SITE PLAN REVIEW

6/14/21 Plan Commission Meeting

Ivee's At Main / Dave Iverson

Village Planner Report **Germantown, Wisconsin**

Summary

Timothy Wiberg, architect and agent for David Iverson, property owner, is seeking approval for site development and building plans to replace and extend the existing patio canopy for the existing restaurant located at W157 N11618 Fond du Lac Avenue.

Property Location: W157 N11618 Fond du Lac Avenue

Property Owners/ Agent:

Timothy Wiberg Wiberg Architecture 1865 Kelly Lane Brookfield, WI	David Iverson Ivee's At Main W157 N11618 FDL Ave Germantown, WI 53022

Current Zoning: B-3: General Business

Adjacent Land Uses		Zoning
North	Residential	B-3
South	Commercial	B-3
East	Commercial	B-3
West	Commercial	B-3

Proposal

Timothy Wiberg, architect and agent for David Iverson, property owner, is seeking approval for site development and building plans to replace and extend the existing patio canopy for the existing restaurant located at W157 N11618 Fond du Lac Avenue.

As described and shown in the attached the following improvements are proposed:

- Remove existing fabric awning and support structure over ½ of the existing 15' x 37.5' concrete patio (225 sqft of the total 562.5 sqft);
- Install permanent canopy over entire 562.5 sqft patio comprised of tube steel and wood framing with a fiberglass shingle or metal standing seam roof

No other building or site improvements are proposed.

Staff Comments

Planning & Zoning
The proposed parking lot expansion and building renovations meet the B-3 Zoning District regulations including required setbacks, impervious area, and other restrictions.

Public Works/Engineering
No comment.

Fire/Police Department
No comment.

Water/Wastewater Utilities
No comment.

Highway Department
No comment.

Building Inspection Services
The Building Inspector has indicated that the submission of state-approved building plans for the new canopy roof will NOT be required prior to issuing a building permit. Plan review will be conducted in-house as part of the permitting process.

Village Planner Recommendation

APPROVE the site development and building plans for the proposed patio canopy for Ivee's restaurant located at W157 N11618 Fond du Lace Avenue subject to the following conditions:

1. Approval is for the site development and building plan set dated March 3, 2021 (unless otherwise revised by a subsequent plan set approved by the Village Planner pursuant to revisions required herein).

Village of Germantown
...Willkommen

Fee must accompany application
- [x] $700 Minor Addition
- [ ] $1,240 Construction <10,000 SF
- [ ] $2,095 Construction 10,000 SF to 50,000
- [ ] $3,460 Industrial Construction >50,000 SF
- [ ] $3,460 Commercial Construction >50,000
- [ ] $200 Plan Commission Consultation
- [ ] $125 Fire Department Plan Review

PAID [signature] DATE 4-23-21

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. All applications must be signed and dated.

1 APPLICANT OR AGENT

TIMOTHY P. WIBERG, A/A
WIBERG ARCHITECTURE
1865 KELLY LANE
BROOKFIELD, WI 53045

Phone (262) 780-5198
E-Mail wibergarchitecture@sbcglobal.net

PROPERTY OWNER

DAVE IVERSON
NORTHRIDGE AUTOMOTIVE ENTERPRISES, INC. DBA IVEE'S AT MAIN
W157 N11618 FOND DU LAC AVE.
GERMANTOWN, WI 53022
Phone (262) 502-0484
E-Mail DAVE.556370@AOL.COM

2 PROPERTY ADDRESS

W157 N11618 FOND DU LAC AVENUE

3 NEIGHBORING USES – Specify name and type of use, e.g. Enviro Tech – Industrial, Smith – Residential, etc.

North	South	East	West
RESIDENT	EMPTY LOT	FLAG CO.	TAVERN

4 READ AND INITIAL THE FOLLOWING:

TW ☑ I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

TW ☑ I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

TW ☑ I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5 SIGNATURES – ALL APPLICATION MUST BE SIGNED BY OWNER!

[signature] 4/15/21
TIMOTHY P. WIBERG, A/A
Applicant Date

[signature] 4/15/21
Owner Date

From: tim wiberg <timwiberg@sbcglobal.net>
Sent: Monday, April 26, 2021 2:28 PM
To: Lori Johnson <ljohnson@village.germantown.wi.us>
Subject: Re: Ivee's Site Plan Review

The owner would like to remove the existing fabric awning that covers half the outdoor patio and replace it with a permanent fixed canopy that covers the whole patio. This will allow outdoor dining without worrying about rain or excessive heat.

Timothy P. Wiberg AIA
Wiberg Architecture

Canopy Replacement

LIST OF DRAWINGS

A0 SITE PLAN
A1 PLANS
A2 ELEVATIONS

OWNER:
NORTHRIDGE AUTOMOTIVE ENTERPRISES, INC. DBA IVEE'S AT MAIN
W157 N11618 FOND DU LAC AVENUE
GERMANTOWN, WI 53022
PHONE: 262.502.0484

ARCHITECT:
TIMOTHY P. WIBERG AIA
WIBERG ARCHITECTURE
1865 KELLY LANE
BROOKFIELD, WI 53045
PHONE: 262.780.5198

ENGINEER:
MICHAEL BLODGETT, PE
BLODGETT ENGINEERING LLC
W169 N10815 REDWOOD LANE
GERMANTOWN, WI 53022
PHONE: 262.293.9923
TBD

PROJECT DESCRIPTION:
CANOPY REPLACEMENT

BUILDING TYPE:
2015 IEBC CHAPTER 10 ADDITION & 2015 IBC

OCCUPANCY TYPE:
A-2 ASSEMBLY (RESTAURANT)

TOTAL OUTDOOR PROJECT SPACE:
562 SQ. FT.

CONSTRUCTION CLASS:
TYPE IIB - NON-SPRINKLERED

LEVELS/STORIES:
ONE

TOTAL BUILDING HEIGHT:
LESS THAN 55 FEET

SPRINKLER SYSTEM:
NONE

OCCUPANT LOAD:
NO CHANGE

MEANS OF EGRESS:
NO CHANGE IN NUMBER OF PEOPLE, SIZE OR LOCATIONS OF EXITS

PLUMBING FIXTURES:
ON FIRST FLOOR - NO CHANGE IN SIZE OF SEATING AREA

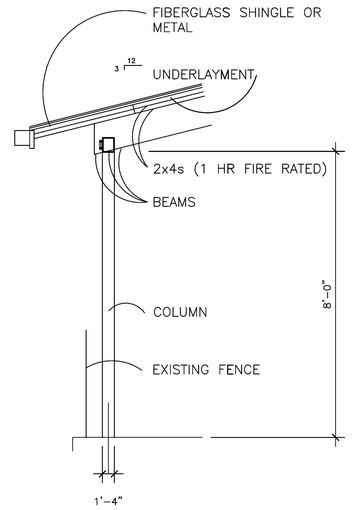
WIBERG ARCHITECTURE

IVEE'S AT MAIN
@ FOND DU LAC AVE
GERMANTOWN, WI

TITLE SHEET

PROJECT NUMBER:	20003
ISSUED:	3/3/2021
DRAWN BY:	TW
CHECKED BY:	TW
FILENAME:	IVEE'S MAIN-T1.DWG

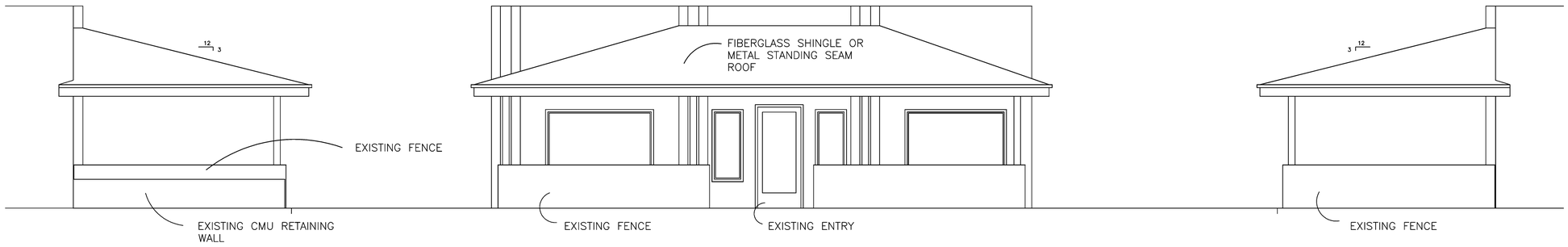
T1



SECTION AT COLUMN

1/2" = 1'-0"

ALSO SEE STRUCTURAL



NW NORTHWEST ELEVATION

1/4" = 1'-0"

SW SOUTHWEST ELEVATION

1/4" = 1'-0"

SE SOUTHEAST ELEVATION

1/4" = 1'-0"

WIBERG ARCHITECTURE

IVEE'S AT MAIN

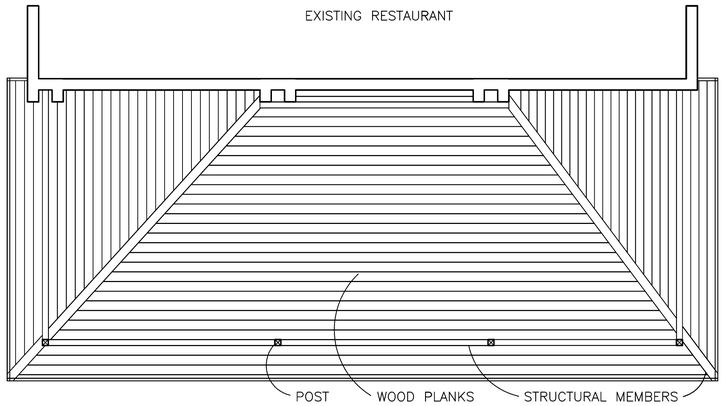
@ FOND DU LAC AVE

GERMANTOWN, WI

ELEVATIONS

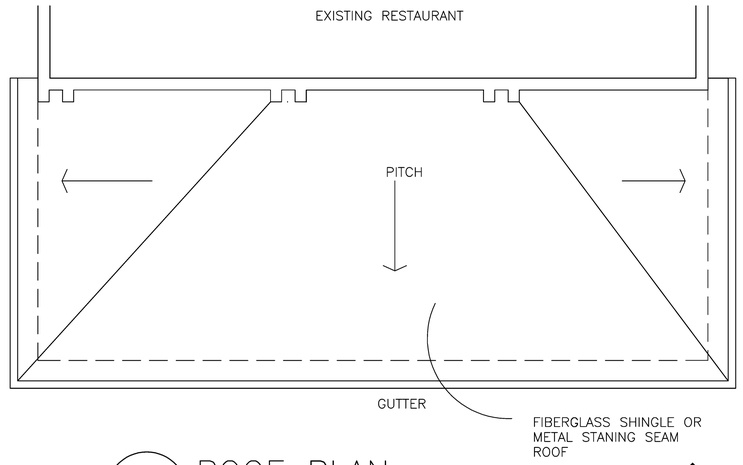
PROJECT NUMBER:	20003
ISSUED:	3/3/2021
DRAWN BY:	TW
CHECKED BY:	TW
FILENAME:	IVEES MAIN-A2b.DWG

