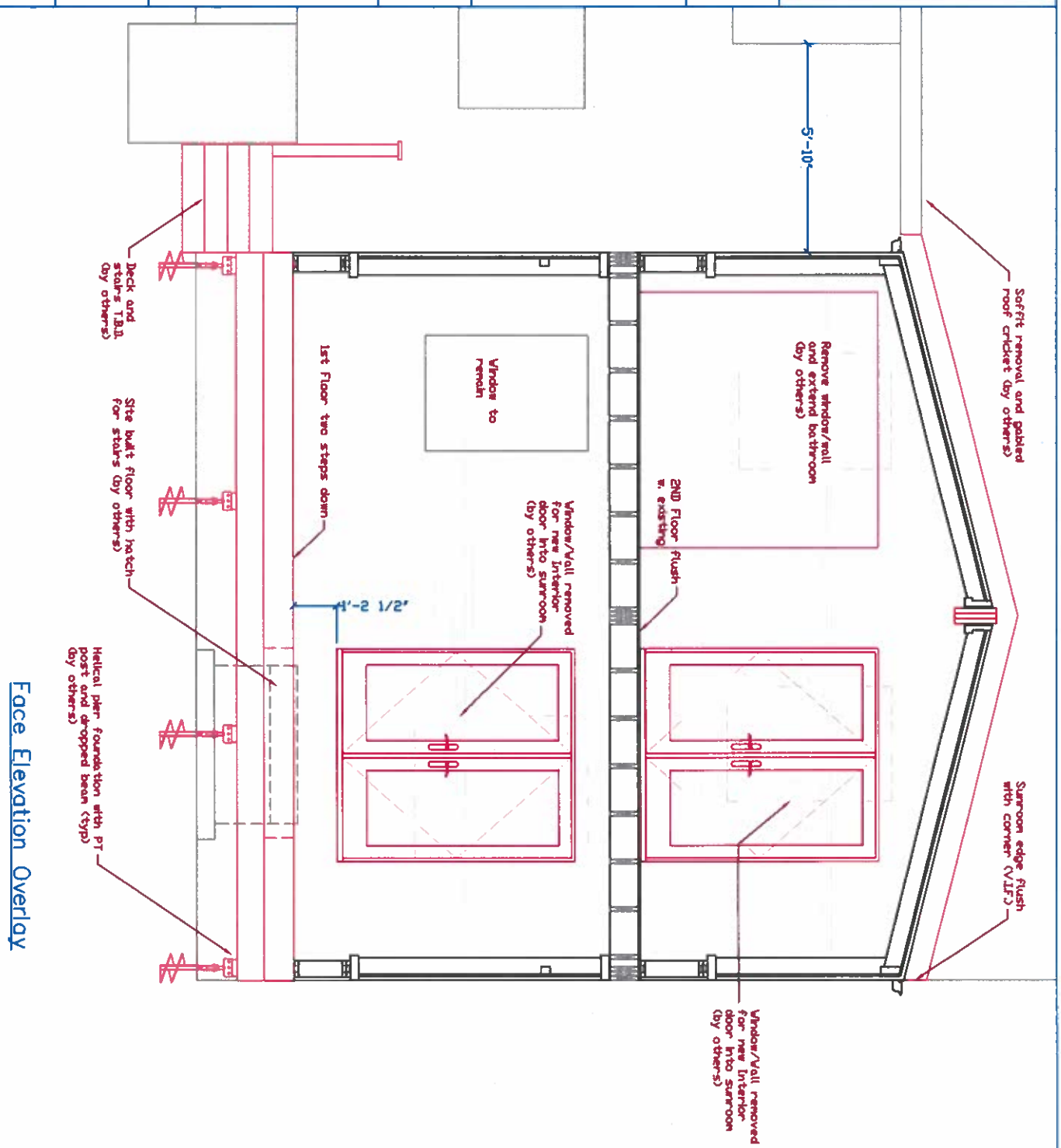
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	5/16"=1'-0"
Roof	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 10 of 25	10-29-24	Preliminary Drawing	11-27-24	Revision 3		
	11-8-24	Revision 1	12-13-24	Revision 4		



Face Elevation Overlay

160 Southbridge St.
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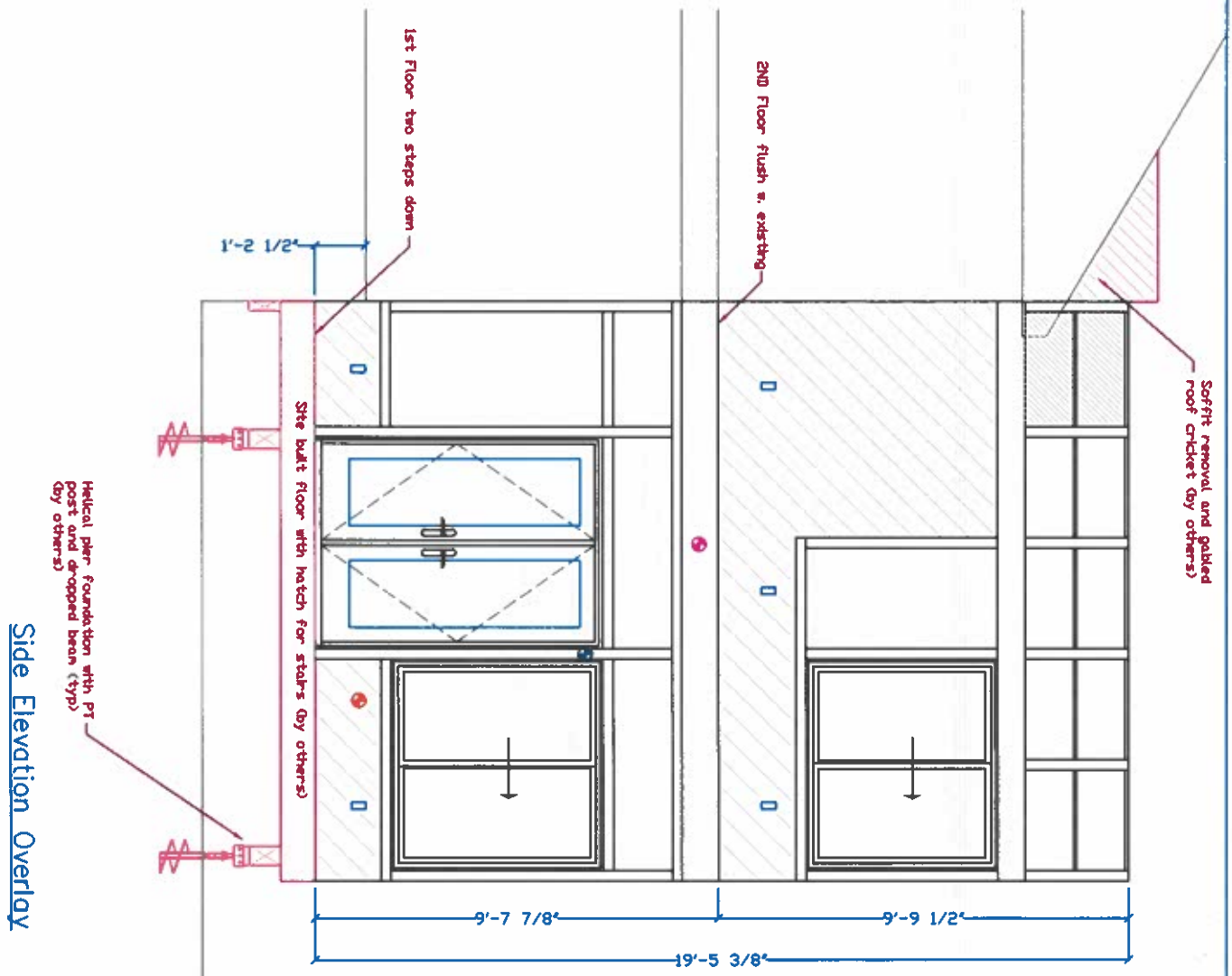
Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	1/4" = 1'-0"

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

OLf

Sheet 11 of 25	10-29-24	Preliminary Drawing	11-19-24	Revision 2		
	11-8-24	Revision 1	11-27-24	Revision 3		



Side Elevation Overlay

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
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Brady-Built SUNROOMS

Drawn:	MG
Date:	10-29-24
Scale:	1/4" = 1'-0"

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

OLs

GENERAL SPECIFICATIONS:

All structural frame components with mortise & tenon joinery and fastened mechanically using ½"x5" lag screws w/ washers

All Fixed Glass Units Dual Seal w/ 7/8" Overall thickness unless specified otherwise

Exterior Weather Cap to be Aluminum extrusion 6063 Alloy/ T5 Temper with color matched Duracron finish

Standard Flashing shapes to be Aluminum .040 with color matched Duracron finish

GLULAM BEAM SPECIFICATIONS:

Moisture Content < 16%
Laminations t=1/4"
Southern Yellow Pine 24F-V3 SP/SP
(AITC Manual)
Fb = 2400 psi
Fv = 200 psi
E = 1,800,000 psi

Fc (perp to grain) = 650 psi
Fc (par to grain) = 1700 psi
Ft (par to grain) = 1150 psi
Eaxial = 1,600,000 psi
K = 20.6

COMPLIANCE STATEMENT:

As per R301.2.1.1.1: This addition is categorized as a CATEGORY V SUNROOM (conditioned, not thermally isolated.) Sunroom fenestrations conform to AAMA/NPEA/NSA 2100

OTHER NOTES & SPECIFICATIONS:

Exterior Aluminum Color: WHITE
Interior Wood Finish: PAINT *

* Approved paint color: Sherwin Williams #7070 'Site White' Satin Finish

Includes seamless aluminum gutter & downspout (1 ea side) materials only, installed by others

All wires with 25' whip from exit point unless specified otherwise

All fixtures & final wiring by others

GLASS AND GLAZING COMPONENTS:

Front & Endwalls:	Fixed Insulated Glass Clear/LowE Tempered
Roof:	Fixed Insulated Glass Bronze/LowE Tempered
Solid Roof Panel:	Aluminum Sheet Exterior Plywood Sheathing Rigid Foam Insulation Primed Sheetrock Interior

FRAMING/STRUCTURAL COMPONENTS:

Kneewall/ Solid Wall:	2x6 KD @ 16" OC 7/16" Zip System Sheathing Unfinished Interior (Insulation and Sheetrock by others)
Floor System:	2x10 KD @ 16" OC 3/4" CDX plywood sub floor (Insulation and bottom drywall closure by others)

DOORS:

Double Inswing Patio Door 59.25"x81.5"
Wood Interior/ Clad Exterior
Full View Clear/LowE Tempered Glass
Multi Point Lockset
Satin Nickel Hardware
No Screen Included

WINDOWS:

Sliding Window 63.5"x59.5"; 63.5"x53.5"; 59.5"x59.5"; 59.5"x53.5"
White Vinyl Interior/ Exterior
Clear/LowE Tempered Glass
Color Matched Frame, Sash, Hardware
Screen Included

ELECTRICAL COMPONENTS:

- = 14-2 Romex Wire & Duplex Box for electrical plug
- = 14-2 Romex Wire only for exterior GFCI plug
- = 14-2 Romex Wire & Exterior Box for light
- = 14-3 Romex Wire for ceiling fan/light
- = 14-2 Romex Wire for 4" recessed LED light
- = 14-2 Romex Wire for exterior accent light

General Notes and Legend

Sheet	10-29-24	11-8-24	Preliminary Drawing	Revision 1	11-27-24	12-12-24	Revision 3	Door Hardware/Paint
12 of 25								

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Drawn:	MG
Date:	10-29-24
Scale:	NTS
Notes	

Confidential, Brady-Built Inc.

Brady-Built SUNROOMS

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Fax: 508-798-3034
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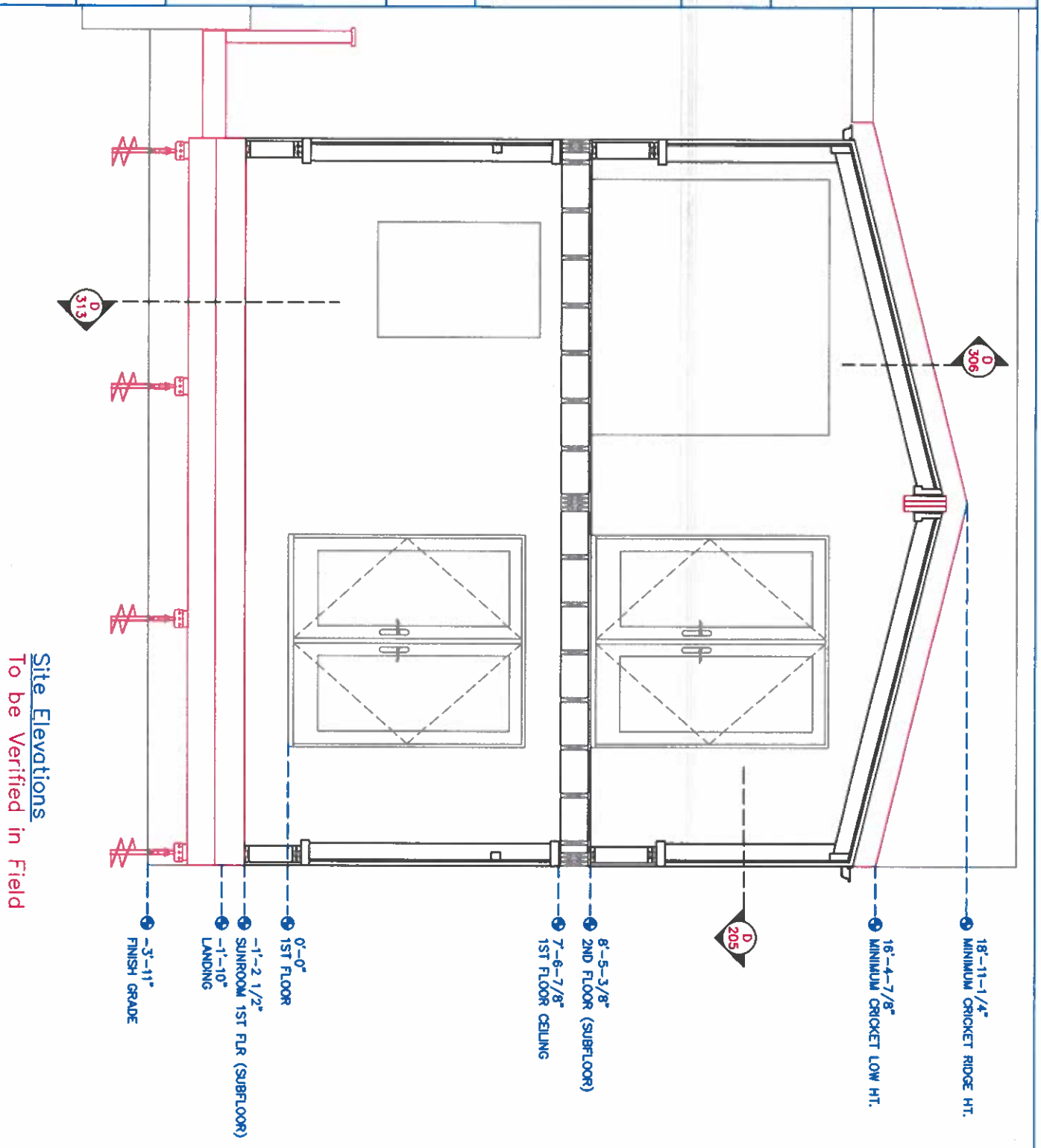
Sheet 13 of 25	12-26-24	For Construction				



