christian fynboe pc
CONSULTING ENGINEER
12181 C Street S. • TACOMA, WA 98444 • (253) 537-8128 • FAX 531-1285

PROJECT: CASCADE CHRISTIAN			SHEET NO.
BY: CF	DATE: 9/15/21	JOB NO. 21169	1/4

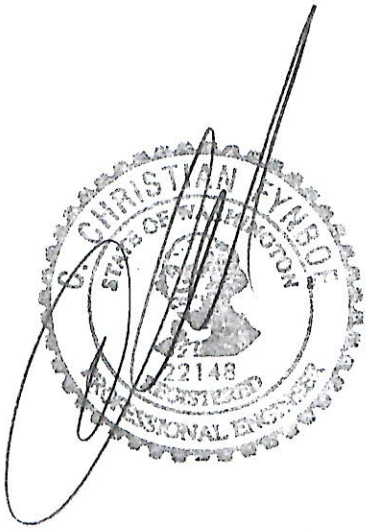
City of Puyallup
Building
ACCEPTED
JMontgomery
01/11/2022
11:34:48 AM

B-21-0727CITY OF PUYALLUP

STRUCTURAL CALCULATIONS
FOR THE
CASCADE CHRISTIAN JR HIGH SCHOOL IIB & IIIA
(815 - 21ST ST SE)

-JEFF BROWN ARCHITECTURE

DESIGN PARAMETERS: 2018 IBC
SEE NOTES ON "S1.1"



Hazards by Location

#2169 2/14

Search Information

Address: 815 21st St SE, Puyallup, WA 98372, USA

Coordinates: 47.18419359999999, -122.2636801

Elevation: 63 ft

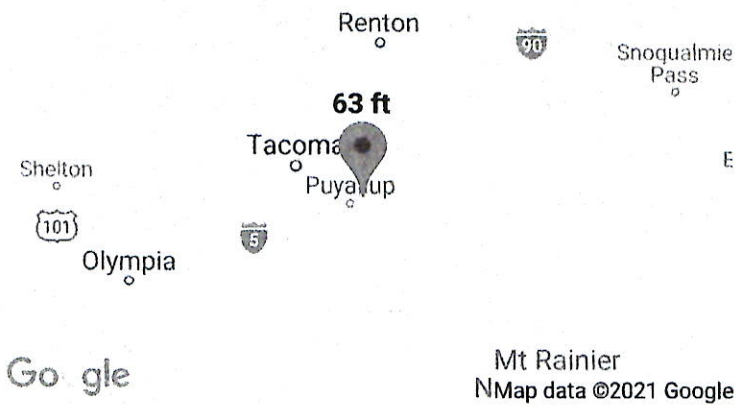
Timestamp: 2021-08-17T16:38:32.854Z

Hazard Type: Seismic

Reference Document: ASCE7-16

Risk Category: II

Site Class: D-default



B-21-0727CITY OF PUYALLUP

Basic Parameters

Name	Value	Description
S_S	1.257	MCE_R ground motion (period=0.2s)
S_1	0.433	MCE_R ground motion (period=1.0s)
S_{MS}	1.509	Site-modified spectral acceleration value
S_{M1}	* null	Site-modified spectral acceleration value
S_{DS}	1.006	Numeric seismic design value at 0.2s SA
S_{D1}	* null	Numeric seismic design value at 1.0s SA

* See Section 11.4.8

V = 1.006/6.5 = 116

Additional Information

Name	Value	Description
SDC	* null	Seismic design category
F_a	1.2	Site amplification factor at 0.2s
F_v	* null	Site amplification factor at 1.0s
CR_S	0.914	Coefficient of risk (0.2s)
CR_1	0.898	Coefficient of risk (1.0s)
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.2	Site amplification factor at PGA
PGA_M	0.6	Site modified peak ground acceleration

H21169 3/14

T_L	6	Long-period transition period (s)
SsRT	1.257	Probabilistic risk-targeted ground motion (0.2s)
SsUH	1.375	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
SsD	1.5	Factored deterministic acceleration value (0.2s)
S1RT	0.433	Probabilistic risk-targeted ground motion (1.0s)
S1UH	0.482	Factored uniform-hazard spectral acceleration (2% probability of exceedance in 50 years)
S1D	0.6	Factored deterministic acceleration value (1.0s)
PGAd	0.5	Factored deterministic acceleration value (PGA)

B-21-0727CITY OF PUYALLUP

* See Section 11.4.8

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are provided by the U.S. Geological Survey Seismic Design Web Services.

