CARUSO
TURLEY
SCOTT
structural
engineers

Job No.	24-1259	**Sheet No.**	Cover
By	NSC	**Date**	05/2024

PRCTI20241698

CLIENT:

Vanney Associates
55 East 5th Street, Suite 750
Saint Paul, MN 55101

PROJECT:

Xfinity TI – Puyallup
South Hill Mall
3500 S Meridian Ave, Space 503
Puyallup, WA 98373

10-24-24

City of Puyallup
Building
REVIEWED
FOR
COMPLIANCE
SKinnear
11/13/2024
4:28:41 PM

Calculations required to be provided by the Permittee on site for all Inspections

GENERAL INFORMATION:

BUILDING CODE: 2022 CALIFORNIA BUILDING CODE

Sheet Number	Description
2	Basis for Design
7	Wall Fixtures
14	Merchandising Niche
22	Stud Wall Design
26	Main Stage
34	Lintel Design

1215 W. Rio Salado Pkwy.
Suite 200
Tempe, AZ 85281
480.774.1700
www.ctsaz.com

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engineers

1215 W. Rio Salado Pkwy.
Suite 200
Tempe, AZ 85281
T: (480) 774-1700
F: (480) 774-1701

Job Name: Xfinity TI

Job No. : 24-1259 Sheet No.: INDEX

By: NSC Date: 06/2024

BASIS OF DESIGN

BUILDING CODE:

2021 WASHINGTON STATE BUILDING CODE

LOADS:

LATERAL:

SEISMIC:

RISK CATEGORY, II.
SEISMIC IMPORTANCE FACTOR, I = 1.0.
MAPPED SHORT PERIOD SPECTRAL ACCELERATION, Ss = 1.264.
MAPPED ONE SECOND SPECTRAL ACCELERATION, S1 = 0.436.
SOIL SITE CLASS, D.
DESIGN SHORT PERIOD SPECTRAL ACCELERATION, Sds = 1.011.
DESIGN ONE SECOND SPECTRAL ACCELERATION, Sd1 = 0.542.
SEISMIC DESIGN CATEGORY, D.

MINIMUM INTERIOR PRESSURE = 5 PSF

STRUCTURAL STEEL:

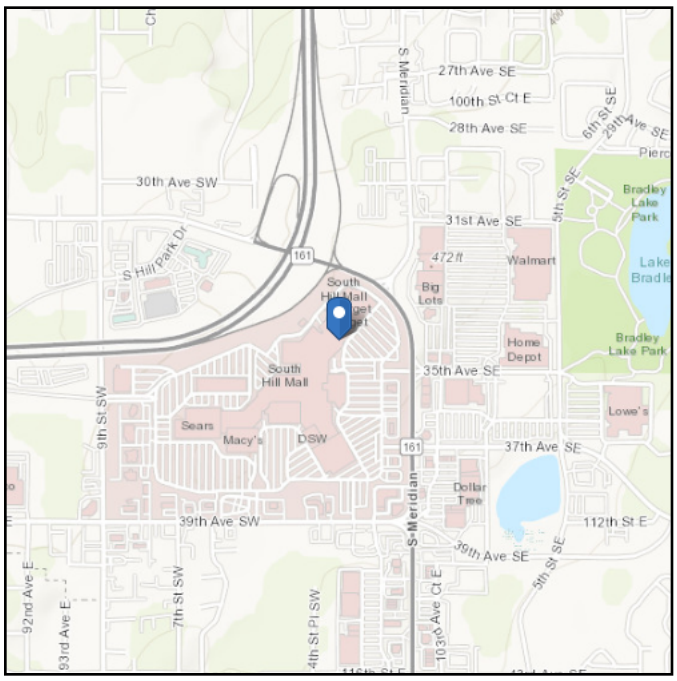
MISC. STRUCTURAL STEEL (A36): Fy = 36,000 PSI.

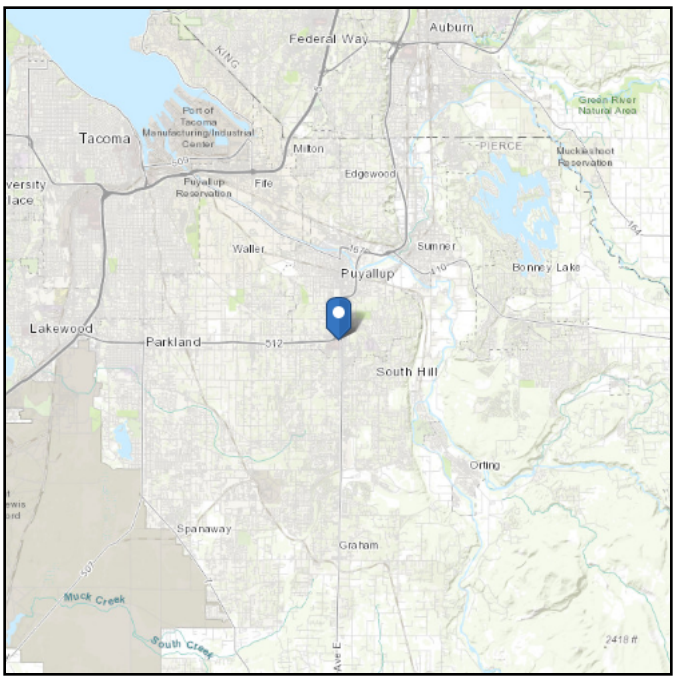
ASCE Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Latitude: 47.159216
Longitude: -122.295589
Elevation: 437.8590260849792 ft (NAVD 88)





Wind

Results:

Wind Speed	97 Vmph
10-year MRI	67 Vmph
25-year MRI	73 Vmph
50-year MRI	78 Vmph
100-year MRI	83 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Thu Oct 17 2024

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is not in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2.

Seismic

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	1.264	S_{D1} :	N/A *0.542
S_1 :	0.436	T_L :	6
F_a :	1.2	PGA :	0.5
F_v :	N/A *1.86	PGA_M :	0.6
S_{MS} :	1.516	F_{PGA} :	1.2
S_{M1} :	N/A *0.813	I_e :	1
S_{DS} :	1.011	C_v :	1.353

Ground motion hazard analysis may be required. See ASCE/SEI 7-16 Section 11.4.8.

Data Accessed: Thu Oct 17 2024

Date Source: USGS Seismic Design Maps

Snow

Results:

Mapped Elevation:

Data Source:

Date Accessed: Thu Oct 17 2024

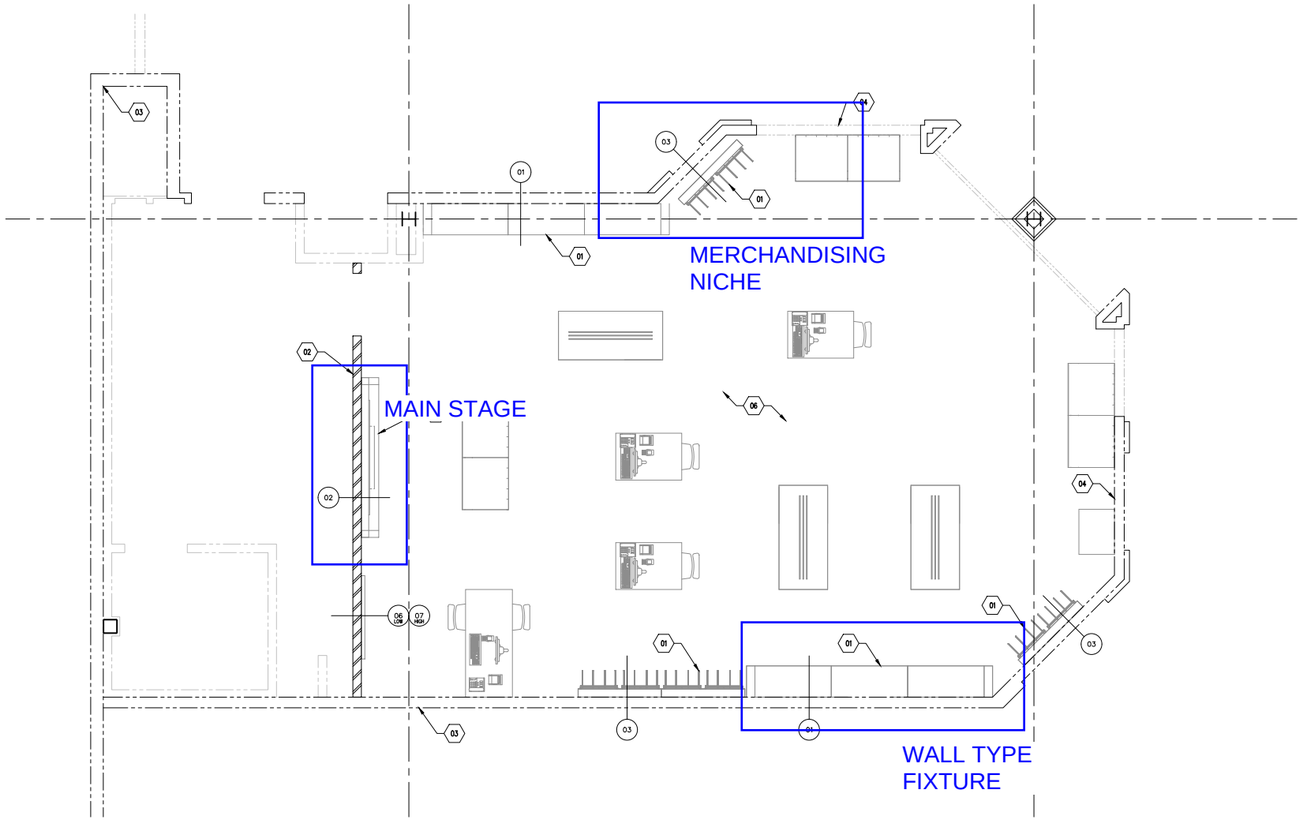
In "Case Study" areas, site-specific case studies are required to establish ground snow loads. Extreme local variations in ground snow loads in these areas preclude mapping at this scale.

Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2 percent annual probability of being exceeded (50-year mean recurrence interval).

Site is outside ASCE/SEI 7-16, Table 7.2-5 boundaries. For ground snow loads in this area, see SEAW Snow Load Analysis for Washington, 2nd Ed. (1995). Structural Engineers Association of Washington, Seattle, WA.

Statutory requirements of the Authority Having Jurisdiction are not included.

Snow load values are mapped to a 0.5 mile resolution. This resolution can create a mismatch between the mapped elevation and the site-specific elevation in topographically complex areas. Engineers should consult the local authority having jurisdiction in locations where the reported ‘elevation’ and ‘mapped elevation’ differ significantly from each other.



FIXTURE PLAN
SCALE: 3/8" = 1'-0"

WALL TYPE FIXTURE

BP-XR-19A
BP-XR-22

MERCHANDISING NICHE
BP-XR-15

MAIN STAGE
BP-XR-10.2

FLOOR PLAN NOTES – TYP U.N.O.:

1. VERIFY ALL DIMENSIONS WITH ARCHITECTURAL DRAWINGS AND FIELD CONDITIONS. BUILDING DIMENSIONS, WHERE SHOWN, WERE PROVIDED BY THE ARCHITECT AND SHALL BE VERIFIED WITH SAME PRIOR TO PROCEEDING WITH THE WORK. DO NOT USE CONC C.J. FOR LOCATING BUILDING ELEMENTS.
2. (1), (2), ETC. – AS SHOWN ON PLAN INDICATES KEYNOTES, SEE FLOOR PLAN KEYNOTES ON THIS SHEET. KEYNOTE DESIGNATIONS ARE TYPICAL TO THE PROJECT AND MAY NOT NECESSARILY BE FOUND ON THIS PLAN.
3. ////// – AS SHOWN ON PLAN INDICATES STEEL STUD WALL, SEE PLAN FOR SIZES AND SPACING. FOR LINTELS IN STEEL STUD WALLS, SEE DETAIL 05 – TYP U.N.O. FOR BASE AND TOP CONNECTIONS, SEE DETAILS 06 AND 07. SEE G.S.N., TYPICAL DETAILS, PLANS AND OTHER DETAILS FOR ADDITIONAL INFORMATION.
4. – – – – – – – AS SHOWN ON PLAN INDICATES NON-STRUCTURAL ARCHITECTURAL WALL OR EXISTING WALL WHERE NOTED. FOR ADDITIONAL INFORMATION, SEE ARCH'L DRAWINGS, G.S.N. AND TYPICAL DETAILS, OR AS NOTED ON PLANS AND DETAILS.
5. THE EXISTING CONDITIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE BEST AVAILABLE INFORMATION AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY.