Site Elevations
To be Verified in Field

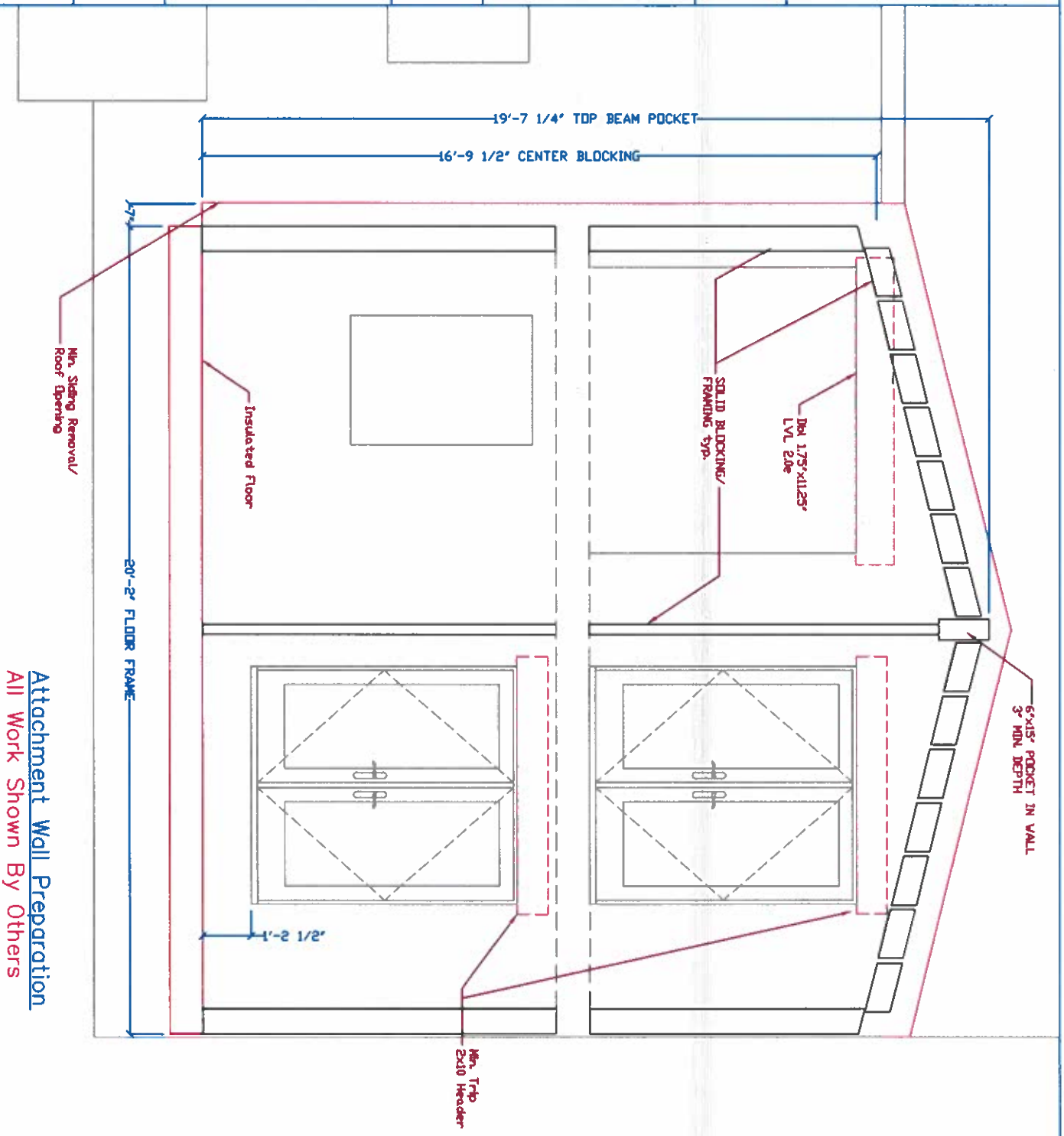
160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-26-24
Scale:	NTS
SP1	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 14 of 25	12-26-24	For Construction				



Attachment Wall Preparation
All Work Shown By Others

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Brady-Built SUNROOMS

Drawn:	MG
Date:	12-26-24
Scale:	NTS
SP2	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Sheet 15 of 25	12-16-24	For Construction				

Notes:

Measure from face of house sheathing not face of foundation

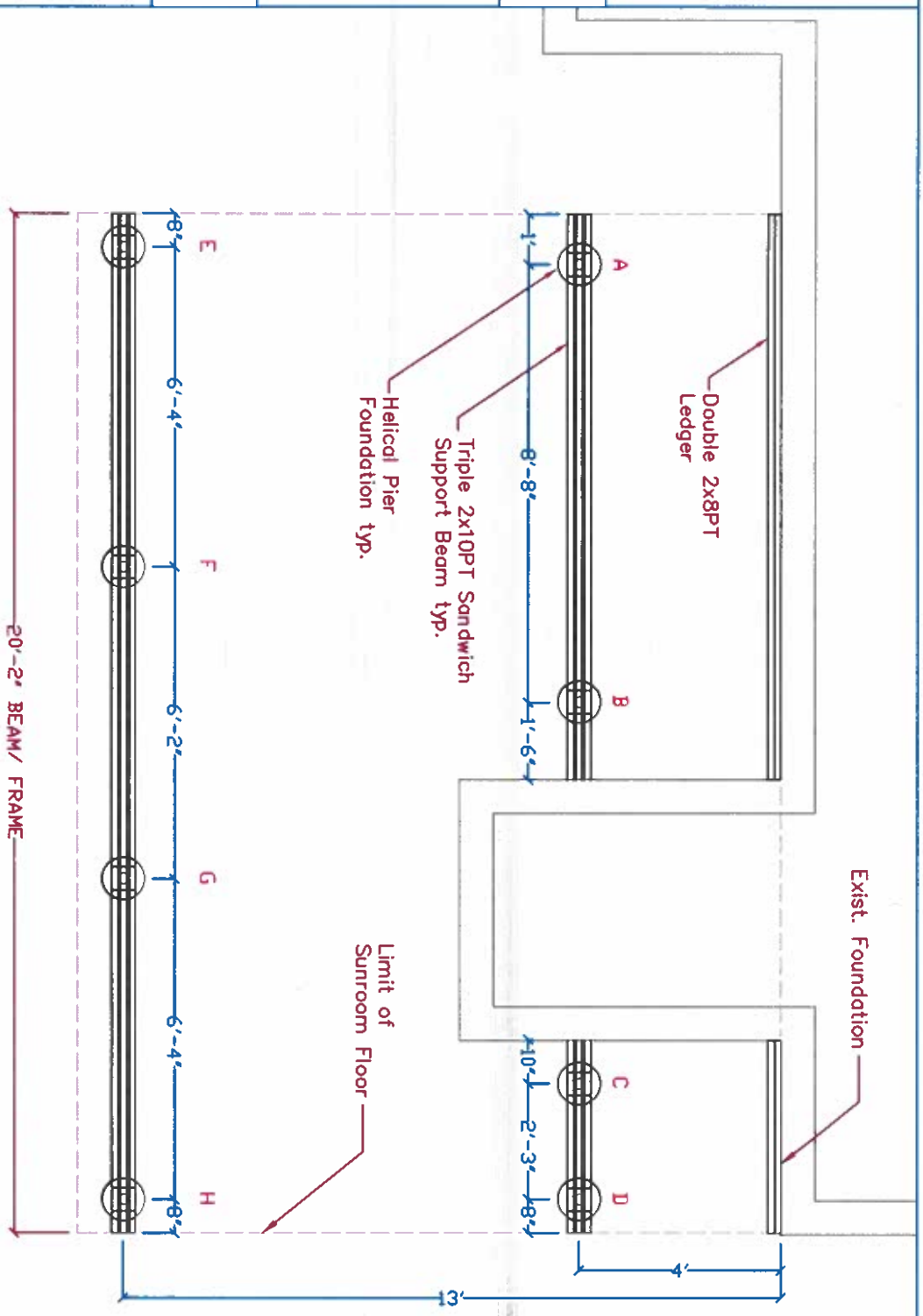
Helical screw at each pier location to be sized to adequately support a minimum imposed load value shown as per TABLE 1

Install SST H2.5A Connectors from support beams to floor joists above

Install temporary bracing to stabilize beams during installation

TABLE 1: MINIMUM LOAD BEARING OF HELICAL PIERS

PIER	MINIMUM LOAD (lbs)
A	4200#
B	6300#
C	3900#
D	2000#
E	3200#
F	4100#
G	4100#
H	3200#



Foundation Plan

All Work Shown By Others

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-16-24
Scale:	5/16"=1'-0"
Fdn	

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29 Trowbridge Street
Belmont, MA 02478

Sheet 16 of 25	12-16-24	For Construction				

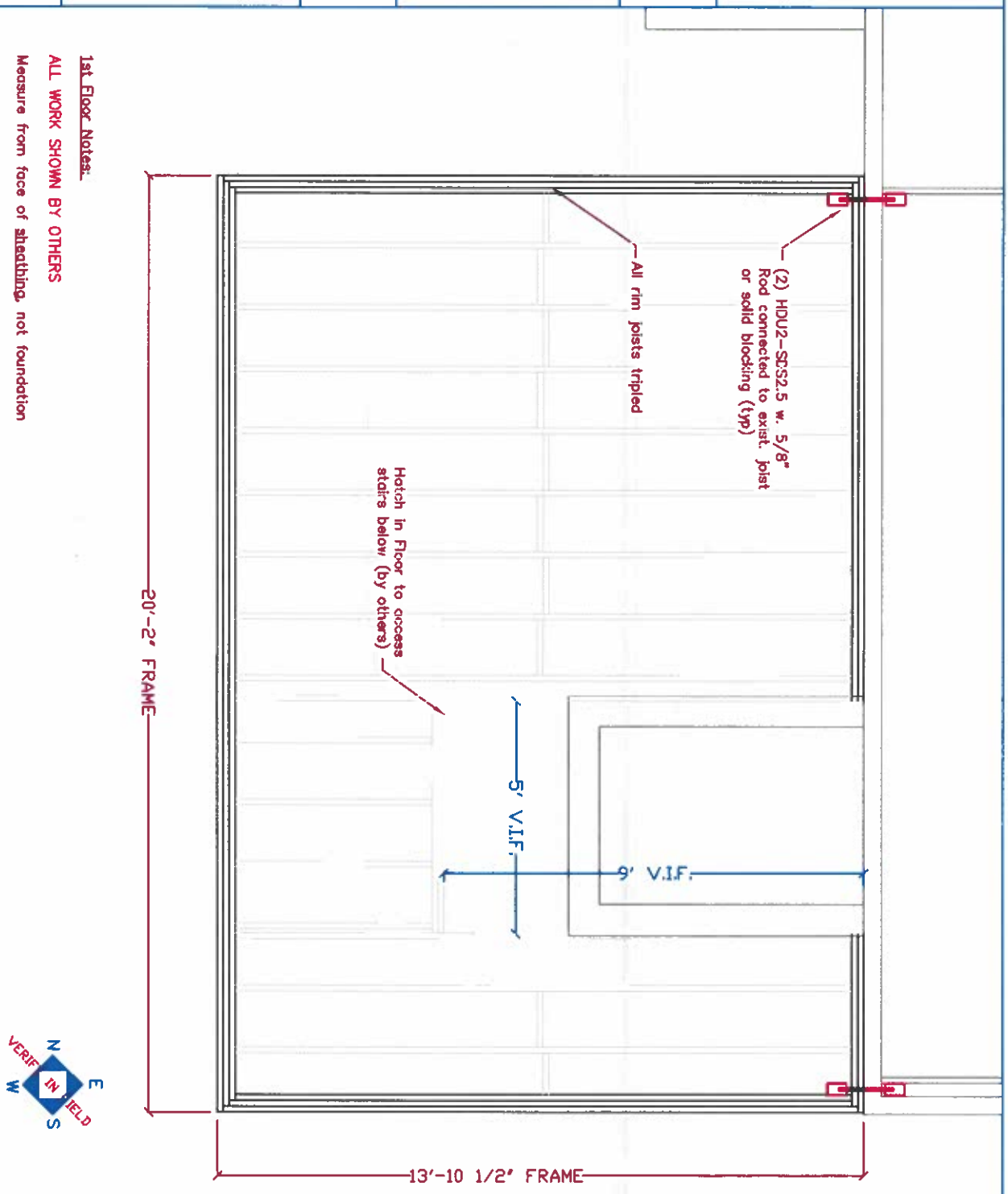
1st Floor Notes:

ALL WORK SHOWN BY OTHERS

Measure from face of sheathing, not foundation

2x10 joists at 16" OC (typ) support at each end with SST LU210Z galvanized hangers. Insulate between joists using (min) R-30 fiberglass batts, vapor barrier up. Close new floor structure with ¾" CDX plywood sub floor. Close bottom of structure with 1/2" PT plywood

Floor structure must be leveled at full span within 1/4" tolerance, squared within 1" tolerance



1st Floor Framing Plan

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-16-24
Scale:	5/16"=1'-0"

Floor1

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29 Trowbridge Street
Belmont, MA 02478