While the information presented on this website is believed to be correct, ATC and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in the report should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. ATC does not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the report provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the report.

Hazards by Location

B-21-0727CITY OF PUYALLUP

#21169 4/14

Search Information

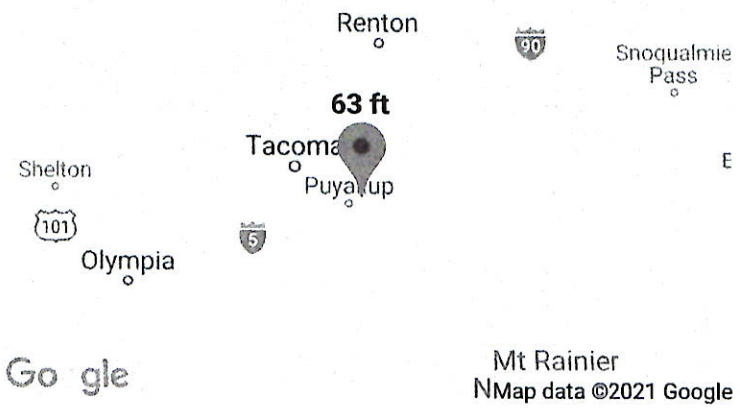
Address: 815 21st St SE, Puyallup, WA 98372, USA

Coordinates: 47.18419359999999, -122.2636801

Elevation: 63 ft

Timestamp: 2021-08-17T16:38:11.514Z

Hazard Type: Wind



ASCE 7-16		ASCE 7-10		ASCE 7-05	
MRI 10-Year	67 mph	MRI 10-Year	72 mph	ASCE 7-05 Wind Speed	85 mph
MRI 25-Year	73 mph	MRI 25-Year	79 mph		
MRI 50-Year	78 mph	MRI 50-Year	85 mph		
MRI 100-Year	82 mph	MRI 100-Year	91 mph		
Risk Category I	92 mph	Risk Category I	100 mph		
Risk Category II	97 mph	Risk Category II	110 mph		
Risk Category III	104 mph	Risk Category III-IV	115 mph		
Risk Category IV	108 mph				

The results indicated here DO NOT reflect any state or local amendments to the values or any delineation lines made during the building code adoption process. Users should confirm any output obtained from this tool with the local Authority Having Jurisdiction before proceeding with design.

Disclaimer

Hazard loads are interpolated from data provided in ASCE 7 and rounded up to the nearest whole integer. Per ASCE 7, islands and coastal areas outside the last contour should use the last wind speed contour of the coastal area – in some cases, this website will extrapolate past the last wind speed contour and therefore, provide a wind speed that is slightly higher. NOTE: For queries near wind-borne debris region boundaries, the resulting determination is sensitive to rounding which may affect whether or not it is considered to be within a wind-borne debris region.

Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 21169	5/4

B-21-0727CITY OF PUYALLUP

SEISMIC

$W_{ROOF} = [88(72) + 11(40)].015 = 102\ k$

$W_{FLOOR} = 6776(.013 + .015) = 178\ k$

$V = 1.00/6.5(1.4)(1.1)\ W = .12W$

USE $.14W$

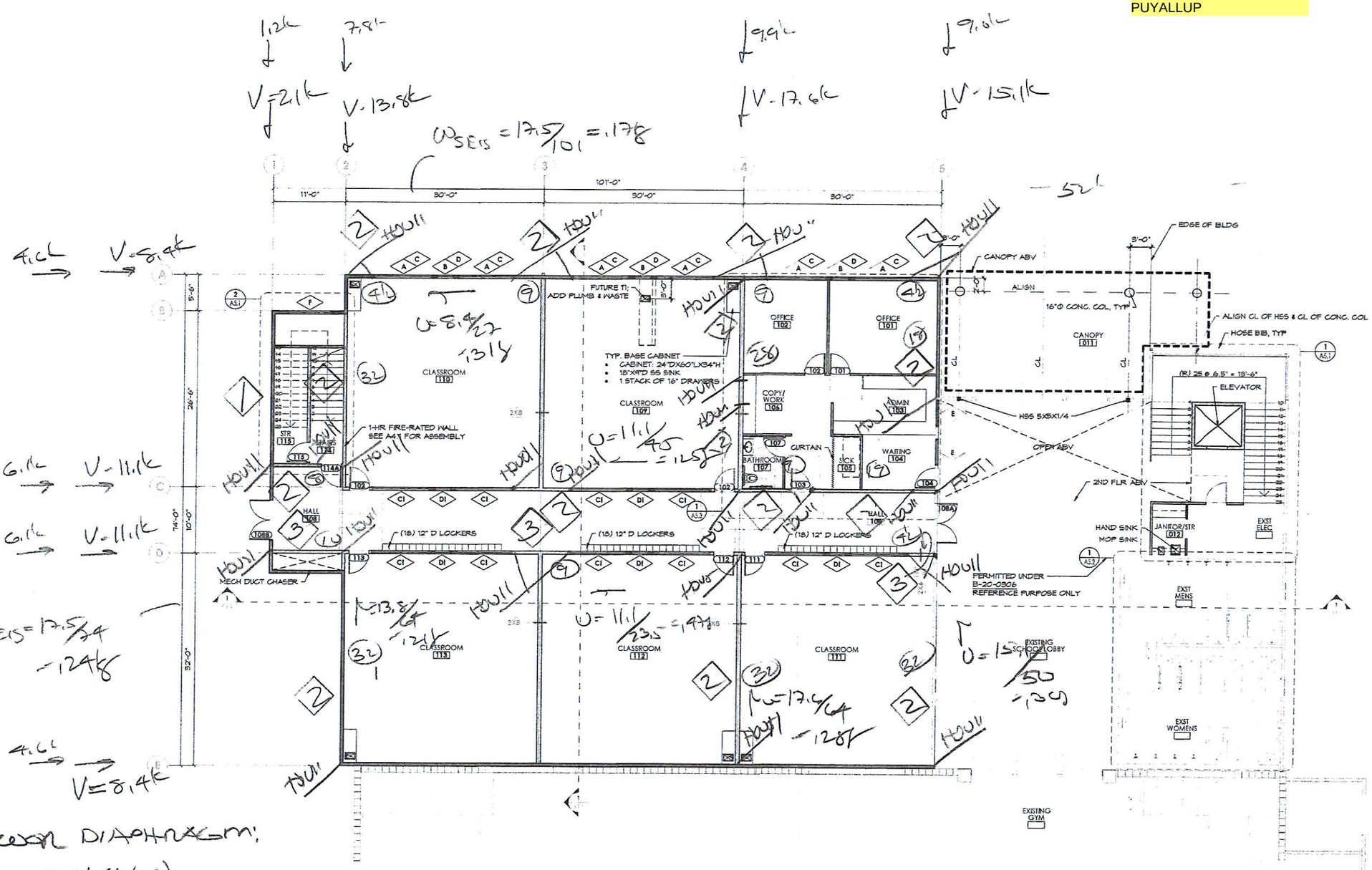
$V = .14(280) = 39.2\ k$

$V_{ROOF} = \frac{102(29.5)}{\underbrace{102(29.5) + 178(13.5)}_{5412}}(39.2) = 21.7\ k$

$V_{2ND} = 17.5\ k$

#2116S 9/14

B-21-0727CITY OF PUYALLUP



1.2k → V=2.1k
7.8k → V=13.8k
9.9k → V=17.6k
9.0k → V=15.1k
52k
4.1k → V=8.4k
6.1k → V=11.1k
4.6k → V=8.4k
U=SEIS=17.5/101=.17g
U=8.4/22=.38g
U=11.1/45=1.25g
U=SEIS=17.5/34=.124g
U=13.8/64=.21g
U=11.1/23.5=.47g
U=17.6/64=.28g
U=15/50=.30g

FLOOR DIAPHRAGM:
3/4" T&G PW (48/24)
Ed=6" DAPPED BEAMS + BOUNDARY
Ed=10" FIND GLOOMARKO

MAIN FLOOR PLAN - CANOPY & STORAGE ADDITION
(11X17) SCALE : 1/16" = 1'-0"
(22X34) SCALE : 1/8" = 1'-0"

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jeff@jeffbrownarchitecture.com

