



13228 NE 20th St., Suite 100
Bellevue, WA 98005
Phone (425) 614-0949 Fax (425) 614-0950

City of Puyallup Development & Permitting Services ISSUED PERMIT	
Building	Planning
Engineering	Public Works
Fire	Traffic

STRUCTURAL CALCULATIONS FOR:

Barnes and Noble Puyallup - Fixture Anchorage

Street Address: 3500 S. Meridian St.
City: Puyallup
State: Washington
Zip Code: 98373

Client:



Visual Creations, Inc.
3500 S. Meridian St.
Puyallup, WA 98373

Project Engineer:
Principal In Charge:
Signing Principal

By
Bingze Weng
Alex Habliston, S.E.
Shalini Prochazka, S.E.

AUE JOB #: 24424
Date: 12/13/2024



12/13/2024

Design Criteria

Code Summary

Building Code: 2021 International Building Code
Local Building Code: 2021 Washington State Building Code
Supplemental Code: 2016 ASCE 7
Risk Category: II Standard-Occupancy Building

Building Dimensions & Site Parameters:

Mean Roof Height 'h': 22.00 ft.
(Larger) Length: 210 ft.
Width: 100.00 ft.
Ground Elevation above Sea Level, z_g : 436 ft

Seismic Design Parameters:

S_S : 1.263 S_{MS} : 1.516 S_{DS} : 1.010 F_a : 1.20 I_e : 1.00
 S_1 : 0.436 S_{M1} : - S_{D1} : - F_v : -

Site Class: D (Default)

Seismic Design Category: D

Additional Requirements: 1 sec period seismic parameters require additional analysis per ASCE 7 Sect. 11.4.8

Design Loads:



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: DC 1
Date: 12/13/2024
Job No.: 24424

Seismic Loading: Components and Cladding

IBC 2021

ASCE 7-16 Chapter 13: Seismic Design Requirements for Nonstructural Components

General Design Parameters:

Risk Category: II <i>Standard-Occupancy Building</i>			h_n : 22.00 ft	<u>Vertical Seismic Loading:</u> $F_{p,vert}$: 0.202 $*W_p$
S_s : 1.263	S_{DS} : 1.010	I_e : 1.00	SDC: D	
S_1 : 0.436	S_{D1} : -		Site Class: (Default)	

- Fixtures

A16. Cabinets - Permanent Floor-Supported Library Shelving, Book Stacks, and Bookshelves over 6 ft tall, Including Countertops

a_p : 1.0	z : 22.00 ft	I_p : 1.0
R_p : 2.5	h : 22.00 ft	
Ω_o : 2.0		
F_p : 0.485 $*W_p$		
$F_{p,max}$: 1.617 $*W_p$	$F_{p,horz}$: 0.485 $*W_p$	
$F_{p,min}$: 0.303 $*W_p$	$\Omega_o * F_{p,horz}$: 0.970 $*W_p$	

- Fixtures ($z/h = 0.66$)

A16. Cabinets - Permanent Floor-Supported Library Shelving, Book Stacks, and Bookshelves over 6 ft tall, Including Countertops

a_p : 1.0	z : 14.67 ft	I_p : 1.0
R_p : 2.5	h : 22 ft	
Ω_o : 2.0		
F_p : 0.377 $*W_p$		
$F_{p,max}$: 1.617 $*W_p$	$F_{p,horz}$: 0.377 $*W_p$	
$F_{p,min}$: 0.303 $*W_p$	$\Omega_o * F_{p,horz}$: 0.754 $*W_p$	



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: C&C Seis 1
Date: 12/13/2024
Job No.: 24424

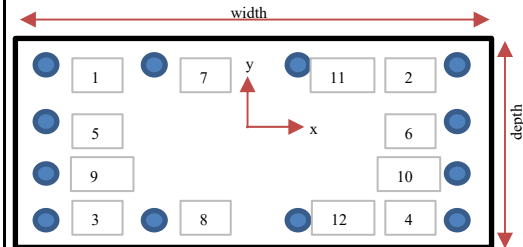
Unit Summary:

Fixture 1

BNO-210A, Nook/Info Look-up

Wall Anchorage

	Weight (lb)	CG (vert) (in)								
Base Wt:	421.00	58.0	Design Wt =	500.00	lb			CG (Depth) =	7.5	in
Add'l Wt 1:	0.00	0.0	Listed Wt =	421.00	lb			CG (Width)=	18.0	in
Add'l Wt 2:	0.00	0.0	Height =	87.0	in ->	7.25	ft	CG (Vert) =	55.7	in
Add'l Wt 3:	0.00	0.0	Depth =	15.0	in ->	1.25	ft	CG measured from bottom left corner		
Add'l Wt 4:	0.00	0.0	Width=	36.0	in ->	3.00	ft			
Misc:	79.00	43.5								



Anchor locations measured from bottom left corner

Number of Anchors: 6

CGx = 18.0 in Ix = 4225 in^2

Cgy = 43.3 in Iy = 384 in^2

Ip = 4609 in^2

Anchor Locations:

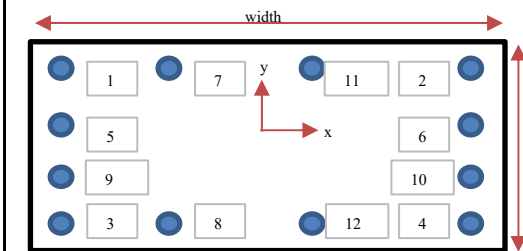
Use	x (in)	y (in)	Use	x (in)	y (in)
x 1	10.00	76.00	- 11	0.00	0.00
x 2	26.00	76.00	- 12	0.00	0.00
x 3	10.00	11.00	- 13	0.00	0.00
x 4	26.00	11.00	- 14	0.00	0.00
x 5	10.00	43.00	- 15	0.00	0.00
x 6	26.00	43.00	- 16	0.00	0.00
- 7	0.00	0.00	- 17	0.00	0.00
- 8	0.00	0.00	- 18	0.00	0.00
- 9	0.00	0.00	- 19	0.00	0.00
- 10	0.00	0.00	- 20	0.00	0.00

Fixture 2

BNO-210AF

Base Anchorage

	Weight (lb)	CG (vert) (in)								
Base Wt:	421.00	58.0	Design Wt =	500.00	lb			CG (Depth) =	7.5	in
Add'l Wt 1:	0.00	0.0	Listed Wt =	421.00	lb			CG (Width)=	18.0	in
Add'l Wt 2:	0.00	0.0	Height =	87.0	in ->	7.25	ft	CG (Vert) =	55.7	in
Add'l Wt 3:	0.00	0.0	Depth =	15.0	in ->	1.25	ft	CG measured from bottom left corner		
Add'l Wt 4:	0.00	0.0	Width=	36.0	in ->	3.00	ft			
Misc:	79.00	43.5								



Anchor locations measured from bottom left corner

Number of Anchors: 4

CGx = 18.0 in Ix = 121 in^2

Cgy = 7.5 in Iy = 676 in^2

Ip = 797 in^2

Anchor Locations:

Use	x (in)	y (in)	Use	x (in)	y (in)
x 1	5.00	13.00	- 11	0.00	0.00
x 2	31.00	13.00	- 12	0.00	0.00
x 3	5.00	2.00	- 13	0.00	0.00
x 4	31.00	2.00	- 14	0.00	0.00
- 5	0.00	0.00	- 15	0.00	0.00
- 6	0.00	0.00	- 16	0.00	0.00
- 7	0.00	0.00	- 17	0.00	0.00
- 8	0.00	0.00	- 18	0.00	0.00
- 9	0.00	0.00	- 19	0.00	0.00
- 10	0.00	0.00	- 20	0.00	0.00



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

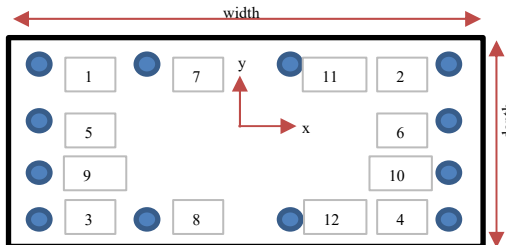
Pg. No: Unit Sum. 1
Date: 12/13/2024
Job No.: 24424

Fixture 3

BTB BNO-210AF

Base Anchorage

	Weight (lb)	CG (vert) (in)								
Base Wt:	842.00	58.0	Design Wt =	1,000.00	lb			CG (Depth) =	16.5	in
Add'l Wt 1:	0.00	0.0	Listed Wt =	842.00	lb			CG (Width)=	18.0	in
Add'l Wt 2:	0.00	0.0	Height =	87.0	in ->	7.25	ft	CG (Vert) =	55.7	in
Add'l Wt 3:	0.00	0.0	Depth =	33.0	in ->	2.75	ft	CG measured from bottom left corner		
Add'l Wt 4:	0.00	0.0	Width=	36.0	in ->	3.00	ft			
Misc:	158.00	43.5								



Anchor locations measured from bottom left corner

Number of Anchors: 4

CGx = 18.0 in Ix = 841 in²Cgy = 16.5 in Iy = 676 in²Ip = 1517 in²**Anchor Locations:**

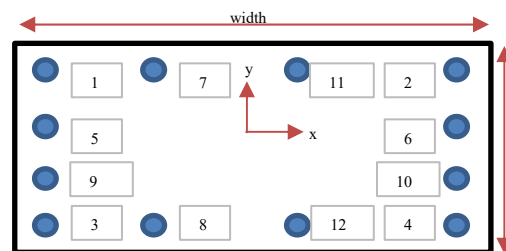
Use	x (in)	y (in)	Use	x (in)	y (in)
x 1	5.00	31.00	- 11	0.00	0.00
x 2	31.00	31.00	- 12	0.00	0.00
x 3	5.00	2.00	- 13	0.00	0.00
x 4	31.00	2.00	- 14	0.00	0.00
- 5	0.00	0.00	- 15	0.00	0.00
- 6	0.00	0.00	- 16	0.00	0.00
- 7	0.00	0.00	- 17	0.00	0.00
- 8	0.00	0.00	- 18	0.00	0.00
- 9	0.00	0.00	- 19	0.00	0.00
- 10	0.00	0.00	- 20	0.00	0.00

Fixture 4

3PER BNO-210AF

Base Anchorage

	Weight (lb)	CG (vert) (in)								
Base Wt:	1,263.00	60.0	Design Wt =	1,500.00	lb			CG (Depth) =	16.5	in
Add'l Wt 1:	0.00	0.0	Listed Wt =	1,263.00	lb			CG (Width)=	18.0	in
Add'l Wt 2:	0.00	0.0	Height =	90.0	in ->	7.50	ft	CG (Vert) =	57.6	in
Add'l Wt 3:	0.00	0.0	Depth =	33.0	in ->	2.75	ft	CG measured from bottom left corner		
Add'l Wt 4:	0.00	0.0	Width=	36.0	in ->	3.00	ft			
Misc:	237.00	45.0								



Anchor locations measured from bottom left corner

Number of Anchors: 4

CGx = 18.0 in Ix = 841 in²Cgy = 16.5 in Iy = 676 in²Ip = 1517 in²**Anchor Locations:**

Use	x (in)	y (in)	Use	x (in)	y (in)
x 1	5.00	31.00	- 11	0.00	0.00
x 2	31.00	31.00	- 12	0.00	0.00
x 3	5.00	2.00	- 13	0.00	0.00
x 4	31.00	2.00	- 14	0.00	0.00
- 5	0.00	0.00	- 15	0.00	0.00
- 6	0.00	0.00	- 16	0.00	0.00
- 7	0.00	0.00	- 17	0.00	0.00
- 8	0.00	0.00	- 18	0.00	0.00
- 9	0.00	0.00	- 19	0.00	0.00
- 10	0.00	0.00	- 20	0.00	0.00



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Project: Barnes and Noble Puyallup - Fixture Anchorage
 Address: 3500 S. Meridian St., Puyallup, Washington 98373
 Client: Visual Creations, Inc.

Pg. No: Unit Sum. 2
 Date: 12/13/2024
 Job No.: 24424

Wall-Mounted Equipment

Fixture 1

Units: BNO-210A, Nook/Info Look-up

Equipment Support

Floor Supported

Assumes Gravity is supported on Floor, Lateral Loads resisted by wall connections

Unit Properties:

Design Wt:	500	lb
Listed Wt:	421	lb
Unit Height:	7.25	ft
Unit Width:	3.00	ft
Unit Depth:	1.25	ft
CG (height):	4.64	ft
CG (width):	1.50	ft
CG (depth):	0.63	ft

Anchorage Properties:

Number of Anchors:	6
Anchor CG (width):	1.50 ft
Anchor CG (depth):	3.61 ft
Anchor Ix:	4,225 in ²
Anchor Iy:	384 in ²
Anchor Ip:	4,609 in ²

Seismic Criteria:

- Fixtures

Fp = 0.485 * Wp Ip: 1.0 Ωo: 2

Loads:

Seismic:

Horiz = 242 lb (LRFD)

Vert = 101 lb (LRFD)

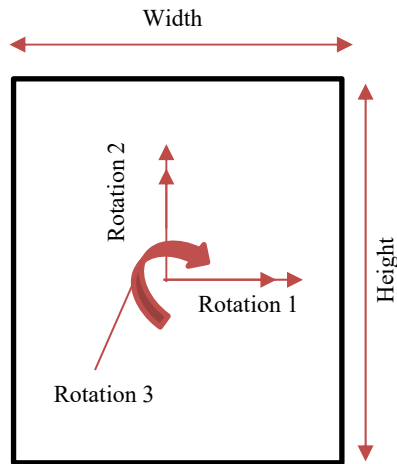
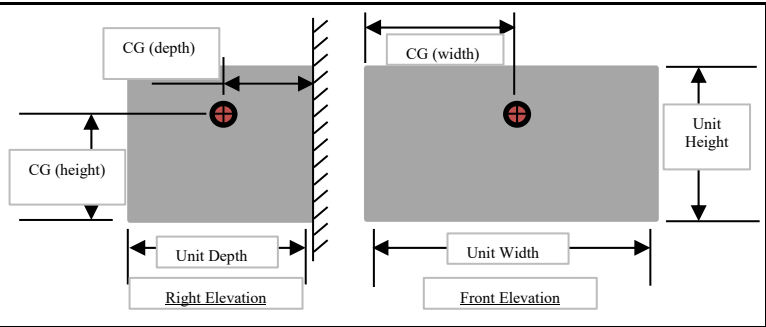
Wind: q = 5 psf (ASD)