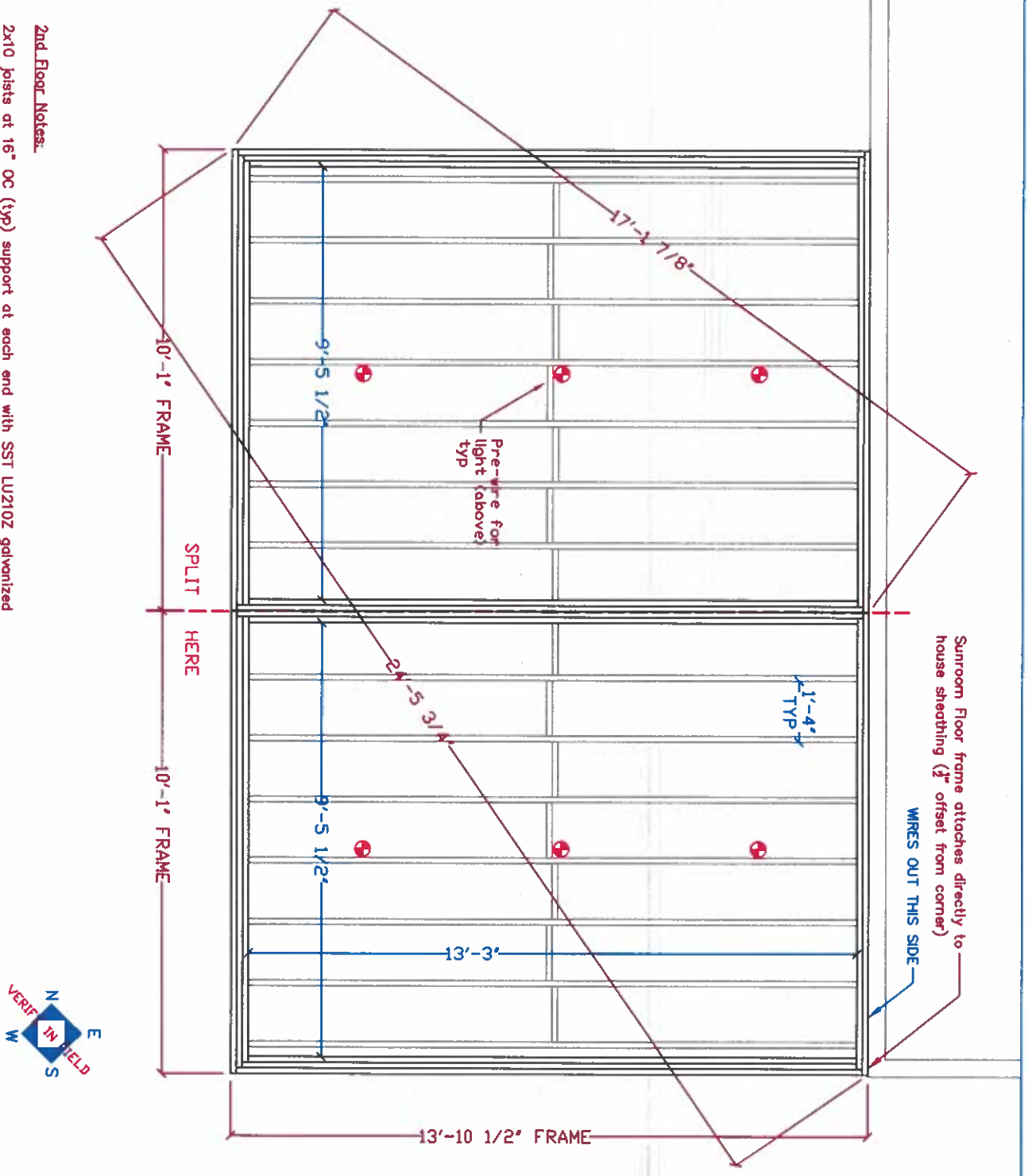
Sheet 17 of 25	12-16-24	For Construction				

2nd Floor Notes:

2x10 joists at 16" OC (typ) support at each end with SST LU210Z galvanized hangers. Perimeter joists to be 2x10 PT

NO INSULATION/BOTTOM PLYWOOD (insulation and ceiling closure by others)

NOTE: Subfloor to be screwed, not nailed, for additional access



2nd Floor Framing Plan

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-16-24
Scale:	5/16"=1'-0"
Floor2	

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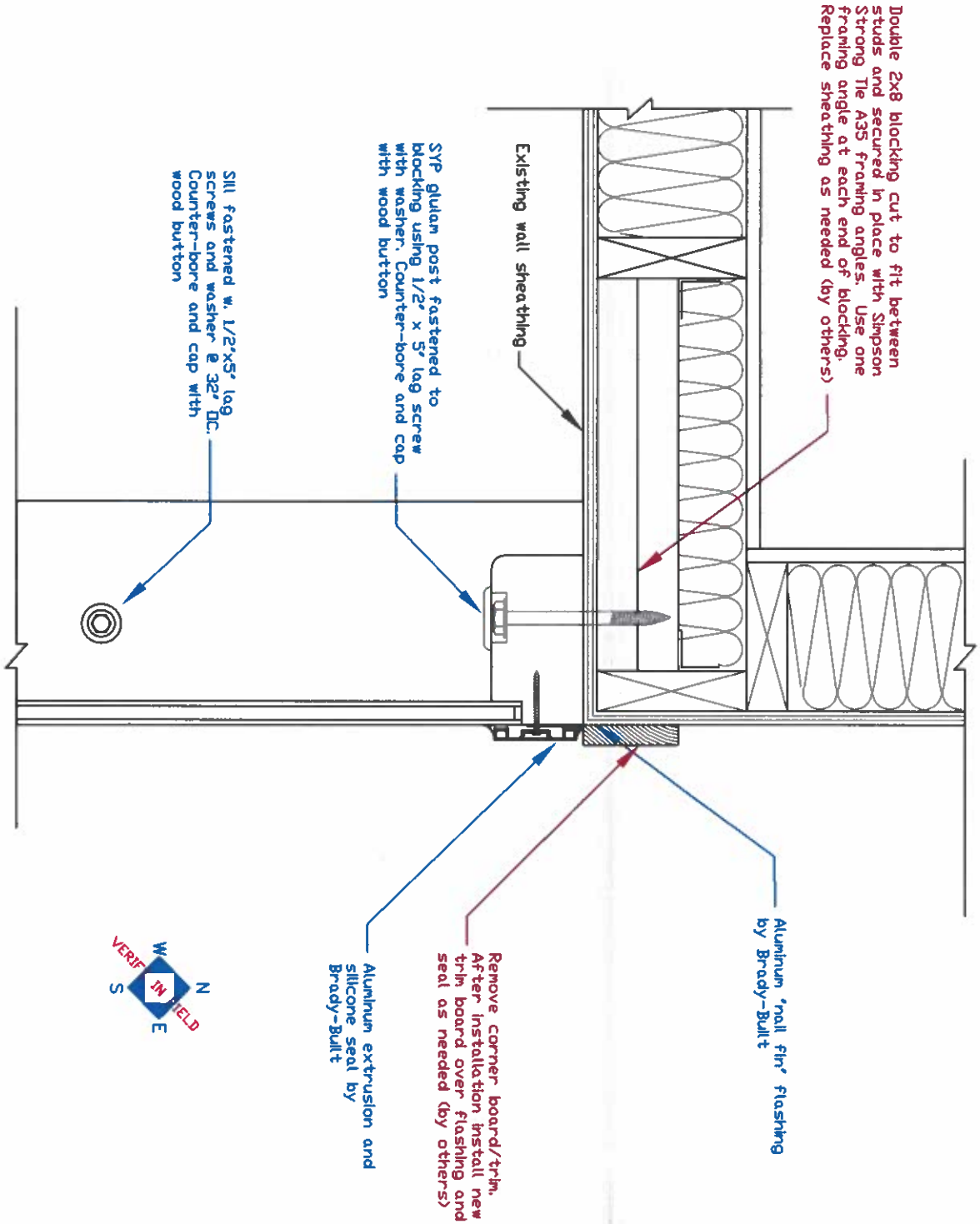
Belmont, MA 02478

Sheet 18 of 25	12-26-24	For Construction				



D-205 (Plan View)
Typical Detail at End Wall Connection

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-26-24
Scale:	NTS
D205	

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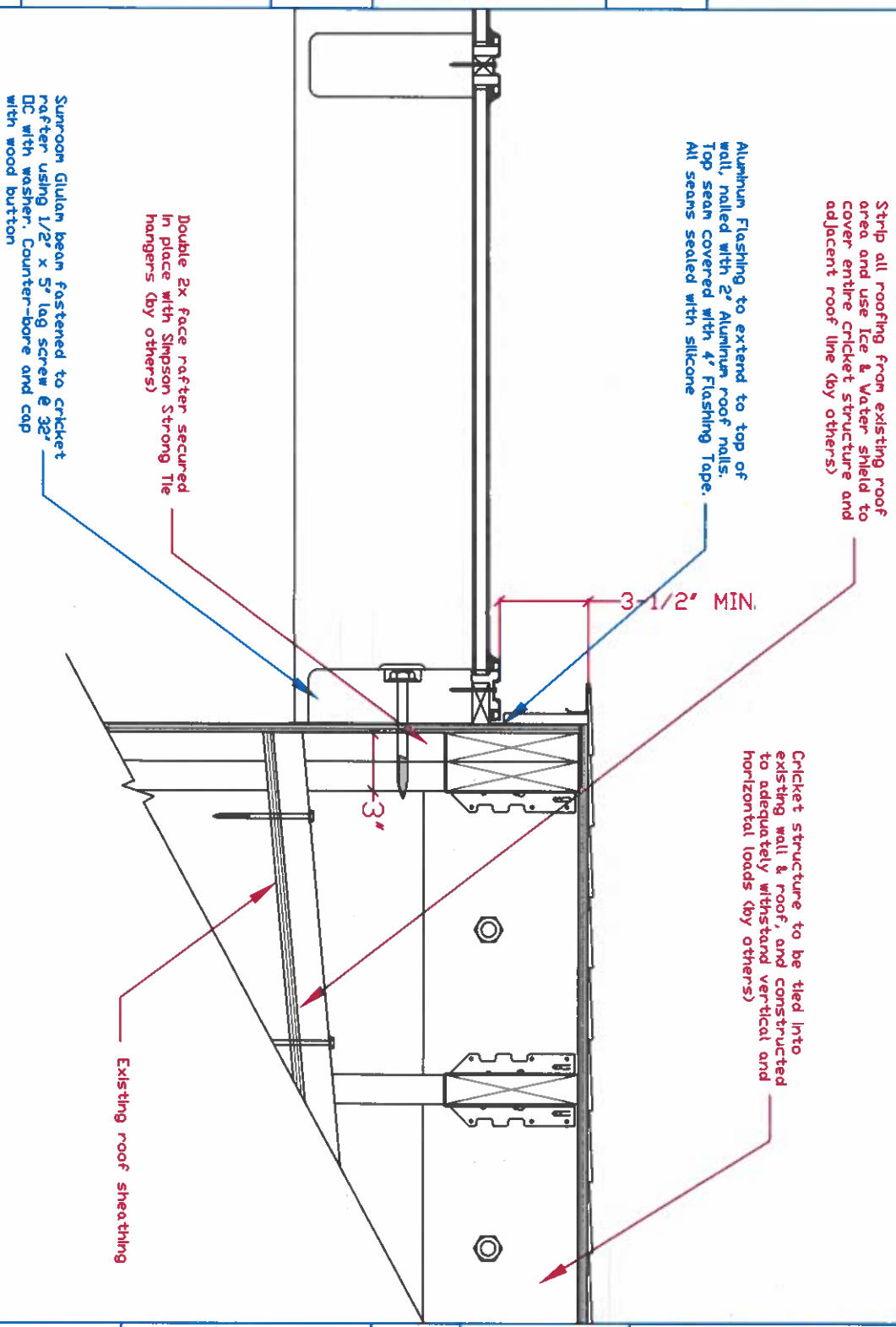
Sheet 19 of 25	12-26-24	For Construction				



D-306
Typical Detail at Roof Rafter Connection

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-26-24
Scale:	NTS
D306	

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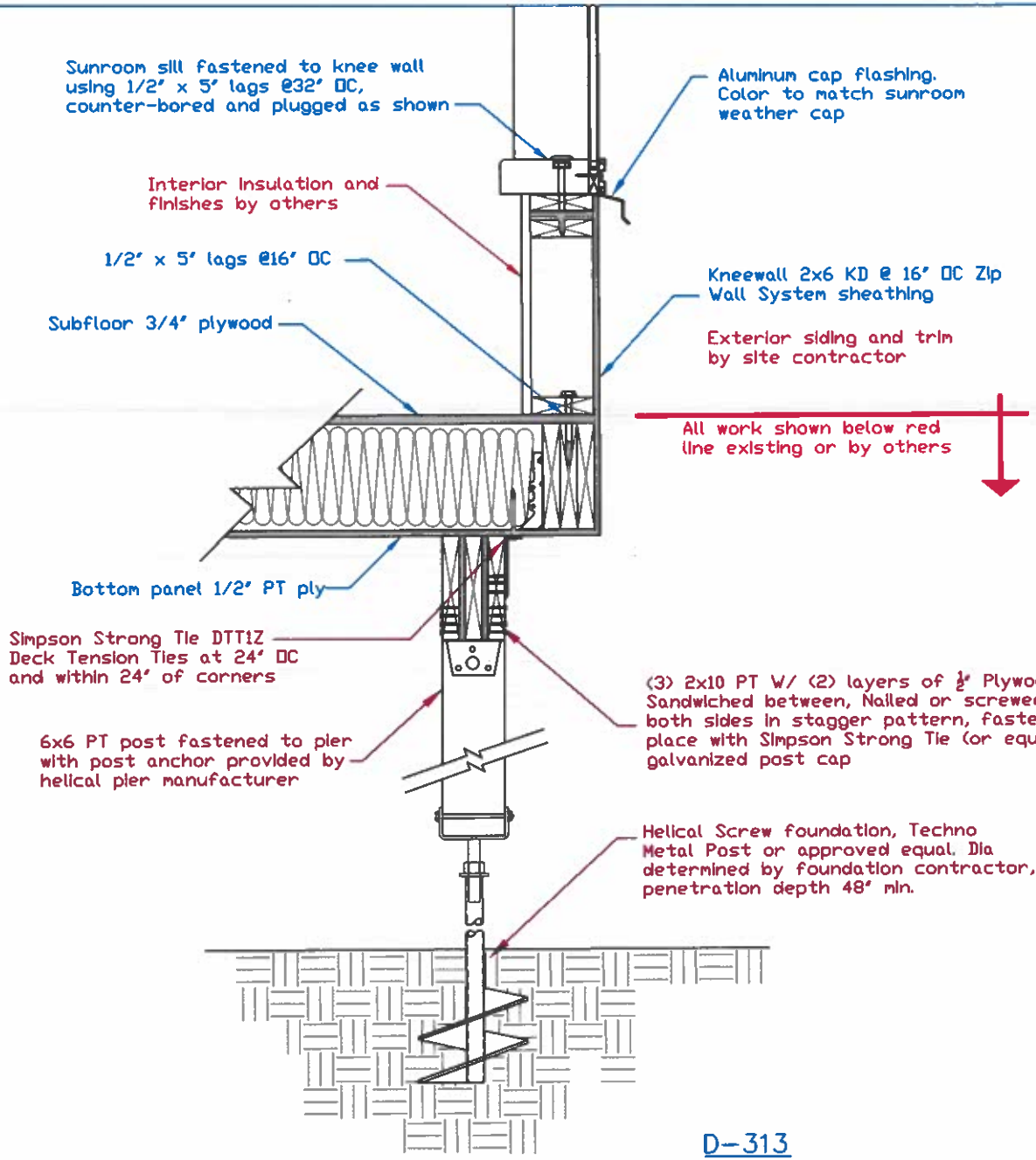

D-313
Typical Detail at Foundation/ Floor/ Sill Connection

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Drawn: MG
Date: 12-26-24
Scale: NTS
D313