FIXTURE FLOOR PLAN KEYNOTES
940–11

1. WALL FIXTURE PER ARCH'L.
2. NEW OR EXISTING STEEL STUD WALLS PER ARCH'L.
3. EXISTING BUILDING WALLS TO REMAIN.
4. EXISTING STOREFRONT TO REMAIN.
5. WALL MOUNTED MAIN STAGE.
6. EXISTING CONCRETE SLAB ON GRADE.

EXISTING CONDITIONS NOTE – TYP U.N.O.:

THE EXISTING CONDITIONS DEPICTED ON THESE DRAWINGS ARE ASSUMPTIONS BASED ON THE BEST AVAILABLE INFORMATION PROVIDED BY ARCHITECT AT TIME OF DESIGN AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE STRUCTURAL ENGINEER IMMEDIATELY. REDESIGN AND ANALYSES MAY BE REQUIRED.

FOR ADDITIONAL INFORMATION SHOWN BUT NOT NOTED, SEE GENERAL STRUCTURAL NOTES ON SHEET S1.1 AND TYPICAL DETAIL SHEETS.

THESE DRAWINGS/CALCULATIONS ARE CONSIDERED PRELIMINARY –NOT FOR CONSTRUCTION OR RECORDING UNLESS THE STRUCTURAL ENGINEER OF RECORD'S SEAL IS AFFIXED WITH WRITTEN SIGNATURE.

PROJECT NUMBER	24–0187	PROJECT MANAGER	RAD
PROJECT ENGINEER	WRH	PROJECT DRAFTER	MJN

CARUSO • TURLEY • SCOTT • INC
consulting structural engineers
1215 West Rio Salado Parkway, Suite 200
Tempe, Arizona 85281 (480) 774-1700 (774-1701 FAX)
www.ctsz.com

ROBERT F. VANNEY ARCHITECT
55 EAST 5TH STREET, STE. 750
SAINT PAUL, MINNESOTA 55101
651.222.4642 FAX 651.222.3034

PRELIMINARY
NOT FOR
CONSTRUCTION

xfinity

BRANDED PARTNER
SOUTH HILL MALL
3500 S. MERIDIAN AVE.
SPACE #503
PUYALLUP, WA 98373

No.	Description	Date

Preliminary Issue:	-
Bid Issue:	10/24/24
Landlord Review:	10/24/24
Permit Issue:	10/24/24
Construction Issue:	--

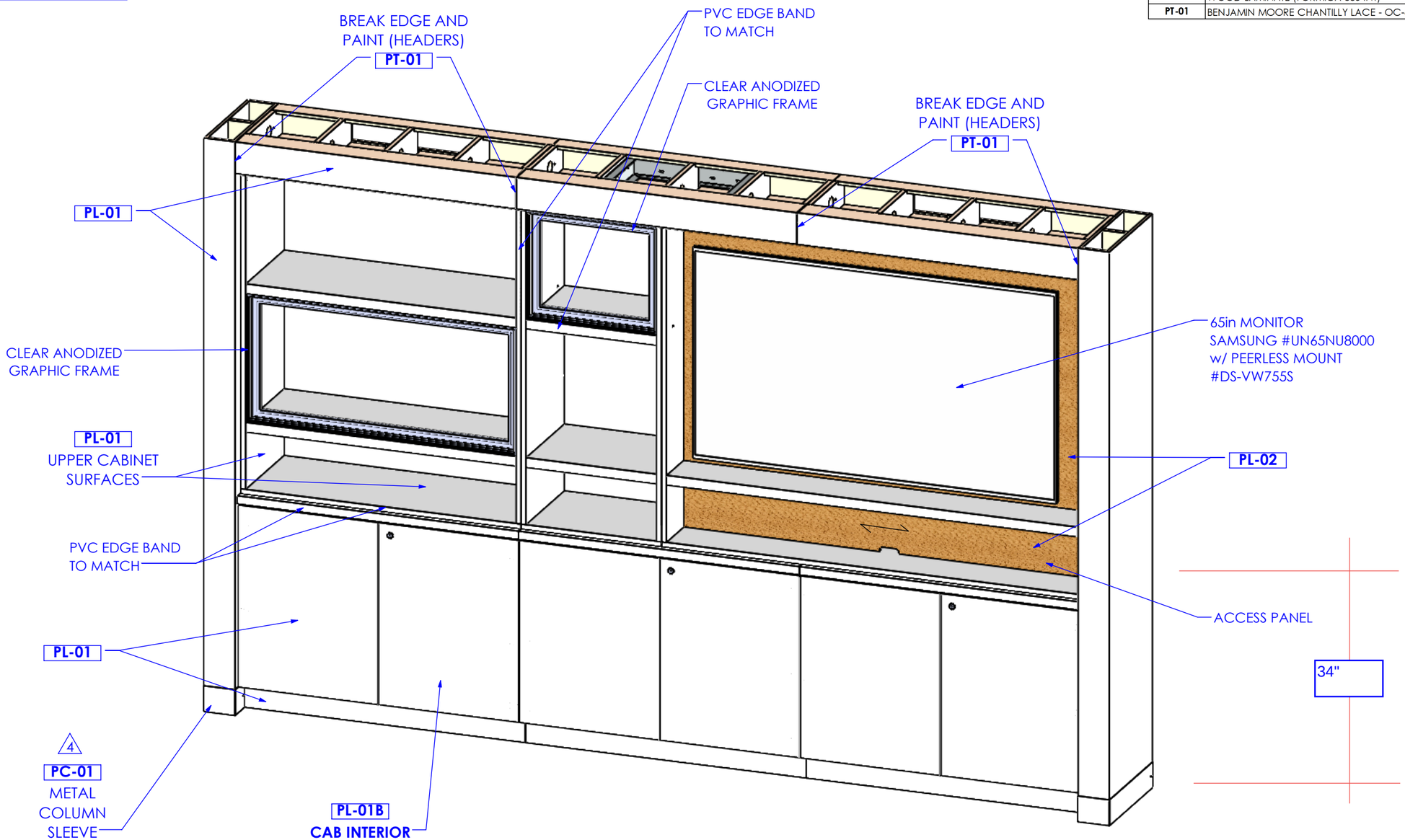
FIXTURE PLAN

Comm. Number	81-2294
Date	10/30/2024
Drawn By	HN
Checked By	NSC

S2.1

'WALL' TYPE FIXTURE
WEIGHT = 1100#
HEIGHT = 89"

FINISH SCHEDULE	
CALLOUT	DESCRIPTION
MEL-02	BLACK MELAMINE
PC-01	WHITE POWDER COAT 4H (RAL #9016)
PL-01	WHITE LAMINATE (WILSONART - LINEN #D427)
PL-01B	WHITE MELAMINE TO MATCH PL-01
PL-02	WOOD LAMINATE (FORMICA 8854NT)
PT-01	BENJAMIN MOORE CHANTILLY LACE - OC-65



3/4-VIEW

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

REV#	DATE	NAME	DESCRIPTION
4	9/6/2019	AL	UPDATE PER PROTO REVIEW: SPLIT DISPLAY CABINET INTO TWO, UPDATE BASE CABINET DEPTH
3	2019\8\12	JW	ALL BOTTOM CABINETS NEED TO ADD DOOR LIMITS TO PREVENT DOOR-TO-DOOR COLLISIONS WHEN OPENING DOORS
2	4/22/2019	AL	UPDATE TV & MOUNT SPEC, ADJUST TV WIRE CHASE HOLES
1	4/8/2019	AL	UPDATE PER 2019-4-5 REDLINES

REVISION TABLE

sparks
2828 CHARTER RD. PHILADELPHIA, PA 19154
PHONE: 215.602.8100 FAX: 215.602.8111
www.wearesparks.com

DIMENSIONS

UNLESS OTHERWISE SPECIFIED,
ALL DIMENSIONS ARE IN: in
ALTERNATE DIMS ARE IN: [mm]

ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.

TOLERANCES ARE:
UNLESS OTHERWISE SPECIFIED,

FRACTIONS	± 1/32	[±0.80mm]
DECIMALS .XXX	± 0.010	[±0.25mm]
ANGULAR	± 0.5°	

DRAWN BY:	SCALE (B-SIZE):
AL	1:16

DATE CREATED: 3/27/2019

CLIENT: COMCAST

PROJECT: BRANDED PARTNER XR VE

JOB #: COMC029

FILE NAME: BP-XR-19A X1 WALL - 3BAY

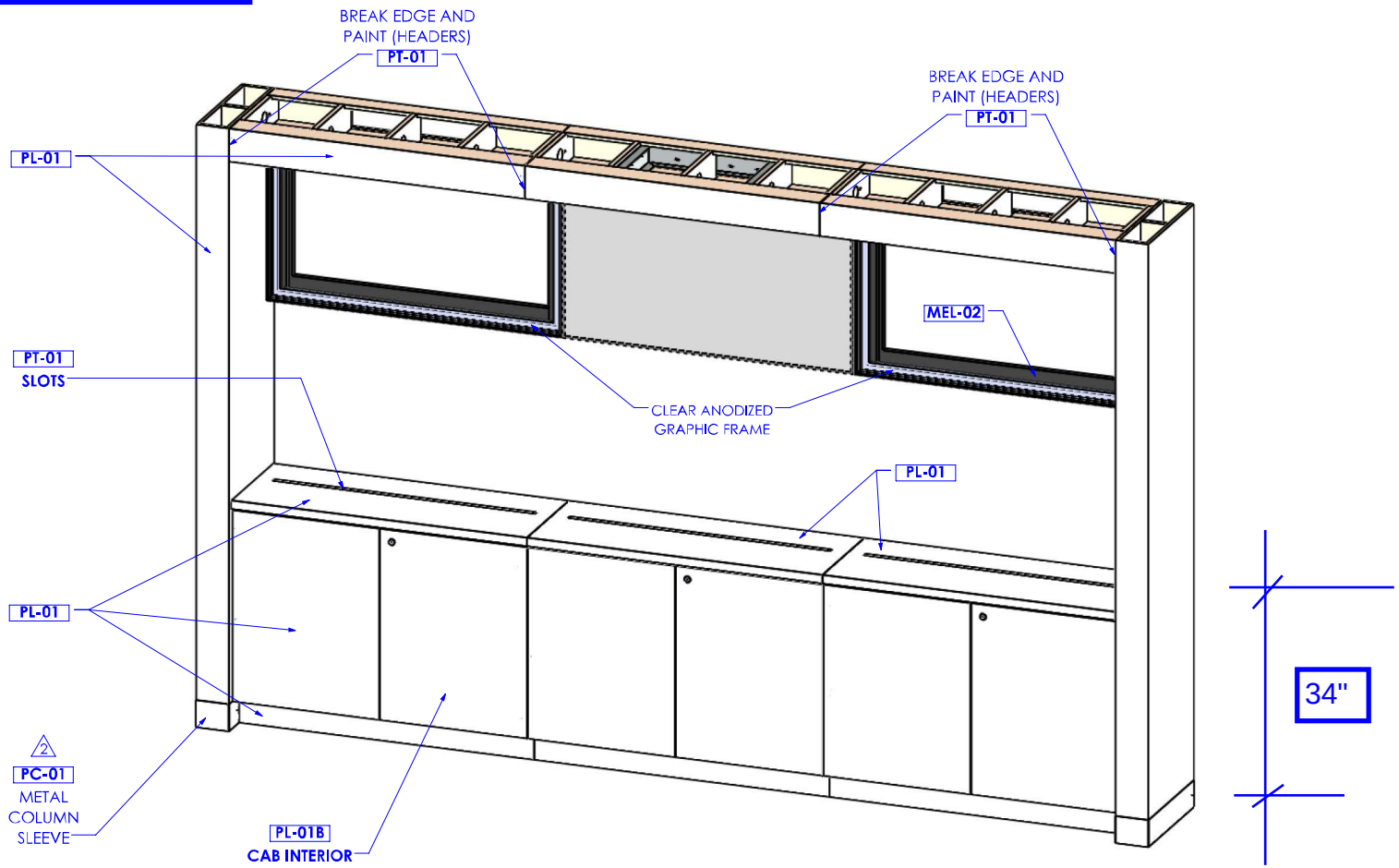
DESCRIPTION: X1 WALL - 3BAY

PART NUMBER: BP-XR-19A

SHEET: 1 of 16

Drawing File Location: \\prod-ph-dc1\Shared\data\Retail\Drawings\COMCAST\COMC029 XR - BP REMODEL\SW\BP-XR PERIMETER WALL ASSEMBLIES & COMPONENTS\BP-XR-19 X1 WALL\BP-XR-19A X1 WALL - 3BAY
Assembly File Location: \\prod-ph-dc1\Shared\data\Retail\Drawings\COMCAST\COMC029 XR - BP REMODEL\SW\BP-XR PERIMETER WALL ASSEMBLIES & COMPONENTS\BP-XR-19 X1 WALL\BP-XR-19 X1 WALL

'WALL' TYPE FIXTURE
WEIGHT = 1100#
HEIGHT = 89"



FINISH SCHEDULE	
CALLOUT	DESCRIPTION
MEL-02	BLACK MELAMINE
PC-01	WHITE POWDER COAT 4H (RAL #9016)
PL-01	WHITE LAMINATE (WILSONART - LINEN #D427)
PL-01B	WHITE MELAMINE TO MATCH PL-01
PT-01	BENJAMIN MOORE CHANTILLY LACE - OC-65

REV#	DATE	NAME	DESCRIPTION
2	9/19/2019	PM	REVISED PER FIXTURE REVIEW
1	2019\8\12	JW	ALL BOTTOM CABINETS NEED TO ADD DOOR LIMITS TO PREVENT DOOR-TO DOOR COLLISIONS WHEN OPENING DOORS

REVISION TABLE

sparks
2828 CHARTER RD. PHILADELPHIA, PA 19154
PHONE: 215.602.8100 FAX: 215.602.8111
www.wearesparks.com

DIMENSIONS

UNLESS OTHERWISE SPECIFIED,
ALL DIMENSIONS ARE IN: in
ALTERNATE DIMS ARE IN: [mm]

ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.

TOLERANCES ARE:
UNLESS OTHERWISE SPECIFIED,

FRACTIONS ± 1/32 [±0.80mm]
DECIMALS .XXX ± 0.010 [±0.25mm]
ANGULAR ± 0.5°

DRAWN BY:	SCALE (B-SIZE):
PM	1:16

DATE CREATED: 2/28/2019
CLIENT: COMCAST
PROJECT: XR - BP REMODEL
JOB #: COMC029
FILE NAME: BP-XR-22A MOBILE WALL - 3BAY
DESCRIPTION: MOBILE WALL - 3BAY
PART NUMBER: BP-XR-22A
SHEET: 1 of 6

City of Puyallup
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Seismic Load Distribution

Loading Criteria A: PL (all shelves)

DL= 47 lbs per shelf
67%PL= 33.5 lbs per shelf
EL= 61 lbs

Load Case #1 1.4DL+1.2PL
DL per shelf= 65.8 lbs
PL per shelf= 40.2 lbs
EL= 61 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	106	2.8	296.8	35%	21.6	60.4
2	106	5.125	543.25	65%	39.5	202.3
3	0	0	0	0%	0.0	0.0
4	0	0	0	0%	0.0	0.0
5	0	0	0	0%	0.0	0.0
6	0	0	0	0%	0.0	0.0
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	212		840.05	100%	61.0	262.7

Mot= 263 'lbs d = 2.3 ft
T,top = 113 lbs
T,bottom = 52 lbs

Load Case #2 1.2DL+1.4PL
DL per shelf= 56.4 lbs
PL per shelf= 46.9 lbs
EL= 61 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	103	2.8	289.24	35%	21.6	60.4
2	103	5.125	529.4125	65%	39.5	202.3
3	0	0	0	0%	0.0	0.0
4	0	0	0	0%	0.0	0.0
5	0	0	0	0%	0.0	0.0
6	0	0	0	0%	0.0	0.0
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	207		818.6525	100%	61.0	262.7

Mot= 263 'lbs d = 2.3 ft
T,top = 113 lbs
T,bottom = 52 lbs

Load Criteria A:

Load Case #5 (1.2 + 0.2Sds)DL + (1.2 + 0.2Sds)βPLapp +ρE

1.40 DL + 0.98 PL - 1.30 EL

DL per shelf= 65.9 lbs
PL per shelf= 32.9 lbs
EL= 79.4 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	99	2.8	276.6	35%	28.0	78.5
2	99	5.125	506.3	65%	51.3	263.0
3	0	0	0.0	0%	0.0	0.0
4	0	0	0.0	0%	0.0	0.0
5	0	0	0.0	0%	0.0	0.0
6	0	0	0.0	0%	0.0	0.0
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	198		782.9	100%	79.4	341.5

Mot= 341 'lbs d = 2.3 ft
T,top = 147 lbs
T,bottom = 68 lbs

Load Case #7 (0.9 - 0.2Sds)DL + (0.9 - 0.2Sds)βPL - ρE

0.70 DL + 0.70 PL + 1.30 EL

DL per shelf= 45.9 lbs
PL per shelf= 23.4 lbs
EL= 79.4 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	69	2.8	194.0	35%	28.0	78.5
2	69	5.125	355.1	65%	51.3	263.0
3	0	0	0.0	0%	0.0	0.0
4	0	0	0.0	0%	0.0	0.0
5	0	0	0.0	0%	0.0	0.0
6	0	0	0.0	0%	0.0	0.0
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	139		549.1	100%	79.4	341.5

Mot= 341 'lbs d = 2.3 ft
T,top = 147 lbs
T,bottom = 68 lbs

Seismic Load Distribution

Loading Criteria B: PL (top shelf only)

DL= 47 lbs per shelf
PL= 50 lbs on top shelf only
EL= 55 lbs

Load Case #1 1.4DL+1.2PL
DL per shelf= 65.8 lbs
PL per shelf= 60 lbs
EL= 55 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	66	2.8	184.24	22%	12.1	34.0
2	126	5.125	644.725	78%	42.5	217.6
3	0	0	0	0%	0.0	0.0
4	0	0	0	0%	0.0	0.0
5	0	0	0	0%	0.0	0.0
6	0	0	0	0%	0.0	0.0
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	192		828.965	100%	54.6	251.6

Mot= 252 'lbs d = 2.3 ft
T,top = 108 lbs
T,bottom = 54 lbs

Load Case #2 1.2DL+1.4PL
DL per shelf= 56.4 lbs
PL per shelf= 70 lbs
EL= 55 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	56	2.8	157.92	20%	10.7	30.0
2	126	5.125	647.8	80%	43.9	225.0
3	0	0	0	0%	0.0	0.0
4	0	0	0	0%	0.0	0.0
5	0	0	0	0%	0.0	0.0
6	0	0	0	0%	0.0	0.0
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	183		805.72	100%	54.6	254.9

Mot= 255 'lbs d = 2.3 'lbs
T,top = 110 lbs
T,bottom = 55 lbs

Load Criteria B:

Load Case #3 (1.2 + 0.2Sds)DL + (1.2 + 0.2Sds)βPLapp +ρE

1.40 DL + 0.98 PL - 1.30 EL

DL per shelf= 65.9 lbs
PL per shelf= 49.1 lbs
EL= 71.0 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	66	2.8	184.5	24%	16.9	47.4
2	115	5.125	589.3	76%	54.0	277.0
3	0	0	0.0	0%	0.0	0.0
4	0	0	0.0	0%	0.0	0.0
5	0	0	0.0	0%	0.0	0.0
6	0	0	0.0	0%	0.0	0.0
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	181		773.8	100%	71.0	324.4

Mot= 324 'lbs d = 2.3 ft
T,top = 140 lbs
T,bottom = 69 lbs

Load Case #4 (0.9 - 0.2Sds)DL + (0.9 - 0.2Sds)βPL - ρE

0.70 DL + 0.70 PL + 1.30 EL

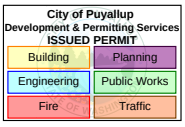
DL per shelf= 45.9 lbs
PL per shelf= 34.9 lbs
EL= 71.0 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	46	2.8	128.6	24%	16.8	47.1
2	81	5.125	414.1	76%	54.2	277.6
3	0	0	0.0	0%	0.0	0.0
4	0	0	0.0	0%	0.0	0.0
5	0	0	0.0	0%	0.0	0.0
6	0	0	0.0	0%	0.0	0.0
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	127		542.7	100%	71.0	324.6

Mot= 325 'lbs d = 2.3 ft
T,top = 140 lbs
T,bottom = 69 lbs

T,top = 147 lbs per 12" section of fixture
T,bottom = 147 lbs per 12" section of fixture *if T,top > than T,bottom use T,top for design

T,cab = T,bottom x 2 (cabs at 24" o.c.) = 294 lbs



CARUSO TURLEY SCOTT
structural engineers
1215 W. Rio Salado Parkway, Suite 200
Tempe, AZ 85281
480.774.1700
www.ctsaz.com

Job Name xfinity

Job No. 24-1259 Sheet No.

By URH Date 10/2024

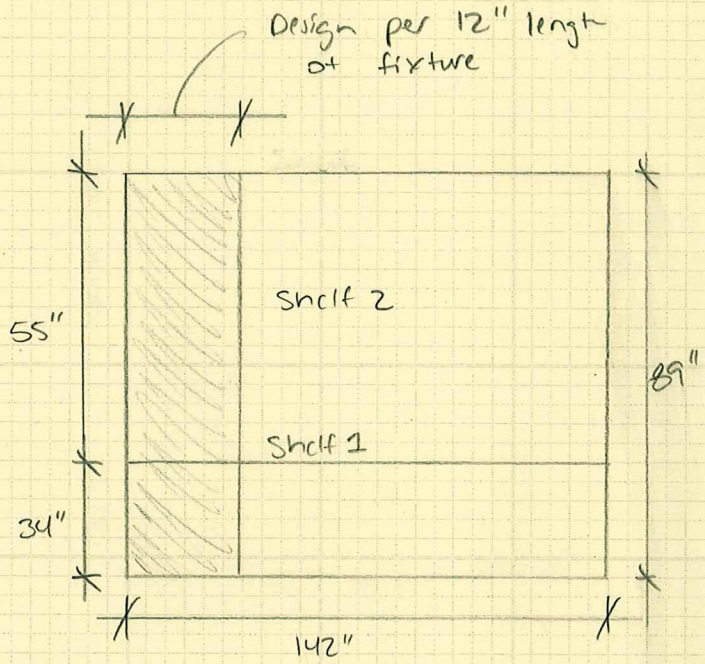
'Wall' - type Fixtures

BP-XR-19 & BP-XR-22 govern by weight

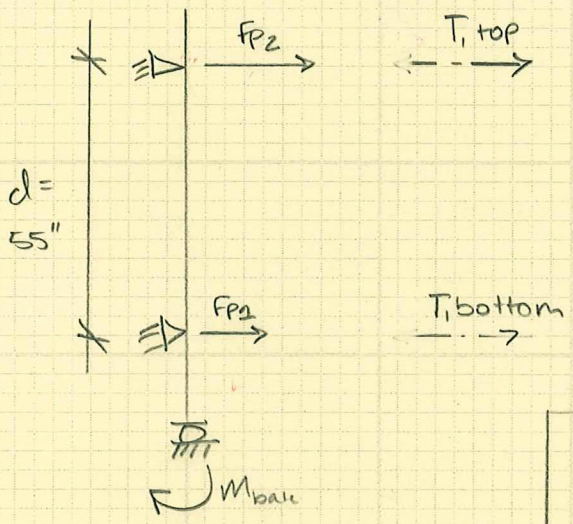
Weight: 1100# MAX.

OL, shelf = 1100#/142" x 12" segment
= 93#/2 shelf = 47#/shelf

PL, shelf = 50#/shelf (assumed)



Resultant Forces



Design Loads in Spreadsheet:

$M_{balc} = (F_{p2} \times h_2) + (f_{p1} \times h_1)$

$T_{,top} = M_{balc} / d$

$T_{,bottom} = T_{,top} - \Sigma F_p$

Anchorage

$T_{,top}$ = 147 # x 0.7 = 103#, T_{allow} = 350# / Ω: 3.0 = 117 #/screw At "Headers"

#Req'd = $T_{,top} / T_{allow}$ = 0.9 screws

∴ use #10 screws at 6" o.c. top

T_{cab} = 294 # x 0.7 = 206#, T_{allow} = 117 #/screw

#Req'd = 1.8 screws/cab At "cabs"

∴ use (4) #10 screw at ea. cab

City of Puyallup
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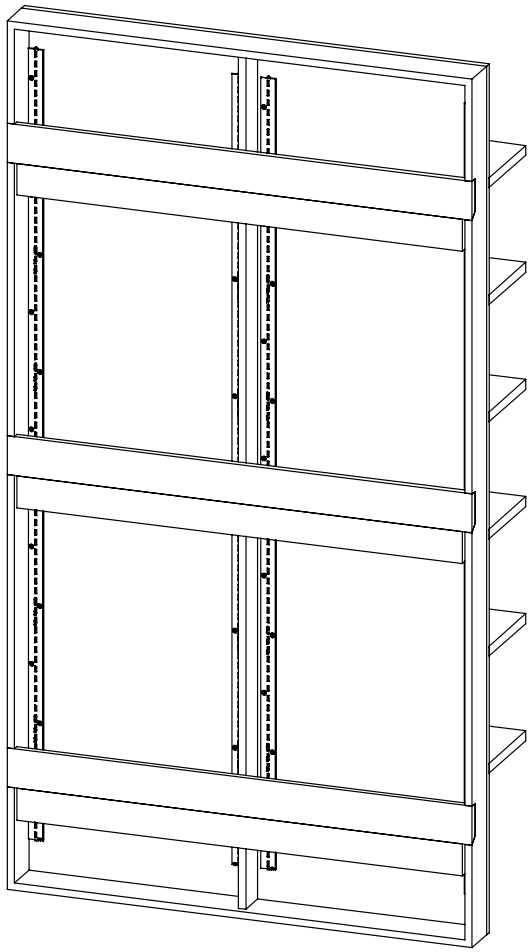
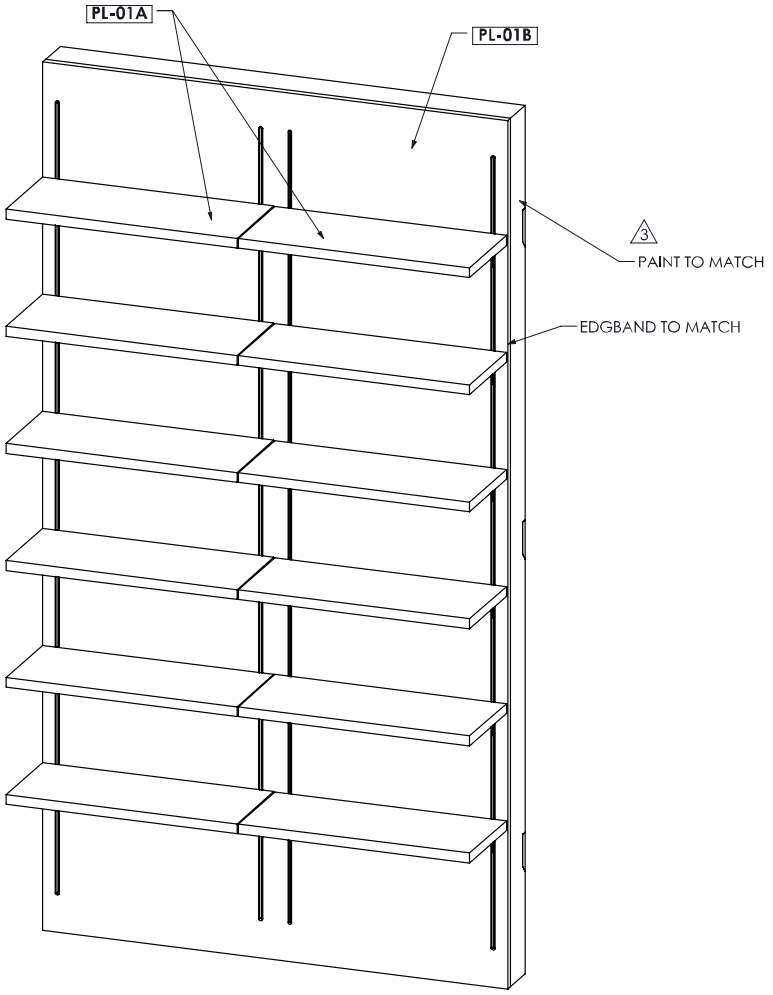
FINISH SCHEDULE	
CALLOUT	DESCRIPTION
PL-01A	WHITE VINYL, 16MIL (OMNOVA - CAMP WHITE #508573)
PL-01B	WHITE MELAMINE TO MATCH PL-01



REAR ISO-VIEW



ISO-VIEW

REVISION TABLE			
REV#	DATE	NAME	DESCRIPTION
3	2017/12/11	TW	UPDATED PER 1ST PRODUCTION
2	2017/9/20	TW	STANDARD SLOT WIDTH UPDATED
1	7/21/2017	AL	REVISED PER PROTOTYPE REVIEW

sparks
2828 CHARTER RD. PHILADELPHIA, PA 19154
PHONE: 215.602.8100 FAX: 215.602.8111
www.sparksonline.com
www.sparksretail.com

DIMENSIONS

UNLESS OTHERWISE SPECIFIED,
ALL DIMENSIONS ARE IN: in
ALTERNATE DIMS ARE IN: [mm]

ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.

TOLERANCES ARE:
UNLESS OTHERWISE SPECIFIED,

FRACTIONS ± 1/32 [±0.80mm]
DECIMALS .XXX ± 0.010 [±0.25mm]
ANGULAR ± 0.5°

DRAWN BY:	SCALE (B-SIZE):
PM	1:12

DATE CREATED: 4/5/2017

CLIENT: COMCAST

PROJECT: 2017 NEIGHBORHOOD

JOB #: COMC003

FILE NAME: FX-15 MERCHANDISING NICHE - LARGE

DESCRIPTION: MERCHANDISING NICHE - LARGE

PART NUMBER: FX-15

ALTERNATIVE P/N: BP-XR-15

SHEET: 1 of 5

City of Puyallup
Development & Permitting Services
ISSUED PERMIT

Building	Planning
Engineering	Public Works
Fire	Traffic

SHELF LOADING- SEISMIC BASED ON RMI SECTION 2 LOAD CASES

INTERIOR CONDITIONS - NO WIND LOAD, ROOF LOAD, SNOW LOAD OR RAIN LOAD

LOAD CASES PER RMI 2.1

1. 1.4DL+1.2PL
2. 1.2DL+1.4PL
5. (1.2 + 0.2Sds)DL + (1.2 + 0.2Sds)βPLapp +ρE
   = 1.40 DL + 0.98 PL - 1.30 E
7. (0.9 - 0.2Sds)DL + (0.9 - 0.2Sds)βPL - ρE
   = 0.70 DL + 0.70 PL + 1.30 E

For load support beams and their connections only:

8. 1.2DL + 1.6PL + 1.4*IL

Seismic loads:

Sds= 1.011 Sd1= 0.542

R= 4 (worst case) Ip= 1.5

ap= 2.5 z/h= 0 (Shelf will be anchored at the base)

β= 0.70 ρ= 1.3

β= 1.00 Load Case 7

Cs= Sds/R= 0.25 Fp= 0.379125

Cs min= .044 Sds= 0.04

Cs * Ip= 0.38

Use: 0.379125 Wp

Number of Shelves= 6 Shelf depth= 10 inches

DL per shelf= 50 lbs Total DL= 300 lbs

PL per shelf= 50 lbs Total PL= 300 lbs

Pallet Loading Criteria:

A. PL (all shelves at 67%)) Ws= DL+ PL= 501 lbs

B. PL (top shelf only) Ws= DL+ PL top shelf only= 350 lbs

EL Case A= (Cs Ip) (or Fp) Ws= 190 lbs

EL Case B= (Cs Ip) (or Fp) Ws= 133 lbs

Seismic Load Distribution

Loading Criteria A: PL (all shelves)

DL=	50	lbs per shelf
67%PL=	33.5	lbs per shelf
EL=	190	lbs

Load Case #1 1.4DL+1.2PL

DL per shelf=	70	lbs
PL per shelf=	40.2	lbs
EL=	190	lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	110	1.24	136.648	5%	9.0	11.2
2	110	2.48	273.296	10%	18.1	44.9
3	110	3.72	409.944	14%	27.1	100.9
4	110	4.96	546.592	19%	36.2	179.4
5	110	6.2	683.24	24%	45.2	280.4
6	110	7.44	819.888	29%	54.3	403.8
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	661		2869.608	100%	189.9	1020.6

Load Case #2 1.2DL+1.4PL

DL per shelf=	60	lbs
PL per shelf=	46.9	lbs
EL=	190	lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	107	1.24	132.556	5%	9.0	11.2
2	107	2.48	265.112	10%	18.1	44.9
3	107	3.72	397.668	14%	27.1	100.9
4	107	4.96	530.224	19%	36.2	179.4
5	107	6.2	662.78	24%	45.2	280.4
6	107	7.44	795.336	29%	54.3	403.8
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	641		2783.676	100%	189.9	1020.6

Load Criteria A:

Load Case #5 (1.2 + 0.2Sds)DL + (1.2 + 0.2Sds)βPLapp +ρE

1.40 DL + 0.98 PL - 1.30 EL

DL per shelf= 70.1 lbs

PL per shelf= 32.9 lbs

EL= 246.9 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	103	1.24	127.7	5%	11.8	14.6
2	103	2.48	255.4	10%	23.5	58.3
3	103	3.72	383.1	14%	35.3	131.2
4	103	4.96	510.8	19%	47.0	233.3
5	103	6.2	638.5	24%	58.8	364.5
6	103	7.44	766.3	29%	70.5	524.9
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	618		2681.9	100%	246.9	1326.8

Load Case #7 (0.9 - 0.2Sds)DL + (0.9 - 0.2Sds)βPL - ρE

0.70 DL + 0.70 PL + 1.30 EL

DL per shelf= 48.8 lbs

PL per shelf= 23.4 lbs

EL= 246.9 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	72	1.24	89.6	5%	11.8	14.6
2	72	2.48	179.1	10%	23.5	58.3
3	72	3.72	268.7	14%	35.3	131.2
4	72	4.96	358.2	19%	47.0	233.3
5	72	6.2	447.8	24%	58.8	364.5
6	72	7.44	537.3	29%	70.5	524.9
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	433		1880.7	100%	246.9	1326.8

Seismic Load Distribution

Loading Criteria B: PL (top shelf only)

DL= 50 lbs per shelf

PL= 50 lbs on top shelf only

EL= 133 lbs

Load Case #1 1.4DL+1.2PL

DL per shelf= 70 lbs

PL per shelf= 60 lbs

EL= 133 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	70	1.24	86.8	4%	5.1	6.3
2	70	2.48	173.6	8%	10.2	25.2
3	70	3.72	260.4	11%	15.2	56.6
4	70	4.96	347.2	15%	20.3	100.7
5	70	6.2	434	19%	25.4	157.3
6	130	7.44	967.2	43%	56.6	420.8
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	480		2269.2	100%	132.7	767.0

Load Case #2 1.2DL+1.4PL

DL per shelf= 60 lbs

PL per shelf= 70 lbs

EL= 133 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	60	1.24	74.4	4%	4.7	5.9
2	60	2.48	148.8	7%	9.5	23.5
3	60	3.72	223.2	11%	14.2	52.9
4	60	4.96	297.6	14%	19.0	94.0
5	60	6.2	372	18%	23.7	146.9
6	130	7.44	967.2	46%	61.6	458.4
7	0	0	0	0%	0.0	0.0
8	0	0	0	0%	0.0	0.0
9	0	0	0	0%	0.0	0.0
	430		2083.2	100%	132.7	781.6

Load Criteria B:

Load Case #3 (1.2 + 0.2Sds)DL + (1.2 + 0.2Sds)βPLapp +ρE

1.40 DL + 0.98 PL - 1.30 EL

DL per shelf= 70.1 lbs
PL per shelf= 49.1 lbs
EL= 172.5 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	70	1.24	86.9	4%	6.8	8.5
2	70	2.48	173.9	8%	13.7	34.0
3	70	3.72	260.8	12%	20.5	76.4
4	70	4.96	347.7	16%	27.4	135.8
5	70	6.2	434.7	20%	34.2	212.2
6	119	7.44	886.8	40%	69.8	519.5
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	470		2190.8	100%	172.5	986.3

Load Case #4 (0.9 - 0.2Sds)DL + (0.9 - 0.2Sds)βPL - ρE

0.70 DL + 0.70 PL + 1.30 EL

DL per shelf= 48.8 lbs
PL per shelf= 34.9 lbs
EL= 172.5 lbs

level	wi	hi	wiXhi	%	Fi	Mi(' lbs)
1	49	1.24	60.6	4%	6.8	8.5
2	49	2.48	121.1	8%	13.6	33.8
3	49	3.72	181.7	12%	20.5	76.1
4	49	4.96	242.3	16%	27.3	135.4
5	49	6.2	302.8	20%	34.1	211.5
6	84	7.44	623.0	41%	70.2	522.1
7	0	0	0.0	0%	0.0	0.0
8	0	0	0.0	0%	0.0	0.0
9	0	0	0.0	0%	0.0	0.0
	328		1531.5	100%	172.5	987.3

Maximum Force at each Level

Level	Fi, max
1	12
2	24
3	35
4	47
5	59
6	71
7	0
8	0

CARUSO TURLEY SCOTT
structural engineers
1215 W. Rio Salado Parkway, Suite 200
Tempe, AZ 85281
480.774.1700
www.ctsaz.com

Job Name Xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

'Merchandising Niche' Type Fixtures

BP-XR-15

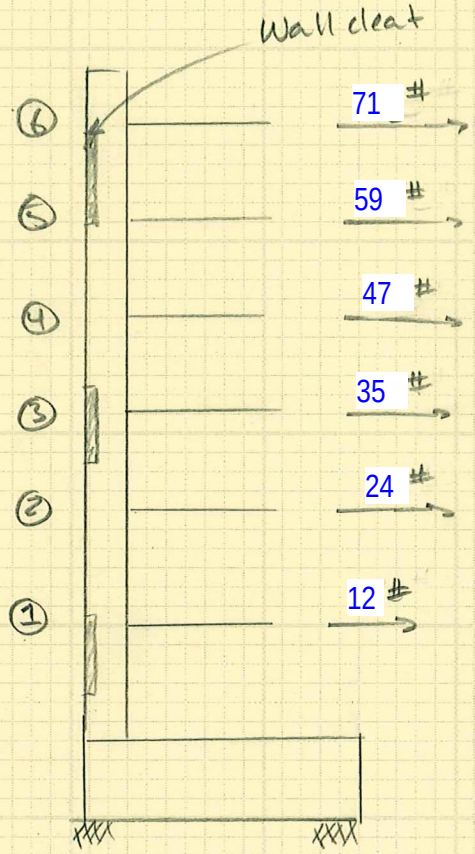
Number of shelves = 6

Dead load per shelf = 50#/12" section

Pallet load per shelf = 50#/12" section

Trib to wall cleat = 2.5 shelves MAX.

$T_{cleat} = 71^{\#} + 59^{\#} + \frac{47^{\#}}{2} = 154^{\#}$



Design screws

$T_{MAX} = 154^{\#} \times 0.7 = 108^{\#}$ (ASD)

$T_{allow} = 350^{\#}/2 = 3.0 = 117^{\#}/screw$

$\#Req'd = T_{MAX}/T_{allow} = 108^{\#}/117^{\#}/screw$

$\doteq 0.92$ screws

Use 2 #10 screws at 6" O.C. at wall cleats

*Add bottom connection at base as well - conservative

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structural engineers
1215 W. Rio Salado Parkway, Suite 200
Tempe, AZ 85281
480.774.1700
www.ctsaz.com

Job Name xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

Seismic force on stud wall

$$F_p = \frac{0.4 a_p S_{DS} W_p}{R_p / I_p} \left(1 + 2\,z/h\right) \quad \text{(ASCE 7)}$$

$$= \frac{0.4\,(1.0)\,(1.011)\,(3)\,W_p}{2.5/1.0} = 0.485 \times W_p$$

$F_p = 0.485 \times 0.7 \times 10\,psf = 3.4\,psf$ (ASD)

$W = 4\,psf$

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Tempe, AZ 85281
480.774.1700
www.ctsaz.com

Job Name Xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

Stud wall calcs

Height = 10.5' (20' max to bottom of roof)

Calc 1 - min. interior

P = 5psf

Spacing = 16" o.c.

Use 362S162-33 at 16" o.c.

Calc 2 - at 'wall' type fixtures

P_1 = 147 # x 0.7 = 103 # @ 2.83'

P_2 = 147 # x 0.7 = 103 # @ 7.42'

Spacing = 16"

Seismic on walls = 4psf

Use single 362S162-33
at 16" o.c. at fixture only

Calc 3 - at 'mechanising Niche' type fixtures

P_1 = 71# x 0.7 = 50# @ 7.44'

P_2 = 59# x 0.7 = 41# @ 6.2'

P_3 = 47# x 0.7 = 33# @ 4.96'

P_4 = 35# x 0.7 = 25# @ 3.72'

P_5 = 24# x 0.7 = 17# @ 2.48'

P_6 = 12# x 0.7 = 9# @ 1.24'

Spacing = 16"

Seismic = 4psf

Use single 362S162-33
at 16" o.c. at fixture only

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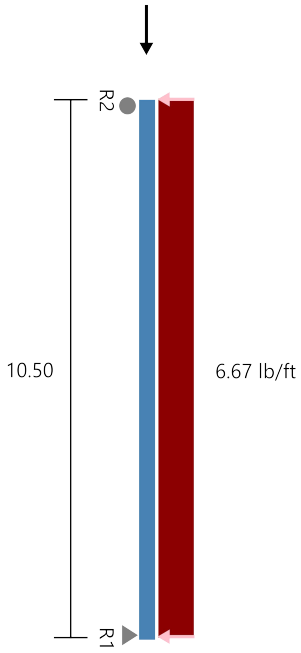


Section : 362S162-33 (33 ksi) Single C Stud (punched)
Maxo = 440.9 ft-lb **Va =** 1023.6 lb **I =** 0.55 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	60.0", 60.0"	60.0", 126.0"	LSUBH3.25 (Min)	0.19

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	35.0	1.00	165.2	0.0	0.11	NO
R1	35.0	1.00	165.2	0.0	0.11	NO

"*" after support means punched near support

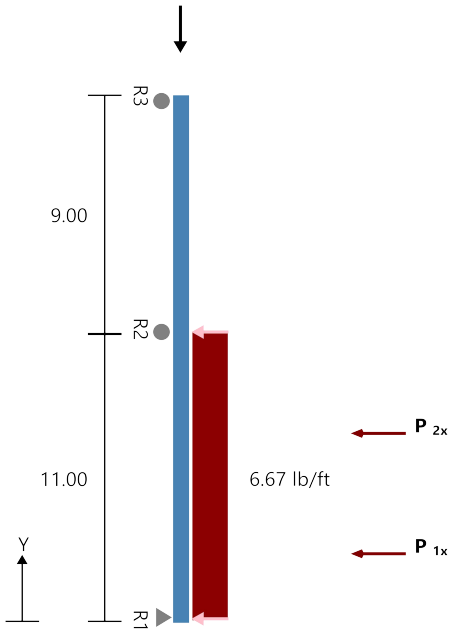
Gravity Load

Type	Load (lb)
Uniform	13.3plf

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	139.7(c)	1613.6(c)	9%	KΦ=0.00 lb-in/in Max KL/r = 97
	Max. Shear, lbs	35.0	521.2	7%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	91.9	434.5	21%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	91.9	408.5	23%	
	Shear/Moment	0.21	1.00	21%	Shear 0.0, Moment 91.9
	Axial/Moment	0.27	1.00	27%	Axial 76.8(c), Moment 91.0
	Deflection Span, in	0.112	--meets L/1123--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	35.0	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	35.0	139.7	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements



Section : 362S162-33 (33 ksi) Single C Stud (punched)
Maxo = 440.9 ft-lb **Va =** 1023.6 lb **I =** 0.55 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Top	60.0", 60.0"	60.0", 108.0"	LSUBH3.25 (Min)	0.01
Bottom	60.0", 60.0"	60.0", 132.0"	LSUBH3.25 (Min)	0.72

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
P2x	103.0	1.50	354.6	266.3	0.52	NO
P1x	103.0	1.50	354.6	325.2	0.60	NO
R3	-27.2	1.00	165.2	0.0	0.09	NO
R2	182.1	1.00	323.4	244.9	0.64	NO
R1	124.4	1.00	165.2	0.0	0.39	NO

"*" after support means punched near support

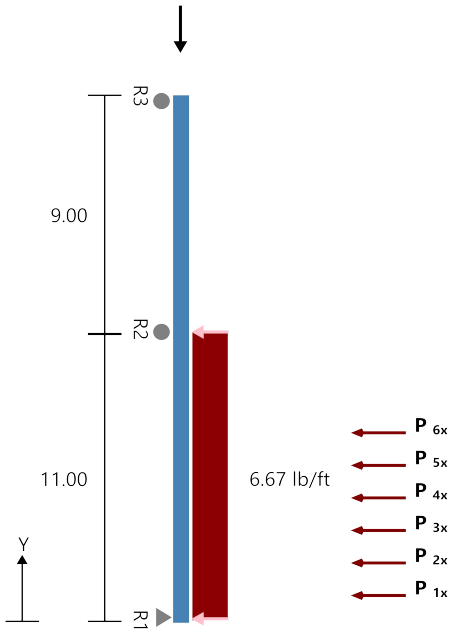
Gravity Load

Type	Load (lb)
Uniform	13.30plf (Top Span), 13.30plf (Bottom Span)

182.1 lbs x 48"/16"=546#

Point Loads	P1x	P2x
Load(lb)	103.00	103.00
X-Dist.(ft)	2.83	7.42

	Code Check	Required	Allowed	Interaction	Notes
Top Span	Max. Axial, lbs	119.7(c)	1707.9(c)	7%	KΦ=0.00 lb-in/in Max KL/r = 97
	Max. Shear, lbs	27.2	521.2	5%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	244.9	434.5	56%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	195.7	406.5	48%	
	Shear/Moment	0.56	1.00	56%	Shear 27.2, Moment 244.9
	Axial/Moment	0.68	1.00	68%	Axial 119.7(c), Moment 244.9
	Deflection Span, in	0.135	--meets L/799--		
Bottom Span	Max. Axial, lbs	266.0(c)	1578.1(c)	17%	KΦ=0.00 lb-in/in Max KL/r = 97
	Max. Shear, lbs	154.9	521.2	30%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	326.0	434.5	75%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	326.0	411.8	79%	
	Shear/Moment	0.76	1.00	76%	Shear 105.6, Moment 325.2
	Axial/Moment	0.97	1.00	97%	Axial 228.3(c), Moment 325.5
	Deflection Span, in	0.409	--meets L/323--		



Section : 362S162-33 (33 ksi) Single C Stud (punched)
Maxo = 440.9 ft-lb **Va =** 1023.6 lb **I =** 0.55 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Top	60.0", 60.0"	60.0", 108.0"	LSUBH3.25 (Min)	0.01
Bottom	60.0", 60.0"	60.0", 132.0"	LSUBH3.25 (Min)	0.64

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
P6x	50.0	1.50	354.6	235.2	0.40	NO
P5x	41.0	1.50	354.6	315.2	0.49	NO
P4x	33.0	1.50	354.6	334.9	0.51	NO
P3x	25.0	1.50	354.6	303.0	0.45	NO
P2x	17.0	1.50	354.6	229.7	0.34	NO
P1x	9.0	1.50	354.6	126.0	0.19	NO
R3	-25.7	1.00	165.2	0.0	0.08	NO
R2	168.5	1.00	323.4	231.2	0.60	NO
R1	105.6	1.00	165.2	0.0	0.33	NO

"*" after support means punched near support

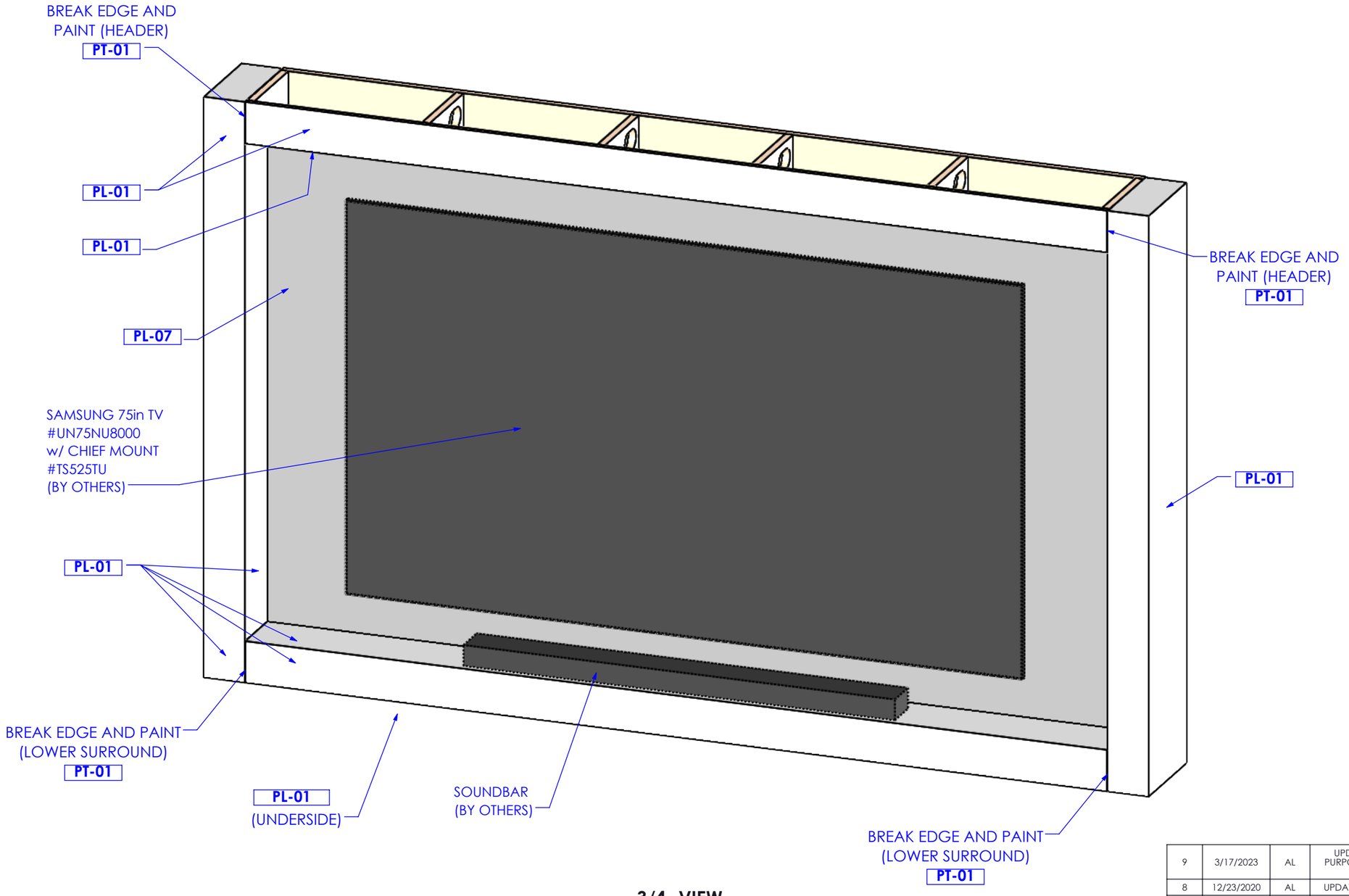
Gravity Load

Type	Load (lb)
Uniform	13.30plf (Top Span), 13.30plf (Bottom Span)

Point Loads	P1x	P2x	P3x	P4x	P5x	P6x
Load(lb)	9.00	17.00	25.00	33.00	41.00	50.00
X-Dist.(ft)	1.24	2.48	3.72	4.96	6.20	7.44

	Code Check	Required	Allowed	Interaction	Notes
Top Span	Max. Axial, lbs	119.7(c)	1707.9(c)	7%	KΦ=0.00 lb-in/in Max KL/r = 97
	Max. Shear, lbs	25.7	521.2	5%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	231.2	434.5	53%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	184.8	406.5	45%	
	Shear/Moment	0.53	1.00	53%	Shear 25.7, Moment 231.2
	Axial/Moment	0.65	1.00	65%	Axial 119.7(c), Moment 231.2
	Deflection Span, in	0.128	--meets L/846--		
Bottom Span	Max. Axial, lbs	266.0(c)	1578.1(c)	17%	KΦ=0.00 lb-in/in Max KL/r = 97
	Max. Shear, lbs	142.8	521.2	27%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	334.9	434.5	77%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	334.9	409.2	82%	
	Shear/Moment	0.76	1.00	76%	Shear 21.5, Moment 334.7
	Axial/Moment	0.97	1.00	97%	Axial 200.0(c), Moment 334.9
	Deflection Span, in	0.391	--meets L/337--		

FINISH SCHEDULE	
CALLOUT	DESCRIPTION
PL-01	WHITE LAMINATE (WILSONART - LINEN #D427)
PL-07	PIONITE MERCURY SG204 SUEDE



3/4 -VIEW

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REV#	DATE	NAME	DESCRIPTION
9	3/17/2023	AL	UPDATE P/N (.2) FOR TRACKING PURPOSES. PRODUCTION ISSUE WITH MODEEZ CONNECTION
8	12/23/2020	AL	UPDATE P/N: INCREASE WIDTH BY 8in
7	11/3/2020	AL	ADD POWER STRIP
6	3/18/2020	AL	ADD SEISMIC NOTES FOR WALL ATTACHMENT
5	1/29/2020	AL	ADJUST WALL CLEAT
4	12/10/2019	AL	INCREASE CUT-OUTS ON BACK, CHANGE BOTTOM TO HOLD EQUIPMENT
3	11/26/2019	AL	REMOVE LOGO, REMOVE HEADER, REDUCE HEIGHT
2	9/6/2019	AL	CHANGE SIDE SURROUNDS TO ATTACH WITH MOD EEZ
1	4/8/2019	AL	UPDATED PER 2019-4-5 REDLINES

REVISION TABLE

sparks
2828 CHARTER RD. PHILADELPHIA, PA 19154
PHONE: 215.602.8100 FAX: 215.602.8111
www.wearesparks.com

ELECTRICAL (if applicable):
NO SECTION OR SECTIONS SHALL BE USED BY THEMSELVES, AND THE VARIOUS SECTIONS MUST BE USED ONLY AS A COMPLETE, FINISHED WIRED UNIT IN THE INTENDED CONFIGURATION.
ALL HARD WIRED CONNECTIONS MUST BE COMPLETED BY A CERTIFIED ELECTRICIAN.

DIMENSIONS
UNLESS OTHERWISE SPECIFIED,
ALL DIMENSIONS ARE IN: in
ALTERNATE DIMS ARE IN: [mm]

ALL DIMENSIONS SHOWN ARE FINISHED DIMENSIONS.

TOLERANCES ARE:
UNLESS OTHERWISE SPECIFIED,

FRACTIONS ± 1/32 [±0.80mm]
DECIMALS .XXX ± 0.010 [±0.25mm]
ANGULAR ± 0.5°

DRAWN BY:	SCALE (B-SIZE):
AL	1:10

DATE CREATED:
2/26/2019

CLIENT:
COMCAST

PROJECT:
XR - BP REMODEL

JOB #:
COMC029

FILE NAME:
BP-XR-10.2 MAIN STAGE

DESCRIPTION:
MAIN STAGE

PART NUMBER:
BP-XR-10.2

SHEET:
1 of 9

Drawing File Location: Z:\Shared\Retail\Drawings\COMCAST\COMC029 XR - BP REMODEL\SW\BP-XR-10 MAIN STAGE\BP-XR-10.2 MAIN STAGE
Assembly File Location: Z:\Shared\Retail\Drawings\COMCAST\COMC029 XR - BP REMODEL\SW\BP-XR-10 MAIN STAGE\BP-XR-10 MAIN STAGE

CARUSO TURLEY SCOTT
structural engineers
1215 W. Rio Salado Parkway, Suite 200
Tempe, AZ 85281
480.774.1700
www.ctsaz.com

Job Name Xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

Hanging Main Stage

Weight = 200# (assumed)

Use: 200# x 1.6 = 320#

Seismic Loading

$$F_{pn} = \frac{0.4 a_p S_{DS} W_p}{R_p/I_p}(1+2z/h) = \frac{0.4(2.5)(1.011)}{2.5/1.0}(320)(1+2)$$

F_{pn} = 388# (ult)

(ASD = 388# x 0.7 = 272#)

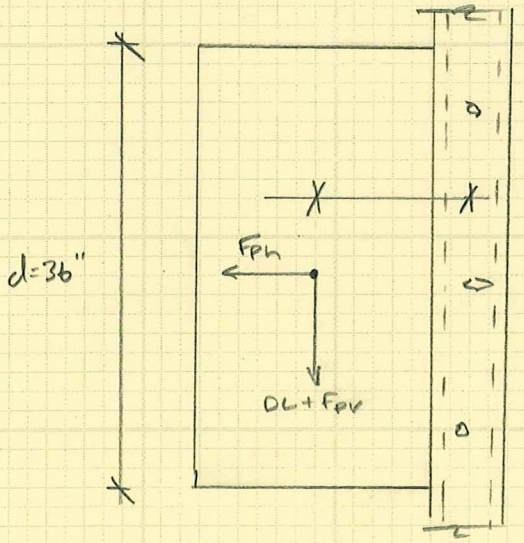
$F_{p,min} = 0.3 S_{DS} I_p W_p = 0.3(1.01(1.0)(320) = 97\# \leq 388\#$ OK

$F_{p,max} = 1.6 S_{DS} I_p W_p = 1.6(1.01(1.0)(320) = 518\# \geq 388\#$ OK

$F_{p,V} = 0.2 S_{DS} W_p = 0.2(1.01(320\#) = 65\# \leq 0.6(200\#) = 120\#$ ∴ no uplift

(ASD = 65# x 0.7 = 46#)

Free-Body



M = (320# + 65#) x 6.5" = 2.5 K-in

Tension, T = M/d = 2.5/36 = 70# (ult)

Shear, V = DL + Fpv = 320# + 65# = 385# (ult)

Attachment Design Next Sheet →

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Job Name Xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

Attachments

T_a = Fph / 2 + T = 272# / 2 + 70# = 206# (ASD)

V_a = Weight + Fpv = 320# + 65# = 385# (ASD)

Screw Capacities:

T_{screw} = 350# / Ω = 3.0 = 117#

V_{screw} = 865# / Ω = 3.0 = ~~288#~~

Utilization

* cleats at (3) studs min w/ (2) screws per stud top & bottom

T = 117# x 4 screws = 468#

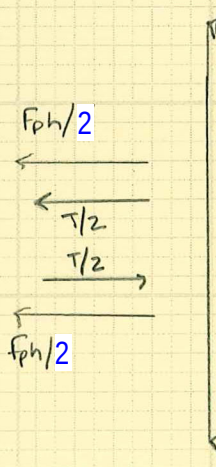
V = ~~288#~~ x 8 screws = 2304#

$U = \frac{T_a}{T} + \frac{V_a}{V} = \frac{231\#}{468\#} + \frac{374\#}{2304\#} = 0.655 \leq 1.0$ OK

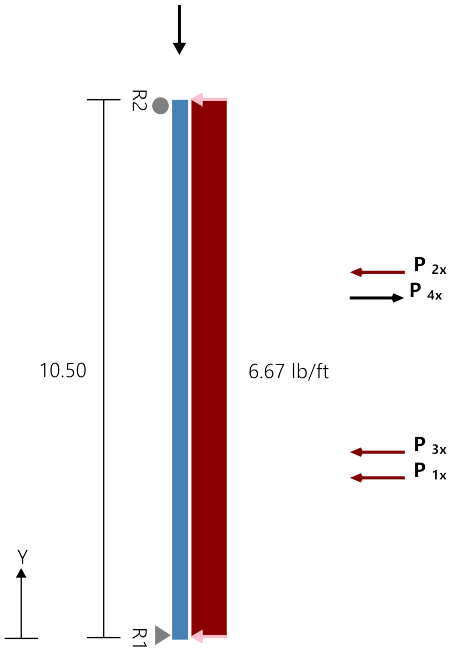
Studs at Main stage

Fph / 2 = 272# / 2 = 136# / 2 studs = 68# @ 3.25' & 7.25'

T/2 = 70# / 2 = 35# +/- @ 3.75' & 6.75'



Use 362S162-43 steel studs at 16" O.C.



Section : 362S162-43 (33 ksi) Single C Stud (punched)
Maxo = 612.0 ft-lb **Va =** 1739.1 lb **I =** 0.71 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	60.0", 60.0"	60.0", 126.0"	LSUBH3.25 (Min)	0.57

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
P4x	-35.0	1.50	620.7	310.2	0.33	NO
P3x	35.0	1.50	620.7	385.1	0.41	NO
P2x	81.0	1.50	620.7	309.3	0.37	NO
P1x	81.0	1.50	620.7	374.4	0.44	NO
R2	106.0	1.00	276.7	0.0	0.20	NO
R1	126.0	1.00	276.7	0.0	0.24	NO

"*" after support means punched near support

Gravity Load

Type	Load (lb)
Uniform	13.3plf

Point Loads	P1x	P2x	P3x	P4x
Load(lb)	81.00	81.00	35.00	-35.00
X-Dist.(ft)	3.25	7.25	3.75	6.75

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	139.7(c)	2219.0(c)	6%	KΦ=0.00 lb-in/in Max KL/r = 98
	Max. Shear, lbs	126.0	675.7	19%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	385.2	609.6	63%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	385.1	559.1	69%	
	Shear/Moment	0.63	1.00	63%	Shear 20.0, Moment 385.1
	Axial/Moment	0.74	1.00	74%	Axial 89.8(c), Moment 385.1
	Deflection Span, in	0.349	--meets L/361--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	106.0	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	126.0	139.7	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

106 lbs x 48"/16"=318#

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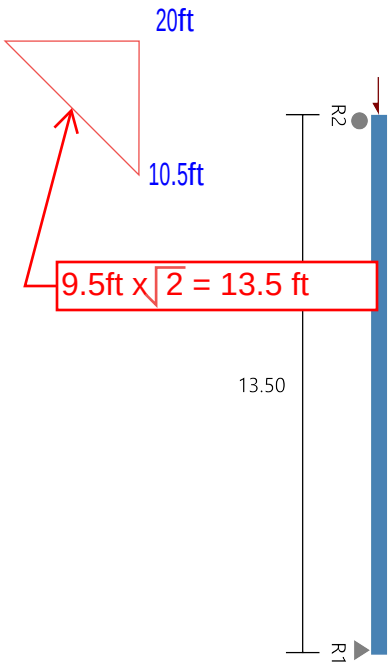

Section : 362S162-68 (50 ksi) Single C Stud (punched)
Maxo = 1431.9 ft-lb **Va =** 4369.6 lb **I =** 1.07 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Bridging Connectors - Design Method =AISI S100

Span	Axial KyLy, KtLt	Flexual, Distortional	Connector	Stress Ratio
Span	None, None	None, 162.0"	N/A	-

Web Crippling

Support	Load (lb)	Bearing (in)	Pa (lb)	M (ft-lbs)	Max Int.	Stiffener?
R2	0.0	1.00	961.7	0.0	0.00	NO
R1	0.0	1.00	961.7	0.0	0.00	NO

"*" after support means punched near support

Gravity Load

Type	Load (lb)
Uniform	0plf
P1y	775.00lb @ 13.50ft

P=546 lb * √2=772 lb

	Code Check	Required	Allowed	Interaction	Notes
Span	Max. Axial, lbs	775.0(c)	799.2(c)	97%	KΦ=0.00 lb-in/in Max KL/r = 272
	Max. Shear, lbs	0.0	1003.5	0%	Shear (Punched)
	Max. Moment (MaFy, Ma-dist), ft-lbs	0.0	1411.4	0%	Ma-dist (control),KΦ=0.00 lb-in/in
	Moment Stability, ft-lbs	0.0	282.6	0%	
	Shear/Moment	0.00	1.00	0%	Shear 0.0, Moment 0.0
	Axial/Moment	0.97	1.00	97%	Axial 775.0(c), Moment 0.0
	Deflection Span, in	0.000	--meets L/0--		

Support	Rx(lb)	Ry(lb)	Simpson Strong-Tie Connector	Connector Interaction	Anchor Interaction
R2	0.0	0.0	By Others & Anchorage Designed by Engineer	NA	NA
R1	0.0	775.0	By Others & Anchorage Designed by Engineer	NA	NA

* Reference catalog for connector and anchor requirement notes as well as screw placement requirements

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www.ctsaz.com

Job Name Xfinity

Job No. 24-0702 Sheet No.

By WRH Date 05/2024

Attachments - at top & bottom for horizontal seismic

F_{ph} = 460# (ult)

× 0.7 = 322#

Top & bottom connections will take horizontal seismic

$T_{top} = F_{ph}/2$ = 322# /2 = 161#

T_{all}, #10 screw = 435#/Ω=3.0 = 145#/screw

Req'd = T_{top}/T_{all} = 161#/145#/screw = 1.1 screws

Use #10 screws at 12" o.c.
top & bottom - 14 total

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3.6.2.1 Product Description

Hilti self-drilling screws are designed to drill their own hole in steel base materials up to 1/2" thick. These screws are available in a variety of head styles, thread lengths and drill-flute lengths for screw diameters #6 through 1/4". Hilti self-drilling screws meet ASTM C1513, ASTM C954 and SAE J78 standards, as applicable.

Product Features:

- Hex head for metal-to-metal applications
- Flush head for wood-to-metal applications
- For metal from 0.035" to 0.500" thick
- Winged reamers for wood over 1/2" thick
- Stitch screws for light gauge metal-to-metal
- Sealing screws for water resistant fastenings

3.6.2.2 Material Specifications

Material	ASTM A510 Grade 1018-1022
Heat Treatment	Case hardened and tempered • Sizes 8, 10 and 12: 0.004" to 0.009" case depth • Size 1/4": 0.005" to 0.011" case depth
Plating	Refer to Section 3.6.2.5 for screw coating information.

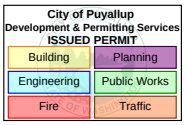
Warning: Because of the potential for delayed hydrogen assisted stress corrosion cracking, many hardened steel fasteners are not recommended for use with dissimilar metals or chemically treated wood when moisture may be present or in corrosive environments. For further information, contact Hilti Technical Support at 1-877-749-6337.

Listings/Approvals

ICC-ES (International Code Council)
ESR-2196

COLA (City of Los Angeles)
RR 25678

ICC-ES ESR-2196, provides IBC recognition of Hilti's Self-Drilling Screw fasteners for most common applications (e.g. CFS connections, gypsum to CFS, etc.), including HWH, HHWH, PPH, PPFH, PBH, PWH, PTH, PPCH, TPCH and PFTH head style screws.



3.6.2.3 Technical Data

Ultimate Tensile Strengths – Pullout (Tension), lb (kN)[1,2,3,4,5,6,7]

Screw Designation	Nominal Diameter in.	Thickness of steel member not in contact with the screw head, ga (in.)					
		20 (0.036)	18 (0.048)	16 (0.060)	14 (0.075)	12 (0.105)	10 (0.135)
#6	0.138	190 (0.85)	250 (1.11)	320 (1.42)	395 (1.76)	555 (2.47)	715 (3.18)
#7	0.151	210 (0.93)	275 (1.22)	345 (1.53)	435 (1.93)	605 (2.69)	780 (3.47)
#8	0.164	225 (1.00)	300 (1.33)	375 (1.67)	470 (2.09)	660 (2.94)	845 (3.76)
#10	0.190	260 (1.16)	350 (1.56)	435 (1.93)	545 (2.42)	765 (3.40)	980 (4.36)
#12	0.216	295 (1.31)	395 (1.76)	495 (2.20)	620 (2.76)	870 (3.87)	1120 (4.98)
1/4 in.	0.250	345 (1.53)	460 (2.05)	575 (2.56)	715 (3.18)	1000 (4.45)	1290 (5.74)

1 The lower of the ultimate pullout, pullover, and tension fastener strength of screw should be used for design.
2 Load values based upon calculations done in accordance with Section E4 of the AISI S100.
3 AISI S100 recommends a safety factor of 3.0 be applied for allowable strength design, a Φ factor of 0.5 be applied for LRFD design or a Φ factor of 0.4 be applied for LSD design.
4 ANSI/ASME standard screw diameters were used in the calculations and are listed in the tables.
5 The screw diameters in the table above are available in head styles of pan, hex washer, pancake, flat, wafer and bugle.
6 The load data in the table is based upon sheet steel with F_u = 45 ksi. For F_u = 55 ksi steel, multiply values by 1.22. For F_u = 65 ksi steel, multiply values by 1.44.
7 Refer to Section 3.6.2.5 to ensure drilling capacities.

Ultimate Shear Strengths – Bearing (Shear), lb (kN)[1,2,3,4,5,6,7]

Screw Designation	Nominal Diameter in.	Thickness of steel member in contact with screw head ga (in.)	Thickness of steel member not in contact with the screw head, ga (in.)				
			20 (0.036)	**18** (0.048)	**16** (0.060)	**14** (0.075)	≥ **12** (0.105)
#7	**0.151**	**20** (0.036)	**500** (2.22)	**660** (2.94)	**660** (2.94)	**660** (2.94)	**660** (2.94)
		18 (0.048)	**500** (2.22)	**660** (2.94)	**880** (3.91)	**880** (3.91)	**880** (3.91)
		≥ **16** (0.060)	**500** (2.22)	**660** (2.94)	**890** (3.96)	**890** (3.96)	**890** (3.96)
#8	**0.164**	**20** (0.036)	**525** (2.34)	**715** (3.18)	**715** (3.18)	**715** (3.18)	**715** (3.18)
		18 (0.048)	**525** (2.34)	**805** (3.58)	**955** (4.25)	**955** (4.25)	**955** (4.25)
		≥ **16** (0.060)	**525** (2.34)	**805** (3.58)	**1120** (4.98)	**1170** (5.20)	**1170** (5.20)
#10-12	**0.190**	**20** (0.036)	**565** (2.51)	**830** (3.69)	**830** (3.69)	**830** (3.69)	**830** (3.69)
		18 (0.048)	**565** (2.51)	**865** (3.85)	**1110** (4.94)	**1110** (4.94)	**1110** (4.94)
		16 (0.060)	**565** (2.51)	**865** (3.85)	**1210** (5.38)	**1390** (6.18)	**1390** (6.18)
		≥ **14** (0.075)	**565** (2.51)	**865** (3.85)	**1210** (5.38)	**1645** (7.32)	**1645** (7.32)
#10-16	**0.190**	**20** (0.036)	**565** (2.51)	**830** (3.69)	**830** (3.69)	**830** (3.69)	**830** (3.69)
		18 (0.048)	**565** (2.51)	**865** (3.85)	**1110** (4.94)	**1110** (4.94)	**1110** (4.94)
		≥ **16** (0.060)	**565** (2.51)	**865** (3.85)	**1210** (5.38)	**1215** (5.40)	**1215** (5.40)
#10-18	**0.190**	**20** (0.036)	**565** (2.51)	**830** (3.69)	**830** (3.69)	**830** (3.69)	**830** (3.69)
		18 (0.048)	**565** (2.51)	**865** (3.85)	**1110** (4.94)	**1110** (4.94)	**1110** (4.94)
		16 (0.060)	**565** (2.51)	**865** (3.85)	**1210** (5.38)	**1390** (6.18)	**1390** (6.18)
		≥ **14** (0.075)	**565** (2.51)	**865** (3.85)	**1210** (5.38)	**1645** (7.32)	**1645** (7.32)
#12-14	**0.216**	**20** (0.036)	**600** (2.67)	**930** (4.14)	**945** (4.20)	**945** (4.20)	**945** (4.20)
		18 (0.048)	**600** (2.67)	**925** (4.11)	**1260** (5.60)	**1260** (5.60)	**1260** (5.60)
		16 (0.060)	**600** (2.67)	**925** (4.11)	**1290** (5.74)	**1570** (6.98)	**1570** (6.98)
		≥ **14** (0.075)	**600** (2.67)	**925** (4.11)	**1290** (5.74)	**1800** (8.00)	**1880** (8.36)
#12-24	**0.216**	**20** (0.036)	**600** (2.67)	**930** (4.14)	**945** (4.20)	**945** (4.20)	**945** (4.20)
		18 (0.048)	**600** (2.67)	**925** (4.11)	**1260** (5.60)	**1260** (5.60)	**1260** (5.60)
		16 (0.060)	**600** (2.67)	**925** (4.11)	**1290** (5.74)	**1570** (6.98)	**1570** (6.98)
		14 (0.075)	**600** (2.67)	**925** (4.11)	**1290** (5.74)	**1800** (8.00)	**1970** (8.76)
		≥ **12** (0.090)	**600** (2.67)	**925** (4.11)	**1290** (5.74)	**1800** (8.00)	**2285** (10.16)
1/4 in.	**0.250**	**20** (0.036)	**645** (2.87)	**1020** (4.54)	**1090** (4.85)	**1090** (4.85)	**1090** (4.85)
		18 (0.048)	**645** (2.87)	**995** (4.43)	**1400** (6.23)	**1460** (6.49)	**1460** (6.49)
		16 (0.060)	**645** (2.87)	**995** (4.43)	**1390** (6.18)	**1820** (8.10)	**1820** (8.10)
		14 (0.075)	**645** (2.87)	**995** (4.43)	**1390** (6.18)	**1940** (8.63)	**2280** (10.14)
		≥ **12** (0.090)	**645** (2.87)	**995** (4.43)	**1390** (6.18)	**1940** (8.63)	**2440** (10.85)

1 The lower of the ultimate shear bearing and shear fastener strength of screw should be used for design.

2 Load values based upon calculations done in accordance with Section E4 of AISI S100.

3 AISI S100 recommends a safety factor of 3.0 be applied for allowable strength design, a Φ factor of 0.5 be applied for LRFD design or a Φ factor of 0.4 be applied for LSD design.

4 ANSI/ASME standard screw diameters were used in the calculations and are listed in the tables.

5 Load values in table are for Hex Washer Head (HWH and HHWH), Phillips Pan Head (PPH), Phillips Truss Head (PTH), Phillips Pancake Head (PPCH), and Phillips Flat Truss Head (PFTH) style screws. Phillips Bugle Head (PBH) and Phillips Wafer Head (PWH) styles are not covered by this table because they are not intended for attachment of steel to steel.

6 The load data in the table is based upon sheet steel with F_u = 45 ksi. For F_u = 55 ksi steel, multiply values by 1.22. For F_u = 65 ksi steel, multiply values by 1.44.

7 Refer to Section 3.6.2.5 to ensure drilling capacities.

3.6.2.4 Installation Instructions

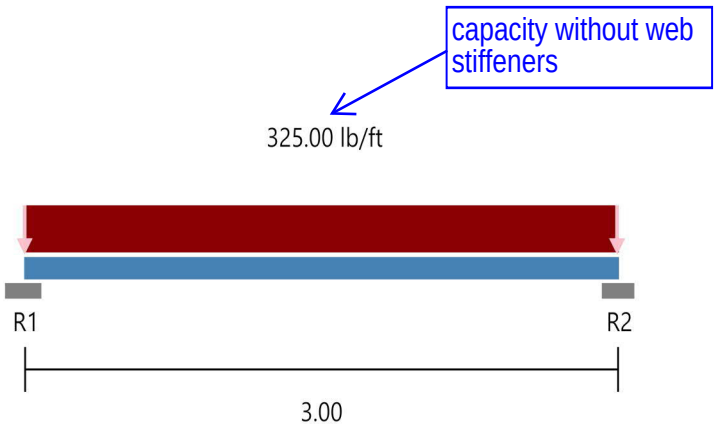
For general discussion of Hilti screw fastener installation, reference Section 3.6.1.7.

For allowable diaphragm shear loads and stiffness values for steel roof or floor deck utilizing Hilti self-drilling screws as frame or sidelap fasteners, reference Section 3.5 and download Hilti's Profis DF software at www.us.hilti.com/decking (US), or www.hilti.ca (Canada).

To estimate the number of sidelap screws on a steel roof or floor deck project, reference Section 3.5.1.6.

Warning: Because of the potential for delayed hydrogen assisted stress corrosion cracking, many hardened steel fasteners are not recommended for use with dissimilar metals or chemically treated wood when moisture may be present or in corrosive environments. For further information, contact Hilti Technical Support at 1-877-749-6337.

Max. Lintel Load: = 10psf x 4' wall above = 40#/ft



Section: (2) 362S162-33 (33 ksi) Boxed C Stud (punched)
Maxo = 881.7 ft-lb **Va =** 2047.2 lb **I =** 1.10 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Flexural and Deflection

	Mmax (ft-lb)	Mmax/ Maxo	Mpos (ft-lb)	Bracing (in)	Ma-Brc (ft-lb)	Mpos/ Ma-Brc	Deflection (in)	Deflection Ratio
Span	365.6	0.415	365.6	None	881.7	0.415	0.018	L/1976

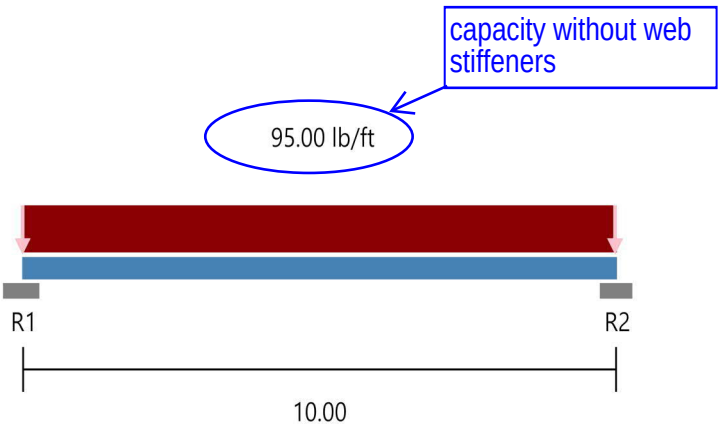
Bending and Web Crippling

Support or Pt Load	Load P(lb)	Bearing (in)	Pa (lb)	Pn (lb)	Mmax (ft-lb)	Intr. Value	Stiffeners Required?
R2	487.5	3.50	518.2	906.9	0.0	0.49	NO
R1	487.5	3.50	518.2	906.9	0.0	0.49	NO

Bending and Shear

Support or Pt Load	Vmax (lb)	Mmax (ft-lb)	Va Factor	V/Va	M/Ma	V + M Intr.
R1	487.5	0.0	0.51	0.47	0.00	0.47
R2	487.5	0.0	0.51	0.47	0.00	0.47

Max. Lintel Load: = 10psf x 4' wall above = 40#/ft



Section: (2) 600S162-33 (33 ksi) Boxed C Stud (punched)
Maxo = 1901.3 ft-lb **Va =** 1276.1 lb **I =** 3.59 in^4

Loads have not been modified for strength checks
Loads have not been modified for deflection calculations

Flexural and Deflection

	Mmax (ft-lb)	Mmax/ Maxo	Mpos (ft-lb)	Bracing (in)	Ma-Brc (ft-lb)	Mpos/ Ma-Brc	Deflection (in)	Deflection Ratio
Span	1187.5	0.625	1187.5	None	1901.3	0.625	0.202	L/594

Bending and Web Crippling

Support or Pt Load	Load P(lb)	Bearing (in)	Pa (lb)	Pn (lb)	Mmax (ft-lb)	Intr. Value	Stiffeners Required?
R2	475.0	3.50	479.4	838.9	0.0	0.52	NO
R1	475.0	3.50	479.4	838.9	0.0	0.52	NO

Bending and Shear

Support or Pt Load	Vmax (lb)	Mmax (ft-lb)	Va Factor	V/Va	M/Ma	V + M Intr.
R1	475.0	0.0	1.00	0.37	0.00	0.37
R2	475.0	0.0	1.00	0.37	0.00	0.37