A2



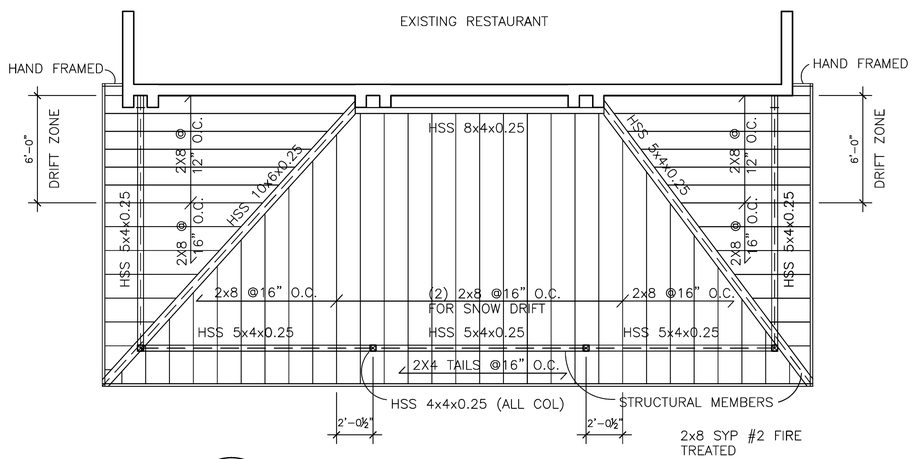
D REFLECTED CEILING PLAN

1/4" = 1'-0"



R ROOF PLAN

1/4" = 1'-0"

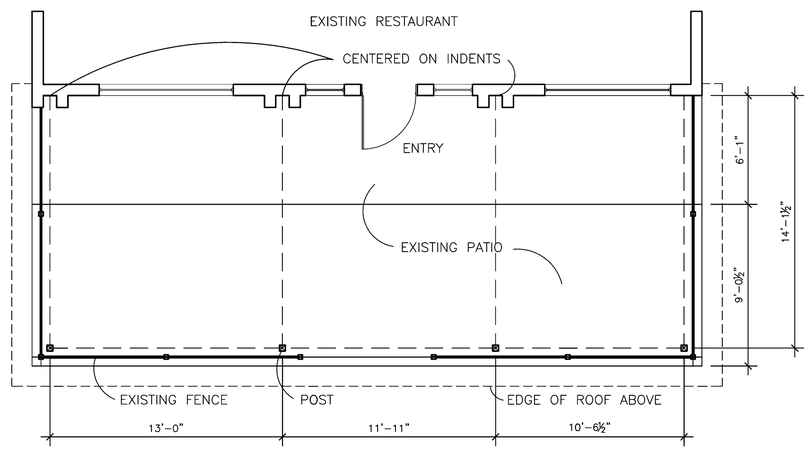


S STRUCTURAL PLAN

1/4" = 1'-0"

* ALL WOOD MEMBERS WITHIN 30' OF THE SIDE PROPERTY LINE MUST BE 1 HOUR FIRE RATED

*STEEL TUBES HAVE (2) 2X BLOCKING ON TOP TO ALLOW FOR TOP FLANGE HANGERS



A FLOOR PLAN

1/4" = 1'-0"

WIBERG ARCHITECTURE

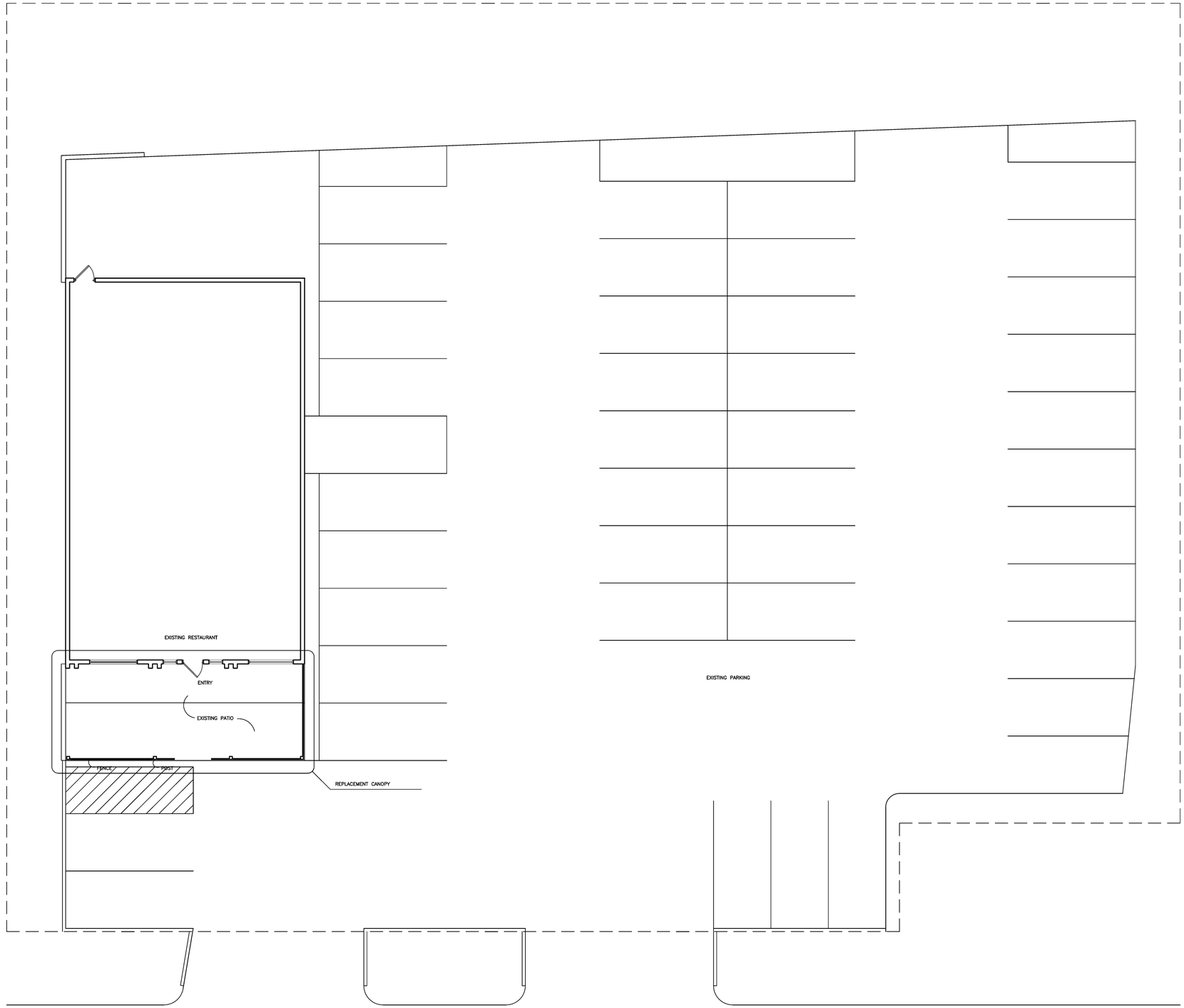
IVEE'S AT MAIN

@ FOND DU LAC AVE
GERMANTOWN, WI

PLANS

PROJECT NUMBER:	20003
ISSUED:	3/3/2021
DRAWN BY:	TW
CHECKED BY:	TW
FILENAME:	IVEES MAIN-A1b.DWG

A1



S SITE PLAN
1/8" = 1'-0"

WIBERG ARCHITECTURE

IVEE'S at MAIN

@ FOND DU LAC AVE
GERMANTOWN, WI

SITE PLAN

PROJECT NUMBER:	20003
ISSUED:	3/3/2021
DRAWN BY:	TW
CHECKED BY:	TW
FILENAME:	IVEE'S MAIN-A0.DWG

A0


Restaurant

January 20, 2021

Ivee's on Main
Germantown, WI

STRUCTURAL CALCULATIONS FOR
Outdoor Canopy

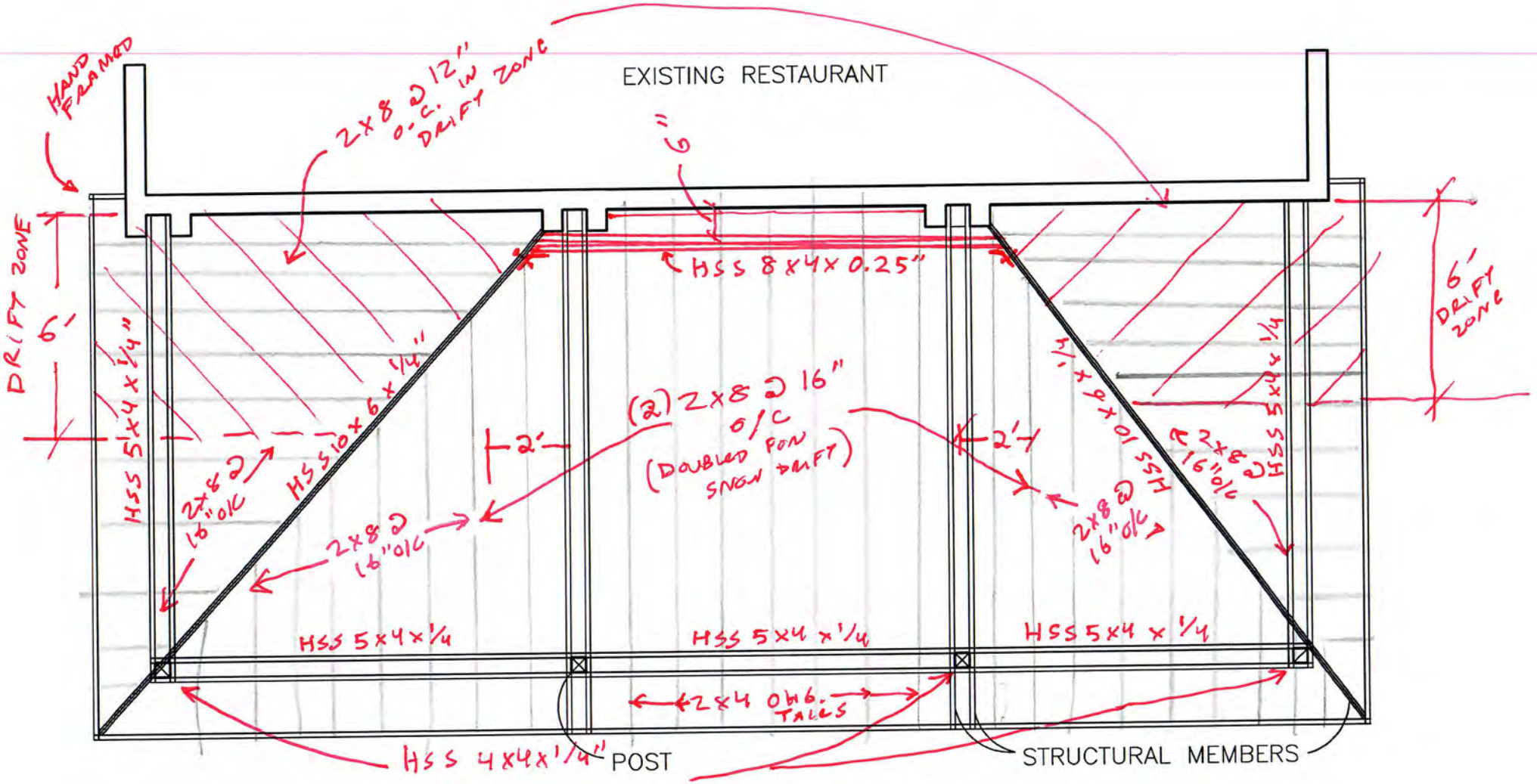
Provided for:

WIBERG ARCHITECTURE

BLODGETT
Engineering, LLC
W169 N10815 Redwood Lane
Germantown, WI 53022
262-293-9923
blodgetteng@wi.rr.com

WISCONSIN
MICHAEL E. BLODGETT
E-36475
GERMANTOWN
WI
PROFESSIONAL ENGINEER

1/20/2021



* STEEL TUBES HAVE (2) 2x BLOCKING ON TOP TO ALLOW TOP FLANGE HANGERS

S

STRUCTURAL PLAN

1/8" = 1'-0"

N

BLODGETT ENGINEERING LLC
STRUCTURAL CONSULTING ENGINEERS
W169 N10815 Redwood Lane
Germantown, WI 53022
blodgetteng@wi.rr.com
Tel/Fax: 262.293.9923

JOB WIBERG - IVEE'S
SHEET NO. _____ OF _____
CALCULATED BY MCB DATE 10/26/2020

LOADS:

$P_g = 30$ psf $D_L = 15$ psf

$P_s = 25.2$ psf FOR CANOPY

DRIFT LOADS:

WINDWARD DRIFTS:

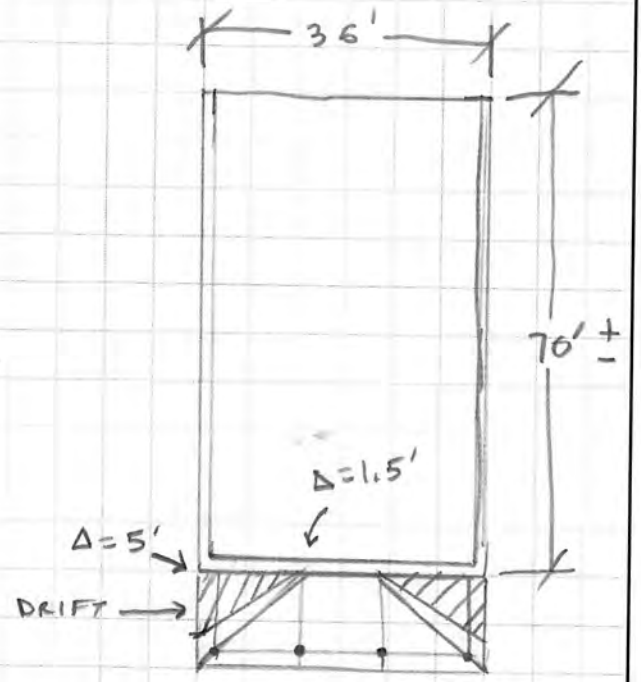
NO DRIFT AT TOP

19.3 PSF AT BOTTOM ($\Delta = 5'$)

LEEWARD DRIFTS:

$p_d = 52.9$ psf $w = 11.83'$ ⇐ CONTROLS

$P_T = 78.1$ = TOTAL SNOW W/DRIFT



SIDE BEAM: 14'-3" SPAN

$W_D = \left(\frac{13'}{2} + 2'\right) 10_{psf} = 85$ plf AT MAX

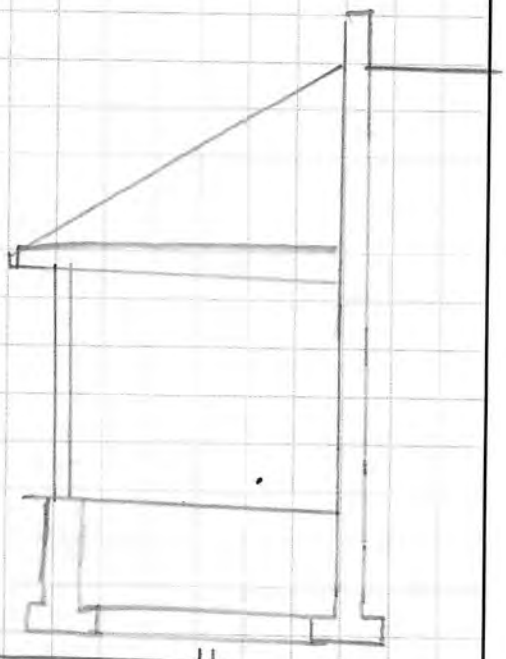
$W_D = (2')\ 15$ psf $= 30$ plf

$W_S = 25.2 \times \left(\frac{5}{2}+2\right) = 126$ plf AT START OF DRIFT

$W_S = 25.2$ psf $\times\ 2' = 50.4$ plf

DRIFT $W_{SD} = 52.9$ psf $\times \left(\frac{5}{2}+2\right) = 264.5$ plf

DRIFT $W_{SD} = 52.9$ psf $\times \left(\frac{10}{2}+2\right) = 370.3$ plf



USE: HSS5x4x1/4 (50 ksi MIN)

Blodgett Engineering
W169 N10815 Redwood Lane
Germantown, WI 53022
262-293-9923

JOB TITLE Ivee's at Main
Germantown, WI
JOB NO. SHEET NO.
CALCULATED BY DATE
CHECKED BY DATE

Snow Loads - from adjacent building or roof:

ASCE 7-10

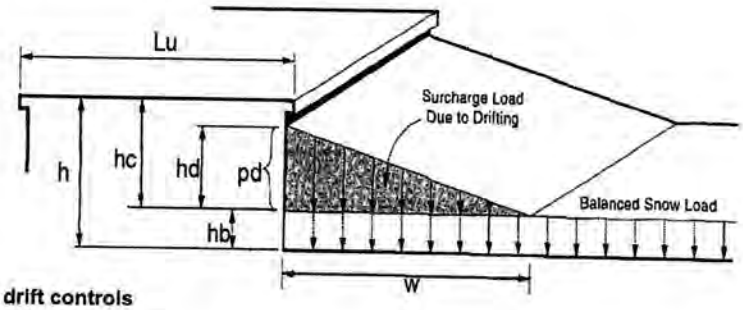
Nominal Snow Forces

		Higher Roof	Lower Roof
Roof slope	=	1.2 deg	3.00 / 12 = 14.0 deg
Horiz. eave to ridge dist (W)	=	36.0 ft	36.0 ft
Roof length parallel to ridge (L)	=	70.0 ft	16.3 ft
Projection height (roof step) h	=		5.0 ft
Building separation s	=		0.0 ft
Type of Roof		Monoslope	Monoslope
Ground Snow Load	Pg =	30.0 psf	30.0 psf
Risk Category	=	II	II
Importance Factor	I =	1.0	1.0
Thermal Factor	Ct =	1.00	1.20
Exposure Factor	Ce =	1.0	1.0
Pf = 0.7*Ce*Ct*I*Pg	=	21.0 psf	25.2 psf
Unobstructed Slippery Surface		no	yes
Sloped-roof Factor	Cs =	1.00	1.00
Balanced Snow Load	**Ps =**	**21.0 psf**	**25.2 psf**
Rain on Snow Surcharge Angle		0.72 deg	0.72 deg
Code Maximum Rain Surcharge		5.0 psf	5.0 psf
Rain on Snow Surcharge	=	0.0 psf	0.0 psf
Ps plus rain surcharge	=	21.0 psf	25.2 psf
Minimum Snow Load	Pm =	20.0 psf	20.0 psf
Uniform Roof Design Snow Load	=	**21.0 psf**	**25.2 psf**
Building Official Minimum	=	20.0 psf	

NOTE: Alternate spans of continuous beams and other areas shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code.

Leeward Snow Drifts - from adjacent higher roof

Upper roof length	lu =	70.0 ft
Snow density	γ =	17.9 pcf
Balanced snow height	hb =	1.41 ft
	hc =	3.59 ft
hc/hb >0.2 = 2.6	**Therefore, design for drift**	
Adj structure factor	=	1.00
Drift height (hd)	=	2.96 ft
Drift width	w =	11.83 ft
Surcharge load:	pd = γ*hd =	**52.9 psf**
Balanced Snow load:	=	25.2 psf
		78.1 psf **Leeward drift controls**



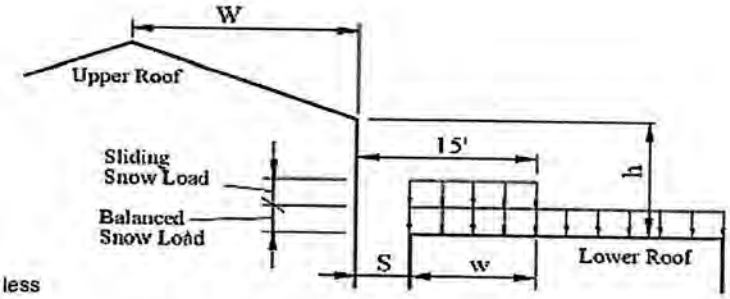
Windward Snow Drifts - from low roof against high roof

Lower roof length	lu =	16.3 ft
Adj structure factor	=	1.00
Drift height	hd =	1.08 ft
Drift width	w =	4.31 ft
Surcharge load:	pd = γ*hd =	**19.3 psf**
Balanced Snow load:	=	25.2 psf
		44.5 psf

Sliding Snow - onto lower roof

Sliding snow = 0.4 Pf W =	0.0 plf
Distributed over 15 feet =	0.0 psf
hd + hb =	1.41 ft
hd + hb < =h therefore sliding snow =	**0.0 psf**
Balanced snow load =	25.2 psf
Uniform snow load =	25.2 psf

Sliding snow not required since upper roof slope is 1/4 in 12 or less



Blodgett Engineering
W169 N10815 Redwood Lane
Germantown, WI 53022
262-293-9923

JOB TITLE Ivee's at Main
Germantown, WI
JOB NO. _____ SHEET NO. _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____