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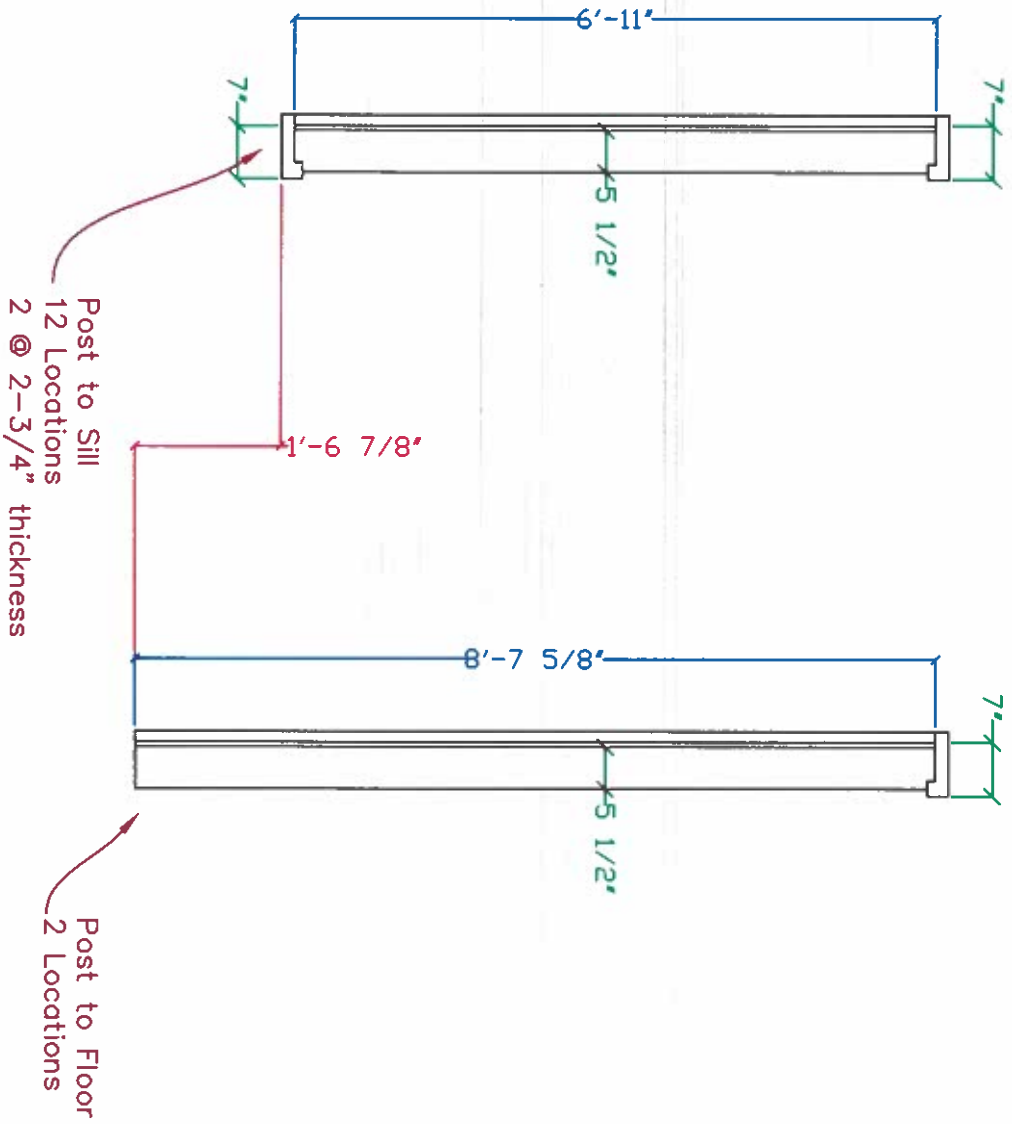
12-26-24 For Construction

Sheet 20 of 25

Sheet 21 of 25	12-13-24	Shop Drawing				



Cross Section with Frame Detail "A"
For Shop Use Only

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Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-13-24
Scale:	NTS
B.a	

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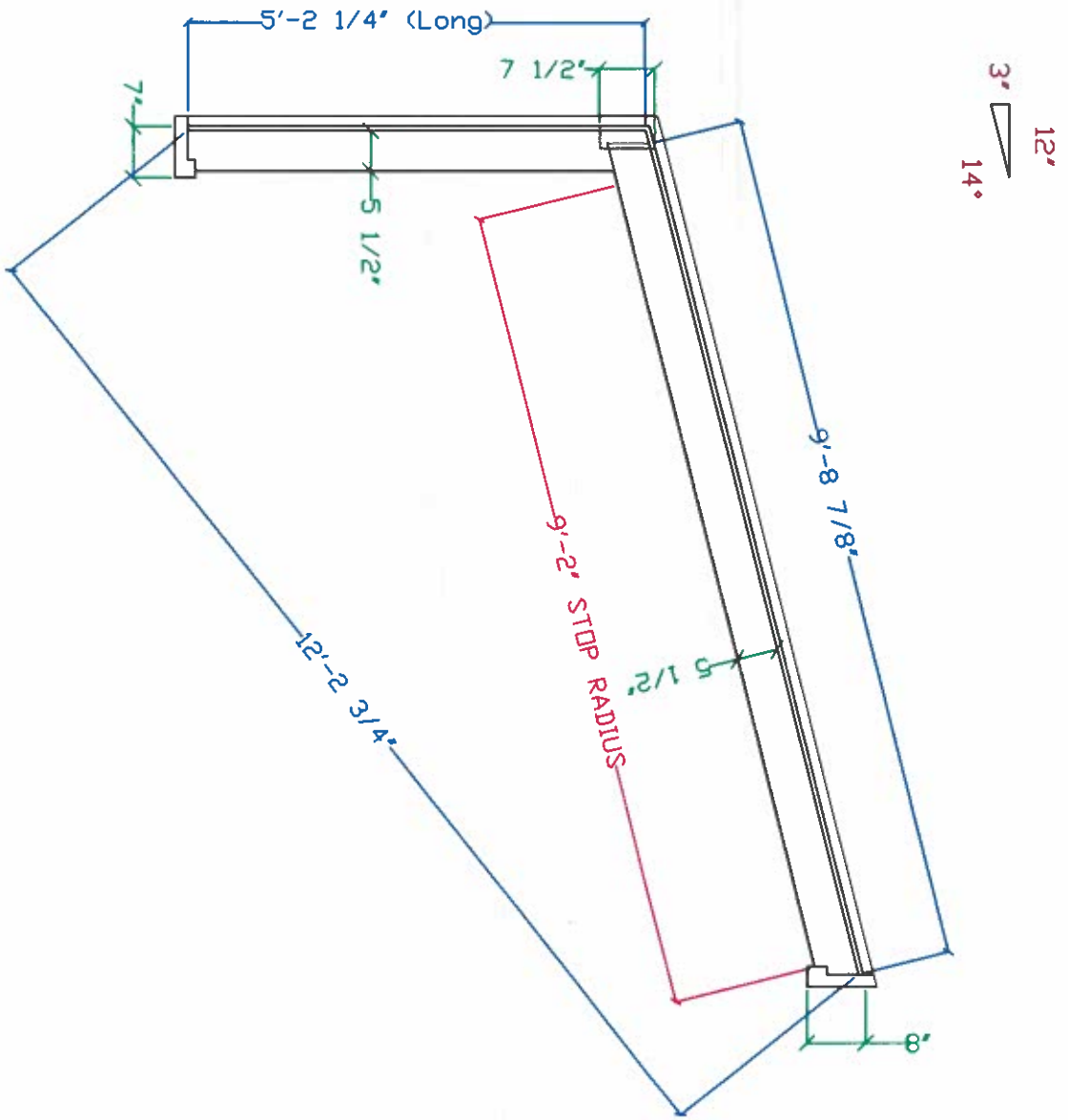
Belmont, MA 02478

Sheet 22 of 25	12-13-24	Shop Drawing				



Cross Section with Frame Detail "B"
For Shop Use Only

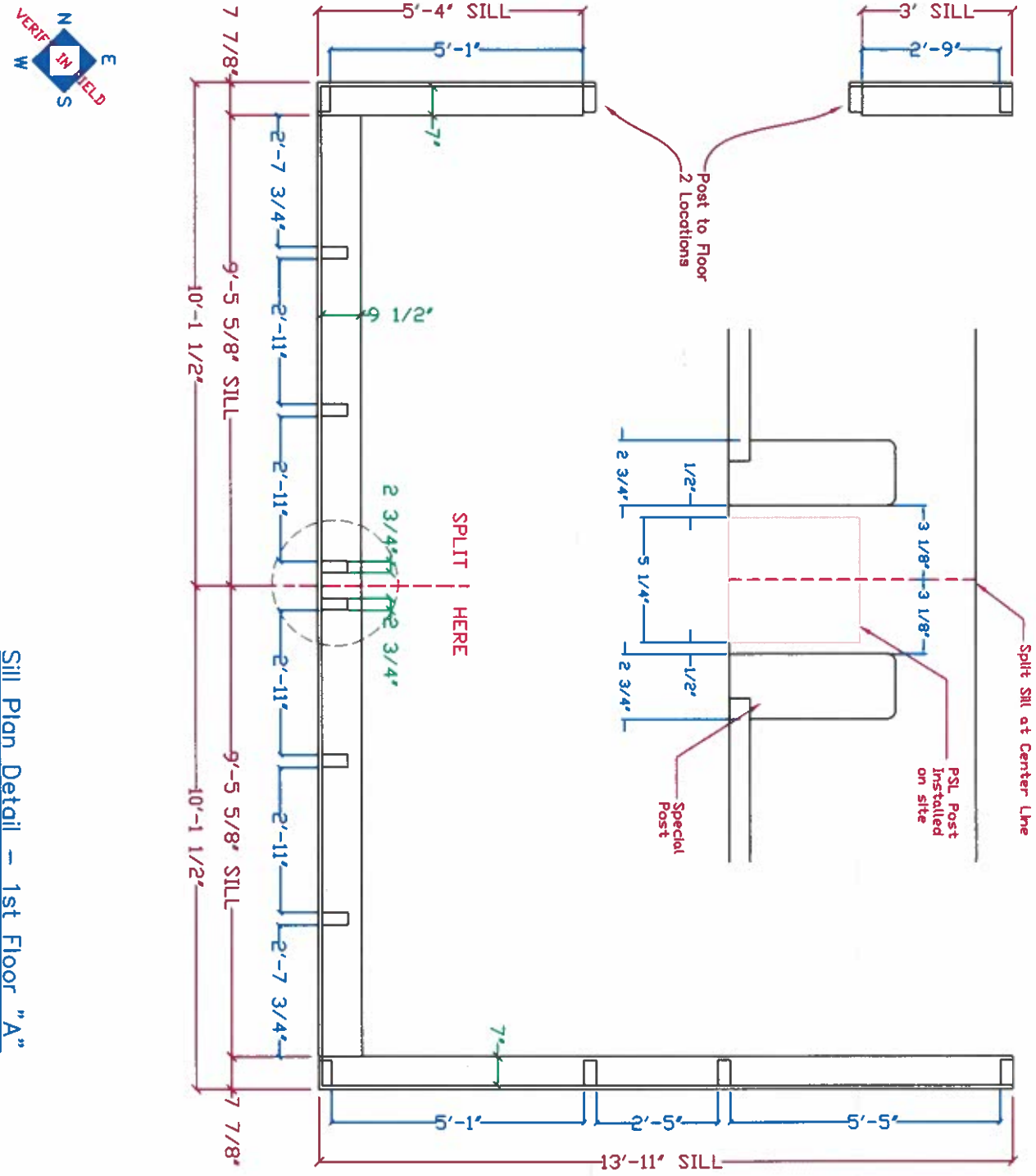
160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

Brady-Built SUNROOMS

Drawn:	MG
Date:	12-13-24
Scale:	NTS
B.b	

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

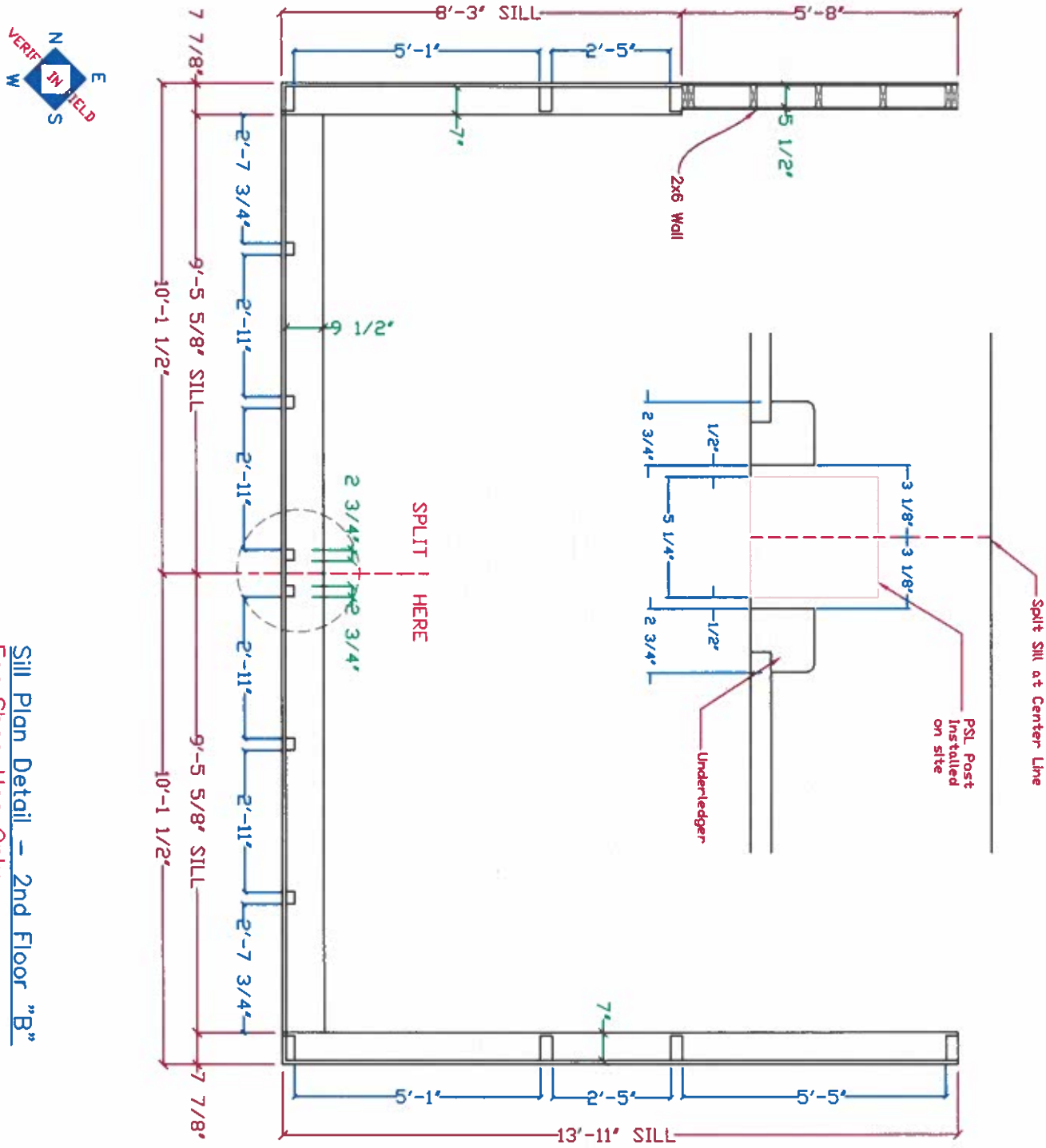
Sheet 23 of 25	12-13-24	Shop Drawing				



Sill Plan Detail – 1st Floor "A"
For Shop Use Only

160 Southbridge St. Auburn, MA 01501 Tel: 508-798-2600 Fax: 508-798-3034 www.sunroomsbybrady.com	Brady-Built SUNROOMS	Drawn:	MG	Sonia Kumar & Nate Harrison 29 Trowbridge Street Belmont, MA 02478
		Date:	12-13-24	
		Scale:	NTS	
		S.a		Confidential, Brady-Built Inc.