Horiz = 109 lb (ASD) perp to wall

Horiz = 45 lb (ASD) parallel to wall

Gravity:

Vert = 0 lb (ASD)



Wall Equipment Elevation

		Mrot (lb-ft)		
Seismic Rotation Analysis:		Rotation 1	Rotation 2	Rotation 3
Forces Perpendicular to Wall: (ASD)	Horiz E/1.4:	179	0	N/A
	Vert E/1.4:	45	N/A	0
	DL:	0	N/A	0
	Total =	224	0	0
Forces Parallel to Wall: (ASD)	Horiz E/1.4:	N/A	108	179
	Vert E/1.4:	45	N/A	0
	DL:	0	N/A	0
	Total =	45	108	179

		Mrot (lb-ft)		
Wind Rotation Analysis:		Rotation 1	Rotation 2	Rotation 3
Forces Perpendicular to Wall: (ASD)	Horiz W/1.6	2	0	N/A
	Vert W/1.6:	N/A	N/A	N/A
	DL:	0	N/A	0
	Total =	2	0	0
Forces Parallel to Wall: (ASD)	Horiz W/1.6	N/A	68	2
	Vert W/1.6:	N/A	N/A	N/A
	DL:	0	N/A	0
	Total =	0	68	2



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: Equipment 1
Date: 12/13/2024
Job No.: 24424

Anchor Checks: (Loads Perpendicular to Wall)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	10.00	76.00	6	26.00	43.00
2	26.00	76.00	7	N/A	N/A
3	10.00	11.00	8	N/A	N/A
4	26.00	11.00	9	N/A	N/A
5	10.00	43.00	10	N/A	N/A

Force Summary: Perpendicular to Wall	w/ Seismic:		LRFD w/o Ω_o	ASD	LRFD w/ Ω_o	Metal Stud Wall Attachment: (ASD)			
		Vvert =	101 lb	72 lb	101 lb	Try:	# Screws: 2	Layers of GWB: 1	
		Vhoriz =	0 lb	0 lb	0 lb	Screw:	#10	Min Mil: 33	Mil
		T =	242 lb	173 lb	485 lb	Tallow =	168	lb (Seismic)	
		Rotation 1:	313 lb-ft	224 lb-ft	563 lb-ft	Vallow =	200	lb (Seismic)	
		Rotation 2:	0 lb-ft	0 lb-ft	0 lb-ft	Tu =	50	lb (Seismic)	
		Rotation 3:	0 lb-ft	0 lb-ft	0 lb-ft	Vu =	12	lb (Seismic)	
	w/ Wind:		LRFD	ASD		Total Unity =	0.36	OK	
		Vvert =	0 lb	0 lb		Tallow =	168	lb (Wind)	
		Vhoriz =	0 lb	0 lb		Vallow =	200	lb (Wind)	
		T =	174 lb	109 lb		Tu =	18	lb (Wind)	
		Rotation 1:	2 lb-ft	2 lb-ft		Vu =	0	lb (Wind)	
		Rotation 2:	0 lb-ft	0 lb-ft		Total Unity =	0.11	OK	
		Rotation 3:	0 lb-ft	0 lb-ft					

Anchor Forces		Shear:						Tension:					
		Total (LRFD) w/o Ω_o		Total (LRFD) w/ Ω_o		Total (ASD)		Total (LRFD) w/o Ω_o		Total (LRFD) w/ Ω_o		Total (ASD)	
Perpendicular to Wall (Seismic)	1	0.02	k	0.02	k	0.01	k	0.07	k	0.13	k	0.05	k
	2	0.02	k	0.02	k	0.01	k	0.07	k	0.13	k	0.05	k
	3	0.02	k	0.02	k	0.01	k	0.07	k	0.13	k	0.05	k
	4	0.02	k	0.02	k	0.01	k	0.07	k	0.13	k	0.05	k
	5	0.02	k	0.02	k	0.01	k	0.04	k	0.08	k	0.03	k
	6	0.02	k	0.02	k	0.01	k	0.04	k	0.08	k	0.03	k
	7	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	8	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	9	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	10	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k

Perpendicular to Wall (Wind)	1	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	2	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	3	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	4	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	5	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	6	0.00	k	N/A	k	0.00	k	0.03	k	N/A	k	0.02	k
	7	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	8	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	9	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	10	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 2
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Anchor Checks: (Loads Parallel to Wall)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	10.00	76.00	6	26.00	43.00
2	26.00	76.00	7	N/A	N/A
3	10.00	11.00	8	N/A	N/A
4	26.00	11.00	9	N/A	N/A
5	10.00	43.00	10	N/A	N/A

Force Summary: Parallel to Wall	w/ Seismic:		LRFD w/o Ω_o	ASD	LRFD w/ Ω_o	Metal Stud Wall Attachment: (ASD)			
		Vvert =	101 lb	72 lb	101 lb	Try:	# Screws: 2	Layers of GWB: 1	
		Vhoriz =	242 lb	173 lb	485 lb	Screw:	#10	Min Mil: 33	Mil
		T =	0 lb	0 lb	0 lb	Tallow =	168	lb (Seismic)	
		Rotation 1:	63 lb-ft	45 lb-ft	63 lb-ft	Vallow =	200	lb (Seismic)	
		Rotation 2:	152 lb-ft	108 lb-ft	303 lb-ft	Tu =	115	lb (Seismic)	
		Rotation 3:	250 lb-ft	179 lb-ft	500 lb-ft	Vu =	47	lb (Seismic)	
	w/ Wind:		LRFD	ASD		Total Unity =	0.92	OK	
		Vvert =	0 lb	0 lb					
		Vhoriz =	73 lb	45		Tallow =	168	lb (Wind)	
		T =	0 lb	0		Vallow =	200	lb (Wind)	
		Rotation 1:	0 lb-ft	0 lb-ft		Tu =	69	lb (Wind)	
		Rotation 2:	109 lb-ft	68 lb-ft		Vu =	8	lb (Wind)	
		Rotation 3:	4 lb-ft	2 lb-ft		Total Unity =	0.45	OK	

Anchor Forces		Shear:						Tension:					
		Total (LRFD) w/o Ω_o		Total (LRFD) w/ Ω_o		Total (ASD)		Total (LRFD) w/o Ω_o		Total (LRFD) w/ Ω_o		Total (ASD)	
Parallel to Wall (Seismic)	1	0.07	k	0.13	k	0.05	k	0.16	k	0.32	k	0.11	k
	2	0.07	k	0.13	k	0.05	k	0.16	k	0.32	k	0.11	k
	3	0.07	k	0.13	k	0.05	k	0.16	k	0.31	k	0.11	k
	4	0.07	k	0.13	k	0.05	k	0.16	k	0.31	k	0.11	k
	5	0.05	k	0.09	k	0.03	k	0.00	k	0.00	k	0.00	k
	6	0.05	k	0.09	k	0.03	k	0.00	k	0.00	k	0.00	k
	7	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	8	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	9	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k
	10	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k	0.00	k