Snow Loads : ASCE 7-10

Nominal Snow Forces

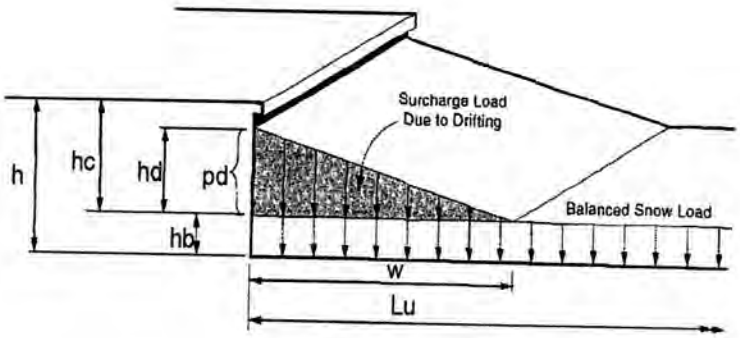
Roof slope	=	14.0 deg
Horiz. eave to ridge dist (W)	=	15.0 ft
Roof length parallel to ridge (L)	=	36.0 ft
Type of Roof		Monoslope
Ground Snow Load	Pg =	30.0 psf
Risk Category	=	II
Importance Factor	I =	1.0
Thermal Factor	Ct =	1.20
Exposure Factor	Ce =	1.0
Pf = 0.7*Ce*Ct*I*Pg	=	25.2 psf
Unobstructed Slippery Surface		yes
Sloped-roof Factor	Cs =	1.00
Balanced Snow Load	=	**25.2 psf**
Rain on Snow Surcharge Angle		0.30 deg
Code Maximum Rain Surcharge		5.0 psf
Rain on Snow Surcharge	=	0.0 psf
Ps plus rain surcharge	=	25.2 psf
Minimum Snow Load	Pm =	20.0 psf
Uniform Roof Design Snow Load	=	**25.2 psf**

Near ground level surface balanced snow load = **30.0 psf**

NOTE: Alternate spans of continuous beams shall be loaded with half the design roof snow load so as to produce the greatest possible effect - see code for loading diagrams and exceptions for gable roofs..

Windward Snow Drifts 1 - Against walls, parapets, etc

Upwind fetch	lu =	16.3 ft
Projection height	h =	1.5 ft
Snow density	g =	17.9 pcf
Balanced snow height	hb =	1.41 ft
	hd =	1.08 ft
	hc =	0.09 ft
hc/hb <0.2 = 0.1	**Therefore, no drift**	
Drift height (hc)	=	0.00 ft
Drift width	w =	0.74 ft
Surcharge load:	pd = γ*hd =	**0.0 psf**
Balanced Snow load:	=	25.2 psf
		25.2 psf



Windward Snow Drifts 2 - Against walls, parapets, etc

Upwind fetch	lu =	16.3 ft
Projection height	h =	5.0 ft
Snow density	g =	17.9 pcf
Balanced snow height	hb =	1.41 ft
	hd =	1.08 ft
	hc =	3.59 ft
hc/hb >0.2 = 2.6	**Therefore, design for drift**	
Drift height (hd)	=	1.08 ft
Drift width	w =	4.31 ft
Surcharge load:	pd = γ*hd =	**19.3 psf**
Balanced Snow load:	=	25.2 psf
		44.5 psf

PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:			
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Side Beam - Steel	CODE:	2015 International Building Code
TYPE:	FLOOR BEAM	AISC:	AISC 360-10
MATERIAL:	STEEL		

HSS Rectangular	HSS5x4x.250	A500 Gr.C-50			

Side Beam - Steel DIAGRAM

BEAM PROPERTIES

Start (ft): 0 End (ft): 14.25 Member Slope: 0/12 Actual Length (ft): 14.25

Es x10^3 (psi)	Fy x10^3 (psi)	Fu x10^3 (psi)	Area (in^2)	Ix (in^4)	Iy (in^4)	Zx (in^3)	Zy (in^3)	J (in^4)	Cw (in^6)
29000	50	62	3.84	13.4	9.46	6.49	5.57	18	0

DESIGN PROPERTIES

Lp (in)	Lr (in)	Flange Flexure	Web Flexure	Flange Compression	Web Compression	Cv	Cv_WA
152	4043	Compact	Compact	Non-Slender	Non-Slender	1	1

BEAM DATA

Span	Length	Unbraced Length Top	Unbraced Length Bottom	Beam End Elev. Diff	Pnt/Ω	Pnc/Ω	Mn/Ω	Mn-OOP/Ω	Vn/Ω	Vn-OOP/Ω	Cb	Cb-OOP
1	14.25	0	14.25	0	0	0	16.19	13.9	36	46.13	1.156	1

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (93.5%)	-2340.6	35996.4	14.25	F7-1	D+S
Moment Y (lbf-ft)	PASS (60.6%)	6382.4	16192.6	8.55	G2-1 (Ref G5)	D+S
Deflection (in)	PASS (11.9%)	0.419 (=L/409)	0.475 (=L/360)	7.55		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	443	0	0	866	0	0	0	0	0	0	0
B	574	0	0	1766	0	0	0	0	0	0	0

Reaction Location

A B

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Trapezoidal (lbf/ft)	30	85	0	14.25	Dead	Y
Trapezoidal (lbf/ft)	50.4	126	0	8.25	Snow	Y
Trapezoidal (lbf/ft)	264.5	370.3	8.25	14.25	Snow	Y
Self Weight (lbf/ft)	13.91	13.91	0	14.25	Dead	Y

NOTES

BLODGETT ENGINEERING LLC
STRUCTURAL CONSULTING ENGINEERS
W169 N10815 Redwood Lane
Germantown, WI 53022
blodgetteng@wi.rr.com
Tel/Fax: 262.293.9923

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

LATERAL - WIND LOADS:

$A = 48.75$ SF

$F_{WW} = 48.75 \times 24.9 = 1213.875\#$

$F_{LW} = 48.75 \times -8.8 = 429\#$

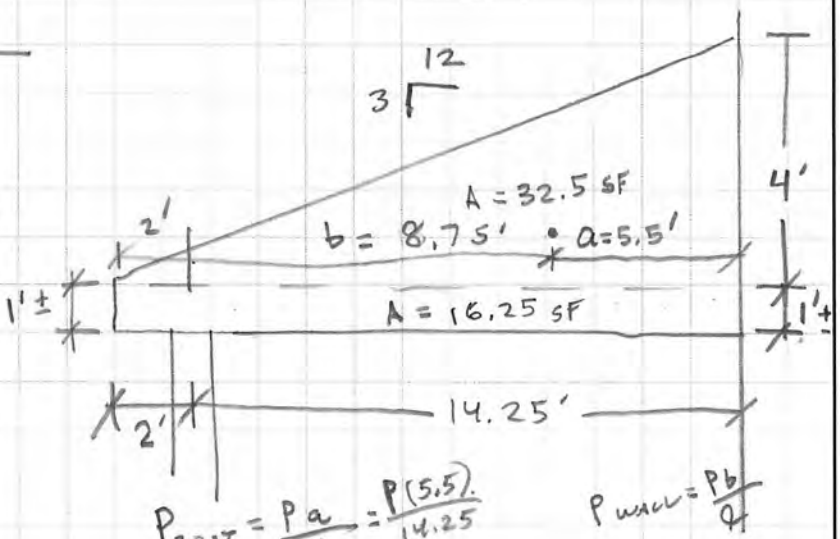
$F_{WW_h} = 0.97(1213.875) = 1104.6\#$

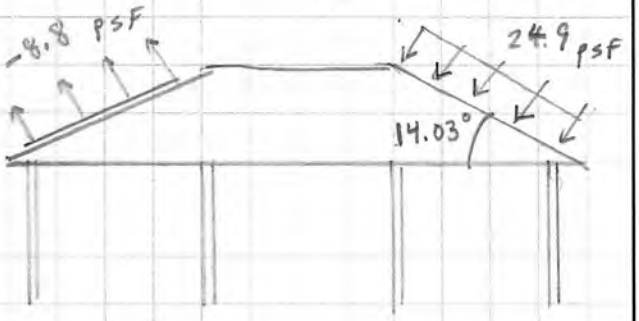
$F_{LW_H} = 0.97(429) = 416.2\#$

F_{WW_h} POST $= 1104.6 \times 0.386 = 426.3\#$

F_{LW_h} POST $= 416.8 \times 0.386 = 160.88\#$

TOTAL $h = 587.2\#$





$F_H = \cos 14.03° = 0.97$

$F_V = \sin 14.03° = 0.2424$

LOAD / POST $= \frac{587.2}{4} = 146.8\#$

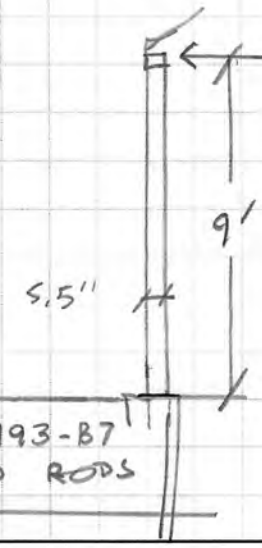
$M = 146.8\# \times 9' = 1321.2\#'$ $\quad M_u = 1321.2 \times 1.6 = 2114\#'$

$T = C = \frac{M}{d} = \frac{1321.2\#'}{.5} = 2642.4\#$

UPLIFT $= 8.8$ PSF $\times \frac{16.25 \times 36}{4 \text{ POSTS}} = 1287\#$/POST

$\times 1.6$

$2059.2\#$



USE: 3/8" BASE PLATE W/ (4) 1/2" ϕ x 3" A193-B7 THREADED RODS

Blodgett Engineering
W169 N10815 Redwood Lane
Germantown, WI 53022
262-293-9923

JOB TITLE Ivee's at Main
Germantown, WI
JOB NO. _____ SHEET NO. _____
CALCULATED BY _____ DATE _____
CHECKED BY _____ DATE _____

Wind Loads - Open Buildings: 0.25 ≤ h/L ≤ 1.0

Ultimate Wind Pressures

Type of roof = Pitched Free Roofs
Wind Flow = Clear

G = 0.85
Roof Angle = 14.0 deg

Main Wind Force Resisting System

Kz = Kh (case 2) = 0.85

Base pressure (qh) = **26.6 psf**

NOTE: The code requires the MWFRS be designed for a minimum pressure of 16 psf.

Roof pressures - Wind Normal to Ridge

Wind Flow	Load Case		Wind Direction γ = 0 & 180 deg	
			Cnw	Cnl
Clear Wind Flow	A	Cn =	1.10	-0.39
		p =	+ 24.9 psf	-8.8 psf
	B	Cn =	0.11	-1.11
		p =	+ 2.6 psf	-25.2 psf

NOTE: 1). Cnw and Cnl denote combined pressures from top and bottom roof surfaces.
2). Cnw is pressure on windward half of roof. Cnl is pressure on leeward half of roof.
3). Positive pressures act toward the roof. Negative pressures act away from the roof.