Sheet 24 of 25	12-13-24	Shop Drawing				



Sill Plan Detail – 2nd Floor "B"
For Shop Use Only

160 Southbridge St. Auburn, MA 01501 Tel: 508-798-2600 Fax: 508-798-3034 www.sunroomsbybrady.com	Brady-Built SUNROOMS	Drawn:	MG	Sonia Kumar & Nate Harrison 29 Trowbridge Street Belmont, MA 02478
		Date:	12-13-24	
		Scale:	NTS	
		S.b		Confidential, Brady-Built Inc.

Sheet 25 of 25	12-13-24	Shop Drawing				

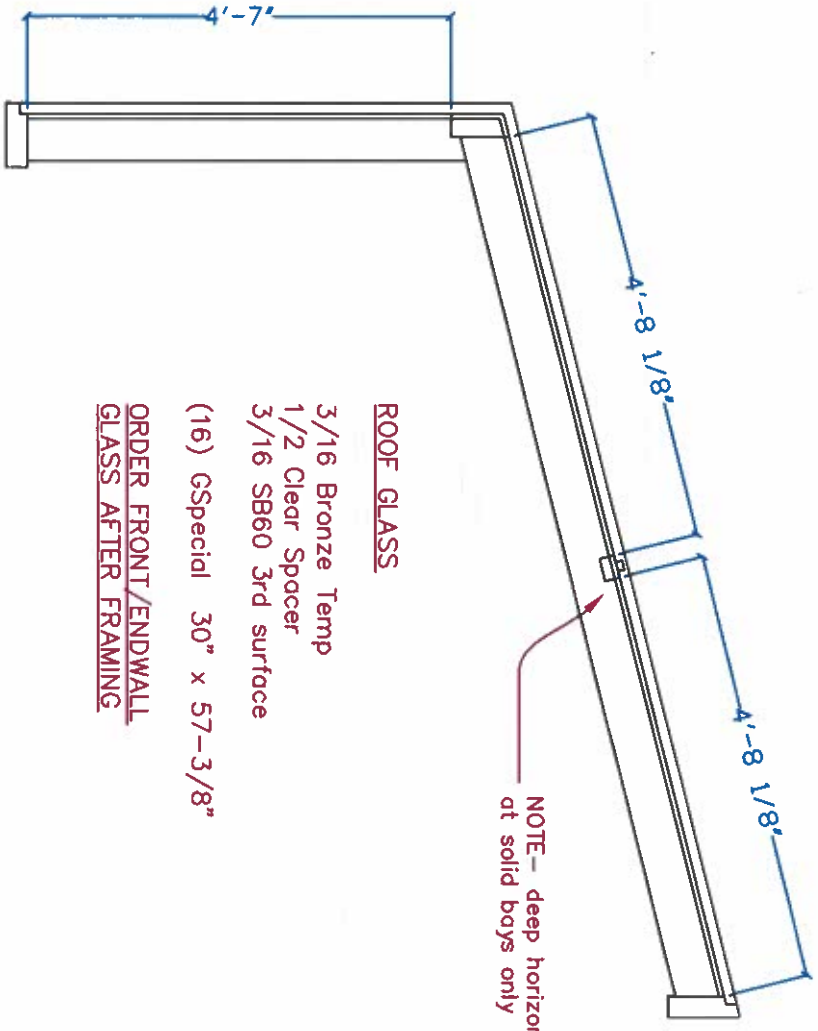
Roof Frame Spacing & Glass Info
For Shop Use Only

ORDER FRONT/ENDWALL GLASS AFTER FRAMING

(16) GSpecial 30" x 57-3/8"

ROOF GLASS

3/16 Bronze Temp
1/2 Clear Spacer
3/16 SB60 3rd surface



Dimensions shown between framing

160 Southbridge St.
Auburn, MA 01501
Tel: 508-798-2600
Fax: 508-798-3034
www.sunroomsbybrady.com

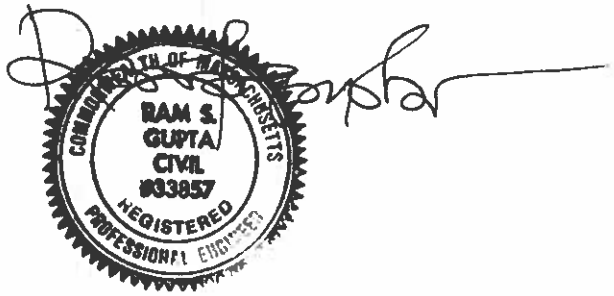
Brady-Built SUNROOMS

Drawn:	MG
Date:	12-13-24
Scale:	NTS

Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

G.1

TABLE 27
SUMMARY



Pitch	1/12, **2/12**, 3/12
Front Height	6.635
Sunroom Roof Horizontal Span	16.375
Critical Combined Uniformly Distributed Load, lbs/ft	150
Nonuniform (Triangular) Load, zero to indicated max, lbs/ft	0
Analysis Based on Optimized Pitch (in bold above)	
Lateral Wind Load on wall, lbs/ft	120
Horizontal Reaction 1 (positive to right), lbs	147.71
Horizontal Reaction 2 (positive to right), lbs	-944.48
Vertical Reaction 1 (positive upward), lbs	1606.60
Vertical Reaction 2 (positive upward), lbs	849.65
Axial Force on Wall (Vertical) Section, lbs	1606.60
Maximum Shear Force, lbs	1606.60
Maximum Bending Moment, ft-lbs	3625.20
Selected Section	
Width	**3**
Depth	**6.5**
Ratio of Combined Interactive Stresses to Permissible Stresses	
Wall Section	0.09
Roof Section	0.91
Roof Shear	0.62

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DELTA ENGINEERS, INC

TABLE #	27-A		
Pitch			
Rise	3		
Run	12		
Height, front, h ft	7.500		
Span, horizontal, L, ft	10		
Vertical load, uniform, W, lbs/ft	188	Ground Snow Load assumed:	40 PSF
Vertical load, triangular, Wsv, lbs/ft	0		
Horizontal wind load, Wlw, lbs/ft	127	Wind Load Assumed:	127 MPH
tan *theta*	0.250		
alpha	0.750		
*alpha**(1 + *alpha*)	1.313		
*alpha***2(Wlw*L)	714.375	0.125*alpha* + 0.167	0.26075
		0.625*alpha* + 0.5	0.96875
WL	1880.000		
*Wsv**2*	0		
Horizontal Reaction HA (positive to right), lbs	-253.882		
Horizontal Reaction HC (positive to right), lbs	-699.163		
		alpha + tan *theta*	1.000
		0.5 *alpha* + tan *theta*	0.625
Vertical Reaction VA (positive up), lbs	1281.431		
Vertical Reaction VC (positive up), lbs	598.569		
		alpha **3*Wlw*L**2	5357.813
		WL**2	18800
		Wsv**2*L	0
Front (Wall) Section		Top (Roof) Section	
Axial Force, lbs	1281.431	Axial Force, lbs	699.163
Shear Force, lbs		Shear Force, lbs	
At A	253.882	At B	1281.431
At B	-699.163	At C	598.569
Maximum Positive Moment, ft lbs	253.764	Maximum Positive Moment, ft lbs	857.598
Negative Moment at B, ft lbs	-1671.84	Maximum Negative Moment, ft lbs	-1671.844
		Maximum Shear Force, lbs	1281.431
		Design Bending Moment, ft lbs	1671.844

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TABLE # 27-A (continued)

Design of Structure				
Selected Section				
Width, in.	3			
Depth, in.	5.5			
Vertical (Wall) Member		Top (Roof) Member		
Axial Force, lbs	1281.431	Axial Force, lbs	699.163	
Shear Force, lbs	253.882	Shear Force, lbs	1281.431	
	-699.163	Design Moment, ft lbs	1671.844	
Front height, h,ft	7.500	Span, L, ft	10.000	
Design Values, psi				
Fb	2400			
Fv	200			
Fc (parallel)	1700			
Fc (perpendicular)	650			
E	1800000			
E min	900000			
Section Properties				
Coefficient of curvature, Cc	0.74			
Depth factor	1			
Load duration factor	1.33			
Combined factor	1			
b, in.	3			
d, in.	5.5			
		Area of cross section, in**2	16.500	
		Section modulus, in.**3	15.125	
		Moment of inertia, in.**4	41.594	
Combined Stress Analysis- Roof Member				
		Actual compression stress, fc, psi	42.373	
		Actual bending stress, fb, psi	1326.421	
		Slenderness ratio, L/d	21.818	
		FCE	1554.094	
		fc/Fc	0.025	
		fc/FCE	0.027	
		fb/Fb	0.553	
		Combined stress ratio	0.569	< 1 OK
				> 1 NG
		Maximum shear stress fv	116.494	
		fv/Fv	0.582	< 1 OK
				> 1 NG
Vertical Member Analysis				
Slenderness ratio	30.000			
FCE for column	822.000			
α = FCE/FC	0.484			
c	0.9			
α/c	0.537			
(1 + α)/2c	0.824			
cp	0.447			
Adjusted Fc	760.451			
Actual fc	77.662			
Stress ratio	0.102	< 1 OK		
		> 1 Revise section		

DELTA ENGINEERS, INC.

JOB Structural Analysis of Brady Sunroom

SHEET NO. 1. OF

CALCULATED BY DATE

CHECKED BY DATE

SCALE

1. Snow drift Load

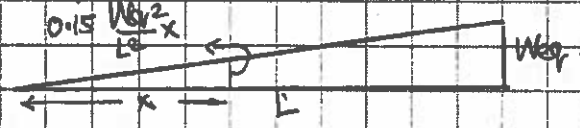
$\approx \frac{4 r_s}{30} \approx 0.15\, W_{sv}$

Load $W_{sr} = r_s\, h_d$; $r_s = 30$ pcf (optimum)

or $h_d = \frac{W_{sv}}{r_s} = \frac{W_{sr}}{30}$

Area of Load diag. $= \frac{1}{2} W_{sv}(0.15 W_{sv}) = 0.075\, W_{sv}^2$

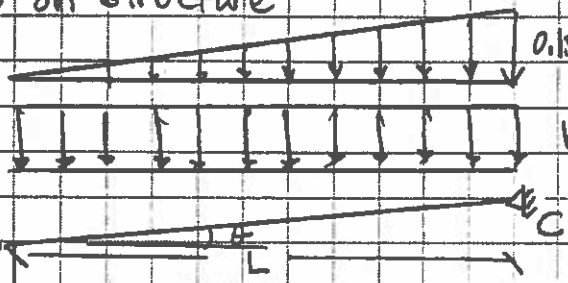
Equivalent snow drift



$\text{Area} = \frac{1}{2} W_{eq} \cdot L = 0.075\, W_{sv}^2$

$W_{eq} = 0.15 \frac{W_{sv}^2}{L}$

2. Load on structure



W → Critical Combination of vertical loads

W_{LW}

Lateral Wind Load (on wall)

3. Analysis of indeterminate structure

Treating horizontal reaction at A as a redundant

M_p - system (Loads as above)

$\Sigma F_x = 0 \quad H_c = \alpha W_{LW} L$

$\Sigma F_y = 0 \quad V_A + V_C - W.L - 0.075 W_{sv}^2$

$\Sigma M_{@C} = 0$

$V_A.L - \alpha W_{LW} L (0.5\alpha L + L\tan\theta) - \frac{WL^2}{2} - 0.075 W_{sv}^2 \left(\frac{L}{3}\right) = 0$

$V_A = \alpha W_{LW} L (0.5\alpha + \tan\theta) + 0.5 WL + 0.025 W_{sv}^2$

DELTA ENGINEERS, INC.

JOB Structural Analysis of Brady Sunrooms

SHEET NO. 2 OF

CALCULATED BY DATE

CHECKED BY DATE

SCALE

MQ-System

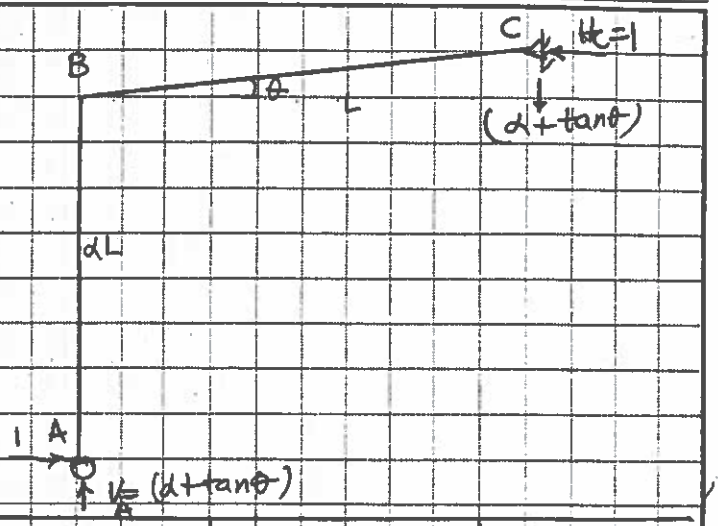
$\Sigma F_x = 0 \quad H_C = 1$

$\Sigma F_y = 0 \quad V_A - V_C = 0$

$\Sigma M_{@C} = 0 \quad V_A L - 1(\alpha L + L\tan\theta) = 0$

$V_A = (\alpha + \tan\theta)$

$V_C = -(\alpha + \tan\theta)$



Element	origin	Range	M_P	M_Q	$M_P M_Q$	M_Q^2
AB	A	$0-\alpha L$	$-W_{LW}\frac{x^2}{2}$	$-x$	$0.5 W_{LW} x^3$	x^2
BC	B	$0-L$	$V_A x - W_{LW}\alpha L(0.5L + x\tan\theta) - W\frac{x^2}{2} - 0.15\frac{W_{SV}^2}{L^2}x\left(\frac{x^2}{2}\right)\left(\frac{x}{3}\right)$	$(\alpha+\tan\theta)x - 1(\alpha L + x\tan\theta)$ or $\alpha(x-L)$		
			Let $x' = (x-L)$, $0.5\alpha^2 W_{LW} L x' - 0.5 W x x' - 0.025\frac{W_{SV}^2}{L^2}x(x+L)x'$	$\alpha x'$	$0.5\alpha^3 W_{LW} L x'^2 - 0.5\alpha W x x'^2 - 0.025\alpha\frac{W_{SV}^2}{L^2}x'^2(x)(x+L)$ or $0.5\alpha^3 W_{LW} L x'^2 - 0.5\alpha W x'^3 - 0.5\alpha W L x'^2 - 0.025\alpha\frac{W_{SV}^2}{L^3}[x'^4 + 3Lx'^3 + 2L^2x'^2]$	$\alpha^2 x'^2$
		$-L$ to 0 (in terms of x')				

$$E\Delta_{HQ} = \frac{0.5}{4}W_{LW}\left[x^4\right]_0^{\alpha} + \frac{0.5\alpha^3}{3}W_{LW}L\left[x'^3\right]_{-L}^{0} - \frac{0.5}{4}\alpha W\left[x'^2\right]_{-L}^{0} - \frac{0.5}{3}\alpha W L\left[x'^3\right]_{-L}^{0} - \frac{0.025}{5}\alpha\frac{W_{SV}^2}{L^2}\left[x'^5\right]_{-L}^{0} - \frac{(0.025)^3}{4}\alpha\frac{W_{SV}^2}{L^2}\left[x'^4\right]_{-L}^{0} - \frac{(0.025)^2}{3}\alpha\frac{W_{SV}^2}{L^2}L^2\left[x'^3\right]_{-L}^{0}$$

$$= \alpha^3 W_{LW} L^4\left[0.125\alpha + 0.167\right] - 0.04\alpha W L^4 - 0.003\alpha W_{SV}^2 L^3$$

$$EI\,\delta H_a = \left[\frac{x^3}{3}\right]_0^{\alpha L} + \frac{\alpha^2}{3}\left[x^3\right]_{-L}^{0}$$

$$\rightarrow(+) \quad \leftarrow(-) \qquad = 0.333\,\alpha^2 L^2(\alpha+1)$$

$$H_A = -\frac{\Delta H_a}{\delta H_a} = -\frac{3\alpha^2 W_{LW} L\,(0.125\alpha+0.167)}{\alpha(1+\alpha)} + \frac{0.12\,WL}{\alpha(+\alpha)} + \frac{0.009\,W_{SV}^2}{\alpha(1+\alpha)}$$