3774 REGISTERED ARCHITECT
JEFFREY E. BROWN STATE OF WASHINGTON

PROJECT NAME/ADDRESS

CASCADE CHRISTIAN JR. HIGH SCHOOL PHASE IIB & IIIA
815 21ST STREET SE
PUYALLUP, WA 98372

PROJECT NUMBER
21007

DRAWING TYPE
PERMIT DOCUMENTS

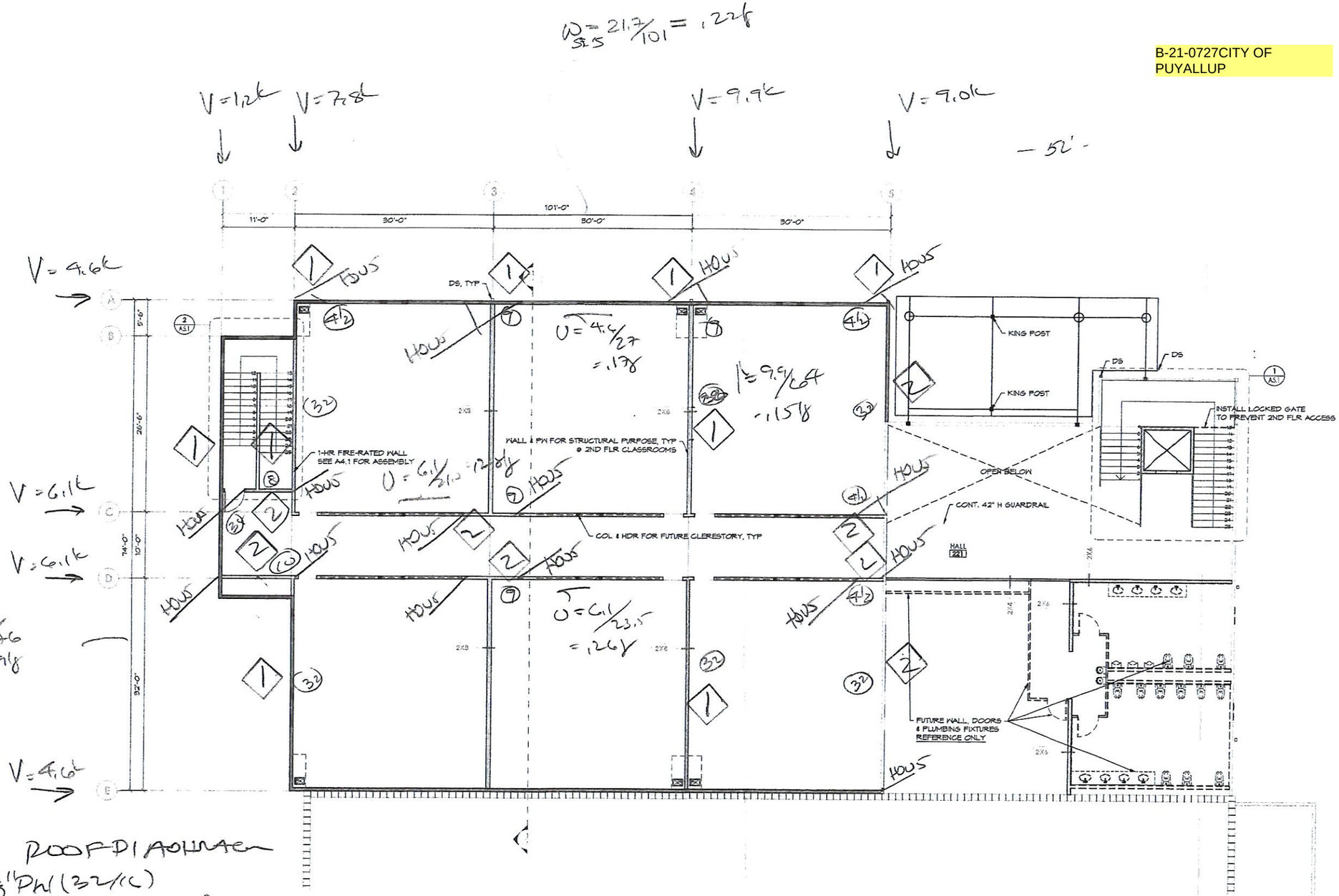
DATE	ISSUE	NO.
07.20.21		

SHEET TITLE
MAIN FLOOR PLAN CANOPY & STR

SHEET #
A2.1

#21169

B-21-0727CITY OF PUYALLUP



2ND FLOOR PLAN & CANOPY FRAMING PLAN

(11X17) SCALE: 1/16" = 1'-0"
(22X34) SCALE: 1/8" = 1'-0"

JEFF BROWN ARCHITECTURE

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JEFFREY E. BROWN STATE OF WASHINGTON