Roof pressures - Wind Parallel to Ridge, γ = 90 deg

Wind Flow	Load Case		Horizontal Distance from Windward Edge		
			≤ h	>h ≤ 2h	> 2h
Clear Wind Flow	A	Cn =	-0.80	-0.60	-0.30
		p =	-18.1 psf	-13.6 psf	-6.8 psf
	B	Cn =	0.80	0.50	0.30
		p =	18.1 psf	11.3 psf	6.8 psf

h = 12.0 ft
2h = 24.0 ft

Fascia Panels -Horizontal pressures

qp = 0.0 psf

Fascia pressures not applicable - roof angle exceeds 5 degrees.

Windward fascia: 0.0 psf (GCpn = +1.5)
Leeward fascia: 0.0 psf (GCpn = -1.0)

Components & Cladding - roof pressures

Kz = Kh (case 1) = 0.85
Base pressure (qh) = **26.6 psf**
G = 0.85

a = 3.0 ft

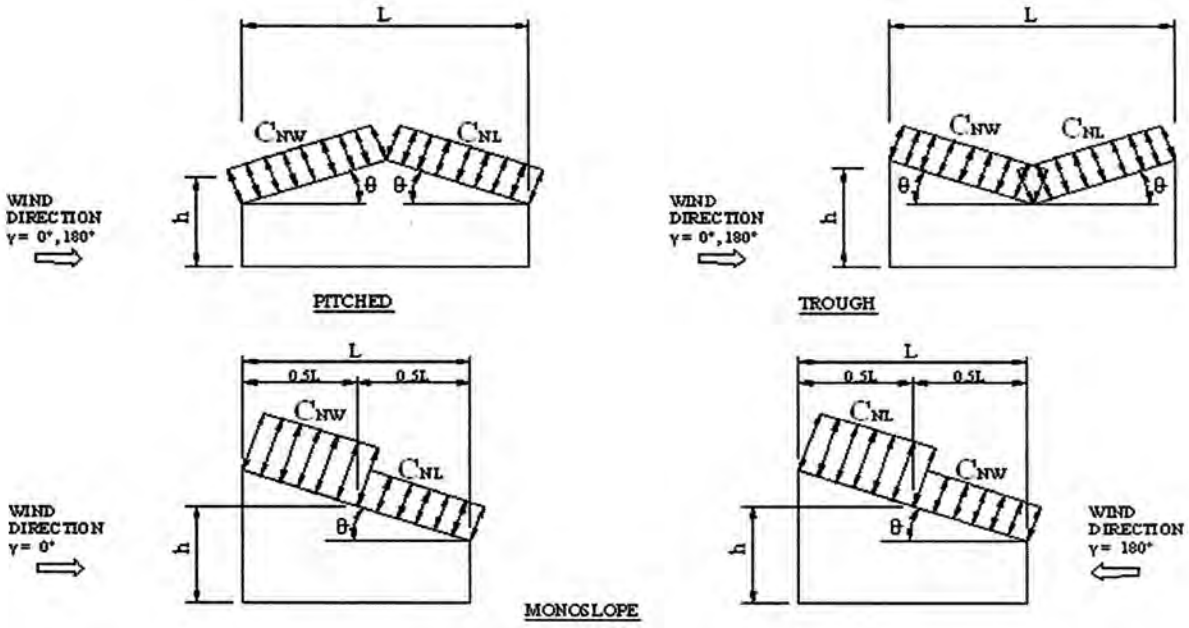
a^2 = 9.0 sf
$4a^2$ = 36.0 sf

	Effective Wind Area	Clear Wind Flow					
		zone 3		zone 2		zone 1	
		positive	negative	positive	negative	positive	negative
C_N	≤ 9 sf	2.20	-2.38	1.70	-1.71	1.10	-1.11
	>9, ≤ 36 sf	1.70	-1.71	1.70	-1.71	1.10	-1.11
	> 36 sf	1.10	-1.11	1.10	-1.11	1.10	-1.11
Wind pressure	≤ 9 sf	49.7 psf	-53.8 psf	38.4 psf	-38.7 psf	24.9 psf	-25.2 psf
	>9, ≤ 36 sf	38.4 psf	-38.7 psf	38.4 psf	-38.7 psf	24.9 psf	-25.2 psf
	> 36 sf	24.9 psf	-25.2 psf	24.9 psf	-25.2 psf	24.9 psf	-25.2 psf

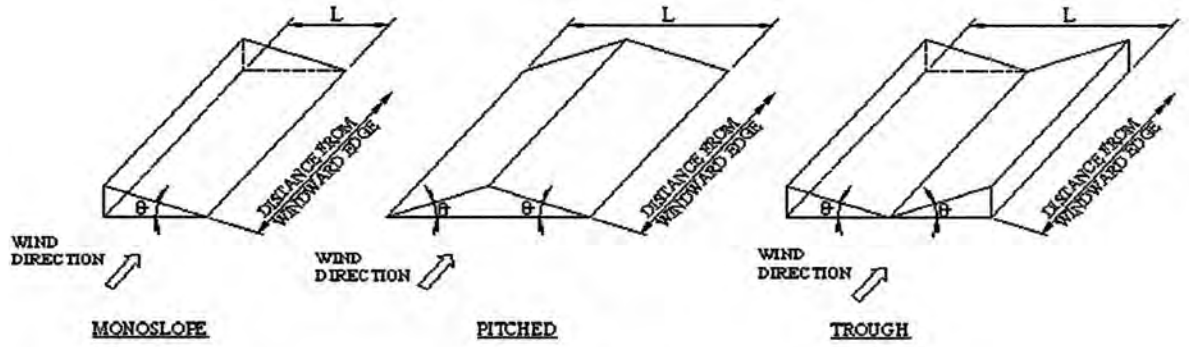
Blodgett Engineering
W169 N10815 Redwood Lane
Germantown, WI 53022
262-293-9923

JOB TITLE Ivee's at Main
Germantown, WI
JOB NO. SHEET NO.
CALCULATED BY DATE
CHECKED BY DATE

Location of Wind Pressure Zones

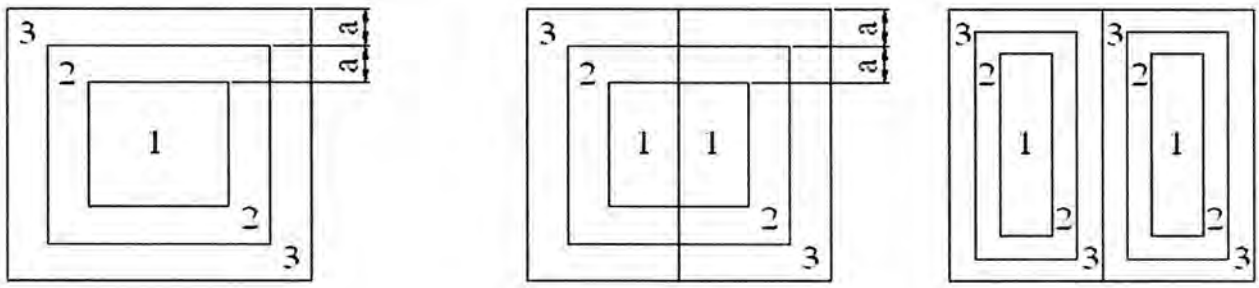


WIND DIRECTION $\gamma = 0°, 180°$



WIND DIRECTION $\gamma = 90°$

MAIN WIND FORCE RESISTING SYSTEM



COMPONENTS AND CLADDING

BLODGETT ENGINEERING LLC
STRUCTURAL CONSULTING ENGINEERS
W169 N10815 Redwood Lane
Germantown, WI 53022
blodgetteng@wi.rr.com
Tel/Fax: 262.293.9923

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

CENTER AND SIDE RAFTERS:

$W_S = 25.2 \times 1.33 = 33.6$ plf

$W_D = 15 \times 1.33 = 20$ plf

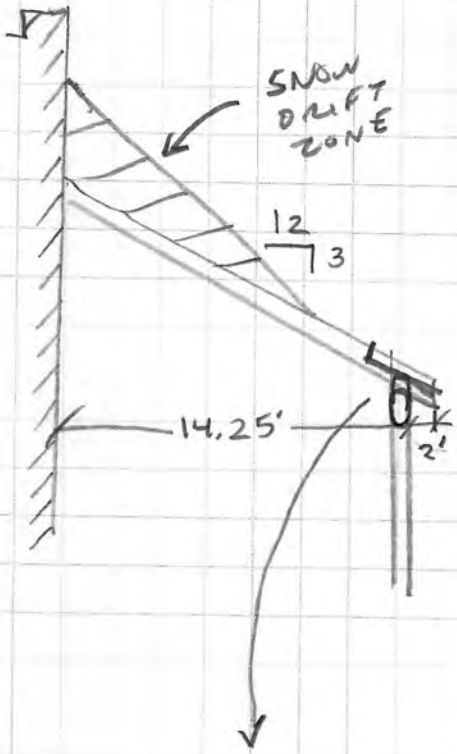
USE: (2) 2x8 SYP #2 (TREATED)

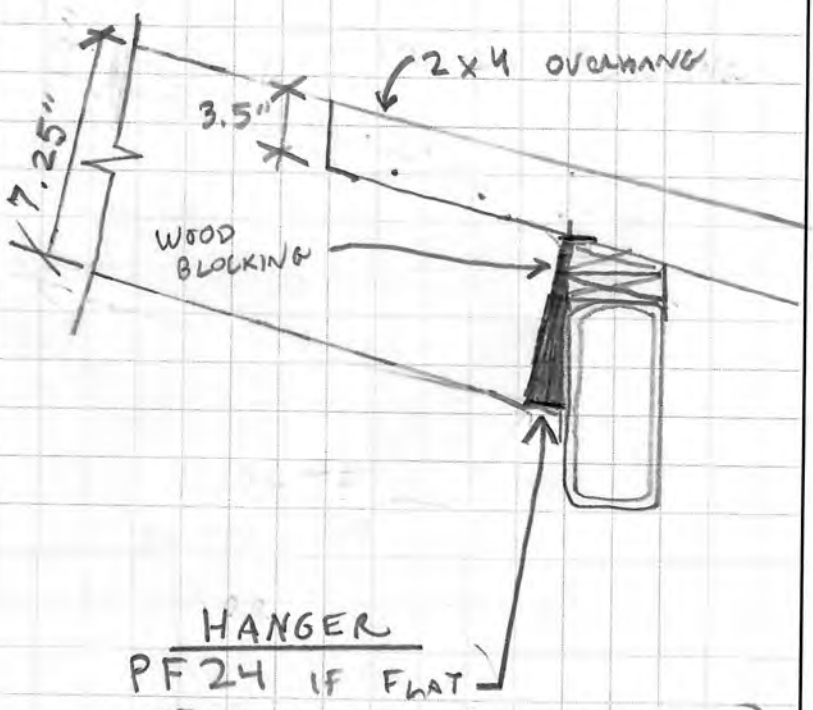
-OR-

(2) 2x8 SPF #2 (IF YOU DON'T WANT TREATED)