4. Reactions at supports

$\Sigma F_x = 0$

$$H_C = -\alpha W_{LW} L - H_A$$

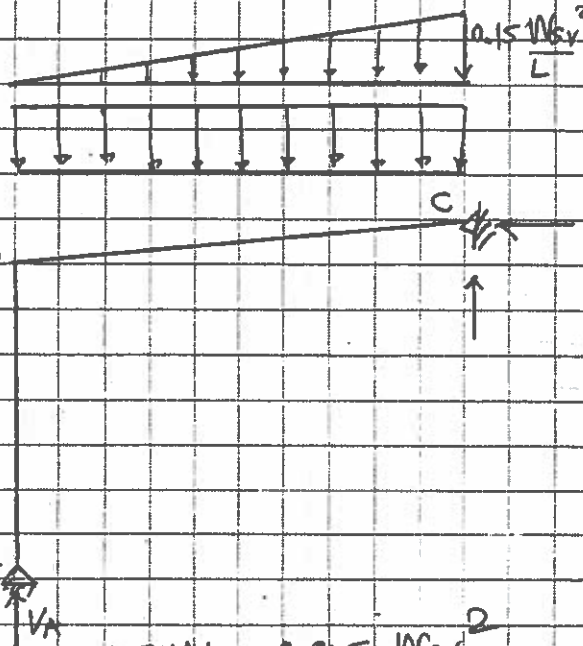
or

$$H_C = -\frac{\alpha^2 W_{LW} L}{\alpha(1+\alpha)}(0.625\alpha+0.5) - \frac{0.12\,WL}{\alpha(1+\alpha)} - \frac{0.009\,W_{SV}^2}{\alpha(1+\alpha)}$$

H_B

$\Rightarrow M@C = 0$

$$-V_A L + H_A L(\alpha+\tan\theta) + \alpha W_{LW} L(0.5\alpha L + L\tan\theta) + \frac{WL^2}{2} + 0.075 W_{SV}^2\left(\frac{L}{3}\right) = 0$$



OR

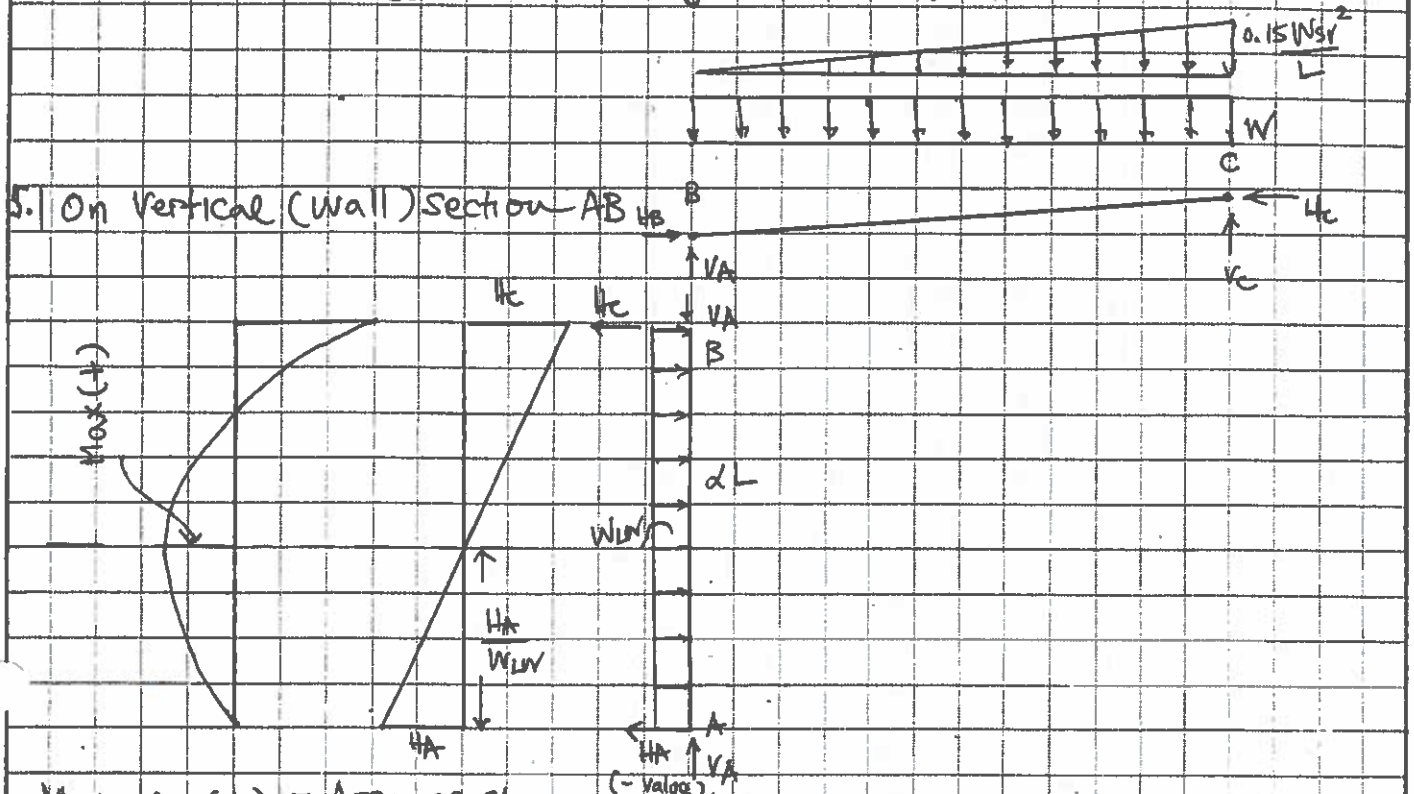
$\uparrow(+)$ $\downarrow(-)$

$$V_A = H_A(\alpha+\tan\theta) + \alpha W_{LW} L(0.5\alpha+\tan\theta) + 0.5\,WL + 0.025\,W_{SV}^2$$

$\Sigma F_y = 0$

$$V_C = -H_A(\alpha+\tan\theta) - \alpha W_{LW} L(0.5\alpha+\tan\theta) + 0.5\,WL - 0.05\,W_{SV}^2$$

5. Shear Forces and Bending Moments.



5. On Vertical (wall) section AB

Maximum (+) = Area of shear triangle

$$= \frac{1}{2} \frac{H_A^2}{W_{LW}}$$

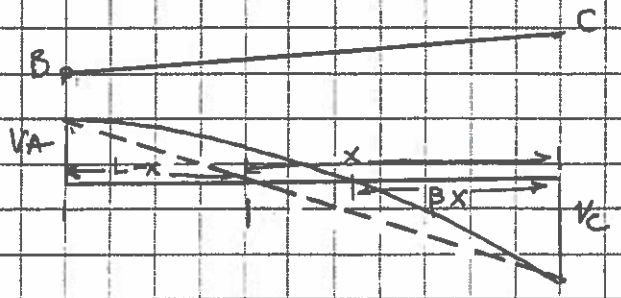
Moment at B (Maximum negative)

$M_B = -H_A(\alpha L) - \alpha^2 W_{LW} \frac{L^2}{2}$ (with H_A in positive direction)

Substituting H_A and solving

$$M_B = \frac{-0.125\alpha^3 W_{LW} L^2 - 0.12 W L^2 - 0.009 W_{sr} L^2}{(1+\alpha)}$$

5.2 Top Chord BC



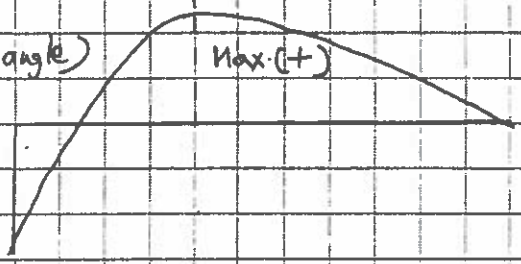
$$\frac{V_A}{(L-x)} = \frac{V_c}{x}$$

$$V_A = \frac{(L-x)\,V_c}{x}$$

$$= \left(\frac{L}{x} - 1\right) V_c$$

$$\text{or } x = \left(\frac{V_c}{V_A + V_c}\right) L$$

Maximum (+) (assuming a triangle)



(+) Max = area of shear triangle

$$= \frac{1}{2} V_c (\beta x)$$

$$= \frac{1}{2} V_c \beta \left(\frac{V_c}{V_A + V_c}\right) L$$

$$= \frac{0.5 \beta V_c^2}{(V_A + V_c)}$$

β to allow for deviation from Linear Shear distribution due to non-Linear (triangular snow) Load

$\beta = 1$ for no drift

$= 0.8$ for high snow drift

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Compliance Certificate

Project Kumar-Harrison Sunroom Addition

Energy Code:	**2023 Massachusetts Stretch Energy Code**
Location:	**Belmont, Massachusetts**
Construction Type:	**Single-family**
Project Type:	**Addition**
Project SubType:	**None**
Climate Zone:	**5 (5641 HDD)**
Permit Date:	
Permit Number:	
All Electric	**false**
Is Renewable	**false**
Has Charger	**false**
Has Battery:	**false**
Has Heat Pump:	**false**

Construction Site:
29 Trowbridge Street
Belmont, MA 02478

Owner/Agent:
Sonia Kumar & Nate Harrison
29 Trowbridge Street
Belmont, MA 02478

Designer/Contractor:
Brady Built Sunrooms
160 Southbridge Street
Auburn, MA 01501
508-798-2600

Compliance: Passes using UA trade-off

Compliance: **28.4% Better Than Code** Maximum UA: **335** Your UA: **240**

The % Better or Worse Than Code Index reflects how close to compliance the house is based on code trade-off rules.
It DOES NOT provide an estimate of energy use or cost relative to a minimum-code home.

Slab-on-grade tradeoffs are no longer considered in the UA or performance compliance path in REScheck. Each slab-on-grade assembly in the specified climate zone must meet the minimum energy code insulation R-value and depth requirements.

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
Roof: Cathedral Ceiling	282	0.0	0.0	0.599	0.024	17	1
Fixed IG Unit: Wood Frame	208			0.240	0.550	50	114
Solid Glazing Panel: Other	45			0.050	0.550	2	25
Front Wall: Wood Frame, 16" o.c.	356	21.0	0.0	0.057	0.045	5	4
Fixed IG Unit: Wood Frame	265			0.240	0.300	64	80
Left Wall: Wood Frame, 16" o.c.	215	21.0	0.0	0.057	0.045	4	3
Patio Door: Glass Door (over 50% glazing)	36			0.270	0.300	10	11
Fixed IG Unit: Wood Frame	47			0.240	0.300	11	14
Sliding Window: Vinyl Frame	55			0.280	0.300	15	17
Right Wall: Wood Frame, 16" o.c.	215	21.0	0.0	0.057	0.045	4	3

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Prop. U-Factor	Req. U-Factor	Prop. UA	Req. UA
Fixed IG Unit: Wood Frame	47			0.240	0.300	11	14
Sliding Window: Vinyl Frame	104			0.280	0.300	29	31
1st Floor: All-Wood Joist/Truss	282	30.0	0.0	0.033	0.033	9	9
2nd Floor: All-Wood Joist/Truss	282	30.0	0.0	0.033	0.033	9	9

Energy Credits

Not applicable

Compliance Statement: The proposed building design described here is consistent with the building plans, specifications, and other calculations submitted with the permit application. The proposed building has been designed to meet the 2023 Massachusetts Stretch Energy Code requirements in RES*check* Version : REScheck-Web and to comply with the mandatory requirements listed in the RES*check* Inspection Checklist.

Marco Gabrielli	M Gabrielli	12/26/24
Name - Title	Signature	Date

Project Notes:

As per R301.2.1.1.1: This addition is categorized as a CATEGORY V SUNROOM (conditioned, not thermally isolated.)

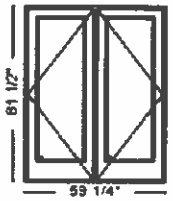
Contract - Detailed

Pella Window and Door Showroom of Boylston
280 Shrewsbury St
Boylston, MA 01505
Phone: (508) 842-1112 **Fax:**

Sales Rep Name: Ducasse, Kenneth
Sales Rep Phone: 774-535-1520
Sales Rep Fax:
Sales Rep E-Mail: kducasse@pellasales.com

Customer Information	Project/Delivery Address	Order Information
Brady Built Sunrooms 160 Southbridge St AUBURN, MA 01501 **Primary Phone:** (508) 798-2600 **Mobile Phone:** **Fax Number:** (508) 7983034 **E-Mail:** marco@bradyrooms.com **Contact Name:** **Great Plains #:** 56C0000503 **Customer Number:** 1002383151 **Customer Account:** 1000333649	**Sonia Kumar Harrison Nate 29 Trowbridge St Belmont** 160 Southbridge St **Lot #** AUBURN, MA 01501 **County:** **Owner Name:** **Owner Phone:**	**Quote Name:** Sonia Kumar Harrison Nate 29 Trowbridge St Belmont **Order Number:** 184 **Quote Number:** 18960462 **Order Type:** Non-Installed Sales **Wall Depth:** **Payment Terms:** 1% 10th/Net 11th **Tax Code:** MAEXEMPT **Cust Delivery Date:** None **Quoted Date:** 12/4/2024 **Contracted Date:** **Booked Date:** **Customer PO #:**

Line #	Location:	Attributes	Qty
10	None Assigned	Lifestyle, Double Inswing Door, Inactive / Active, 59.25 X 81.5, Without HGP, White	1



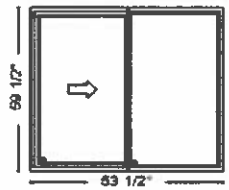
Viewed From Exterior

PK #
2180

1: 6082 Inactive / Active Double Inswing Door
Frame Size: 59 1/4 X 81 1/2
General Information: No Package, Without Hinged Glass Panel, Clad, Pine, 5 7/8", 4 9/16", Standard Sill, Black Finish Sill
Exterior Color / Finish: Standard Enduraclad, White
Interior Color / Finish: Unfinished Interior
Glass: Insulated Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Standard, Satin Brass, Multipoint Lock, No Integrated Sensor, Order Handle Set, Order Handle Set
Screen: No Screen
Performance Information: U-Factor 0.27, SHGC 0.23, VLT 0.43, CPD PEL-N-221-00473-00001, Performance Class LC, PG 50, Calculated Positive DP Rating 50, Calculated Negative DP Rating 50, STC 30, OITC 24
Grille: No Grille,
Wrapping Information: Foldout Fins, Factory Applied, No Exterior Trim, 4 9/16", 5 7/8", Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 282".

Rough Opening: 60" X 82"

Line #	Location:	Attributes	Qty
15	None Assigned	**Pella 250 Series, Sliding Window, Vent Right / Fixed, 63.5 X 59.5, White**	1



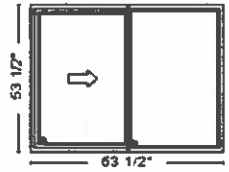
PK # 2180

Viewed From Exterior

1: Non-Standard Size Vent Right / Fixed Double Slider
Frame Size: 63 1/2 X 59 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 26.792, Clear Opening Height 55.25, Clear Opening Area 10.27957, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 246".
Venting Width: Equal

Rough Opening: 64" X 60"

Line #	Location:	Attributes	Qty
20	None Assigned	**Pella 250 Series, Sliding Window, Vent Right / Fixed, 63.5 X 53.5, White**	1



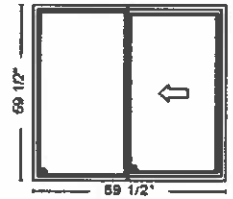
PK # 2180

Viewed From Exterior

1: Non-Standard Size Vent Right / Fixed Double Slider
Frame Size: 63 1/2 X 53 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 26.792, Clear Opening Height 49.25, Clear Opening Area 9.163236, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 234".
Venting Width: Equal

Rough Opening: 64" X 54"

Line #	Location:	Attributes	Qty
25	None Assigned	**Pella 250 Series, Sliding Window, Fixed / Vent Left, 59.5 X 59.5, White**	1



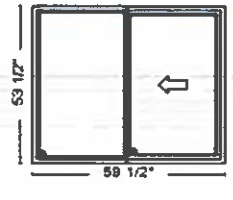
PK # 2180

Viewed From Exterior

1: 6060 Fixed / Vent Left Double Slider
Frame Size: 59 1/2 X 59 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 24.792, Clear Opening Height 55.25, Clear Opening Area 9.512208, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 238".
Venting Width: Equal

Rough Opening: 60" X 60"

Line #	Location:	Attributes	Qty
30	None Assigned	**Pella 250 Series, Sliding Window, Fixed / Vent Left, 59.5 X 53.5, White**	1



PK # 2180

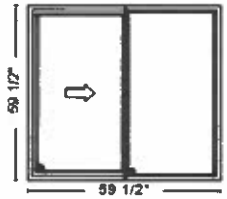
Viewed From Exterior

1: 6054 Fixed / Vent Left Double Slider
Frame Size: 59 1/2 X 53 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 24.792, Clear Opening Height 49.25, Clear Opening Area 8.479208, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 226".
Venting Width: Equal

Rough Opening: 60" X 54"

Line #	Location:	Attributes

35 None Assigned



Viewed From Exterior

PK # 2180

Pella 250 Series, Sliding Window, Vent Right / Fixed, 59.5 X 59.5, White

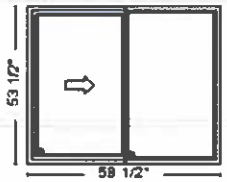
Item Price	Qty	Ext'd Price
$594.92	1	$594.92

1: 6060 Vent Right / Fixed Double Slider
Frame Size: 59 1/2 X 59 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 24.792, Clear Opening Height 55.25, Clear Opening Area 9.512208, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 238".
Venting Width: Equal

Rough Opening: 60" X 60"

Line #	Location:	Attributes

40 None Assigned



Viewed From Exterior

PK # 2180

Pella 250 Series, Sliding Window, Vent Right / Fixed, 59.5 X 53.5, White

Qty
1

1: 6054 Vent Right / Fixed Double Slider
Frame Size: 59 1/2 X 53 1/2
General Information: Standard, Vinyl, Nail Fin, No Foam Insulated, 3 1/4", 1 1/8", 2 1/8"
Exterior Color / Finish: White
Interior Color / Finish: White
Glass: Insulated Dual Tempered Low-E Advanced Low-E Insulating Glass Argon Non High Altitude
Hardware Options: Cam-Action Lock, 2 Locks, White, No Limited Opening Hardware
Screen: Half Screen, InView™
Performance Information: U-Factor 0.28, SHGC 0.29, VLT 0.55, Performance Class R, PG 30, Calculated Positive DP Rating 30, Calculated Negative DP Rating 30, STC 25, OITC 22, Clear Opening Width 24.792, Clear Opening Height 49.25, Clear Opening Area 8.479208, Egress Meets Typical 5.7 sqft (E) (United States Only)
Grille: No Grille,
Wrapping Information: No Vinyl Flat Casing, Factory Applied, Manufacturer Recommended Clearance, Perimeter Length = 226".
Venting Width: Equal

Rough Opening: 60" X 54"

GUARDIAN GLASS ANALYTICS | PERFORMANCE CALCULATOR

15.January.2020 Prepared for Marco Gabrielli
By Bean, Tim
tbean@solarseal.com

SOLAR SEAL COMPANY

Brady Built

Make-up Name	Make-up Icon	Glass 1 & Coating	Glass 2 & Coating	Visible Light			Ultraviolet	Solar Energy			Thermal Properties	
				Transmittance	Reflectance			Transmittance	Reflectance		U-Value	
Bronze/SB60		**Vitro Solarbronze® glass (IGDB)**	**Vitro Solarban® 60 (IGDB) on Vitro Clear glass USA (IGDB)**	**46**	**8**	**10**	**10**	**23**	**19**	**0.34**	**0.24**	**0.22**

Calculation Standard: NFRC 2010

Bronze/SB60

Outdoors

GLASS 1	Vitro Solarbronze® glass (IGDB) Thickness = 3/16" (5mm)	#1 ---- #2 ----
GAP 1	10% Air, 90% Argon, 1/2" (12.7mm)	
GLASS 2	Vitro Clear glass USA (IGDB) Thickness = 3/16" (5mm)	#3 Vitro Solarban® 60 (IGDB) #4 ----

Total Unit (Nominal) = 7/8 in

Slope = 90°

Estimated Nominal Glazing Weight: 4.73 lb/ft²

Indoors

Important Notes

Calculations and terms in this report are based on NFRC 2010. The performance values shown above represent nominal values for the center of glass with no spacer system or framing.

Laminated products:
It is not guaranteed that modeled laminated configurations will be compliant with relevant laminated safety regulations unless specifically declared for Guardian products. It is the user's sole responsibility to assess if the final laminated product should be certified according to relevant standards and ensure compliance with laminated safety regulations.

Additional consequences for laminated glass with coating facing interlayer (due to contact between coating and interlayer) may include (not limited to): significant decrease of safety performance for some coating and interlayer combinations; loss of thermal insulation performance of surface facing the interlayer; noticeable color change; other performance deterioration.

Non-specular products (translucent or diffuse):
The performance measurement for non-specular (translucent or diffuse) materials such as translucent interlayers or acid etched glass surface, or surface with ceramic frit is limited by the current experimental technologies. Since measurements capture physically only a part of the resulting radiation, calculated performance results provided herein and based on such measurements are not compliant with any standard (including EN 410) and may only be used as a general reference. Actual values may vary significantly based upon exact fabrication process, as well as type, thickness and color of used non-specular material.

Please note that the Thermal Stress Guideline is only a general guide to the thermal safety of a glazing, and it is not a replacement for detailed thermal stress analysis.

Explanation of Terms

Visible Light Transmittance (Tv, %) is the percentage of incident light in the wavelength range of 380 nm to 780 nm that is

transmitted by the glass.

Ultraviolet (UV) Transmittance (Tuv, %) is the percentage of the incident solar radiation transmitted by the glazing in the 300 nm to 380 nm range.

Solar Energy Direct Transmittance (Te, %) is the percentage of incident solar energy in the wavelength range of 300 nm to 2500 nm that is directly transmitted by the glass.

Visible Light Reflectance Outdoors/Indoor (Rv out/in, %) is the percentage of incident visible light directly reflected by the glass.

Solar Direct Reflectance Outdoors/Indoors (Re out/in, %) is the percentage of incident solar energy directly reflected by the glass.

Solar Energy Absorptance (Ae, %) is the percentage of the sun's energy that is absorbed by glass.

U-Value is the glazing parameter that characterizes the heat transfer through the central part of the glazing, i.e. without edge effects, and expresses the steady-state density of heat transfer rate per temperature difference between the environmental temperatures on each side. US Standard units are Btu/hr·ft²·F and SI / Metric units are W/m2 K.

Relative Heat Gain (RHG) is the total net heat gain to the indoors due to both the air-to-air thermal conductance and the solar heat gain. US Standard units are Btu/hr.ft² and SI / Metric units are W/m².

Shading Coefficient (sc) is Solar Factor divided by 0.87. It is a measure of the solar heat gain referenced to 3 mm clear glass which has the designated value of 1.00.

Solar Heat Gain Coefficient (SHGC) is the sum of the solar direct transmittance and the secondary heat transfer factor of the glazing towards the inside, the latter resulting from heat transfer by convection and longwave IR-radiation of that part of the incident solar radiation which has been absorbed by the glazing.

Light-to-Solar Gain (LSG) is the ratio of visible light gain to solar gain. LSG = (Visible Transmittance) / (SHGC)

Color Rendering Index in transmission, D65 (R_a) is the change in color of an object as a result of the light being transmitted by the glass.

Weighted Sound Reduction Index (Rw) is a single-number quantity which characterizes the airborne sound insulation of a material or building element over a range of frequencies.

Sound Transmission Class (STC) is a single-number quantity which characterizes the airborne sound insulation of a material or building element over a range of frequencies.

Disclaimer

This performance analysis is provided for the limited purpose of assisting the user in evaluating the performance of the glass products identified on this report.

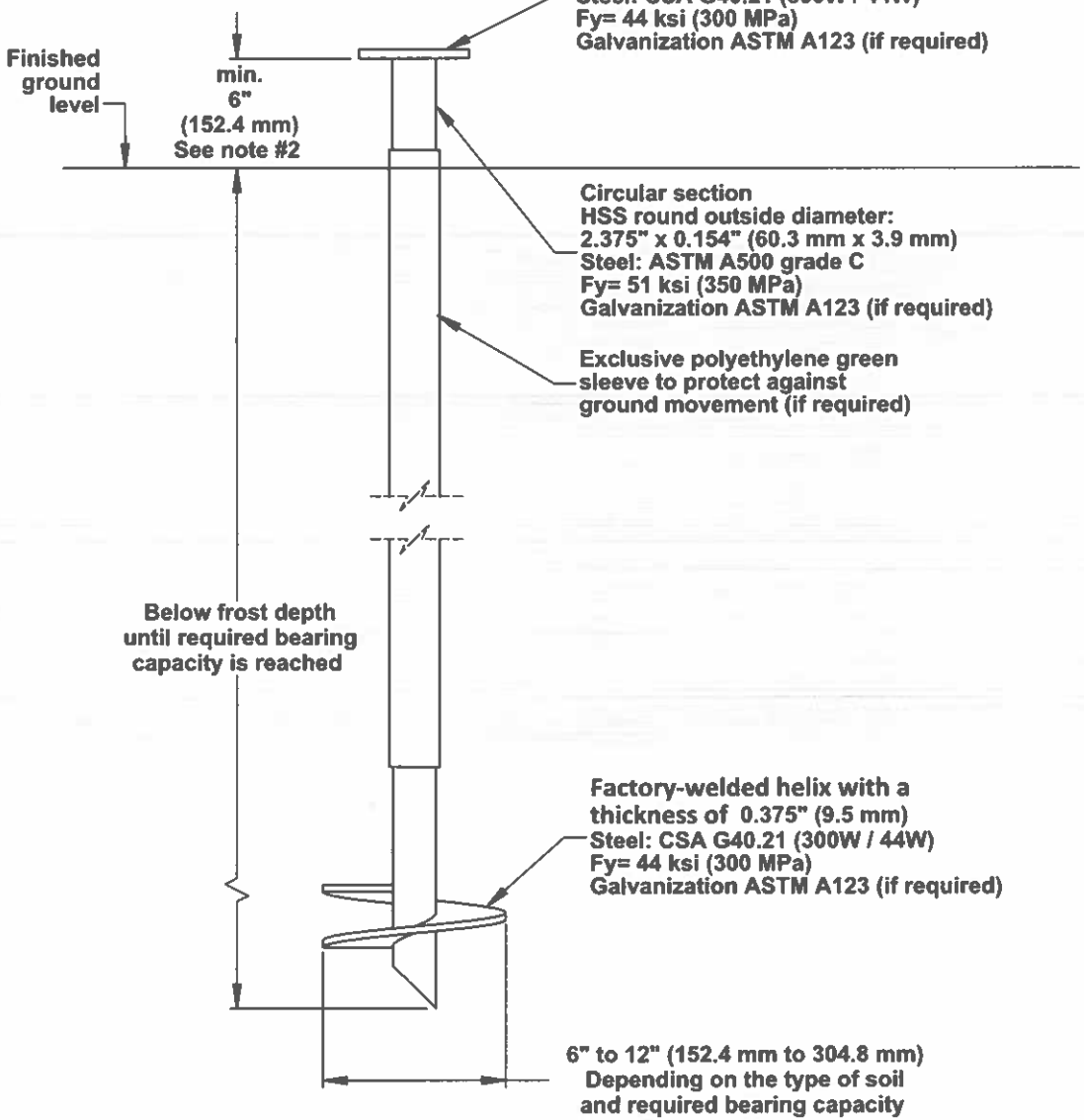
Spectral data for products manufactured by Guardian reflect nominal values derived from typical production samples or CE Initial Type Testing and subject to variations due to manufacturing and calculation tolerances. Spectral data for products not manufactured by Guardian were derived from the LBNL International Glazing Database and have not been independently verified by Guardian. Guardian recommends a full-size mock-up be approved.

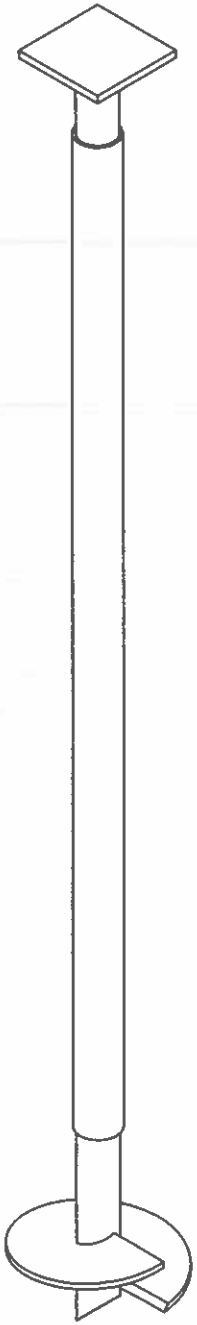
The values provided herein are generated according to established engineering practices and applicable calculation standards. Many factors may affect glazing characteristics, including glass size, building orientation, shading, wind speed, type of installation, production process and others. The applicability and results of the analysis are directly related to user inputs and any changes in actual conditions can have a significant effect on the results. It is the responsibility of the users of the analysis to ensure that the intended application is appropriate and complies with all relevant laws, regulations, standards, codes of practices, processing guidelines and other requirements. Guardian makes no guarantee that any glazing modeled herein is available from Guardian or any other manufacturer. The user has the responsibility to check with the manufacturer regarding availability of any glass type or make-up.

While Guardian has made a good faith effort to verify the reliability of the tools used for this analysis, they may contain unknown programming errors that could result in inaccurate results. The user assumes all risk relating to the results provided and is solely responsible for selection of appropriate products for user's application. Guardian makes no express or implied warranty of any kind with respect to the tools used by Guardian and this analysis. There are no warranties of merchantability, non-infringement or fitness for a particular purpose with respect to the tools used by Guardian and this analysis and no warranty shall be implied by operation of law or otherwise. The only warranties applicable to Guardian products are those separately provided in writing for each product. In no event shall Guardian be liable for direct, indirect, special, consequential or incidental damages of any kind relating to or resulting from

use of Guardian tools and analyses.

Program Version: 4.1.0.8578
Database Version: 20200115





NOTES:

1. The designer must refer to the Techno Metal Post selection table regarding the bearing capacity of the piles.

2. The minimum height shown on the plan is appropriate for aboveground applications only.

techno Metal Post.

1700, Setlakwe Street
Thetford Mines (QC) G6G 8B2
CANADA
www.technometalpost.com

REVISIONS

DATE	DESCRIPTION	REV.
2013/06/27	Revised of load capacity	1
2020/10/22	Revised entire drawing.	2

Approved by: Manufactured by
Techno Pieux / Techno Metal Post

1700, Setlakwe
Thetford Mines (Québec)
G6G 8B2

May 16, 2014

Drawing:
Techno Metal Post single helix Model P2

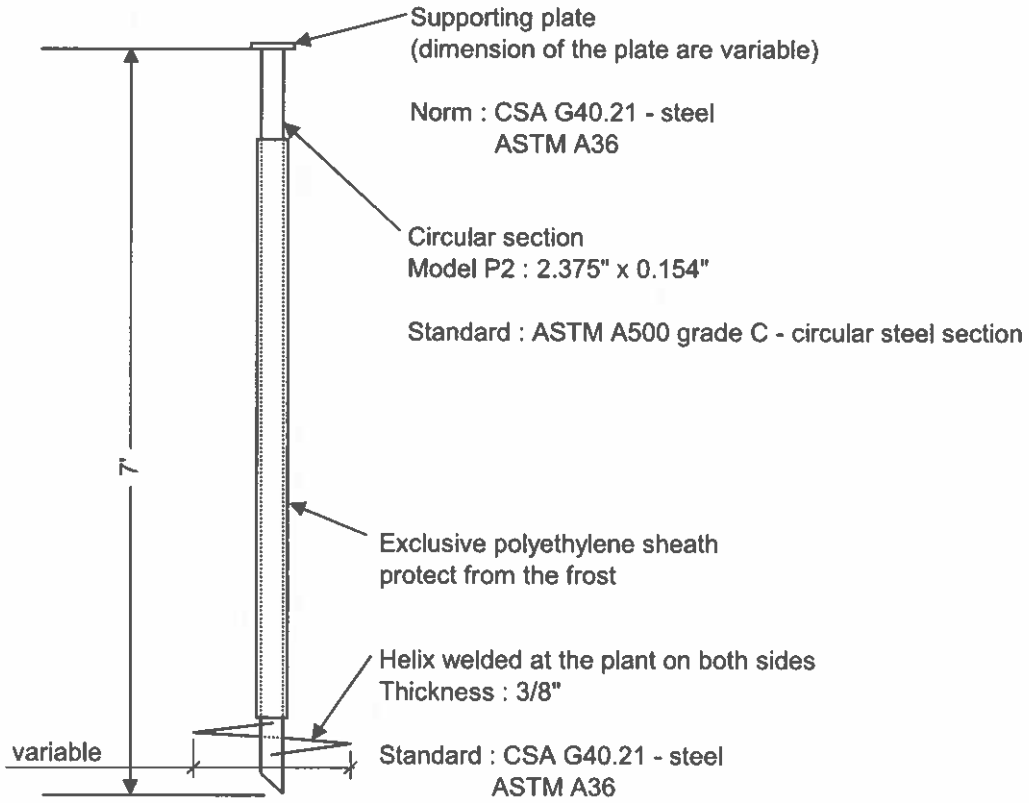
Approved by:

Date:	Scale:
2011/10/31	N/A
Drawing no:	**Page number:**
P2-Rev2-A-USA	SHEET 1 OF 1

techno Metal Post

SHOP DRAWING

MODEL - P2



Approved by : Manufactured by :
Techno Pieux / Techno Metal Post

1700, Setlakwe
Thetford Mines (Québec)
G6G 8B2

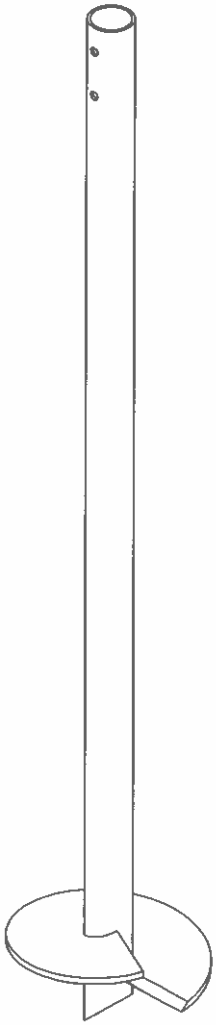
May 16, 2014

techno Metal Post

HELICAL PILES
MODEL P2

Shaft

Wall Thickness	0.154" (3.9 mm)
Round HSS Outside Diameter	2.4" (60.3 mm)
Available Standard Lengths	7'-0" (2.1 m) / 10'-6" (3.2 m)



Load Specifications

Max. Installation Torque	2,242 ft-lb (3,037 N-m)
Max. Allowable Capacity*	11 kips (49 kN)

** Higher load ratings could be considered with site-specific engineering.*

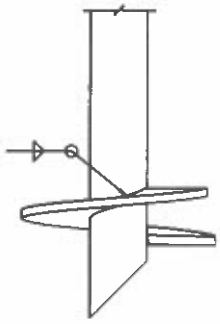
Technical Specifications

Commonly Used Structure	Medium Residential Light Commercial
Code Evaluation	Listed per IAPMO-UES (ER-481)
Standard Steel	ASTM A500 Grade C Fy=51 ksi min (350 MPa)
Black Steel Design Life	50 years per AC358
Coating	Galvanized or Black Steel
Galvanization Compliance	ASTM A123/A123M
Additional Corrosion Protection	Cathodic Protection System available

Helix

Pitch	3" (76.2 mm) / 5" (127 mm)
Thickness	0.375" (9.5 mm)
Standard Steel	CSA G40.21-44W Fy=44 ksi min (300 MPa)
Coating	Galvanized or Black Steel
Multiple Welded Helix	Available
Helix Size*	6" (152 mm) to 16" (406 mm)

** Other sizes available upon request.*



techno Metal Post

HELICAL PILES
MODEL P2

Sleeve (Available)

Function Utility	Protection against soil movements
Wall Thickness	1/16" (1.6 mm)
Round HSS Outside Diameter	± 2.625" (± 66.7 mm)
Length	± 66" (± 1.67 m)
Weight	± 0.7 lb (± 0.32 kg)
Material	HDPE
Color	Green

Outside Couplings

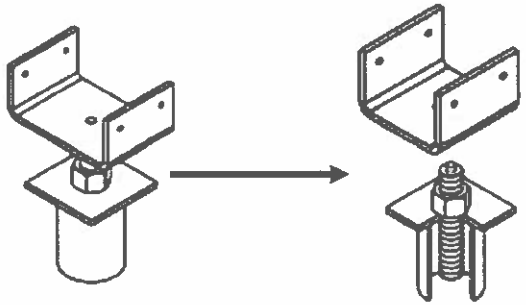
	Regular
Assembly	Welded
Wall Thickness	0.203" (5 mm)
Round HSS Outside Diameter	2.875" (73 mm)
Standard Steel	ASTM A500 Grade C Fy=51 ksi min (350 MPa)
Length*	1.25" (31.8 mm)

** Length of outside coupling welded on-site.*

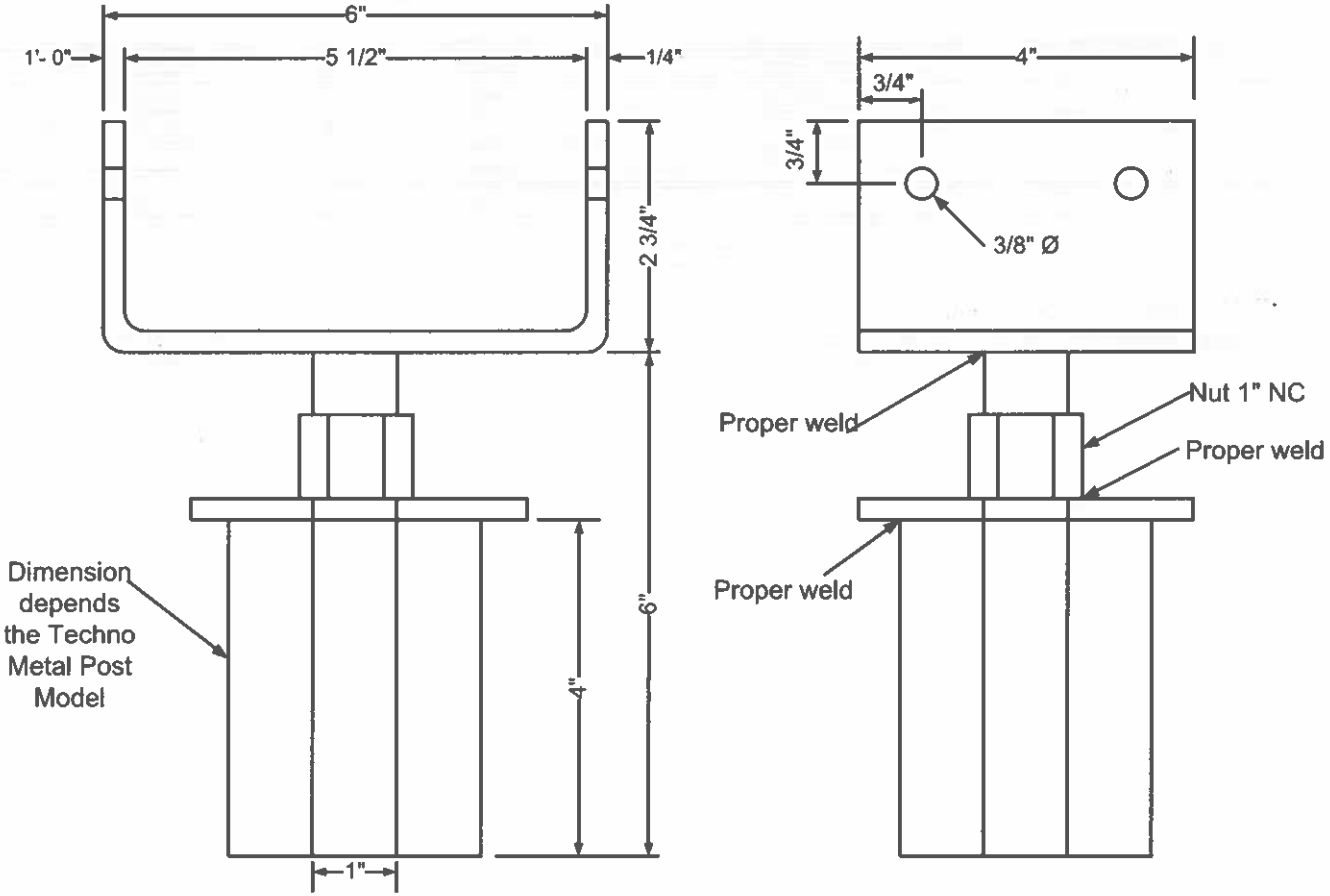
Approved by : Manufactured by
Techno Pieux / Techno Metal Post

1700, Setlakwe
Thetford Mines (Québec)
G6G 8B2

May 16, 2014



Maximum Working Tension Load
4 800 lb



Note : Support system can be attached to piles in the following ways : welded or bolted.

techno Metal Post

Techno Metal Post Connecticut
482 Spring St
Naugatuck, CT 06770
Phone: (203) 723-9904
Fax: (203) 723-0429

Client :

Client Address :

Project :

Date : May 6, 2014

Scale : N/A

Drawing name:
Shop Drawing
Adjustable U Shape Plate for P2

Drawn by : M.D.

Verified by : J.C.

Approved by : Manufactured by
Techno Pieux / Techno Metal Post

1700, Setlakwe
Thetford Mines (Québec)
G6G 8B2

May 16, 2014

File : 14027-003a

Drawing no : 001

techno Metal Post

Model No.	Project Type	Allowable working load		Maximum bearing capacity in shear *		Bending Moment	
		(lbs)	(kN)	(lbs)	(kN)	(ft.lbs)	(kN.m)
P1- ? (Outside Ø 48 mm)	**Light Residential** (deck, patio, etc.)	6800	30,2	0 to 300	0 to 1	1328	1,8
P2-? (Outside Ø 60 mm)	**Medium Residential and Light Commercial** (carport, sunrooms, single storey house addition, etc.)	9600	42,7	0 to 500	0 to 2	2213	3,0
P3-? (Outside Ø 89 mm)	**Heavy Residential, Light to Medium Commercial and Industrial** (chalet, mobile, two storey house addition, shelter equipment, supporting column etc.)	23800	105,9	1200 to 2300	5 to 10	7892	10,7
P4-? (Outside Ø 101 mm)	**Heavy Residential, Light to Medium Commercial and Industrial** (chalet, mobile, two storey house addition, shelter equipment, supporting column etc.)	29000	129	1400 to 2700	6 to 12	10400	14,1
P5-? (Outside Ø 141,3 mm)	**Heavy Residential, Light to Heavy Commercial and Industrial** (chalet, mobile, two storey house addition, shelter equipment, supporting column etc.)	49900	222	1800 to 4500	8 to 20	26921	36,5
P6-? (Outside Ø 168 mm)	**Heavy Residential, Light to Heavy Commercial and Industrial** (chalet, mobile, two storey house addition, shelter equipment, supporting column etc.)	66400	295,3	2300 to 6800	10 to 30	38796	52,6

Note : - For more information contact the engineer of Techno Metal Post Inc.

- The maximum compressive charge include a security factor superior or equal to 2.

* The bearing capacity depends on the density of soil medium

Caution! The structural capacity in service (ELS) is different from the bearing capacity of the pile in the ground. Thus, generally the bearing capacity of the ground and the power of the equipment of installation will be the limit of the bearing capacity of Techno Metal Post.