PROJECT NAME/ADDRESS

CASCADE CHRISTIAN JR. HIGH SCHOOL PHASE IIB & IIIA

815 21ST STREET SE
PUYALLUP, WA 98372

PROJECT NUMBER
21007

DRAWING TYPE
PERMIT DOCUMENTS

DATE	ISSUE	NO.
07.20.21		

SHEET TITLE
2ND FLOOR PLAN & CANOPY FRM'G

SHEET #
A2.2

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 21169	9/14

Mark (shear capacity)	Wall Type (3)	Panel Edge Nailing (1), (2)	Intermediate Nailing (2)	Bottom Plate Anchor Bolting or Nailing (5)
1 (200 lb/ft.)	½" CDX Plywood or OSB, one side	8d @ 6" o.c.	8d @ 12" o.c.	½" A.B. @ 4'-0" o.c. or 16d @ 7½" o.c.
2 (350 lb/ft.)	½" CDX Plywood or OSB, one side	8d @ 4" o.c.	8d @ 12" o.c.	5/8" A.B. @ 3'-4" o.c. or 16d @ 4" o.c.
3 (700 lb/ft.)	½" CDX Plywood or OSB, both sides	8d @ 4" o.c. (4)	8d @ 12" o.c.	3/4" A.B. @ 2'-0" o.c. or 16d @ 2" o.c.
11 (200 lb/ft.)	½" GWB, both sides	5d cooler nails @ 7" o.c.	5d cooler nails @ 7" o.c.	½" A.B. @ 4'-0" o.c. or 16d @ 8" o.c.

Notes:

1. Block all panel edges.
2. Common or box nails.
3. 2x studs shall be H.F. #2 or better, kiln-dried.
4. Use 3x studs and plates @ panel edges, wall type 3 only.
5. Anchor bolts shall have minimum 3" by 3" by ¼" thick plate washers.

B-21-0727CITY OF PUYALLUP

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 2116	9/14

B-21-0727CITY OF PUYALLUP

SHEAR WALL (HEM FIR VALUES)

(1) $15/32$" STRUCT I 8d @ 6" o/c $280(.82) = 230$

$1/2$" ϕ AB @ 4'0" o/c $600(1.6/4) = 240$ lb/ft

16d @ 4" o/c $91(1.6)12/75 = 233$ lb/ft

200 lb/ft

(2) $15/32$ STRUCT I 8d @ 4" o/c $430(.82) = 353$ lb

$5/8$" ϕ AB @ 3'4" $860(1.6)/3.33 = 413$ lb/ft

16d @ 4" o/c $91(1.6)12/4 = 437$ lb/ft

350 lb/ft

(3) $15/32$ STRUCT I 8d @ 4" o/c $353(2) = 706$ lb/ft

$3/4$" ϕ AB @ 2'0" $1180(1.6)/2 = 944$ lb/ft

16d @ 2" o/c $91(1.6)12/2 = 873$ lb/ft

700 lb/ft

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 21169	10/14

B-21-0727CITY OF PUYALLUP

ROOF FRAMING

L=9'

W=.045(7) = .32#

M=.32(9)²/8 = 3.9k"

S REQ= 3.9/2.4(1.15) = 1.4.1

5½"x12" GLB

2ND FLOOR

L=9'

W=(.013+.014+.1) = .123(5) = .62#

M=.62(9)²/8 = 7.8k"

S REQ= 7.8/2.4 = 31.1

5½"x12" GLB

W = .04(32) + .123(32) = 5.2#

2x8 DFL#2 @16" OC

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PROJECT:			SHEET NO.
BY:	DATE:	JOB NO. 21169	11/14

B-21-0727CITY OF PUYALLUP

WALL @ STAIRWAY
h = 27'

$w = .0125(8) = 0.1\,k$

$M = \frac{0.1(27)^2}{8}12 = 109\,k''$

$S_{REQD} = 109/4.6(1.6) = 4.0\,in^3$

$I_{REQD} = \frac{5}{384}\frac{(0.1)(27'')^4(12'')}{29{,}000(1.8)} = 22.9\,in^4$

HSS 5x5x3/16

#21169 12/14

RedSPEC

RedSpec™ by RedBuilt™
v7.1.12

Project: Project
Location:
Folder: Folder
Date: 9/15/21 1:38 PM
Designer:
Comment:

B-21-0727CITY OF PUYALLUP

Type: Type

30" Red-L™ @ 24" o.c.