(OK TO USE SINGLES WHERE SPAN IS 12' OR LESS)

USE: (1) 2x4 RAFTER TAIL ADDED
NAIL TO SIDE OF 2x8





HANGER
HU24TF
(FOR DOUBLE RAFTERS)

HANGER
PF24 IF FLAT SEAT IS O.K. (CUT 2x8 FLAT) NOT BEARING
USES 3" NAILS
COSTS LESS

PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:	(2) 2x8 @ 16" o/c		
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Front Section Rafter	CODE:	2015 International Building Code
TYPE:	FLOOR BEAM	NDS:	2015 NDS
MATERIAL:	SOLID SAWN		

Spruce-Pine-Fir	No. 2	(2) 1.5 X 7.25	DRY		

Front Section Rafter DIAGRAM

BEAM PROPERTIES

Start (ft): 0 End (ft): 16.25 Member Slope: 0/12 Actual Length (ft): 16.25

Area (in^2)	Ix (in^4)	Iy (in^4)	BSW (lbf/ft)	Lams	G	Kcr Creep Factor
21.75	95.27	4.08	4.2	2	0.42	1

STRENGTH PROPERTIES

	Fb (psi)	Ft (psi)	Fv (psi)	Fc (psi)	Fc⊥ (psi)	E (psi) x10^3	Emin (psi) x10^3
Base Values	875	450	135	1150	425	1400	510
Adjusted Values	1208	540	135	1208	425	1400	510
C_M	1	1	1	1	1	1	1
C_T	1	1	1	1	1	1	1
C_i	1	1	1	1	1	1	1
C_F	1.2	1.2	1	1.05	1	1	1

Bending Adjustment Factors $C_{fu} = 1$ $C_r = 1.15$

BEAM DATA

Span	Length (ft)	Unbraced Length (ft) Top	Unbraced Length (ft) Bottom	Beam End Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	14.25	0	14.25	0	1.00	0.47	1.00	1.00
2	2	0	2	0	1.00	0.99	1.00	1.00

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR C
Shear Stress Y (psi)	PASS (68.5%)	48.8	155.3	0	D+S	1.15
Bending Stress Y (psi)	PASS (29.0%)	986.5	1388.6	6.5	D+S	1.15
Deflection (in)	PASS (11.1%)	0.178 (=L/270)	0.200 (=L/240)	16.25	S	
Bearing Stress (psi)	PASS (84.1%)	67.4	425.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	169	0	0	539	0	0	0	0	0	0	0
B	224	0	0	430	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0

Reaction Location

A B C

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	20	20	0	16.25	Dead	Y
Uniform (lbf/ft)	33.6	33.6	0	16.25	Snow	Y
Trapezoidal (lbf/ft)	70.53	0	0	12	Snow	Y
Self Weight (lbf/ft)	4.2	4.2	0	16.25	Dead	Y

NOTES

PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:	SINGLE 2x8 @ 16" o/c		
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Hip Section Rafter	CODE:	2015 International Building Code
TYPE:	FLOOR BEAM	NDS:	2015 NDS
MATERIAL:	SOLID SAWN		

Spruce-Pine-Fir	No. 2	(1) 1.5 X 7.25	DRY		

Hip Section Rafter DIAGRAM

BEAM PROPERTIES

Start (ft): 0 End (ft): 12 Member Slope: 0/12 Actual Length (ft): 12

Area (in^2)	Ix (in^4)	Iy (in^4)	BSW (lbf/ft)	Lams	G	Kcr Creep Factor
10.88	47.63	2.04	2.1	1	0.42	1

STRENGTH PROPERTIES

	Fb (psi)	Ft (psi)	Fv (psi)	Fc (psi)	Fc⊥ (psi)	E (psi) x10^3	Emin (psi) x10^3
Base Values	875	450	135	1150	425	1400	510
Adjusted Values	1208	540	135	1208	425	1400	510
C_M	1	1	1	1	1	1	1
C_T	1	1	1	1	1	1	1
C_i	1	1	1	1	1	1	1
C_F	1.2	1.2	1	1.05	1	1	1

Bending Adjustment Factors $C_{fu} = 1$ $C_r = 1.15$

BEAM DATA

Span	Length (ft)	Unbraced Length (ft) Top	Unbraced Length (ft) Bottom	Beam End Elev. Diff (ft)	CL(Top)	CL(Bottom)	CL(Left)	CL(Right)
1	10	0	10	0	1.00	0.65	1.00	1.00
2	2	0	2	0	1.00	0.99	1.00	1.00

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	LOAD COMBO	DURATION FACTOR C
Shear Stress Y (psi)	PASS (53.7%)	71.9	155.3	0	D+S	1.15
Bending Stress Y (psi)	PASS (23.9%)	1057.1	1388.6	4.68	D+S	1.15
Deflection (in)	PASS (28.9%)	0.142 (=L/337)	0.200 (=L/240)	12	S	
Bearing Stress (psi)	PASS (76.6%)	99.3	425.0	0	D+S	1.15

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	106	0	0	415	0	0	0	0	0	0	0
B	159	0	0	411	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0

Reaction Location

A B C

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	20	20	0	12	Dead	Y
Uniform (lbf/ft)	33.6	33.6	0	12	Snow	Y
Trapezoidal (lbf/ft)	70.53	0	0	12	Snow	Y
Self Weight (lbf/ft)	2.1	2.1	0	12	Dead	Y

NOTES

Top-Flange Hangers – Solid Sawn Lumber (DF/SP)

Visit **strongtie.com/software** to learn more about our Joist Hanger Selector software.

These products are available with additional corrosion protection. For more information, see p. 15.

Joist or Purlin Size	Model No.	Ga.	Dimensions				Fasteners (in.)		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes														
2x4	PF24	18	1⁹⁄₁₆	3⁷⁄₁₆	1½	1¹⁄₁₆	(2) 0.148 x 3	(2) 0.148 x 3	300	1,255	1,255	1,255	Lowest	
2x4	HU24TF	12	1⁹⁄₁₆	3⁷⁄₁₆	2¼	2⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	190	1,865	1,865	1,865	850%	
DBL 2x4	HU24-2TF	12	3⅛	3⁷⁄₁₆	2½	2½	(8) 0.162 x 3½	(2) 0.148 x 3	370	2,050	2,050	2,050	Lowest	
2x6	JB26	18	1⁹⁄₁₆	5⅜	1½	1⁵⁄₁₆	(4) 0.148 x 3	(2) Prong	—	995	995	995	Lowest	
2x6	LB26	14	1⁹⁄₁₆	5⅜	1½	1½	(4) 0.162 x 3½	(2) 0.148 x 1½	380	1,135	1,135	1,135	117%	
2x6	HU26TF	12	1⁹⁄₁₆	5⅜	2¼	2⁷⁄₁₆	(10) 0.162 x 3½	(4) 0.148 x 1½	660	2,550	2,550	2,550	568%	
DBL 2x6	HUS26-2TF	14	3⅛	5⅜	2	1¾	(6) 0.162 x 3½	(4) 0.162 x 3½	1,200	2,440	2,440	2,440	Lowest	
DBL 2x6	WP26-2	12	3⅛	5⅜	2½	2¾₁₆	(2) 0.148 x 3	(2) 0.148 x 3	—	3,300	3,300	3,300	33%	IBC, FL, LA
DBL 2x6	HU26-2TF	12	3⅛	5⅜	2½	2½	(10) 0.162 x 3½	(4) 0.148 x 3	815	2,785	2,785	2,785	87%	
2x8	JB28	18	1⁹⁄₁₆	7¼	1½	1⁵⁄₁₆	(4) 0.148 x 3	(2) Prong	—	955	955	955	Lowest	
2x8	LB28	14	1⁹⁄₁₆	7¼	1½	1½	(4) 0.162 x 3½	(2) 0.148 x 1½	380	1,135	1,135	1,135	98%	
2x8	HU28TF	12	1⁹⁄₁₆	7⅛	2¼	2⁷⁄₁₆	(10) 0.162 x 3½	(4) 0.148 x 1½	700	2,910	2,970	3,010	563%	
DBL 2x8	HUS28-2TF	14	3⅛	7¼	2	1⅞	(8) 0.162 x 3½	(6) 0.162 x 3½	1,765	3,400	3,400	3,400	Lowest	
DBL 2x8	WP28-2	12	3⅛	7⅛	2½	2¾₁₆	(2) 0.148 x 3	(2) 0.148 x 3	—	3,300	3,300	3,300	16%	
DBL 2x8	HU28-2TF	12	3⅛	7⅛	2½	2½	(12) 0.162 x 3½	(4) 0.148 x 3	815	3,265	3,265	3,265	75%	
2x10	JB210A	18	1⁹⁄₁₆	9³⁄₁₆	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	260	1,685	1,685	1,685	*	IBC, FL
2x10	LB210AZ	14	1⁹⁄₁₆	9³⁄₁₆	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	355	1,865	1,865	1,865	*	
2x10	HU210TF	12	1⁹⁄₁₆	9⅛	2¼	2⁷⁄₁₆	(12) 0.162 x 3½	(4) 0.148 x 1½	700	2,910	2,970	3,010	359%	
DBL 2x10	HUS210-2TF	14	3⅛	9¼	2	1½	(10) 0.162 x 3½	(8) 0.162 x 3½	2,315	3,735	4,065	4,275	Lowest	
DBL 2x10	WP210-2	12	3⅛	9⅛	2½	2¾₁₆	(2) 0.148 x 3	(2) 0.148 x 3	—	3,300	3,300	3,300	9%	IBC, FL, LA
DBL 2x10	HU210-2TF	12	3⅛	9⅛	2½	2½	(14) 0.162 x 3½	(6) 0.148 x 3	1,220	3,945	3,945	3,945	67%	
TPL 2x10	HU210-3TF	12	4¹¹⁄₁₆	9⅛	2½	2½	(14) 0.162 x 3½	(6) 0.162 x 3½	1,420	3,945	3,945	3,945	Lowest	
2x12	JB212A	18	1⁹⁄₁₆	11⅞	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	260	1,685	1,685	1,685	*	IBC, FL
2x12	LB212AZ	14	1⁹⁄₁₆	11⅞	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	355	1,865	1,865	1,865	*	
2x12	HU212TF	12	1⁹⁄₁₆	11	2¼	2⁷⁄₁₆	(14) 0.162 x 3½	(6) 0.148 x 1½	700	3,070	3,070	3,070	339%	
DBL 2x12	HUS212-2TF	14	3⅛	11⅞	2	2¼	(10) 0.162 x 3½	(8) 0.162 x 3½	2,080	4,375	4,375	4,375	Lowest	
DBL 2x12	WP212-2	12	3⅛	11	2½	2¾₁₆	(2) 0.148 x 3	(2) 0.148 x 3	—	3,300	3,300	3,300	12%	IBC, FL, LA
DBL 2x12	HU212-2TF	12	3⅛	11	2½	2½	(16) 0.162 x 3½	(6) 0.148 x 3	1,220	4,590	4,590	4,590	48%	
TPL 2x12	HU212-3TF	12	4¹¹⁄₁₆	11	2½	2½	(16) 0.162 x 3½	(6) 0.162 x 3½	1,420	4,590	4,590	4,590	Lowest	
2x14	JB214A	18	1⁹⁄₁₆	13⅞	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	260	1,685	1,685	1,685	*	IBC, FL
2x14	LB214AZ	14	1⁹⁄₁₆	13⅞	2	1⁷⁄₁₆	(6) 0.162 x 3½	(2) 0.148 x 1½	355	1,865	1,865	1,865	*	
2x14	HU214TF	12	1⁹⁄₁₆	13	2¼	2½	(16) 0.162 x 3½	(6) 0.148 x 1½	1,140	2,955	3,045	3,110	189%	
DBL 2x14	HUS214-2TF	14	3⅛	13⅞	2	2¼	(12) 0.162 x 3½	(8) 0.162 x 3½	2,715	4,065	4,065	4,065	Lowest	
DBL 2x14	WP214-2	12	3⅛	13	2½	2¾₁₆	(2) 0.148 x 3	(2) 0.148 x 3	—	3,300	3,300	3,300	2%	
DBL 2x14	HU214-2TF	12	3⅛	13	2½	2½	(18) 0.162 x 3½	(8) 0.148 x 3	1,330	4,030	4,030	4,030	33%	IBC, FL, LA
TPL 2x14	HU214-3TF	12	4¹¹⁄₁₆	13	2½	2½	(18) 0.162 x 3½	(8) 0.162 x 3½	1,560	4,030	4,030	4,030	Lowest	
2x16	LB216	14	1⁹⁄₁₆	15⅞	2	1½	(4) 0.162 x 3½	(2) 0.148 x 1½	380	1,480	1,480	1,480	Lowest	
2x16	HU216TF	12	1⁹⁄₁₆	15	2¼	2½	(18) 0.162 x 3½	(8) 0.148 x 1½	1,065	3,235	3,360	3,440	199%	