Parallel to Wall (Wind)	1	0.01	k	N/A	k	0.01	k	0.11	k	N/A	k	0.07	k
	2	0.01	k	N/A	k	0.01	k	0.11	k	N/A	k	0.07	k
	3	0.01	k	N/A	k	0.01	k	0.11	k	N/A	k	0.07	k
	4	0.01	k	N/A	k	0.01	k	0.11	k	N/A	k	0.07	k
	5	0.01	k	N/A	k	0.01	k	0.00	k	N/A	k	0.00	k
	6	0.01	k	N/A	k	0.01	k	0.00	k	N/A	k	0.00	k
	7	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	8	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	9	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k
	10	0.00	k	N/A	k	0.00	k	0.00	k	N/A	k	0.00	k



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 3
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Equipment: (Without Floor Mounted Isolators)

Fixture 2

Units: BNO-210AF

Equipment Pad Wt:

t = 0.00 in
width = 6.00 ft
depth = 6.00 ft
Wt = 0 lb

Unit Properties:

Design Wt: 500 lb
Listed Wt: 421 lb
Unit Height: 7.25 ft
Unit Width: 3.00 ft
Unit Depth: 1.25 ft
CG (height): 4.64 ft
CG (width): 1.50 ft
CG (depth): 0.63 ft

Anchorage Properties:

Number of Anchors: 4
Anchor CG (width): 1.50 ft
Anchor CG (depth): 0.63 ft
Anchor Ix: 121 in²
Anchor Iy: 676 in²
Anchor Ip: 797 in²

Seismic Criteria:

- Fixtures (z/h = 0.66)

Fp = 0.377 * Wp Ip: 1.0 Ωo: 2

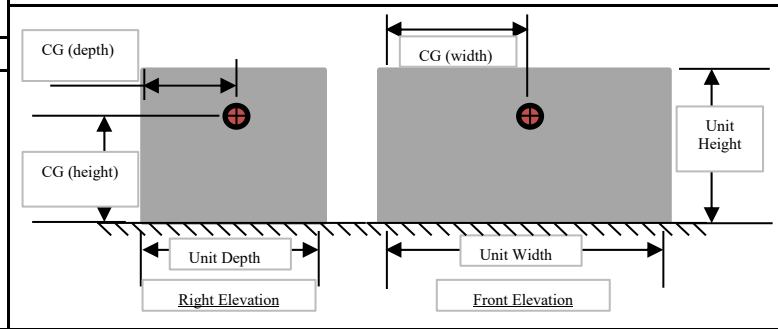
Loads:

Seismic:

Horiz = 189 lb (LRFD)
Vert = 101 lb (LRFD)

Wind: q = 5 psf (ASD)

Horiz = 109 lb (ASD) perp to width
Horiz = 45 lb (ASD) perp to depth



Seismic Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz E/1.4:	613 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	44 lb-ft	Vert DL:	158 lb-ft	Overturning
	or	44 lb-ft	or	158 lb-ft	
	Mo =	657 lb-ft	Mr =	158 lb-ft	Mnet = 499 lb-ft
	or	657 lb-ft	or	158 lb-ft	or 499 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz E/1.4:	613 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	106 lb-ft	Vert DL:	379 lb-ft	Overturning
	or	106 lb-ft	or	379 lb-ft	
	Mo =	719 lb-ft	Mr =	379 lb-ft	Mnet = 340 lb-ft
	or	719 lb-ft	or	379 lb-ft	or 340 lb-ft

Wind Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz W/1.6	394 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	158 lb-ft	Overturning
	or	0 lb-ft	or	158 lb-ft	
	Mo =	394 lb-ft	Mr =	158 lb-ft	Mnet = 236 lb-ft
	or	394 lb-ft	or	158 lb-ft	or 236 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz W/1.6	164 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	379 lb-ft	No Net Overturning
	or	0 lb-ft	or	379 lb-ft	
	Mo =	164 lb-ft	Mr =	379 lb-ft	Mnet = -215 lb-ft
	or	164 lb-ft	or	379 lb-ft	or -215 lb-ft



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: Equipment 4
Date: 12/13/2024
Job No.: 24424

Anchor Checks: (Loads Perpendicular to Width)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	13.00	11	N/A	N/A
2	31.00	13.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Width	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o	V = 189 lb	Min. Edge =	6 in	Min Slab =	3.25 in	
	- Mr includes reduction due to min vertical forces	Mo = 876 lb-ft	Tallow =	0.94 k (Seismic)	or	1.25 k (Wind)	
		Mr = 174 lb-ft	Vallow =	1.35 k (Seismic)	or	1.35 k (Wind)	
	Wind: (LRFD)	Perpendicular to Width	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 174 lb	Tu/Tallow =	0.81 OK	Tu/Tallow =	0.17 OK	
		Mo = 631 lb-ft	Vu/Vallow =	0.07 OK	Vu/Vallow =	0.03 OK	
		Mr = 237 lb-ft	Total =	0.88 OK	Total =	0.20 OK	

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL *1.2 (k)
Perpendicular to Width (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.047	0.044	0	0	0	0	0.047	0.044	0.094	N/A	0.383	0.215	0.766	N/A	0.478	0.344
	2	0.047	0.044	0	0	0	0	0.047	0.044	0.094	N/A	0.383	0.215	0.766	N/A	0.478	0.344
	3	0.047	0.044	0	0	0	0	0.047	0.044	0.094	N/A	0.383	0.215	0.766	N/A	0.478	0.344
	4	0.047	0.044	0	0	0	0	0.047	0.044	0.094	N/A	0.383	0.215	0.766	N/A	0.478	0.344
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 5
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Anchor Checks: (Loads Perpendicular to Depth)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	13.00	11	N/A	N/A
2	31.00	13.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Depth	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o - Mr includes reduction due to min vertical forces	V = 189 lb Mo = 876 lb-ft Mr = 417 lb-ft Mtor = 0 lb-ft	Min. Edge = 6 in Tallow = 0.94 k (Seismic) Vallow = 1.35 k (Seismic)	Min Slab = 3.25 in or 1.25 k (Wind) or 1.35 k (Wind)			
	Wind: (LRFD)	Perpendicular to Depth	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 73 lb Mo = 263 lb-ft Mr = 568 lb-ft	Tu/Tallow = 0.23 Vu/Vallow = 0.07 Total = 0.30	OK OK OK	Tu/Tallow = 0.00 Vu/Vallow = 0.01 Total = 0.01	OK OK OK	

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL *1.2 (k)
Perpendicular to Depth (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.047	0.018	0	0	0	0	0.047	0.018	0.094	N/A	0.106	0	0.212	N/A	1.129	0.061
	2	0.047	0.018	0	0	0	0	0.047	0.018	0.094	N/A	0.106	0	0.212	N/A	1.129	0.061
	3	0.047	0.018	0	0	0	0	0.047	0.018	0.094	N/A	0.106	0	0.212	N/A	1.129	0.061
	4	0.047	0.018	0	0	0	0	0.047	0.018	0.094	N/A	0.106	0	0.212	N/A	1.129	0.061
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 6
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Angle Design Connection to Equipment			
Fastener:	(4) #12	Screws w/ 5/8" Embed	
Vallow:	141	lb/screw	<i>Note: Safety factor of 5 has been applied to ultimate values obtained from APA</i>
Tallow:	78	lb/screw	
Eccentricity:	1	in	
Spacing:	1	in	
Vu:	68	lb	
Tu:	8	lb	
Unity:	0.59	OK	