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

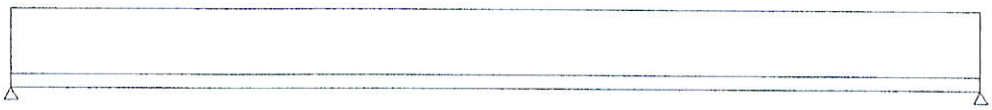
DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	28%	0.280	1.000	L / 999+	L / 360	PASS
Span Total	25%	0.504	2.000	L / 715	L / 180	PASS

SUPPORTS	Support 1	Support 2
Live Reaction (lb) (DOL%)	765 (115)	765 (115)
Dead Reaction (lb)	612	612
Total Reaction (lb) (DOL%)	1376 (115)	1376 (115)
Bearing	Top Chord	Top Chord
Support	Wall	Wall
Bearing Clip	6" No-Notch Clip	6" No-Notch Clip
Approx. Clip Height	1.5"	1.5"
Approx. Clip Width	7.1875"	7.1875"
Assumed Bearing Width	3.5"	3.5"

SPANS AND LOADS

Dimensions represent horizontal clear span.

Member Slope: 0.25/12



30'- 0.0"

APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Snow(115%)	25	20	0	24"	Snow Roof Joist

NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for partial span application live load.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 90
- Pricing Index (plf) = 90

C:\Users\nfranks\Documents\RedSpec\Project1.red

#21169 13/14

RedSPEC

RedSpec™ by RedBuilt™
v7.1.12

Project: Project
Location:
Folder: Folder
Date: 9/15/21 1:40 PM
Designer:
Comment:

B-21-0727CITY OF PUYALLUP

Type: Type

32" Red-W™ @ 16" o.c. with Glued Sheathing

This product meets or exceeds the set design controls for the application and loads listed

This truss design is feasible. The finished design shall be produced by RedBuilt Engineering. All open-web trusses are custom designed to carry the specific design loads for each project. Actual truss capacity when fabricated is limited to that required to resist the specific loads. Do not use this analysis to verify the capacity of existing trusses.

DEFLECTIONS (in)	%	Design	Allow.	Design	Allow.	Pass/Fail
Span Live	28%	0.213	0.750	L / 999+	L / 480	PASS
Span Total	28%	0.425	1.500	L / 846	L / 240	PASS

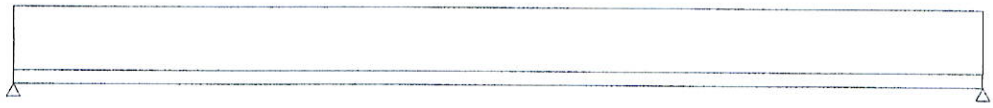
FloorChoice™ Rating: 6.4

Performance rating is based on: 23/32", 3/4" Panels, glued and nailed, no ceiling, no topping, simple span, rigid supports. RedSpec has not performed a structural analysis of the sheathing.

SUPPORTS	Support 1	Support 2
Live Reaction (lb) (DOL%)	816 (100)	816 (100)
Dead Reaction (lb)	816	816
Total Reaction (lb) (DOL%)	1631 (100)	1631 (100)
Bearing	Top Chord	Top Chord
Support	Wall	Wall
Bearing Clip	6" No-Notch Clip	6" No-Notch Clip
Approx. Clip Height	1.5"	1.5"
Approx. Clip Width	8.4375"	8.4375"
Assumed Bearing Width	3.5"	3.5"

SPANS AND LOADS

Dimensions represent horizontal clear span.



30'- 0.0"

APPLICATION LOADS

Type	Units	DOL	Live	Dead	Partition	Tributary	Member Type
Uniform	psf	Floor(100%)	40	30	10	16"	Glued Floor Joist

NOTES

- Building code and design methodology: 2018 IBC ASD (US).
- Repetitive member increase applied in design.
- Truss design includes consideration for a 1000.0 lbs load distributed over a 30" square area and all live loads removed.
- Deflection analysis is based on composite action with single layer of 24 oc (23/32", 3/4") span-rated sheathing, glued and nailed.
- Continuous lateral support required at top edge. Lateral support at bottom edge shall be per RedBuilt recommendations.
- Pricing Load (plf) = 107
- Pricing Index (plf) = 107

C:\Users\nfranks\Documents\RedSpec\Project1.red

B-21-0727CITY OF PUYALLUP

#21169 14/14

Joist Depth	Basic Properties						Reaction Properties[4][5]							
							End Reaction (lbs)				Intermediate Reaction (lbs)			
							Bearing Length				Bearing Length			
	Joist Weight (lbs/ft)	Resistive Moment[1] (ft-lbs)	Vertical Shear[2] (lbs)	EI x 10[6] (in.²-lbs)	EI[3] x 10[6] Red-I™ Joist with Nailed Floor Sheathing (in.²-lbs)	EI[3] x 10[6] Red-I™ Joist with Glue-Nailed Floor Sheathing (in.²-lbs)	1½" (Not for Hangers)	3½"			3½"		5¼"	
							Web Stiffeners[6]		Web Stiffeners[6]		Web Stiffeners[6]		Web Stiffeners[6]	
							No	Yes	No	Yes	No	Yes	No	Yes
Red-145™ Joist														
9½"	2.2	[illegible]	[illegible]	[illegible]	221	253	[illegible]	N.A.	1,120	N.A.	2,025	N.A.	2,575	N.A.
11⅞"	2.6	4,695	[illegible]	[illegible]	375	429	[illegible]	1,225	1,420	1,420	2,025	2,385	2,575	2,930
14"	2.8	[illegible]	[illegible]	[illegible]	553	633	[illegible]	1,225	1,560	1,710	2,025	2,385	2,575	2,930
16"	3.0	5,330	[illegible]	[illegible]	[illegible]	808	[illegible]	1,225	1,560	1,915	2,025	2,385	2,575	2,930
18"	3.2	7,420	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1,225	1,560	1,915	2,025	2,385	2,575	2,930
20"	3.5	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	N.A.	1,225	N.A.	1,915	N.A.	2,385	N.A.	2,930
Red-165™ Joist														
11⅞"	3.3	6,750	1,925	450	512	582	1,375	1,745	1,885	1,925	2,745	3,120	3,365	3,735
14"	3.6	8,930	2,125	666	750	852	1,375	1,750	1,885	2,125	2,745	3,365	3,365	3,985
16"	3.9	9,210	2,330	913	1,025	1,116	1,375	1,750	1,885	2,330	2,745	3,490	3,365	4,105
18"	4.2	10,380	2,535	1,205	1,348	1,462	1,375	1,750	1,885	2,535	2,745	3,615	3,365	4,230
20"	4.4	11,540	2,740	1,545	1,722	1,864	N.A.	1,750	N.A.	2,740	N.A.	3,740	N.A.	4,355
22"	4.7	12,690	2,935	1,934	2,149	2,322	N.A.	1,750	N.A.	2,935	N.A.	3,860	N.A.	4,480
24"	5.0	13,830	3,060	2,374	2,632	2,838	N.A.	1,750	N.A.	3,060	N.A.	3,875	N.A.	4,605
26"	5.3	14,960	2,900	2,868	3,172	3,416	N.A.	1,750	N.A.	2,900	N.A.	4,725[7]	N.A.	5,345[8]
28"	5.5	16,085	2,900	3,417	3,772	4,056	N.A.	1,750	N.A.	2,900	N.A.	4,850[7]	N.A.	5,470[8]
30"	5.8	17,205	2,900	4,025	4,434	4,762	N.A.	1,750	N.A.	2,900	N.A.	4,975[7]	N.A.	5,590[8]
Red-190™ Joist														
11⅞"	4.2	9,605	1,925	621	687	741	1,400	1,715	1,885	1,925	3,350	3,665	3,965	4,285
14"	4.5	11,430	2,125	913	1,005	1,079	1,400	1,875	1,885	2,125	3,350	3,825	3,965	4,440
16"	4.7	13,115	2,330	1,246	1,366	1,462	1,400	2,030	1,885	2,330	3,350	3,980	3,965	4,600
18"	5.0	14,785	2,535	1,635	1,786	1,908	1,400	2,030	1,885	2,515	3,350	3,980	3,965	4,600
20"	5.3	16,435	2,740	2,085	2,272	2,422	N.A.	2,190	N.A.	2,675	N.A.	4,140	N.A.	4,755
22"	5.6	18,075	2,935	2,597	2,824	3,006	N.A.	2,345	N.A.	2,830	N.A.	5,080	N.A.	5,705
24"	5.8	19,700	3,060	3,172	3,442	3,659	N.A.	2,345	N.A.	2,830	N.A.	5,405	N.A.	6,020
26"	6.1	21,315	2,900	3,814	4,132	4,387	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
28"	6.4	22,915	2,900	4,525	4,895	5,191	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
30"	6.6	24,510	2,900	5,305	5,730	6,073	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
Red-I90H™ Joist														
11⅞"	4.6	10,960	1,925	687	755	810	1,400	1,715	1,885	1,925	3,495	3,810	4,100	4,420
14"	4.9	13,090	2,125	1,015	1,109	1,185	1,400	1,875	1,885	2,125	3,495	3,970	4,100	4,575
16"	5.2	15,065	2,330	1,389	1,512	1,610	1,400	2,030	1,885	2,330	3,495	4,130	4,100	4,735
18"	5.4	17,010	2,535	1,827	1,982	2,106	1,400	2,030	1,885	2,515	3,495	4,130	4,100	4,735
20"	5.7	18,945	2,740	2,331	2,522	2,676	N.A.	2,190	N.A.	2,675	N.A.	4,285	N.A.	4,890
22"	6.0	20,855	2,935	2,904	3,136	3,321	N.A.	2,345	N.A.	2,830	N.A.	5,235	N.A.	5,840
24"	6.3	22,755	3,060	3,549	3,825	4,046	N.A.	2,345	N.A.	2,830	N.A.	5,425	N.A.	6,155
26"	6.5	24,645	2,900	4,266	4,590	4,850	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
28"	6.8	26,520	2,900	5,059	5,436	5,737	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
30"	7.1	28,380	2,900	5,930	6,363	6,710	N.A.	2,450	N.A.	2,900	N.A.	5,800[7]	N.A.	5,800[8]
Red-I90HS™ Joist														
11⅞"	6.0	16,050	2,320	900	941	973	1,835	2,320	2,150	2,320	3,995	4,650	4,690	5,345
14"	6.3	19,425	2,565	1,355	1,410	1,455	1,835	2,565	2,150	2,565	3,995	4,980	4,690	5,670
16"	6.6	22,550	2,790	1,876	1,948	2,005	1,835	2,790	2,150	2,790	3,995	4,980	4,690	5,670
18"	7.0	25,640	3,020	2,488	2,578	2,650	1,835	3,020	2,150	3,020	3,995	5,310	4,690	6,000
20"	7.3	28,695	3,250	3,195	3,306	3,394	N.A.	3,250	N.A.	3,250	N.A.	5,425	N.A.	6,330
22"	7.6	31,725	3,480	3,998	4,131	4,238	N.A.	3,475	N.A.	3,480	N.A.	5,425	N.A.	6,330
24"	7.9	34,730	3,710	4,901	5,059	5,186	N.A.	3,500	N.A.	3,710	N.A.	5,425	N.A.	6,655
26"	8.2	37,715	3,940	5,905	6,090	6,238	N.A.	3,500	N.A.	3,940	N.A.	6,985[7]	N.A.	7,675[8]
28"	8.5	40,680	4,165	7,014	7,228	7,400	N.A.	3,500	N.A.	4,165	N.A.	6,985[7]	N.A.	7,675[8]
30"	8.8	43,630	4,375	8,230	8,476	8,672	N.A.	3,500	N.A.	4,375	N.A.	7,310[7]	N.A.	8,005[8]
32"	9.1	46,560	4,375	9,555	9,834	10,057	N.A.	3,500	N.A.	4,375	N.A.	7,640[7]	N.A.	8,335[8]

- The stated allowable design properties are for loads of normal duration. Adjustments to the allowable design values shall be in accordance with the applicable code.

(1) Do not increase joist resistive moment properties by a repetitive-member-use factor.

(2) For possible increases in shear capacity see below.

(3) For deflection calculation only. Assumes 24" joist spacing (12" spacing for I90HS joists) with a 24" span-rated panel.

(4) Interpolation between bearing lengths is permitted for allowable design reactions.

(5) Reaction capacity has been determined based on RedBuilt™ products. Allowable bearing on supporting members shall be checked.

(6) Refer to page 16 for web stiffener details.

(7) 5¼" bearing length is required at intermediate reactions.

(8) 7" bearing length is required at intermediate reactions.

Red-I™ Joist Shear Design

When joists are used as simple-span members, the design shear is equal to the shear at the face of the support.

When joists **up to 24" in depth** are used as multiple-span members, the design shear is the calculated shear at the interior support reduced by the following:

$$R = \frac{W}{19.25} \leq 18\%$$

Where: R is the percent reduction
W is uniform load in plf

$l = 10'$
$W = 1.3(14/12) = 1.78$
$M = \frac{1.17(10)^2}{8} = 2.21$ k