See footnotes on p. 131.

Codes: See p. 12 for Code Reference Key Chart

BLODGETT ENGINEERING LLC
STRUCTURAL CONSULTING ENGINEERS
W169 N10815 Redwood Lane
Germantown, WI 53022
blodgetteng@wi.rr.com
Tel/Fax: 262.293.9923

JOB _____

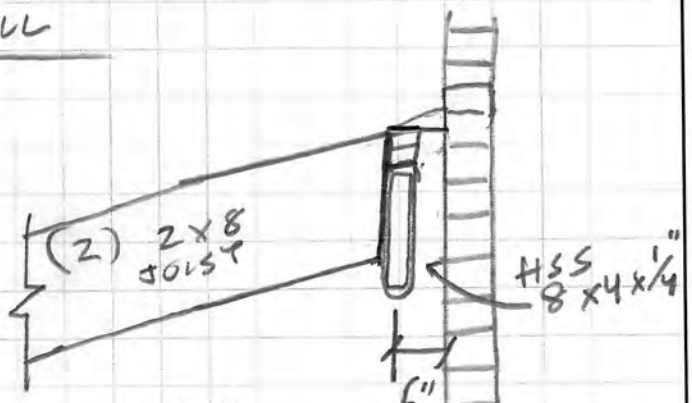
SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

JOIST SUPPORT TUBE AT WALL

$P_S = 539\#$ PER $= 404.25$ plf

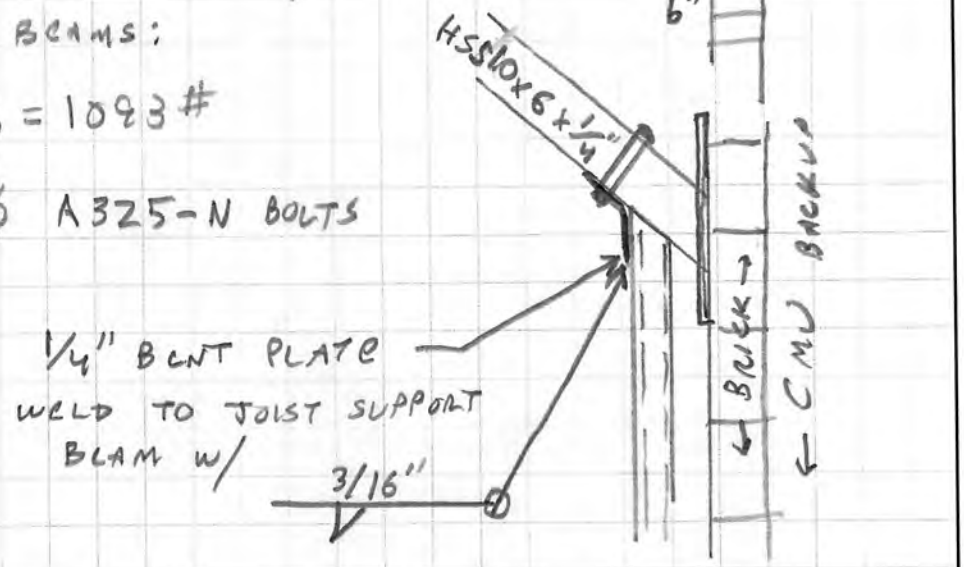
$P_D = 169\#$ 16" O/C $= 126.75$ plf



ADD LOADS TO HIP BEAMS:

$P_S = 3032\#$ $P_D = 1093\#$

USE (2) 5/8" ϕ A325-N BOLTS

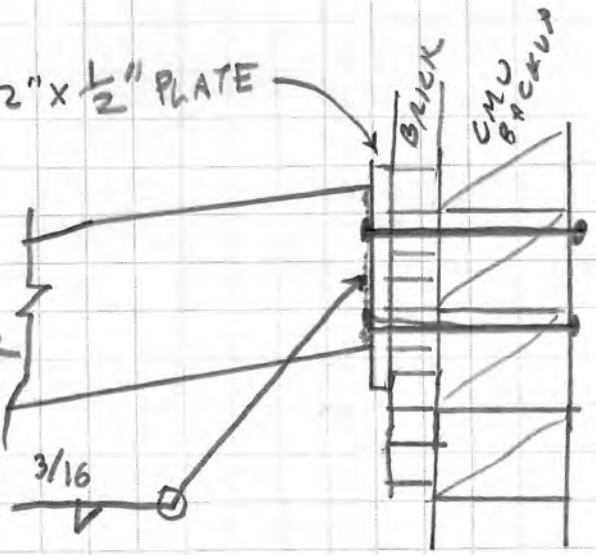


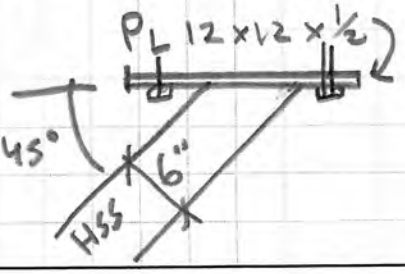
THRU BOLT HIP CONNECTIONS AND SIDE BEAM CONNECTIONS:

$P_{MAX} = 9964\# = 9.9K$

USE: (4) 5/8" ϕ A325 BOLTS THRU ENTIRE EXISTING WALL

CAPACITY $= 8.29 \times 4 = 33.16K \geq 9.9K$





PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:			
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Joist Support Beam at wall	CODE:	2015 International Building Code
TYPE:	FLOOR BEAM	AISC:	AISC 360-10
MATERIAL:	STEEL		

HSS Rectangular	HSS8x4x.250	A500 Gr.C-50			

Joist Support Beam at wall DIAGRAM

BEAM PROPERTIES

Start (ft): 0 End (ft): 15 Member Slope: 0/12 Actual Length (ft): 15

Es x10^3 (psi)	Fy x10^3 (psi)	Fu x10^3 (psi)	Area (in^2)	Ix (in^4)	Iy (in^4)	Zx (in^3)	Zy (in^3)	J (in^4)	Cw (in^6)
29000	50	62	5.24	42.5	14.4	13.3	8.2	35.3	0

DESIGN PROPERTIES

Lp (in)	Lr (in)	Flange Flexure	Web Flexure	Flange Compression	Web Compression	Cv	Cv_WA
128	3530	Compact	Compact	Non-Slender	Non-Slender	1	1

BEAM DATA

Span	Length	Unbraced Length Top	Unbraced Length Bottom	Beam End Elev. Diff	Pnt/Ω	Pnc/Ω	Mn/Ω	Mn-OOP/Ω	Vn/Ω	Vn-OOP/Ω	Cb	Cb-OOP
1	15	0	15	0	0	0	33.18	18.87	61.11	46.13	1.136	1

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (93.2%)	-4125.2	61110.2	15	F7-1	D+S
Moment Y (lbf-ft)	PASS (53.4%)	15469.3	33183.6	7.5	G2-1 (Ref G5)	D+S
Deflection (in)	PASS (50.2%)	0.374 (=L/482)	0.750 (=L/240)	7.5		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	1093	0	0	3032	0	0	0	0	0	0	0
B	1093	0	0	3032	0	0	0	0	0	0	0

Reaction Location

A B

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Uniform (lbf/ft)	404.25	404.25	0	15	Snow	Y
Uniform (lbf/ft)	126.75	126.75	0	15	Dead	Y
Self Weight (lbf/ft)	19.02	19.02	0	15	Dead	Y

NOTES

PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:			
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Hip Beam - Steel	CODE:	2015 International Building Code
TYPE:	HIP BEAM	AISC:	AISC 360-10
MATERIAL:	STEEL		

HSS Rectangular	HSS10x6x.250	A500 Gr.C-50			

Hip Beam - Steel DIAGRAM

BEAM PROPERTIES

Start (ft): 0 End (ft): 22.153 Member Slope: 0/12 Actual Length (ft): 22.15

Es x10^3 (psi)	Fy x10^3 (psi)	Fu x10^3 (psi)	Area (in^2)	Ix (in^4)	Iy (in^4)	Zx (in^3)	Zy (in^3)	J (in^4)	Cw (in^6)
29000	50	62	7.1	96.9	44.1	23.6	16.6	96.7	0

DESIGN PROPERTIES

Lp (in)	Lr (in)	Flange Flexure	Web Flexure	Flange Compression	Web Compression	Cv	Cv_WA
208	5573	Compact	Compact	Non-Slender	Slender	1	1