Light Gauge Clip Design:									
<i>Loading:</i>		<i>Clip Dimension & Properties:</i>							
Ecc.:	1 in.	Clip Leg to Frame:	2	in.	F _y :	50	ksi.	I _{x-x} :	0.0002 in4
M _{req.} :	0.068 k-in.	Clip Leg to Struct.:	2	in.	Ω _B :	1.67		S _x :	0.0034 in3
		Clip Length 'b':	2	in.	E:	29000	ksi.	M _{x_yeild} :	0.1724 k-in.
Capacity Check:		Clip Thick:	97	mil	Z _p :	0.0052	in3	M _n :	0.2586 k-in.
Mn/Ω _B :	0.155 k-in.	Design Thick:	0.1017	in.					
	0.44	OK							



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 7
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Equipment: (Without Floor Mounted Isolators)

Fixture 3

Units: BTB BNO-210AF

Equipment Pad Wt:

t = 0.00 in
width = 6.00 ft
depth = 6.00 ft
Wt = 0 lb

Unit Properties:

Design Wt: 1,000 lb
Listed Wt: 842 lb
Unit Height: 7.25 ft
Unit Width: 3.00 ft
Unit Depth: 2.75 ft
CG (height): 4.64 ft
CG (width): 1.50 ft
CG (depth): 1.38 ft

Anchorage Properties:

Number of Anchors: 4
Anchor CG (width): 1.50 ft
Anchor CG (depth): 1.38 ft
Anchor Ix: 841 in²
Anchor Iy: 676 in²
Anchor Ip: 1,517 in²

Seismic Criteria:

- Fixtures (z/h = 0.66)

Fp = 0.377 * Wp Ip: 1.0 Ωo: 2

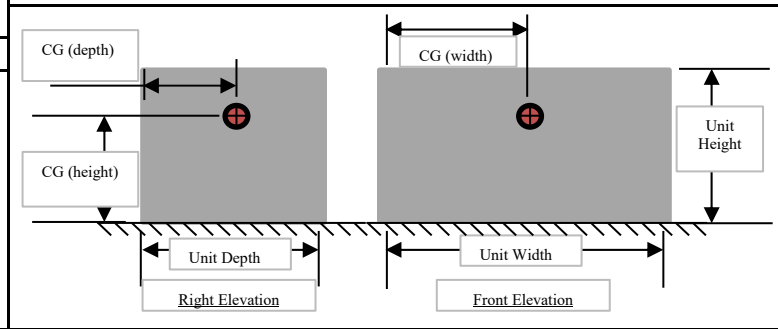
Loads:

Seismic:

Horiz = 377 lb (LRFD)
Vert = 202 lb (LRFD)

Wind: q = 5 psf (ASD)

Horiz = 109 lb (ASD) perp to width
Horiz = 100 lb (ASD) perp to depth



Seismic Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz E/1.4:	1,226 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	195 lb-ft	Vert DL:	695 lb-ft	Overturning
	or	195 lb-ft	or	695 lb-ft	
	Mo =	1,420 lb-ft	Mr =	695 lb-ft	Mnet = 726 lb-ft
	or	1,420 lb-ft	or	695 lb-ft	or 726 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz E/1.4:	1,226 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	212 lb-ft	Vert DL:	758 lb-ft	Overturning
	or	212 lb-ft	or	758 lb-ft	
	Mo =	1,438 lb-ft	Mr =	758 lb-ft	Mnet = 680 lb-ft
	or	1,438 lb-ft	or	758 lb-ft	or 680 lb-ft

Wind Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz W/1.6	394 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	695 lb-ft	No Net Overturning
	or	0 lb-ft	or	695 lb-ft	
	Mo =	394 lb-ft	Mr =	695 lb-ft	Mnet = -300 lb-ft
	or	394 lb-ft	or	695 lb-ft	or -300 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz W/1.6	361 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	758 lb-ft	No Net Overturning
	or	0 lb-ft	or	758 lb-ft	
	Mo =	361 lb-ft	Mr =	758 lb-ft	Mnet = -396 lb-ft
	or	361 lb-ft	or	758 lb-ft	or -396 lb-ft



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: Equipment 8
Date: 12/13/2024
Job No.: 24424

Anchor Checks: (Loads Perpendicular to Width)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	31.00	11	N/A	N/A
2	31.00	31.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Width	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o	V = 377 lb	Min. Edge =	6 in	Min Slab =	3.25 in	
	- Mr includes reduction due to min vertical forces	Mo = 1,751 lb-ft	Tallow =	0.94 k (Seismic)	or	1.25 k (Wind)	
		Mr = 764 lb-ft	Vallow =	1.35 k (Seismic)	or	1.35 k (Wind)	
	Wind: (LRFD)	Perpendicular to Width	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 174 lb	Tu/Tallow = 0.43 OK		Tu/Tallow = 0.00 OK		
		Mo = 631 lb-ft	Vu/Vallow = 0.14 OK		Vu/Vallow = 0.03 OK		
		Mr = 1,042 lb-ft	Total = 0.57 OK		Total = 0.03 OK		

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL *1.2 (k)
Perpendicular to Width (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.094	0.044	0	0	0	0	0.094	0.044	0.189	N/A	0.204	0	0.408	N/A	0.362	0.131
	2	0.094	0.044	0	0	0	0	0.094	0.044	0.189	N/A	0.204	0	0.408	N/A	0.362	0.131
	3	0.094	0.044	0	0	0	0	0.094	0.044	0.189	N/A	0.204	0	0.408	N/A	0.362	0.131
	4	0.094	0.044	0	0	0	0	0.094	0.044	0.189	N/A	0.204	0	0.408	N/A	0.362	0.131
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 9
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Anchor Checks: (Loads Perpendicular to Depth)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	31.00	11	N/A	N/A
2	31.00	31.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Depth	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o - Mr includes reduction due to min vertical forces	V = 377 lb Mo = 1,751 lb-ft Mr = 834 lb-ft Mtor = 0 lb-ft	Min. Edge = 6 in Tallow = 0.94 k (Seismic) Vallow = 1.35 k (Seismic)	Min Slab = 3.25 in or 1.25 k (Wind) or 1.35 k (Wind)			
	Wind: (LRFD)	Perpendicular to Depth	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 160 lb Mo = 578 lb-ft Mr = 1,137 lb-ft	Tu/Tallow = 0.45 OK Vu/Vallow = 0.14 OK Total = 0.59 OK		Tu/Tallow = 0.00 OK Vu/Vallow = 0.03 OK Total = 0.03 OK		

Anchor Forces: (LRFD)		Shear:										Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)		DL*1.2 (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o			
Perpendicular to Depth (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.094	0.04	0	0	0	0	0.094	0.04	0.189	N/A	0.212	0	0.424	N/A	0.325	0.133	0.3	0.3
	2	0.094	0.04	0	0	0	0	0.094	0.04	0.189	N/A	0.212	0	0.424	N/A	0.325	0.133	0.3	0.3
	3	0.094	0.04	0	0	0	0	0.094	0.04	0.189	N/A	0.212	0	0.424	N/A	0.325	0.133	0.3	0.3
	4	0.094	0.04	0	0	0	0	0.094	0.04	0.189	N/A	0.212	0	0.424	N/A	0.325	0.133	0.3	0.3
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 10
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Angle Design Connection to Equipment			
Fastener:	(4) #12	Screws w/ 5/8" Embed	
Vallow:	141	lb/screw	<i>Note: Safety factor of 5 has been applied to ultimate values obtained from APA</i>
Tallow:	78	lb/screw	
Eccentricity:	1	in	
Spacing:	1	in	
Vu:	39	lb	
Tu:	17	lb	
Unity:	0.49	OK	

Light Gauge Clip Design:									
<u>Loading:</u>		<u>Clip Dimension & Properties:</u>							
Ecc.:	1 in.	Clip Leg to Frame:	2	in.	F _y :	50	ksi.	I _{x-x} :	0.0002 in4
M _{req.} :	0.039 k-in.	Clip Leg to Struct.:	2	in.	Ω _B :	1.67		S _x :	0.0034 in3
		Clip Length 'b':	2	in.	E:	29000	ksi.	M _{x_yeild} :	0.1724 k-in.
Capacity Check:		Clip Thick:	97	mil	Z _p :	0.0052	in3	M _n :	0.2586 k-in.
Mn/Ω _B :	0.155 k-in.	Design Thick:	0.1017	in.					
	0.25	OK							

Check Fixture Connections:

Fixture Attachment:					
Fastener:	#8	Screws w/ 5/8" Embed into Ply			
Vallow:	141	lb/screw	3/4" Ply to 3/4" Ply (Includes Cd=1.6)		
Tallow:	88	lb/screw			
# Screws: 4					
<u>Forces Perpendicular to Width:</u>		<u>Forces Perpendicular to Depth:</u>			
Vu:	68	lb/screw	Vu:	38	lb/screw
Tu:	17	lb/screw	Tu:	0	lb/screw
Unity:	0.68	OK	Unity:	0.27	OK



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 11
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Equipment: (Without Floor Mounted Isolators)

Fixture 4

Units: 3PER BNO-210AF

Equipment Pad Wt:

t = 0.00 in
width = 6.00 ft
depth = 6.00 ft
Wt = 0 lb

Unit Properties:

Design Wt: 1,500 lb
Listed Wt: 1,263 lb
Unit Height: 7.50 ft
Unit Width: 3.00 ft
Unit Depth: 2.75 ft
CG (height): 4.80 ft
CG (width): 1.50 ft
CG (depth): 1.38 ft

Anchorage Properties:

Number of Anchors: 4
Anchor CG (width): 1.50 ft
Anchor CG (depth): 1.38 ft
Anchor Ix: 841 in²
Anchor Iy: 676 in²
Anchor Ip: 1,517 in²

Seismic Criteria:

- Fixtures (z/h = 0.66)

Fp = 0.377 * Wp Ip: 1.0 Ωo: 2

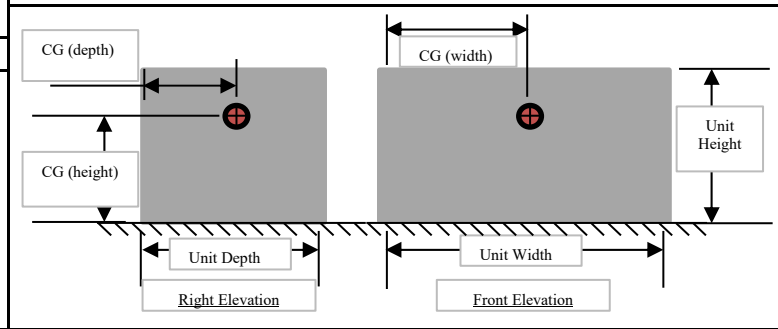
Loads:

Seismic:

Horiz = 566 lb (LRFD)
Vert = 303 lb (LRFD)

Wind: q = 5 psf (ASD)

Horiz = 113 lb (ASD) perp to width
Horiz = 103 lb (ASD) perp to depth



Seismic Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz E/1.4:	1,902 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	292 lb-ft	Vert DL:	1,042 lb-ft	Overturning
	or	292 lb-ft	or	1,042 lb-ft	
	Mo =	2,194 lb-ft	Mr =	1,042 lb-ft	Mnet = 1,152 lb-ft
	or	2,194 lb-ft	or	1,042 lb-ft	or 1,152 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz E/1.4:	1,902 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	318 lb-ft	Vert DL:	1,137 lb-ft	Overturning
	or	318 lb-ft	or	1,137 lb-ft	
	Mo =	2,220 lb-ft	Mr =	1,137 lb-ft	Mnet = 1,084 lb-ft
	or	2,220 lb-ft	or	1,137 lb-ft	or 1,084 lb-ft

Wind Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz W/1.6	422 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	1,042 lb-ft	No Net Overturning
	or	0 lb-ft	or	1,042 lb-ft	
	Mo =	422 lb-ft	Mr =	1,042 lb-ft	Mnet = -620 lb-ft
	or	422 lb-ft	or	1,042 lb-ft	or -620 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz W/1.6	387 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	1,137 lb-ft	No Net Overturning
	or	0 lb-ft	or	1,137 lb-ft	
	Mo =	387 lb-ft	Mr =	1,137 lb-ft	Mnet = -750 lb-ft
	or	387 lb-ft	or	1,137 lb-ft	or -750 lb-ft



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: Equipment 12
Date: 12/13/2024
Job No.: 24424

Anchor Checks: (Loads Perpendicular to Width)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	31.00	11	N/A	N/A
2	31.00	31.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Width	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o	V = 566 lb	Min. Edge =	6 in	Min Slab =	3.25 in	
	- Mr includes reduction due to min vertical forces	Mo = 2,717 lb-ft	Tallow =	0.94 k (Seismic)	or	1.25 k (Wind)	
		Mr = 1,146 lb-ft	Vallow =	1.35 k (Seismic)	or	1.35 k (Wind)	
	Wind: (LRFD)	Perpendicular to Width	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 180 lb	Tu/Tallow = 0.69 OK		Tu/Tallow = 0.00 OK		
		Mo = 675 lb-ft	Vu/Vallow = 0.21 OK		Vu/Vallow = 0.03 OK		
		Mr = 1,563 lb-ft	Total = 0.90 OK		Total = 0.03 OK		

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL *1.2 (k)
Perpendicular to Width (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.141	0.045	0	0	0	0	0.141	0.045	0.283	N/A	0.325	0	0.65	N/A	0.562	0.14
	2	0.141	0.045	0	0	0	0	0.141	0.045	0.283	N/A	0.325	0	0.65	N/A	0.562	0.14
	3	0.141	0.045	0	0	0	0	0.141	0.045	0.283	N/A	0.325	0	0.65	N/A	0.562	0.14
	4	0.141	0.045	0	0	0	0	0.141	0.045	0.283	N/A	0.325	0	0.65	N/A	0.562	0.14
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 13
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Anchor Checks: (Loads Perpendicular to Depth)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	31.00	11	N/A	N/A
2	31.00	31.00	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	31.00	2.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	N/A	N/A	17	N/A	N/A
8	N/A	N/A	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Depth	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o	V = 566 lb	Min. Edge =	6 in	Min Slab =	3.25 in	
	- Mr includes reduction due to min vertical forces	Mo = 2,717 lb-ft	Tallow =	0.94 k (Seismic)	or	1.25 k (Wind)	
		Mr = 1,250 lb-ft	Vallow =	1.35 k (Seismic)	or	1.35 k (Wind)	
	Wind: (LRFD)	Perpendicular to Depth	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 165 lb	Tu/Tallow =	0.72 OK	Tu/Tallow =	0.00 OK	
		Mo = 619 lb-ft	Vu/Vallow =	0.21 OK	Vu/Vallow =	0.03 OK	
		Mr = 1,705 lb-ft	Total =	0.93 OK	Total =	0.03 OK	

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL *1.2 (k)
Perpendicular to Depth (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.141	0.041	0	0	0	0	0.141	0.041	0.283	N/A	0.339	0	0.677	N/A	0.504	0.143
	2	0.141	0.041	0	0	0	0	0.141	0.041	0.283	N/A	0.339	0	0.677	N/A	0.504	0.143
	3	0.141	0.041	0	0	0	0	0.141	0.041	0.283	N/A	0.339	0	0.677	N/A	0.504	0.143
	4	0.141	0.041	0	0	0	0	0.141	0.041	0.283	N/A	0.339	0	0.677	N/A	0.504	0.143
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 14
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Angle Design Connection to Equipment			
Fastener:	(4) #12	Screws w/ 5/8" Embed	
Vallow:	141	lb/screw	<i>Note: Safety factor of 5 has been applied to ultimate values obtained from APA</i>
Tallow:	78	lb/screw	
Eccentricity:	1	in	
Spacing:	1	in	
Vu:	63	lb	
Tu:	25	lb	
Unity:	0.76	OK	

Light Gauge Clip Design:									
<u>Loading:</u>		<u>Clip Dimension & Properties:</u>							
Ecc.:	1 in.	Clip Leg to Frame:	2	in.	F _y :	50	ksi.	I _{x-x} :	0.0002 in4
M _{req.} :	0.063 k-in.	Clip Leg to Struct.:	2	in.	Ω _B :	1.67		S _x :	0.0034 in3
		Clip Length 'b':	2	in.	E:	29000	ksi.	M _{x_yeild} :	0.1724 k-in.
Capacity Check:		Clip Thick:	97	mil	Z _p :	0.0052	in3	M _n :	0.2586 k-in.
Mn/Ω _B :	0.155 k-in.	Design Thick:	0.1017	in.					
	0.40	OK							

Check Fixture Connections:

Fixture Attachment:					
Fastener:	#8	Screws w/ 5/8" Embed into Ply			
Vallow:	141	lb/screw	3/4" Ply to 3/4" Ply (Includes Cd=1.6)		
Tallow:	88	lb/screw			
# Screws: 4					
<u>Forces Perpendicular to Width:</u>		<u>Forces Perpendicular to Depth:</u>			
Vu:	68	lb/screw	Vu:	38	lb/screw
Tu:	17	lb/screw	Tu:	0	lb/screw
Unity:	0.68	OK	Unity:	0.27	OK



13228 NE 20th St, Suite 100, Bellevue, WA 98005 | (425) 614-0949

Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 15
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Equipment: (Without Floor Mounted Isolators)

Fixture 5

Units: BTB W-3F w/ W3FE

Equipment Pad Wt:

t = 0.00 in
width = 6.00 ft
depth = 6.00 ft
Wt = 0 lb

Unit Properties:

Design Wt: 1,400 lb
Listed Wt: 1,684 22.00
Unit Height: 7.50 ft
Unit Width: 5.75 ft
Unit Depth: 2.75 ft
CG (height): 5.25 ft
CG (width): 2.88 ft
CG (depth): 1.38 ft

Anchorage Properties:

Number of Anchors: 6
Anchor CG (width): 2.85 ft
Anchor CG (depth): 1.35 ft
Anchor Ix: 1,022 in²
Anchor Iy: 3,812 in²
Anchor Ip: 4,835 in²

Seismic Criteria:

- Fixtures (z/h = 0.66)

Fp = 0.377 * Wp 22 #N/A Ωo: 2

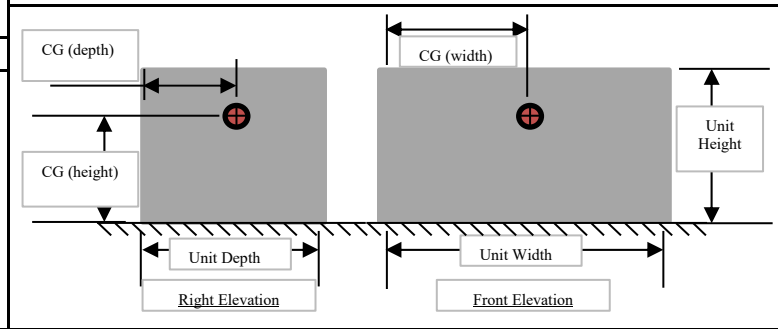
Loads:

Seismic:

Horiz = 528 lb (LRFD)
Vert = 283 lb (LRFD)

Wind: q = 5 psf (ASD)

Horiz = 216 lb (ASD) perp to width
Horiz = 103 lb (ASD) perp to depth



Seismic Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz E/1.4:	1,942 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	272 lb-ft	Vert DL:	1,389 lb-ft	
	or	272 lb-ft	or	1,389 lb-ft	
	Mo =	2,214 lb-ft	Mr =	1,389 lb-ft	Mnet = 825 lb-ft
	or	2,214 lb-ft	or	1,389 lb-ft	or 825 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz E/1.4:	1,942 lb-ft	Horiz DL:	0 lb-ft	
	Vert E/1.4:	569 lb-ft	Vert DL:	2,905 lb-ft	
	or	569 lb-ft	or	2,905 lb-ft	
	Mo =	2,511 lb-ft	Mr =	2,905 lb-ft	Mnet = -393 lb-ft
	or	2,511 lb-ft	or	2,905 lb-ft	or -393 lb-ft

Wind Overturning Analysis:		Mo		Mr	
Forces Perpendicular to Width: (ASD)	Horiz W/1.6	809 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	1,389 lb-ft	
	or	0 lb-ft	or	1,389 lb-ft	
	Mo =	809 lb-ft	Mr =	1,389 lb-ft	Mnet = -581 lb-ft
	or	809 lb-ft	or	1,389 lb-ft	or -581 lb-ft
Forces Perpendicular to Depth: (ASD)	Horiz W/1.6	387 lb-ft	Horiz DL:	0 lb-ft	
	Vert W/1.6:	0 lb-ft	Vert DL:	2,905 lb-ft	
	or	0 lb-ft	or	2,905 lb-ft	
	Mo =	387 lb-ft	Mr =	2,905 lb-ft	Mnet = -2,518 lb-ft
	or	387 lb-ft	or	2,905 lb-ft	or -2,518 lb-ft



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Project: Barnes and Noble Puyallup - Fixture Anchorage
Address: 3500 S. Meridian St., Puyallup, Washington 98373
Client: Visual Creations, Inc.

Pg. No: Equipment 16
Date: 12/13/2024
Job No.: 24424

Anchor Checks: (Loads Perpendicular to Width)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	30.50	11	N/A	N/A
2	66.50	26.50	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	66.50	6.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	31.00	30.50	17	N/A	N/A
8	31.00	2.00	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Width	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o	V = 528 lb	Min. Edge =	6 in	Min Slab =	3.25 in	
	- Mr includes reduction due to min vertical forces	Mo = 2,774 lb-ft	Tallow =	0.94 k (Seismic)	or	1.25 k (Wind)	
		Mr = 1,695 lb-ft	Vallow =	1.35 k (Seismic)	or	1.35 k (Wind)	
	Wind: (LRFD)	Perpendicular to Width	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 345 lb	Tu/Tallow = 0.38		Tu/Tallow = 0.00		
		Mo = 1,294 lb-ft	Vu/Vallow = 0.13		Vu/Vallow = 0.04		
		Mr = 2,084 lb-ft	Total = 0.52		Total = 0.04		

Anchor Forces: (LRFD)		Shear:								Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o	DL*1.2 (k)
Perpendicular to Width (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.088	0.058	0.001	0	5E-04	0	0.089	0.058	0.178	N/A	0.181	0	0.361	N/A	0.464	0.216
	2	0.088	0.058	0.001	0	4E-04	0	0.089	0.058	0.178	N/A	0.13	0	0.26	N/A	0.334	0.156
	3	0.088	0.058	0.001	0	5E-04	0	0.089	0.058	0.178	N/A	0.181	0	0.361	N/A	0.464	0.216
	4	0.088	0.058	0.001	0	4E-04	0	0.089	0.058	0.178	N/A	0.13	0	0.26	N/A	0.334	0.156
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0.088	0.058	1E-04	0	5E-04	0	0.088	0.058	0.176	N/A	0.181	0	0.361	N/A	0.464	0.216
	8	0.088	0.058	1E-04	0	5E-04	0	0.088	0.058	0.176	N/A	0.181	0	0.361	N/A	0.464	0.216
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 17
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Anchor Checks: (Loads Perpendicular to Depth)

Anchor Locations:					
	x (in)	y (in)		x (in)	y (in)
1	5.00	30.50	11	N/A	N/A
2	66.50	26.50	12	N/A	N/A
3	5.00	2.00	13	N/A	N/A
4	66.50	6.00	14	N/A	N/A
5	N/A	N/A	15	N/A	N/A
6	N/A	N/A	16	N/A	N/A
7	31.00	30.50	17	N/A	N/A
8	31.00	2.00	18	N/A	N/A
9	N/A	N/A	19	N/A	N/A
10	N/A	N/A	20	N/A	N/A

Force Summary:	Seismic: (LRFD)	Perpendicular to Depth	Anchor:	Hilti KB-TZ2 3/8" Dia, w/ 1.5 Eff. Embed (6" Edge)			
	w/o Ω_o - Mr includes reduction due to min vertical forces	V = 528 lb Mo = 2,774 lb-ft Mr = 3,544 lb-ft Mtor = 11 lb-ft	Min. Edge = 6 in	Min Slab = 3.25 in			
			Tallow = 0.94 k (Seismic)	or	1.25 k (Wind)		
			Vallow = 1.35 k (Seismic)	or	1.35 k (Wind)		
	Wind: (LRFD)	Perpendicular to Depth	Seismic: (Max Unity)		Wind: (Max Unity)		
	- Mr includes reduction due to min vertical forces	V = 165 lb Mo = 619 lb-ft Mr = 4,357 lb-ft	Tu/Tallow = 0.00	OK	Tu/Tallow = 0.00	OK	
			Vu/Vallow = 0.13	OK	Vu/Vallow = 0.02	OK	
			Total = 0.13	OK	Total = 0.02	OK	

Anchor Forces: (LRFD)		Shear:										Tension				Compression			
		Direct (k)		Indirect (k)		Indirect (k)		Total (k)		Total (k)		Direct (k)		Direct (k)		Overturn (k)		DL*1.2 (k)	
		Perp. to width		Perp. to width		Perp. to depth		w/o Ω_o		w/ Ω_o		w/o Ω_o		w/ Ω_o		w/o Ω_o			
Perpendicular to Depth (Seismic & Wind)	No.	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind	Seis.	Wind
	1	0.088	0.028	8E-04	0	4E-04	0	0.089	0.028	0.178	N/A	0	0	0	N/A	0.95	0.057	0.28	0.28
	2	0.088	0.028	9E-04	0	3E-04	0	0.089	0.028	0.178	N/A	0	0	0	N/A	1.053	0.063	0.28	0.28
	3	0.088	0.028	8E-04	0	4E-04	0	0.089	0.028	0.178	N/A	0	0	0	N/A	0.95	0.057	0.28	0.28
	4	0.088	0.028	9E-04	0	3E-04	0	0.089	0.028	0.178	N/A	0	0	0	N/A	1.053	0.063	0.28	0.28
	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	7	0.088	0.028	9E-05	0	4E-04	0	0.088	0.028	0.176	N/A	0	0	0	N/A	0.103	0.006	0.28	0.28
	8	0.088	0.028	9E-05	0	4E-04	0	0.088	0.028	0.176	N/A	0	0	0	N/A	0.103	0.006	0.28	0.28
	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 18
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424

Angle Design Connection to Equipment			
Fastener:	(4) #12	Screws w/ 5/8" Embed	
Vallow:	141	lb/screw	<i>Note: Safety factor of 5 has been applied to ultimate values obtained from APA</i>
Tallow:	78	lb/screw	
Eccentricity:	1	in	
Spacing:	1	in	
Vu:	35	lb	
Tu:	16	lb	
Unity:	0.44	OK	

Light Gauge Clip Design:									
Loading:		Clip Dimension & Properties:							
Ecc.:	1 in.	Clip Leg to Frame:	2	in.	F _y :	50	ksi.	I _{x-x} :	0.0002 in4
M _{req.} :	0.035 k-in.	Clip Leg to Struct.:	2	in.	Ω _B :	1.67		S _x :	0.0034 in3
		Clip Length 'b':	2	in.	E:	29000	ksi.	M _{x_yeild} :	0.1724 k-in.
Capacity Check:		Clip Thick:	97	mil	Z _p :	0.0052	in3	M _n :	0.2586 k-in.
Mn/Ω _B :	0.155 k-in.	Design Thick:	0.1017	in.					
	0.22	OK							

Check Fixture Connections:

W-3FE to W-3F

Fixture Attachment:					
Fastener:	#8	Screws w/ 5/8" Embed into Ply			
Vallow:	141	lb/screw	3/4" Ply to 3/4" Ply		
Tallow:	88	lb/screw	(Includes Cd=1.6)		
# Screws:	3				
<u>Forces Perpendicular to Width:</u>		<u>Forces Perpendicular to Depth:</u>			
Vu:	50	lb/screw	Vu:	49	lb/screw
Tu:	0	lb/screw	Tu:	0	lb/screw
Unity:	0.36	OK	Unity:	0.35	OK

* W-3F to W-3F, see Dbl 3F calculations



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Project:	Barnes and Noble Puyallup - Fixture Anchorage	Pg. No:	Equipment 19
Address:	3500 S. Meridian St., Puyallup, Washington 98373	Date:	12/13/2024
Client:	Visual Creations, Inc.	Job No.:	24424