BEAM DATA

Span	Length	Unbraced Length Top	Unbraced Length Bottom	Beam End Elev. Diff	Pnt/ϕ	Pnc/ϕ	Mn/ϕ	Mn-OOP/ϕ	Vn/ϕ	Vn-OOP/ϕ	Cb	Cb-OOP
1	20.153	0	20.153	0	0	0	58.88	33.25	77.85	74.09	1.151	1
1	2	0	2	0	0	0	58.88	33.25	77.85	74.09	2.611	1

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Shear Force Y (lbf)	PASS (87.2%)	9964.3	77852.7	0	F7-1	D+S
Moment Y (lbf-ft)	PASS (57.1%)	25249.9	58882.2	8.64	G2-1 (Ref G5)	D+S
Deflection (in)	PASS (25.9%)	0.148 (=L/324)	0.200 (=L/240)	22.15		S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Y axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	2384	0	0	7580	0	0	0	0	0	0	0
B	955	0	0	2749	0	0	0	0	0	0	0
C	0	0	0	0	0	0	0	0	0	0	0

Reaction Location

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Trapezoidal (lbf/ft)	75.57	0	0	22.153	Dead	Y
Trapezoidal (lbf/ft)	507.65	0	0	22.153	Snow	Y
Trapezoidal (lbf/ft)	75.57	0	0	22.153	Dead	Y
Trapezoidal (lbf/ft)	151.14	0	0	22.153	Snow	Y
Point (lbf)	3032	-	0.5	-	Snow	Y
Point (lbf)	1093	-	0.5	-	Dead	Y
Self Weight (lbf/ft)	25.82	25.82	0	22.153	Dead	Y

PASS

DATE:	1/18/2021	COMPANY:	Blodgett Engineering
VITRUVIUS BUILD:	Base	DESIGNED BY:	Michael Blodgett
CUSTOMER:	Wiberg Architecture	REVIEWED BY:	Michael Blodgett
PROJECT LOCATION:	,		
LEVEL:	Roof	LOADING:	ASD
LOCATION:	Inner Support Column	CODE:	2015 International Building Code
TYPE:	COLUMN	AISC:	AISC 360-10
MATERIAL:	STEEL		

HSS Square	HSS4x4x.250	A500 Gr.C-50			

Inner Support Column DIAGRAM

COLUMN PROPERTIES

Start (ft): 0 End (ft): 9 Member Slope: 0/12 Actual Length (ft): 9

Es x10^3 (psi)	Fy x10^3 (psi)	Fu x10^3 (psi)	Area (in^2)	Ix (in^4)	Iy (in^4)	Zx (in^3)	Zy (in^3)	J (in^4)	Cw (in^6)
29000	50	62	3.37	7.8	7.8	4.69	4.69	12.8	0

DESIGN PROPERTIES

Lp (in)	Lr (in)	Flange Flexure	Web Flexure	Flange Compression	Web Compression	Cv	Cv_WA
160	4242	Compact	Compact	Non-Slender	Non-Slender	1	1

COLUMN DATA

Span	Length	Unbraced Length Top	Unbraced Length Bottom	Column End Elev. Diff	Pnt/ϕ	Pnc/ϕ	Mn/ϕ	Mn-OOP/ϕ	Vn/ϕ	Vn-OOP/ϕ	Cb	Cb-OOP
1	9	0	0	0	0	100.9	11.7	11.7	27.63	46.13	1	1

PASS-FAIL

	PASS/FAIL	MAGNITUDE	STRENGTH	LOCATION (ft)	AISC CODE	LOAD COMBO
Deflection (in)	PASS (99.1%)	0.003 (=L/40000)	0.300 (=L/360)	9		S
Compressive Force (lbf)	PASS (96.0%)	4073.9	100898.2	0	E3-1	D+S

REACTIONS

Units for V: lbf Units for M: lbf-ft

Z axis	DEAD	LIVE	LIVE ROOF	SNOW	WIND +	WIND -	SEISMIC +	SEISMIC -	ICE	RAIN	EARTH
A	1618	0	0	2456	0	0	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0

Reaction Location

LOAD LIST

Type	Left Magnitude	Right Magnitude	Load Start (ft)	Load End (ft)	Load Type	Direction
Point (lbf)	-2456	-	9	-	Snow	Z
Point (lbf)	-1508	-	9	-	Dead	Z
Self Weight (lbf/ft)	12.21	12.21	0	9	Dead	Z

NOTES

BLODGETT ENGINEERING LLC
STRUCTURAL CONSULTING ENGINEERS
W169 N10815 Redwood Lane
Germantown, WI 53022
blodgetteng@wi.rr.com
Tel/Fax: 262.293.9923

JOB _____

SHEET NO. _____ OF _____

CALCULATED BY _____ DATE _____

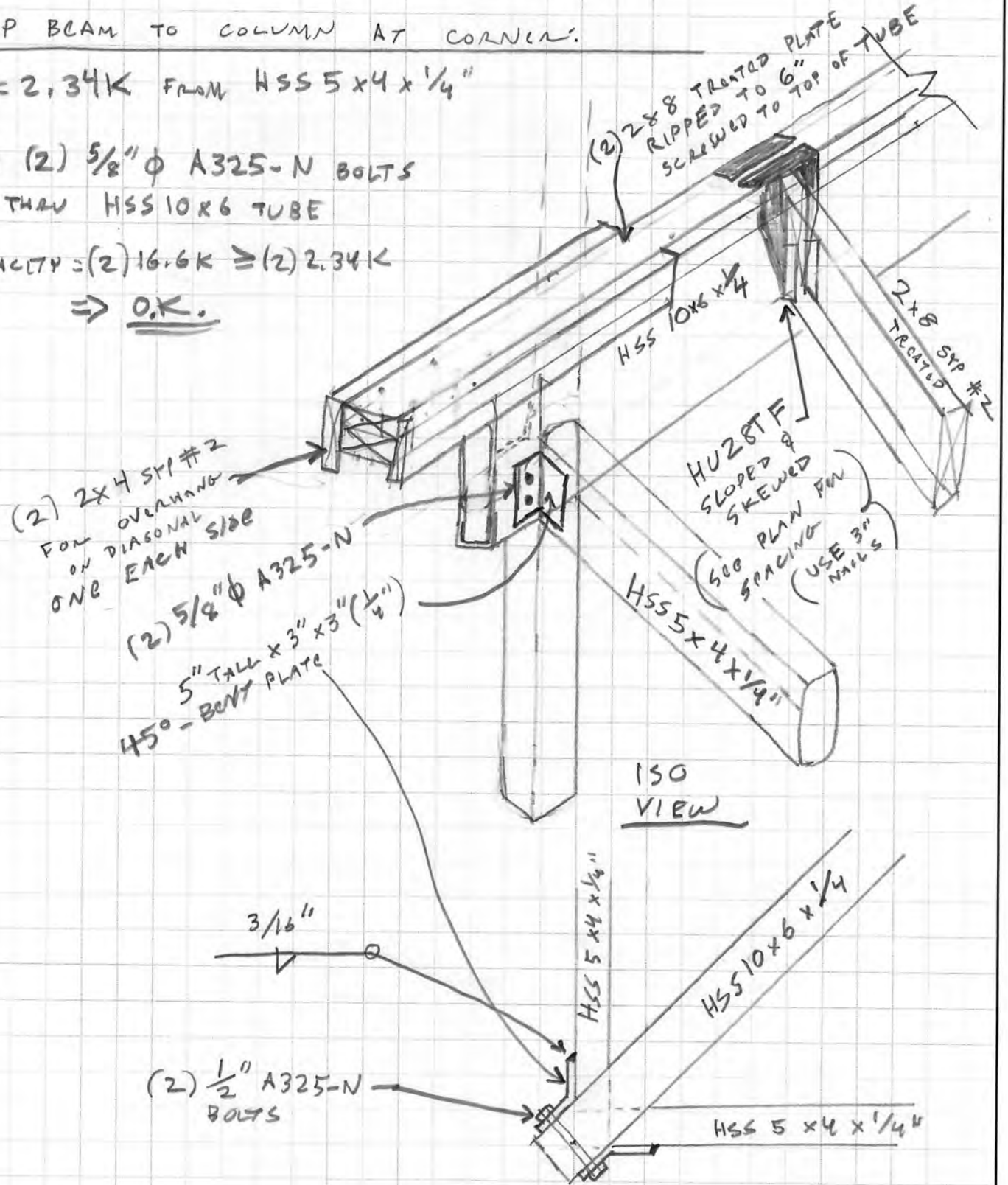
HLP BEAM TO COLUMN AT CORNER.

P = 2.34K FROM HSS 5x4x1/4"

USE (2) 5/8" ϕ A325-N BOLTS THRU HSS 10x6 TUBE

CAPACITY = (2) 16.6K ≥ (2) 2.34K

⇒ O.K.



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JOB _____

SHEET NO. _____ OF _____

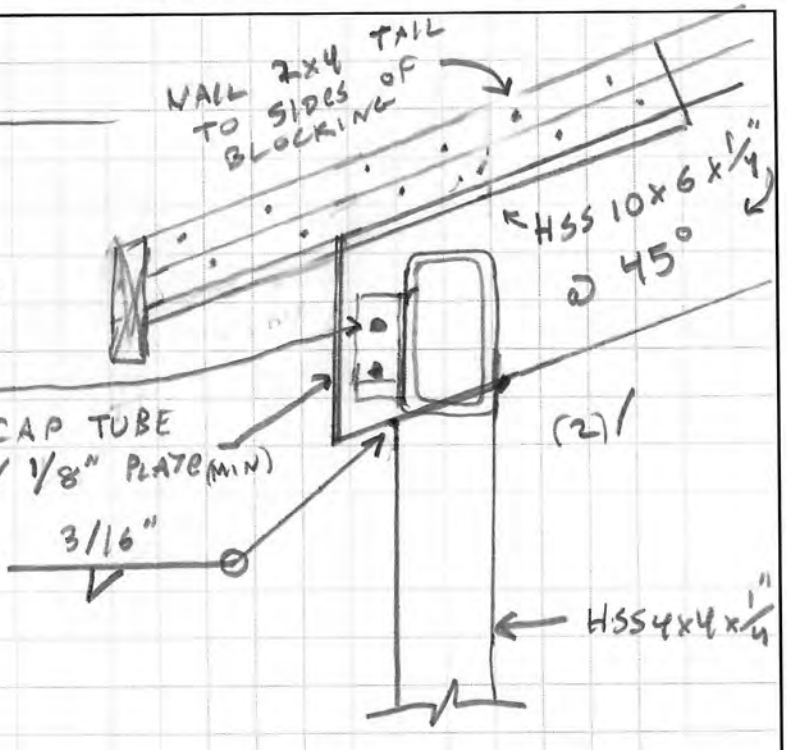
CALCULATED BY _____ DATE _____

COLUMN CONNECTIONS:

TOP AT HIP BEAM:

- SHOP WELD VALLEY BEAM TO COLUMN

USE: (2) 5/8" A325-N BOLTS THRU TUBE



TO CONCRETE: