City of White Salmon
Plan Review

OWNER	Steve Delaere	CONTRACTOR	
ADDRESS	P.O. Box 275	LICENSE#	
TELEPHONE	503-310-0319	TELEPHONE	

SITE ADDRESS	Gaddis PL (lot#5)	ARCHITECT	
		Engn.	Dale Pearson
SF: MAIN FLOOR	1379	LOWER FLOOR	648
2ND FLOOR	928	GARAGE	699
RETAINING WALL	76'	DECK	680
		UNIT TYPE	
VALUATION	$292,239		

ROOF LIVE LD	52 #PSF	SOIL TYPE	1500
FLOOR LIVE LD	40 #PSF	FROST DEPTH	18"
DECK LIVE LD	60 #PSF	SEISMIC ZONE	D-1
WIND LOAD	110mph 3-sec. gust	CONST TYPE	V-B
EXPOSURE		OCCUPANCY	R-3 / SFD

ENGINEERED DESIGN   Y ☑   N ☐   Partial

FOOTING SIZE:	8"X16"	FOUNDATION:	8" icf	ANCHORBOLTS:	
CONT. REBAR	2- #4	CONT. REBAR	#5 @ 21" oc	PAGE	
VERT. REBAR		VERT. REBAR	#5 @ 18" oc	☑ 4'OC ☐ 6'OC ☐OTHER	
				3"X3"X1/4" washers	

ABP:	Y☐ N☑	PORTAL FRAME: Y ☐ N ☑		WALL SHEATHING:	
LOCATION		LOCATION		SIZE	Min. 1/2" ply
HOLDDOWNS		HOLDDOWNS		NAILING	8d @ 6", 12"
				see page 2a for details	

ROOF SHEATHING:		FLOORS:		SPECIAL HOLD DOWNS:	
SIZE	min. 1/2"	SHEATHING	5/8" min.	PAGE	3,
NAILING	8d @ 6", 12"	NAILING	10d @ 6", 12"	LOCATION	south wall
nail 8d @ 6" at roof diaphram				TYPE	1800 psf

CORRECTIONS/COMMENTS:

1-   See engn. Design page 2 & 2a   2-   Verify property lines   3-   Stairway detail not provided (R-311.5, R-312)

4-   See smoke det. location living room   5-   see anchor location page 3, souyh wall.

6-   See insulation requirements

PLANS REVIEWED BY	Dean A. Nygaard	DATE	6/17/2009

City of White Salmon
Plan Review

ADDRESS, PERMIT AND INSPECTION CARD MUST BE VISIBLE

Approved plans, plan review and engineering are required ON SITE at time of inspections.

Inspections:

Foundation:	☑	Site/Setbacks
	☑	Footings
	☑	Stemwalls
	☐	Monopour
	☑	Slab insulation
	☐	Appliance Protection/Slab
	X	Under Slab Plumbing
Post & Beam:	☐	Post & Beam/Underfloor
	☑	Roof Sheathing
	☑	Seismic Strapping
	☑	Wall Sheathing
		Rough Electrical
	☑	Rough Plumbing
	☑	Rough Mechanical/Gas Piping
Framing:	☑	Framing
Insulation:	☑	Insulation/Windows
Drywall:	☑	Drywall
	☑	Firewall
	☑	Final Electrical
	☑	Final Plumbing
	☑	Final Mechanical
Final:	☑	Final Structural
	X	Occupancy

> Call inspections into the
> City of White Salmon
> by 9:00 am
> (509) 493-1133
>
> Washington
> Dept. of Labor & Industries
> Electrical Inspections
> (509) 493-5041

Please Note: Repeated failure to make required corrections may result in additional fees incurred for re-inspection.

FINAL INSPECTION IS REQUIRED PRIOR TO OCCUPANCY (No personal belongings, furniture, etc.)

Any changes to approved plans or site plan shall be submitted in writing. Approval must be signed on both sets of plans. Changes to Site Plan must be presented to the City of White Salmon.

R105.5 Expirations. Every permit issued shall become invalid unless the work authorized by such permit is commenced within 180 days after its issuance, or if the work authorized by such permit is suspended or abandoned for a period of 180 days after the time the work is commenced. The Building Official is authorized to grant, in writing, one or more extensions of time, for periods not more than 180 days each. The extension shall be requested in writing and justifiable cause demonstrated.

R109.3 Inspection Requests. It shall be the duty of the permit holder or their agent to notify the Building Department that such work is ready for inspection. It shall be the duty of the person requesting any inspections required by this code to provide access to and means for inspection of such work.

R109.4 Approval Required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the Building Official. The Building Official upon notification shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the permit holder or an agent of the permit holder wherein the same fails to comply with this code. Any portions that do not comply shall be corrected and such portions shall not be covered or concealed until authorized by the Building Official.

The issuance of a permit shall not prevent the correction of errors in plans, specifications or the construction.

Print Name _____

Signature _____   Date _____

ANALYSIS: SUMMARY OF MARGINS OF SAFETY   REFERENCES:

	M.S.	SHT. No.
RETAINING WALL		
STEEL REINFORCING	+.58	4
SOIL BEARING	+.71	6
SLIDING RESISTANCE	+.05	6
BASEMENT WALL		
STEEL REINFORCEMENT	+1.11	7
ROOF SUPPORT BEAM		
BENDING	+.29	8
DEFLECTION	+.18	8
HOT TUB SUPPORT		
JOIST BENDING	+.25	9
JOIST DEFLECTION	+.26	10
SUPPORT BEAM BENDING	+.00	11
" " DEFLECTION	+.06	12
MAIN FLOOR SUPPORT BEAM - STEEL		
BENDING	+.00	14
DEFLECTION	+.	14
HEADERS		
UPPER FLOOR FAMILY ROOM - BENDING	+1.71	15
LARGE FRONT WINDOW - BENDING	+.04	15
KITCHEN WINDOW - BENDING	+.42	15
BEDROOM SIDE WINDOW - BENDING	+1.44	16
BEDROOM ENTRANCE WALL - MAIN VER.	+.25	16
CENTER WALL BASEMENT -		
BENDING	+.25	16
SHEAR	+.78	16
BASEMENT BATH WINDOW		
BENDING	+.53	16
SHEAR	+.25	16

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ANALYSIS: <u>SUMMARY OF MARGINS OF SAFETY</u> (CONT.)   REFERENCES:

	M.S.	SHEET NO.
COLUMNS — BUCKLING (CRITICAL COLUMN)	+.15	17
FOOTINGS — UNDER MAIN FLOOR SUPPORT (CRIT.)	+.01	18

ANALYSIS: RETAINING WALL   **REFERENCES:**

WALL IS 9'-4" HIGH INCLUDING FOOTING

NO SLAB AT BASE - WALL IS 8" THICK

ASSUMING #5 Ø WITH 3" COVER, $d = 8 - 3.15 = 4.84"$ FOR WALL

NO SURCHARGE. NO SLOPE - VERTICAL WALL

$$P = \frac{1}{2} wh^2 \left(\frac{1 - \sin\theta}{1 + \sin\theta} \right) \quad \text{ASSUME } \theta = 33°42' \quad \delta, \text{SOIL} = 100 \, ^{\#}/FT^3$$

$$P = \frac{1}{2} (100)(9.33)^2 (.286) = \underline{1245^{\#}}$$

$$M = \frac{1245(9.33)}{3} = 3872'^{\#} = \underline{46463"^{\#}}$$

ASSUME WALL WEIGHT HAS AN ARM OF 8"

$$M_W = 9.33(^2/_3)(150) \, 8 = \underline{7464"^{\#}}$$

$$M_{OD} = 46465"^{\#} + 7464"^{\#} = \underline{54000"^{\#}}$$

EARTH LOAD ON FOOTING MUST EQUAL $\frac{39000}{W_F/2} = \frac{78000}{W_F}$

$$P_{EARTH} = \frac{9.33(100)}{.12} (W_F) = 77.75 \, W_F$$

$$77.75 \, W_F = \frac{78000}{W_F} \quad ; \quad W_F = \underline{32"} \quad \text{TRY FOR DESIGN}$$

RESIDENCE DESIGN & ENGINEERING

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ANALYSIS: SKETCH   REFERENCES:
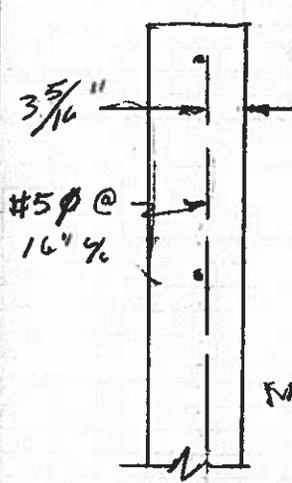
ASSUME FOOTING THICKNESS = 12"; $d_e = 8.84''$

TRY #5 ϕ @ 16" %; $p = \dfrac{A_s}{bd} = \dfrac{.301}{16(8.84)} = .0022$

$n = \dfrac{29.5(10^6)}{57000\sqrt{4000}} = 8.18$ & $pn = .018$

$K = \sqrt{2(p.018) - (.018)^2} - .018 = .171$

$J = 1 - \dfrac{.171}{3} = .943$

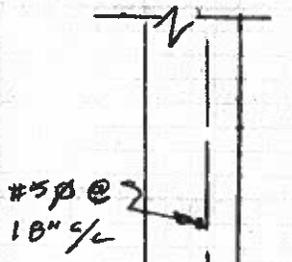$M_s = A_s f_s j d = .306(40000)(.943)(8.84) = \underline{15305}$ "#

REDUCED TO 12" $M_{s\,ALL} = \dfrac{12}{16}(15305) = \underline{11478b}$ "#

CHECKING WALL — TRY #5 ϕ @ 16"

$p = \dfrac{A_s}{bd} = \dfrac{.306}{16(4.64)} = .0040$, $pn = .032$

$K = \sqrt{2(.032) - (.032)^2} - .032 = .219$ $j = 1 - \dfrac{.219}{3} = .927$

$M_s = .306(40000)(.927)(4.64) = 82375$ "#

REDUCING TO 12" $M_{ALL} = \dfrac{12}{16}(42375) = \underline{417.82}$ "#

M.S. IN WALL = $\dfrac{417.82}{39020} - 1 = +.58$ ←

#5 ϕ @ 16" %

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ANALYSIS: RETAINING WALL (CONT.)   **REFERENCES:**
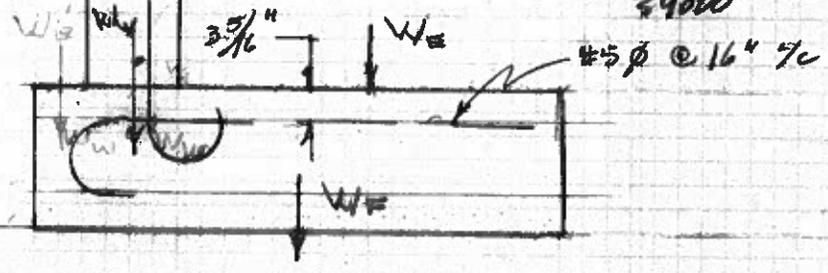
CHECKING SOIL PRESSURES

$$W_{BF} = 8.33(100)(2.67) = 2224^\#$$
$$8.33(100)(.3) = 245^\#$$
$$W_W = 8.33(100) = 833^\#$$
$$W_F = 3.67(150) = 551^\#$$
$$\overline{3608}^\#$$

$\underline{M_A}$

$$W_{BF}(16) = 35584$$
$$W_F(22) = 12122$$
$$W_W(36) = 29988$$
$$\overline{77694}^{\prime\prime\#}$$

$$a = \frac{77694}{3608^\#} = 21.53^{\prime\prime} = 1.79^\prime$$

FOOTING

44" = 3.67'

$R_1 = 1508 \#/FT$

$R_2 = 9.5 \#/FT$

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ANALYSIS: RETAINING WALL (CONT.)

$$\frac{(P_L + \frac{P_R}{2})(4.4)}{(12)} = 3608 \quad ; \quad P_L = 1968 - P_R$$

$$\frac{(3.47)^2 (P_R)}{2} + \frac{(P_L - P_R)(3.47)^2}{3} = 3608 (1.79)$$

$$\frac{P_R}{2} + \frac{(7968 - 2P_R)}{3} = 480.3$$

$$3P_R + 2(7968 - 2P_R) = 3882$$

$$+ P_R = \underline{914 \text{ }^\#/FT}$$

$$P_L = \underline{1054 \text{ }^\#/FT}$$

CHECKING:

$$\frac{1054 + 914}{2} (3.47) = 3411^\# \text{ OK}$$

$$M.S. = \frac{1800}{1054} - 1 = +.71 \quad \longleftarrow \text{ SOIL BEARING}$$

CHECKING M_{TOE} —

$$3608 (1.88) + 387 < 2224 (2.33) + 833 (8) + 55 (1.83) - 78 (.7)$$

$$10443 < 12854 \text{ OK}$$

CHECKING SLIDING

$$1245 \text{ LEFT VS } 3608 (.33) = 1203 \text{ OK}^*$$

$*$ FOOTING HAS ADDITIONAL SOIL WEIGHT ON TOE

$$= \frac{100 (2')}{2} = 100^\# \text{ LATERAL LOAD RIGHT}$$

$$M.S. = \frac{1203 + 100}{1245} - 1 = +.05 \quad \text{SLIDING RESISTANCE}$$

NOTE: C.F. OF .33 IS CONSERVATIVE

REFERENCES:

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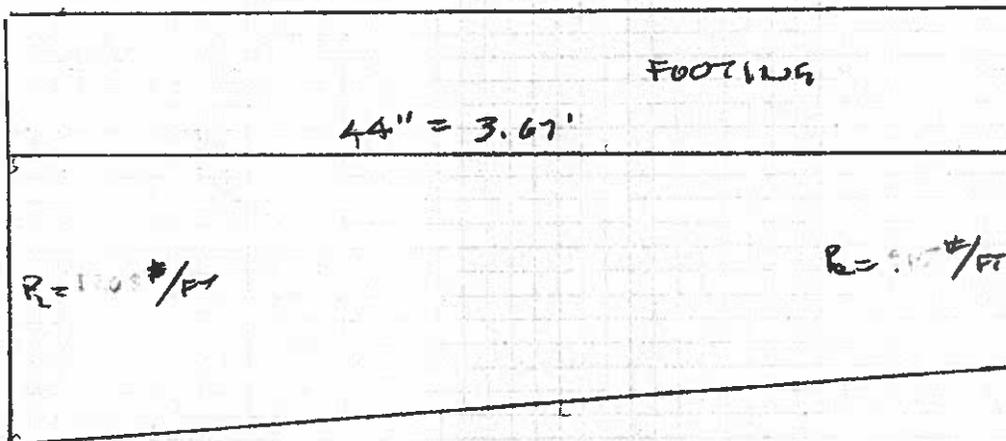ANALYSIS: BASEMENT WALL.   REFERENCES:

$P = wh = 137(9.25) = 1267$ psf

$P = \dfrac{wh^2}{2} (1267)(9.2) = 1224\#$

⅓ OF LOAD REACTED AT TOP = 408 #

408#   816#

$M_{MAX} = 9.25(.1283)(1224) = 1453'\# = 17431''\#$

TRY MIN. STEEL - #5∅ @ 18"%

$P = \dfrac{As}{bd} = \dfrac{.306}{18(4.84)} = .0035$

$Pn = .0035(8.43) = .029$

$k = \sqrt{2Pn - Pn^2} - Pn = .209$

$J = 1 - \dfrac{.209}{3} = .93$

$M_{BALL} = .306(40000)(.93)(4.84) = 55115''\#$

REDUCE TO 12"; $M_{ALL} = \dfrac{12}{18}(55115) = 36744''\#$

$M.S. = \dfrac{36744}{17431} - 1 = +1.11$ —— WALL BENDING
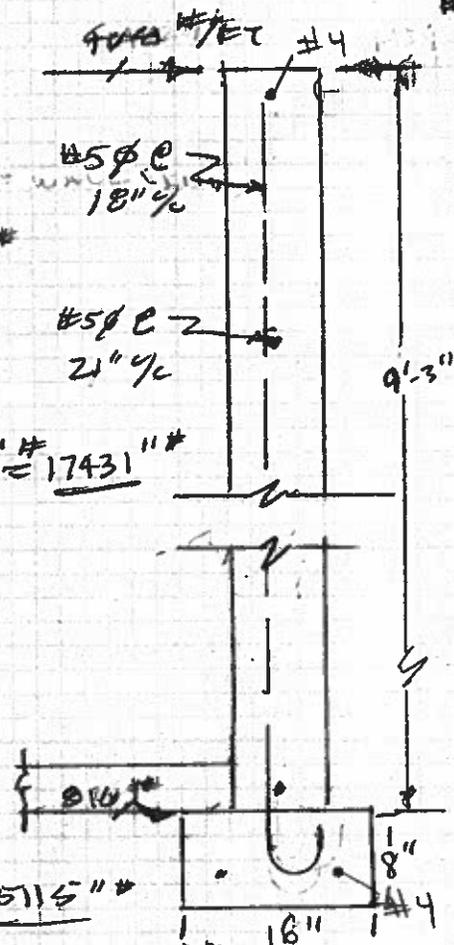
#4 @ FT   #4

#5∅ @
18"%

#5∅ @
21"%   9'-3"

#4 @   8"

8"%   8"

16"   #4

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ANALYSIS: ROOF SUPPORT BEAM.   REFERENCES:

$B.L. = 52 \text{ PSF}$; $D.L. = 10 \text{ PSF}$ (ASSUMED)

RAFTERS SECTION

$$R_{WL} = \frac{62(13.83)^2}{2(13.83)} = 541.7^{\#}$$

$$R_{BEAM} \cong 34(62) - 541.7 - 632.9 = 913.4^{\#}/\text{FT}$$

$$R_{WR} = \frac{62(18.17)^2}{2(16.17)} = 632.9^{\#}$$

$$w = 913.4^{\#}/\text{FT}$$

$$M_{MAX.} = \frac{(913.4 + 16)(16.83)^2}{8} = 32906^{'\#}$$

TRY 7" × 11⅞" V/L ; M = 42550 IN-LBS) I = 976.8 IN⁴

CHECKING DEFLECTION

$$w_{LL.} = \frac{52}{62}(913.4)/12 = 63.8^{\#}/\text{IN}$$

$$\delta = \frac{63.8(5)(202)^4}{384(2)(10)^6(976.8)} = .71" ; \delta_{ALL} = \frac{202}{240} = .84"$$

$$M.S. = \frac{42550}{32906} - 1 = +.29 \longleftarrow \text{BEAM BENDING}$$

$$M.S. = \frac{.84}{.71} - 1 = +.18 \longleftarrow \text{BEAM DEFLECTION}$$

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ANALYSIS: HOT TUB LOADS   REFERENCES:

ASSUME TUB IS CENTERIZED IN SPACE 13' X 13'
JOISTS RUN ONE DIRECTION &
   TUB IS 7' X 7' X 3' - p = 3(42.5) = 406 PSF

LORD DIAGRAM - ONE JOIST

$$R_L = R_R = \frac{7(420) + 6(67)}{2} = 2371^{\#}$$

$$M_{max.} = \frac{2371 + 2170}{2}(3) + \frac{2170(3.5)}{2} = 10609^{\text{"}\#} \quad \text{TRY } 3\tfrac{1}{2}\text{"} \times 9\tfrac{1}{2}\text{" V/L}$$

$$M.S. = \frac{13272}{10609} - 1 = +.25 \quad \Leftarrow \text{BEAM BENDING}$$

CHECK DEFLECTION : CONSERVATIVELY ASSUME (420.67)^#/FT OF TUB
LOAD IS CONC. PT LOAD AT CENTER

$$\sqrt{} = \frac{5\left(\tfrac{}{}\right)^?(13.5)^?}{384(2)(.7)(230.0)} + \frac{\tfrac{5}{8}(2371)^3(.3)}{48(2.1 \times 10^6)(232.8)} = 2.78"$$

ANALYSIS: HOT TUB LOADS / DEFLECTION (CONT.)   **REFERENCES:**

THIS DEFLECTION ANALYSIS REQUIRES

INTEGRATION OF THE M DIAGRAM & THE Mx DIAGRAM

DIVIDED BY EI.

FOR THE M DIAGRAM (WHICH GIVES THE SLOPE)

$$\overline{SLOPE} = R\int_0^a x\,dx + \int_a^{a+\frac{b}{2}}\left[Rx - \frac{w}{2}(x-a)^2\right]dx$$

WHERE $a = 36''$, $b = 24''$ & $R = 1613^{\#}$ & $w = 38.4\,^{\#}/IN$

THUS $EI(SLOPE) = 1613\int_0^{36} x\,dx + \int_{36}^{48}\left[1613x - \frac{384}{2}(x-36)^2\right]dx$

& INTEGRATING ABOVE, $EI(SLOPE) = 1613\left[\frac{x^2}{2}\right]_0^{36} + 1613\left[\frac{x^2}{2}\right]_{36}^{48} - 19.2\left[\frac{x^3}{3}\right]_{36}^{48} + 19.2(72)\left[\frac{x^2}{2}\right]_{36}^{48} - 19.2(1296\,x)\big|_{36}^{48}$

SO THAT $EI(SLOPE) = 4.433(10)^6$ & SLOPE = .0096

FOR THE Mx DIAGRAM (WHICH GIVES THE DEFL. FROM THE SLOPE)

$$EI\delta' = \int_0^a Rx^2\,dx + \int_a^{a+\frac{b}{2}}\left[Rx - \frac{w}{2}(x-a)^2\right]x\,dx$$

& SOLVING AS ABOVE, $EI\delta' = 220.95(10)^6$

& $\delta' = \dfrac{220.95}{2(10)^6(250.8)} = .48''$

$\delta = .0096(a+\frac{b}{2}) - \delta' = .75 - .48 = .27''$

ADD BACK IN LOAD REMOVED FOR NORMAL DESIGN

$\delta_{dL} = \dfrac{5(\frac{w}{12})(156)^4}{384(2)(10)^6(250.8)} = .07''$ & $\delta_{TOTAL} = .27 + .07 = .34''$

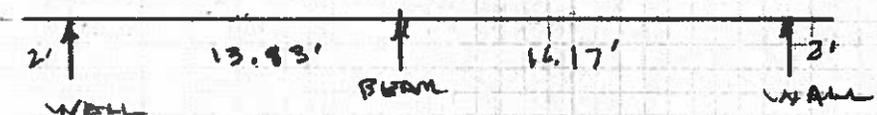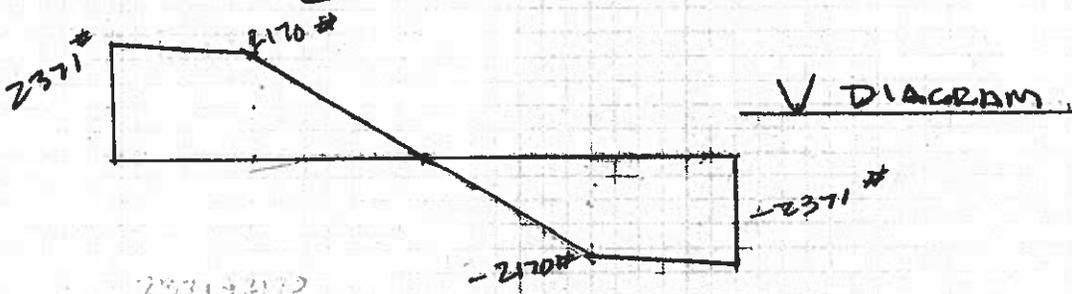$\delta_{ALL} = \dfrac{156}{360} = .43$; M.S. $= \dfrac{.43}{.34} - 1 = +.26$ DOES'T DEFLECTION

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ANALYSIS: SUPPORT BEAM FOR HOT TUB JOISTS | REFERENCES:

NORMAL CASE - TUB IN CENTER OF ROOM
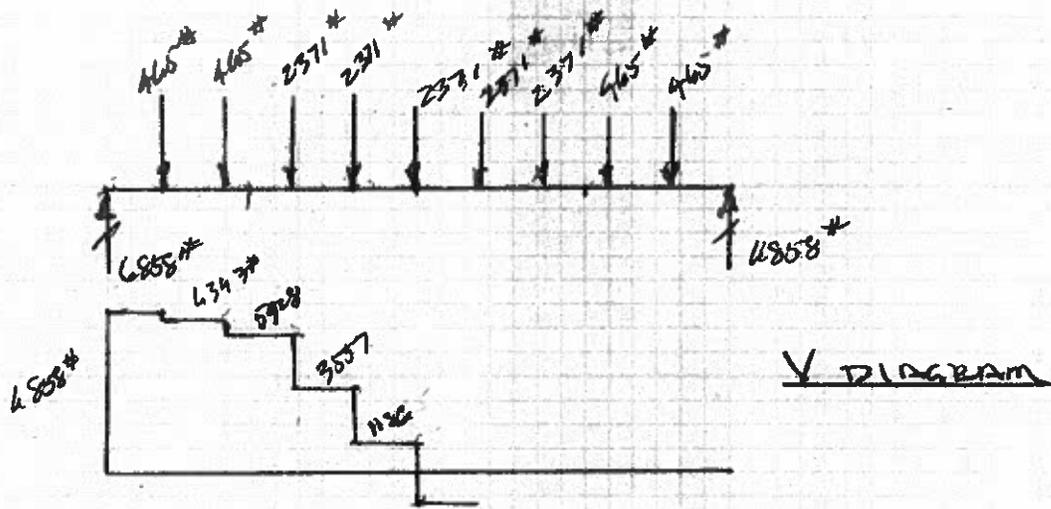
V DIAGRAM

$$M_{max} = 6.33(6858 + 6393 + 5928 + 3557 + 1186) = 31816'^{\#}$$
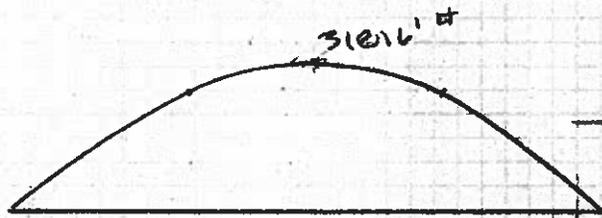
M DIAGRAM

TRY $5\frac{1}{4}" \times 11\frac{7}{8}"$ V/L

$$M_{ult} = 31913'^{\#} \; ; \; M.S. = \frac{31913}{31816} - 1 = +.00 \longleftarrow \text{BEAM BENDING}$$

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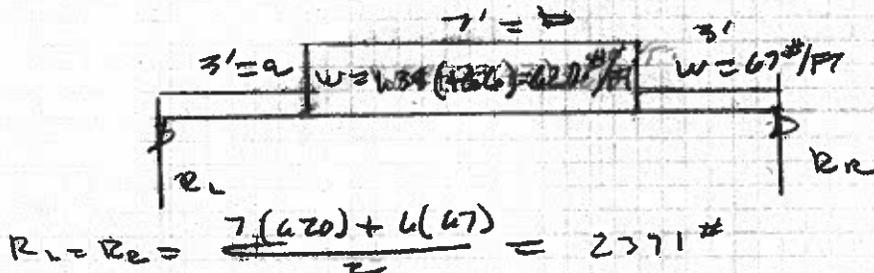Associate Member American Institute of Architects

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ANALYSIS: SUPPORT BEAM FOR HOT TUB JOISTS (CONT)   REFERENCES:

CALCULATING DEFLECTION ~ SEE SHEET FOR METHOD

$$4745 \int_0^{38} x\,dx + \int_{38}^{80}\left[4765\,x - \frac{119.1}{2}(x-38)^2\right]dx = EI\,(\text{SLOPE})$$

INTEGRATING

$$4745\left[\frac{x^2}{2}\right]_0^{38} + 4745\left[\frac{x^2}{2}\right]_{38}^{80} - \frac{119.1}{2}\left[\frac{x^3}{3}\right]_{38}^{80} + \frac{119.1}{2}(38)\left[\frac{x^2}{2}\right]_{38}^{80} - \frac{119.1}{2}(38)^2\left[x\right]_{38}^{80} = EI\,(\text{SLOPE})$$

$$EI\,(\text{SLOPE}) = 18.777 \times 10^6 \; ; \; \text{SLOPE} = .0094$$

$$4745\int_0^{38} x^2\,dx + \int_{38}^{80} 4745(x^2\,dx) - \frac{119.1}{2}\left[\frac{x^3}{3}\right]_{38}^{80} + \frac{119.1}{2}(76)x^2\,dx - \frac{119.1}{2}(38)^2 x\,dx$$

INTEGRATING

$$4745\left[\frac{x^3}{3}\right]_0^{38} + 4745\left[\frac{x^3}{3}\right]_{38}^{80} - \frac{119.1}{2}\left[\frac{x^4}{4}\right]_{38}^{80} + \frac{119.1}{2}(76)\left[\frac{x^3}{3}\right]_{38}^{80} - \frac{119.1}{2}(38)^2\left[\frac{x^2}{2}\right]_{38}^{80}$$

$$EI\,\delta = 711.017\,(10)^6 \; ; \; \delta' = .285$$

$$\delta = .0094(80) - .485 = .267 \; , \; \delta_{ALL} = \frac{960}{360} = .144''$$

ADD BACK IN LOAD REMOVED FOR INTERNAL DESIGN LAW

$$\delta_n = \frac{5(24.22)(160)^4}{384(2)(10)^6(932.6)} = .14'' \; , \; \delta_{TOTAL} = .28 + .14 = .42''$$

$$M.S. = \frac{.144}{.42} - 1 = +.106 \quad \longleftarrow \text{ BEAM DEFLECTION}$$

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ANALYSIS: MAIN FLOOR SUPPORT BEAM   REFERENCES:

THIS BEAM MUST CARRY MAIN FLOOR JOISTS
PLUS A SINGLE CONCENTRATED LOAD AT CENTER
SPAN COMING FROM ROOF & UPPER FLOOR
LOADS

FROM ROOF — 22 PSF × (16 × 7 + 16 × $\frac{17}{2}$) = 14849

FROM UPPER FLR — 50 PSF [16 × 27 + (8) + 2(4)] = 84856

FROM MAIN FLOOR — 50 PSF [12(15)] = 25625 #

APPLYING DESIGN LIF

.75 (25625 #) = 19224 #

UNIFORM LOAD FROM LWR FLR = .75 (71)(80) = 4732.5 #/FT
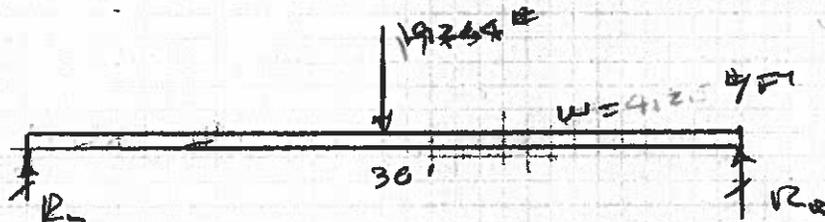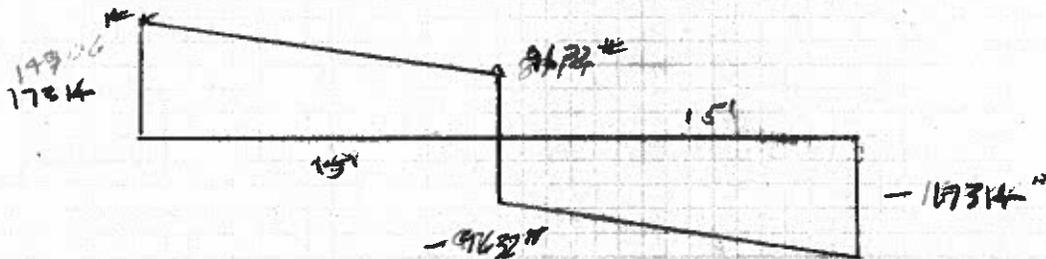
$R_L = \left[30 (4732.5) + 19224 \right] / 2 = 17314$ #

$M_{max} = \dfrac{17314 \# + 9682.5 \#}{2} (15) = 1995975 \, \#\#$ (Try WF 12 × 72)

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ANALYSIS: MAIN FLOOR SUPPORT BEAM (cont'd)   REFERENCES:

$M/_\Omega$ all. $= 1398/666'^{lb}$; M.S. $= \dfrac{198000}{197585} - 1 = +.000$ ← BEAM BENDING

NOTE W14 × 49 MEETS UNBRACED LENGTH CRITERION

CONSIDERING MID-SPAN DEFLECTION! $I = 592 \, IN^4$

FROM CONC. LOAD:

$$\delta = \frac{PL^3}{48EI}$$

$P = .75\left[14849\left(\frac{52}{62}\right) + 16960\left(\frac{40}{62}\right)\right] = 14381^{\#} \text{ L.L.}$

$\delta = \dfrac{14381 (360)^3}{48 (29\times10^6)(592)} = .47''$; $\delta_{ALL} = \dfrac{360}{240} = 1.5''$

M.S. $= \dfrac{1.5}{.47} - 1 = +1.49$ ← BEAM DEFLECTION

__POST LOADS__

REACTION PT. U1 $= 15'(6.58)'(42) = 4119^{\#}$

REACTION PT. U2 $= 15(6.58 + 8.42)(42) = 13950^{\#}$

REACTION PT. U3 $= \left[14(7) + 15(8.42)\right]42 = 14775^{\#}$

REACTION PT. U4 $= 7(14)(42) = 4944^{\#}$

"   "   L1 $= 10357 + U1 = 14976^{\#}$ } SEE ANAL.

"   "   L2 $= 10782 + U2 = 24732^{\#}$ ON SHT V1

"   "   L3 $= 8436 + U3 = 23211^{\#}$ SEE SHT 13

"   "   L4 $= (10977 + U4) = 4944$

"   "   L5 $= 8 \times 8 \times 64.5 = 4128^{\#}$

"   "   B6 $= 6.5 \times 6 \times 64.5 = 2516^{\#}$

"   "   B7 $= 4 \times 6 \times 64.5 = 1548^{\#}$

"   "   B8 $= 4 \times 6 \times 64.5 = 1548^{\#}$

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ANALYSIS: POST LOADS (CONT.) | REFERENCES:

REACTION PT B2 - 445$\left[\frac{14.67}{2}(10)\right]$ + L2 = 25705#

"   " B3 - 0 + L3   = 23244

"   " B5 - 445(5)(6) + 3.3(10.3) + L5 = 8070#

"   " B8 - 445$\left[\frac{17}{2}(9) + 6(7)\right]$ + L8 = 19791#

HEADERS

UPR. FLOOR FAMILY ROOM   - SPAN 6'

$W = 15 \times 62 = 930 \#/FT$

$M_{max} = \frac{930(6)^2}{8} = 4185'\# = 50220''\#$ TRY 6×12 S.L.

$f_b = \frac{6(50220)}{5.5(11.5)^2} = 414 PSI$; M.S. $= \frac{875}{414} - 1 = 1.11$ ← BENDING

LARGE FRONT WINDOW - SPAN 12'

$\frac{15}{2} \times 62 = 465 \#/FT$

$M_{max} = \frac{465(12)^2}{8} = 8370'\# = 100440''\#$ TRY 6×12 S.L.

$f_b = \frac{6(100440)}{5.5(11.5)^2} = 828 PSI$; M.S. $= \frac{875}{828} - 1 = +.06$ ← BENDING

KITCHEN WINDOW - 8' SPAN

$W = 1783 \#/FT$

[beam diagram with 6234# reactions at each support]

$M_{max} = 6234(.5) + \frac{6234(3.5)}{2} = 14038'\# = 168453''\#$; TRY 5¼"×9¼" 4/L
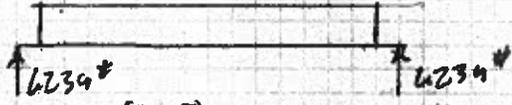
M.S. $= \frac{19908}{14038} - 1 = +.42$ ← BENDING

RESIDENCE DESIGN & ENGINEERING

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ANALYSIS: HEADERS (CONT.)   **REFERENCES:**

BEDROOM SIDE WINDOW   SPAN = 8'

$w = 45(7) = 452\#/FT$; $M_{max} = \dfrac{452(8)^2}{8} = 3616'^{\#} = 43392^{\#}$

TRY 6×12 —

$f_b = \dfrac{6(43392)}{5.5(11.5)^2} = 358$; M.S. $= \dfrac{875}{358} - 1 = +1.44$ ← BENDING

BEDROOM INTERIOR WALL - MAIN FLOOR - SPAN 3'

$M = \dfrac{PL}{4} = \dfrac{3475(3)}{4} = 1401'^{\#}$ TRY 5¼" × 9½" V/L

$V = \dfrac{3475}{2} = 1738\#$ — SHEAR IS CRITICAL

$V_{ALL} = 2227$; M.S. $= +.25$ ← SHEAR

CENTER HALL - BASEMENT - SPAN 5'-6"

LOAD = 24737\#   TRY 7" × 11⅞" V/L

$M_{max} = \dfrac{24737(5.5)}{4} = 34013'^{\#}$; M.S. $= \dfrac{42550}{34013} - 1 = +.25$ ← BEND.

$V_{max} = \dfrac{24737}{2} = 12369\#$ M.S. $= \dfrac{15845}{12369} - 1 = +.28$ ← SHEAR

BASEMENT BATH WINDOW - SPAN = 4'

LOAD = 14966\#   TRY 5¼" × 9½" V/L

$M_{max} = \dfrac{14966(4)}{4} = 14966'^{\#}$; $V = \dfrac{14966}{2} = 7483\#$

M.S. $= \dfrac{19906}{14966} - 1 = +.33$ ← BENDING

M.S. $= \dfrac{9227}{7483} - 1 = +.23$ ← SHEAR

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ANALYSIS: COLUMNS

CRITICAL POST LOAD IS AT $u_3 = 25611^{\#}$

 UPPER FLOOR SUPPORT

WHEN SUPPORTING ROOF & FLOOR, LOAD CAN BE
 REDUCED TO .75

$\therefore P_c = .75(25611) = 19208^{\#}$ - Try $5\frac{1}{4}" \times 5\frac{1}{4}"$ V/L

$P_{all} = 22180^{\#}$ FOR 9' LENGTH

$F.S. = \dfrac{22180}{19208} - 1 = +.15$ ← COLUMN BUCKLING

SUMMARY

   UPPER FLOOR

      POINTS U2 & U3 - $5\frac{1}{4}" \times 5\frac{1}{4}"$ V/L

      " U1 & U4 - (3) 2×6 MIN.

   MAIN FLOOR

      POINTS L1, L2 & L3 - $5\frac{1}{4}" \times 5\frac{1}{4}"$ V/L

      " L4 & L5 - (3) 2×6 MIN.

   BASEMENT

      POINTS B2, B3 & B5 - $5\frac{1}{4}" \times 5\frac{1}{4}"$ V/L

      " B8 - 3 (2×6) MIN.

REFERENCES:

ANALYSIS: FOOTINGS   REFERENCES:

UNDER MAIN FLOOR SUPPORT BEAM

$$\text{DIRECT LOAD FROM BEAM} = 17314\#$$

$$\text{ASSUME 3' OF CONC FNDN} = 2750\#$$

$$\text{" FOOTING } 3\tfrac{1}{2}' \times 3\tfrac{1}{2}' \times 1' = \underline{1838\#}$$

$$21902\#$$

$$\text{SOIL BEARING} = \frac{21902}{(3.5)^2} = 1788 \text{ PSF}$$

$$M.S. = \frac{1800}{1788} - 1 = +.01 \longleftarrow$$

2 x 10 PT deck joists @ 24" centers
with 3/4 plywood decking covered with
waterproofing membrane.
Joists will be hung from P.T. deck
ledger and glu-lam with z -max
simpson joist hangers.
Deck support beam to be 5 1/4 x 10"
glu-lam with 6 x 6 posts at 16' on
center as spec.'d by engineer.

44'-0"

13'-4"   8'-3 1/2"   4'-1 9/16"   4'-

2'-2"   4'-0"   2'-1 7/23/16"   3'-0"   5 1/4"3/4

4030   3068

4'-0"

12'-10 1/2"   8'-0"

-5'-10 1/16"

UP

21'-5 1/2"

4'-0"

3'-4"

40'-0"

3'-6"

8436   6030   6030   -2'-0"

DECK
33'-7" x 9'-7"

9'-8 1/2"   -2'-

5 1/2"

34'-2 1/8"

LIVING AREA
1200 sq ft
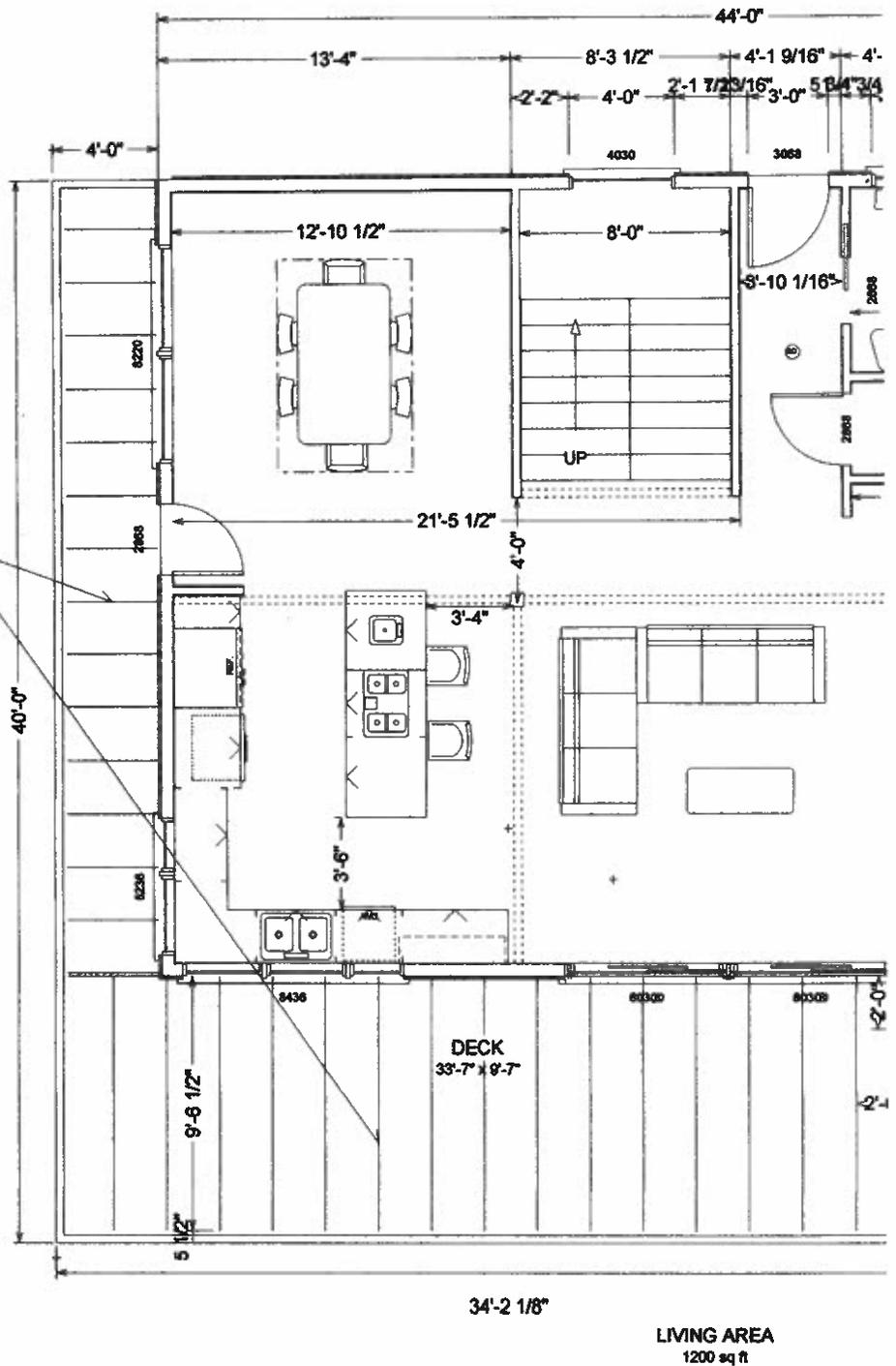
Wall detail for open two story wall in front of house

Double 2 x 6 top plate

6" x 12" header

2" x 8" header

2'-0"

2'-0"

ADD
BLOCKING
AT BEAM

18'-6"

2 x6 studs @ 12" on center with plywood

6'-0"

8'-0"

2 4x6

DOUBLE
PLATE

P.T. deck ledger
to rim joist

1'-0"

3- 2x6 studs

4x6 KING
& 4x6 JACK STUD

ICF basement wall

9'-3"

16'-11"
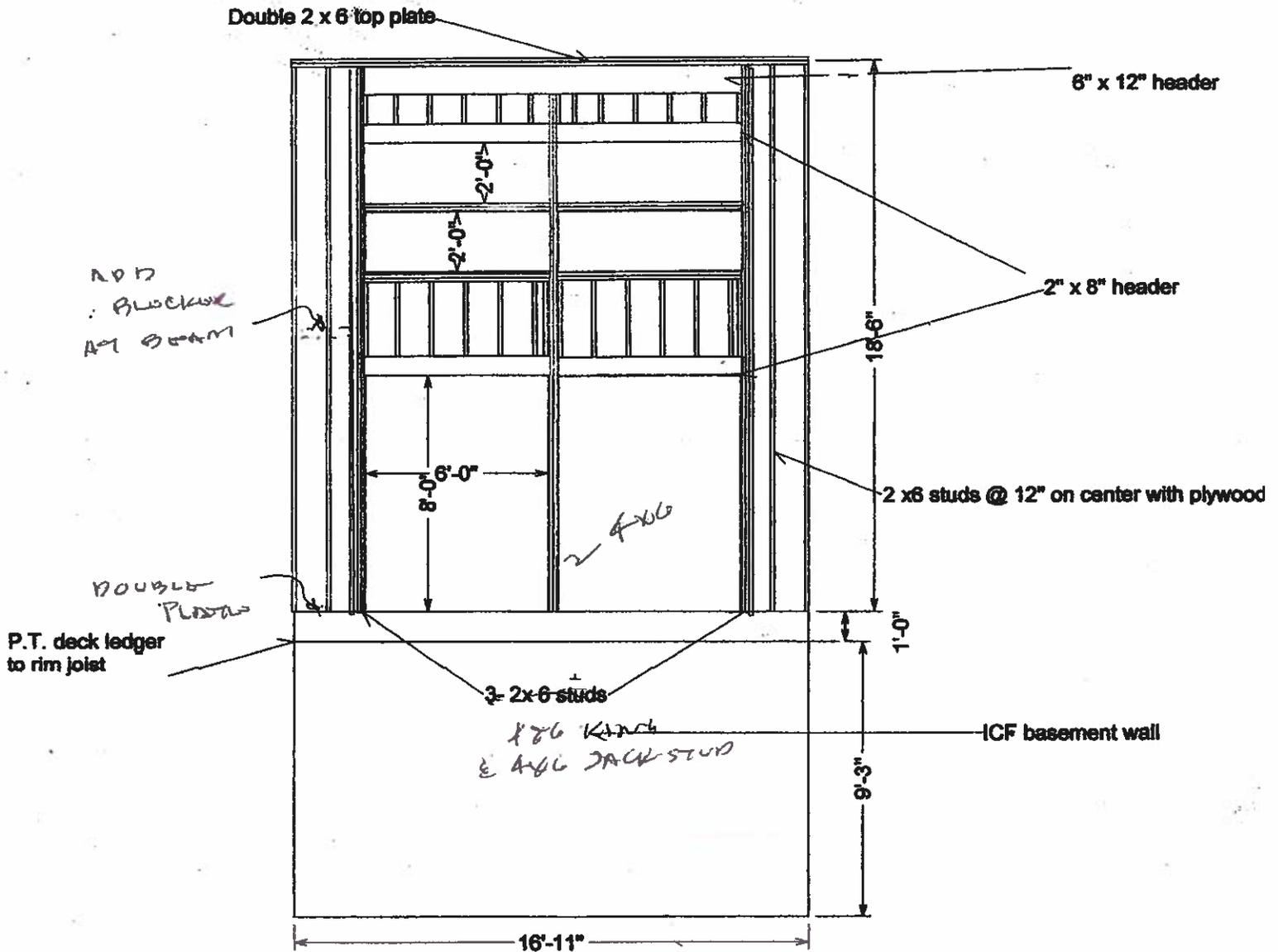
1. REDUCE LWR. FLR. WINDOW TO 6'-0" x 4'-0"
2. FRAME WALL AT LEFT OF LARGE WINDOW
   USING 4x6 STUDS WITH 5/8" PLYWOOD
   SHEATHING & 16 d NAILS @ 3" c/c
3. ADD CEILING BLOCKING OVER UPR. FLR
   BEDROOM IN LINE W/OFFSET CONTAINING WINDOW
   WINDOW.

Page 2A

R311.4.4 Type of lock or latch. All egress doors shall be readily openable from the side from which egress is to be made without the use of a key or special knowledge or effort.

R311.5 Stairways.

R311.5.1 Width. Stairways shall not be less than 36 inches (914 mm) in clear width at all points above the permitted handrail height and below the required headroom height. Handrails shall not project more than 4.5 inches (114 mm) on either side of the stairway and the minimum clear width of the stairway at and below the handrail height, including treads and landings, shall not be less than 31.5 inches (787 mm) where a handrail is installed on one side and 27 inches (698 mm) where handrails are provided on both sides.

> **Exception:** The width of spiral stairways shall be in accordance with Section R311.5.8.

R311.5.2 Headroom. The minimum headroom in all parts of the stairway shall not be less than 6 feet 8 inches (2036 mm) measured vertically from the sloped plane adjoining the tread nosing or from the floor surface of the landing or platform.

R311.5.3 Stair treads and risers.

R311.5.3.1 Riser height. The maximum riser height shall be $7^3/_4$ inches (196 mm). The riser shall be measured vertically between leading edges of the adjacent treads. The greatest riser height within any flight of stairs shall not exceed the smallest by more than $3/_8$ inch (9.5 mm).

R311.5.3.2 Tread depth. The minimum tread depth shall be 10 inches (254 mm). The tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge. The greatest tread depth within any flight of stairs shall not exceed the smallest by more than $3/_8$ inch (9.5 mm). Winder treads shall have a minimum tread depth of 10 inches (254 mm) measured as above at a point 12 inches (305 mm) from the side where the treads are narrower. Winder treads shall have a minimum tread depth of 6 inches (152 mm) at any point. Within any flight of stairs, the largest winder tread depth at the 12 inch (305 mm) walk line shall not exceed the smallest by more than $3/_8$ inch (9.5 mm).

R311.5.3.3 Profile. The radius of curvature at the leading edge of the tread shall be no greater than $9/_{16}$ inch (14 mm). A nosing not less than $3/_4$ inch (19 mm) but not more than $1^1/_4$ inch (32 mm) shall be provided on stairways with solid risers. The greatest nosing projection shall not exceed the smallest nosing projection by more than $3/_8$ inch (9.5 mm) between two stories, including the nosing at the level of floors and landings. Beveling of nosing shall not exceed $1/_2$ inch (12.7 mm). Risers shall be vertical or sloped from the underside of the leading edge of the tread above at an angle not more than 30 degrees (0.51 rad) from the vertical. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter (102 mm) sphere.

Exceptions:

1. A nosing is not required where the tread depth is a minimum of 11 inches (279 mm).

2. The opening between adjacent treads is not limited on stairs with a total rise of 30 inches (762 mm) or less.

R311.5.4 Landings for stairways. There shall be a floor or landing at the top and bottom of each stairway.

> **Exception:** A floor or landing is not required at the top of an interior flight of stairs, including stairs in an enclosed garage, provided a door does not swing over the stairs.

A flight of stairs shall not have a vertical rise larger than 12 feet (3658 mm) between floor levels or landings.

The width of each landing shall not be less than the width of the stairway served. Every landing shall have a minimum dimension of 36 inches (914 mm) measured in the direction of travel.

R311.5.5 Stairway walking surface. The walking surface of treads and landings of stairways shall be sloped no steeper than one unit vertical in 48 inches horizontal (2-percent slope).

R311.5.6 Handrails. Handrails shall be provided on at least one side of each continuous run of treads or flight with four or more risers.

R311.5.6.1 Height. Handrail height, measured vertically from the sloped plane adjoining the tread nosing, or finish surface of ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

R311.5.6.2 Continuity. Handrails for stairways shall be continuous for the full length of the flight, from a point directly above the top riser of the flight to a point directly above the lowest riser of the flight. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than $1^1/_2$ inch (38 mm) between the wall and the handrails.

Exceptions:

1. Handrails shall be permitted to be interrupted by a newel post at the turn.

2. The use of a volute, turnout, starting easing or starting newel shall be allowed over the lowest tread.

R311.5.6.3 Handrail grip size. All required handrails shall be of one of the following types or provide equivalent graspability.

1. Type I. Handrails with a circular cross section shall have an outside diameter of at least $1^1/_4$ inches (32 mm) and not greater than 2 inches (51 mm). If the handrail is not circular it shall have a perimeter dimension of at least 4 inches (102 mm) and not greater than $6^1/_4$ inches (160 mm) with a maximum cross section of dimension of $2^1/_4$ inches(57 mm).

2. Type II. Handrails with a perimeter greater than $6^1/_4$ inches (160 mm) shall provide a graspable finger

recess area on both sides of the profile. The finger recess shall begin within a distance of $^3/_4$ inch (19 mm) measured vertically from the tallest portion of the profile and achieve a depth of at least $^5/_{16}$ inch (8 mm) within $^7/_8$ inch (22 mm) below the widest portion of the profile. This required depth shall continue for at least $^3/_8$ inch (10 mm) to a level that is not less than $1^3/_4$ inches (45 mm) below the tallest portion of the profile. The minimum width of the handrail above the recess shall be $1^1/_4$ inches (32 mm) to a maximum of $2^3/_4$ inches (70 mm). Edges shall have a minimum radius of 0.01 inch (0.25 mm).

R311.5.7 Illumination. All stairs shall be provided with illumination in accordance with Section R303.6.

R311.5.8 Special stairways. Spiral stairways and bulkhead enclosure stairways shall comply with all requirements of Section R311.5 except as specified below.

R311.5.8.1 Spiral stairways. Spiral stairways are permitted, provided the minimum width shall be 26 inches (660 mm) with each tread having a $7^1/_2$-inches (190 mm) minimum tread depth at 12 inches from the narrower edge. All treads shall be identical, and the rise shall be no more than $9^1/_2$ inches (241 mm). A minimum headroom of 6 feet 6 inches (1982 mm) shall be provided.

R311.5.8.2 Bulkhead enclosure stairways. Stairways serving bulkhead enclosures, not part of the required building egress, providing access from the outside grade level to the basement shall be exempt from the requirements of Sections R311.4.3 and R311.5 where the maximum height from the basement finished floor level to grade adjacent to the stairway does not exceed 8 feet (2438 mm), and the grade level opening to the stairway is covered by a bulkhead enclosure with hinged doors or other approved means.

R311.6 Ramps.

R311.6.1 Maximum slope. Ramps shall have a maximum slope of one unit vertical in twelve units horizontal (8.3-percent slope).

Exception: Where it is technically infeasible to comply because of site constraints, ramps may have a maximum slope of one unit vertical in eight horizontal (12.5 percent slope).

R311.6.2 Landings required. A minimum 3-foot-by-3-foot (914 mm by 914 mm) landing shall be provided:

1. At the top and bottom of ramps.

2. Where doors open onto ramps.

3. Where ramps change direction.

R311.6.3 Handrails required. Handrails shall be provided on at least one side of all ramps exceeding a slope of one unit vertical in 12 units horizontal (8.33-percent slope).

R311.6.3.1 Height. Handrail height, measured above the finished surface of the ramp slope, shall be not less than 34 inches (864 mm) and not more than 38 inches (965 mm).

R311.6.3.2 Handrail grip size. Handrails on ramps shall comply with Section R311.5.6.3.

R311.6.3.3 Continuity. Handrails where required on ramps shall be continuous for the full length of the ramp. Handrail ends shall be returned or shall terminate in newel posts or safety terminals. Handrails adjacent to a wall shall have a space of not less than 1.5 inches (38 mm) between the wall and the handrails.

SECTION R312
GUARDS

R312.1 Guards. Porches, balconies, ramps or raised floor surfaces located more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 36 inches (914 mm) in height. Open sides of stairs with a total rise of more than 30 inches (762 mm) above the floor or grade below shall have guards not less than 34 inches (864 mm) in height measured vertically from the nosing of the treads.

Porches and decks which are enclosed with insect screening shall be equipped with guards where the walking surface is located more than 30 inches (762 mm) above the floor or grade below.

R312.2 Guard opening limitations. Required guards on open sides of stairways, raised floor areas, balconies and porches shall have intermediate rails or ornamental closures which do not allow passage of a sphere 4 inches (102mm) or more in diameter.

Exceptions:

1. The triangular openings formed by the riser, tread and bottom rail of a guard at the open side of a stairway are permitted to be of such a size that a sphere 6 inches (152 mm) cannot pass through.

2. Openings for required guards on the sides of stair treads shall not allow a sphere $4^3/_8$ inches (107 mm) to pass through.

SECTION R313
SMOKE ALARMS

R313.1 Smoke detection and notification. All smoke alarms shall be listed in accordance with UL 217 and installed in accordance with the provisions of this code and the household fire warning equipment provisions of NFPA 72.

Household fire alarm systems installed in accordance with NFPA 72 that include smoke alarms, or a combination of smoke detector and audible notification device installed as required by this section for smoke alarms, shall be permitted. The household fire alarm system shall provide the same level of smoke detection and alarm as required by this section for smoke alarms in the event the fire alarm panel is removed or the system is not connected to a central station.

R313.2 Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room.

R602.10.1 Braced wall lines. Braced wall lines shall consist of braced wall panel construction in accordance with Section R602.10.3. The amount and location of bracing shall be in accordance with Table R602.10.1 and the amount of bracing shall be the greater of that required by the seismic design category or the design wind speed. Braced wall panels shall begin no more than 12.5 feet (3810 mm) from each end of a braced wall line. Braced wall panels that are counted as part of a braced wall line shall be in line, except that offsets out-of-plane of up to 4 feet (1219 mm) shall be permitted provided that the total out-to-out offset dimension in any braced wall line is not more than 8 feet (2438 mm).

R602.10.1.1 Spacing. Spacing of braced wall lines shall not exceed 35 feet (10 668 mm) on center in both the longitudinal and transverse directions in each story.

Exception: Spacing of braced wall lines not exceeding 50 feet shall be permitted where:

1. The wall bracing installed equals or exceeds the amount of bracing required by Table R602.10.1 multiplied by a factor equal to the braced wall line spacing divided by 35 feet and

2. The length-to-width ratio for the floor or roof diaphragm does not exceed 3:1.

R602.10.2 Cripple wall bracing.

R602.10.2.1 Seismic design categories other than D_2. In Seismic Design Categories other than D_2, cripple walls shall be braced with an amount and type of bracing as required for the wall above in accordance with Table R602.10.1 with the following modifications for cripple wall bracing:

1. The percent bracing amount as determined from Table R602.10.1 shall be increased by 15 percent and

2. The wall panel spacing shall be decreased to 18 feet (5486 mm) instead of 25 feet (7620 mm).

R602.10.2.2 Seismic Design Category D_2. In Seismic Design Category D_2, cripple walls shall be braced in accordance with Table R602.10.1.

R602.10.2.3 Redesignation of cripple walls. In any seismic design category, cripple walls are permitted to be redesignated as the first story walls for purposes of determining wall bracing requirements. If the cripple walls are redesignated, the stories above the redesignated story shall be counted as the second and third stories, respectively.

R602.10.3 Braced wall panel construction methods. The construction of braced wall panels shall be in accordance with one of the following methods:

1. Nominal 1-inch-by-4-inch (25 mm by 102 mm) continuous diagonal braces let in to the top and bottom plates and the intervening studs or approved metal strap devices installed in accordance with the manufacturer's specifications. The let-in bracing shall be placed at an angle not more than 60 degrees (1.06

rad) or less than 45 degrees (0.79 rad) from the horizontal.

2. Wood boards of $^5/_8$ inch (16 mm) net minimum thickness applied diagonally on studs spaced a maximum of 24 inches (610 mm). Diagonal boards shall be attached to studs in accordance with Table R602.3(1).

3. Wood structural panel sheathing with a thickness not less than $^5/_{16}$ inch (8 mm) for 16-inch (406 mm) stud spacing and not less than $^3/_8$ inch (9 mm) for 24-inch (610 mm) stud spacing. Wood structural panels shall be installed in accordance with Table R602.3(3).

4. One-half-inch (13 mm) or $^{25}/_{32}$-inch (20 mm) thick structural fiberboard sheathing applied vertically or horizontally on studs spaced a maximum of 16 inches (406 mm) on center. Structural fiberboard sheathing shall be installed in accordance with Table R602.3(1).

5. Gypsum board with minimum $^1/_2$-inch (13 mm) thickness placed on studs spaced a maximum of 24 inches (610 mm) on center and fastened at 7 inches (178 mm) on center with the size nails specified in Table R602.3(1) for sheathing and Table R702.3.5 for interior gypsum board.

6. Particleboard wall sheathing panels installed in accordance with Table R602.3(4).

7. Portland cement plaster on studs spaced a maximum of 16 inches (406 mm) on center and installed in accordance with Section R703.6.

8. Hardboard panel siding when installed in accordance with Table R703.4.

Exception: Alternate braced wall panels constructed in accordance with Section R602.10.6.1 or R602.10.6.2 shall be permitted to replace any of the above methods of braced wall panels.

R602.10.4 Length of braced panels. For Methods 2, 3, 4, 6, 7 and 8 above, each braced wall panel shall be at least 48 inches (1219 mm) in length, covering a minimum of three stud spaces where studs are spaced 16 inches (406 mm) on center and covering a minimum of two stud spaces where studs are spaced 24 inches (610 mm) on center. For Method 5 above, each braced wall panel shall be at least 96 inches (2438 mm) in length where applied to one face of a braced wall panel and at least 48 inches (1219 mm) where applied to both faces.

Exceptions:

1. Lengths of braced wall panels for continuous wood structural panel sheathing shall be in accordance with Section R602.10.5.

2. Lengths of alternate braced wall panels shall be in accordance with Section R602.10.6.1 or Section R602.10.6.2.

R602.10.5 Continuous wood structural panel sheathing. When continuous wood structural panel sheathing is provided in accordance with Method 3 of Section R602.10.3 on all sheathable areas of all exterior walls, and interior braced

ORIENTATION OF STUD MAY VARY. SEE FIGURE R602.3(2)

GYPSUM WALL BOARD INSTALLED IN ACCORDANCE WITH CHAPTER 7

16d NAIL AT 12 IN. O.C.

8d NAIL AT 6 IN. O.C. (ALL PANEL EDGES)

8d NAIL AT 12 IN. O.C. ON ALL FRAMING MEMBERS NOT AT PANEL EDGES

WOOD STRUCTURAL PANEL INSTALLED IN ACCORDANCE WITH TABLE R602.3(1)

(a) OUTSIDE CORNER DETAIL

ORIENTATION OF STUD MAY VARY. SEE FIGURE R602.3(2)

GYPSUM WALL BOARD INSTALLED IN ACCORDANCE WITH CHAPTER 7 (INTERIOR)

16d NAIL AT 12 IN. O.C.

WOOD STRUCTURAL PANEL INSTALLED IN ACCORDANCE WITH TABLE R602.3(1)

8d NAIL AT 6 IN. O.C. ALL FRAMING MEMBERS AT PANEL EDGES AND 12 IN. O.C. ON ALL FRAMING MEMBERS NOT AT PANEL EDGES

(b) INSIDE CORNER DETAIL

For SI: 1 inch = 25.4 mm.
Gypsum board nails deleted for clarity.

FIGURE R602.10.5
TYPICAL EXTERIOR CORNER FRAMING FOR CONTINUOUS STRUCTURAL
PANEL SHEATHING; SHOWING REQUIRED STUD-TO-STUD NAILING

wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure R602.10.6.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure R602.10.6.2. Use of a built-up header consisting of at least two 2 x 12s and fastened in accordance with Table R602.3(1) shall be permitted. A spacer, if used, shall be placed on the side of the built-up beam opposite the wood structural panel sheathing. The header shall extend between the inside faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet (1829 mm) and not more than 18 feet (5486 mm) in length. A strap

with an uplift capacity of not less than 1000 pounds (4448 N) shall fasten the header to the side of the inner studs opposite the sheathing. One anchor bolt not less than $^5/_8$-inch-diameter (16 mm) and installed in accordance with Section R403.1.6 shall be installed in the center of each sill plate. The studs at each end of the panel shall have a tie-down device fastened to the foundation with an uplift capacity of not less than 4,200 pounds (18 683 N).

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1000 pounds (4448 N) shall fasten the header to the bearing

R602.10.7 Panel joints. All vertical joints of panel sheathing shall occur over, and be fastened to, common studs. Horizontal joints in braced wall panels shall occur over, and be fastened to, common blocking of a minimum 2 inches in nominal thickness.

> **Exception:** Blocking is not required behind horizontal joints in Seismic Design Categories A and B and detached dwellings in Seismic Design Category C when constructed in accordance with Section R602.10.3, braced wall panel construction Method 3 and Table R602.10.1, Method 3, or where permitted by the manufacturer's installation requirements for the specific sheathing material.

R602.10.8 Connections. Braced wall panel bottom (sole) plates shall be fastened to the floor framing and top plates shall be connected to the framing above in accordance with Table R602.3(1). Sill plates shall be fastened to the footing, foundation or slab in accordance with Sections R403.1.6 and R602.11. Where joists are perpendicular to the braced wall lines above, blocking shall be provided under and in line with the braced wall panels. Where joists are perpendicular to braced wall lines below, blocking shall be provided over and in line with the braced wall panels. Where joists are parallel to braced wall lines above or below, a rim joist or other parallel framing member shall be provided at the wall to permit fastening per Table R602.3(1). For buildings in Seismic Design Categories D_0, D_1 and D_2, braced wall panels shall also be fastened in accordance with Section R602.11.2.

R602.10.9 Interior braced wall support. This section is not adopted. See Section R403.1.2.

(Insert Facing Page 141)

R602.10.10 Design of structural elements. Where a building, or portion thereof, does not comply with one or more of the bracing requirements in Sections R602.10 through R602.10.9, those portions shall be designed and constructed in accordance with accepted engineering practice.

R602.10.11.1 Braced wall line spacing. Spacing between braced wall lines in each story shall not exceed 25 feet (7620 mm) on center in both the longitudinal and transverse directions.

> **Exception:** In one- and two-story buildings two adjacent braced wall lines shall not exceed 35 feet (10,363 mm) on center in order to accommodate an area not exceeding 900 square feet (84 m²) in each dwelling unit. Spacing between all other braced wall lines shall not exceed 25 feet (7620 mm).

R602.10.11.2 Braced wall panel location. Exterior braced wall lines shall be provided with a braced wall panel located at each end of the braced wall line.

> **Exception:** For braced wall panel construction Method 3 of Section R602.10.3, the braced wall panel shall be permitted to begin no more than 8 feet (2438 mm) from each end of the braced wall line provided one of the following is satisfied:
>
> 1. A minimum 24-inch-wide (610 mm) panel is applied to each side of the building corner and the two 24-inch-wide (610 mm) panels at the corner shall be attached to framing in accordance with Figure R602.10.5, or
>
> 2. The end of each braced wall panel closest to the corner shall have a tie-down device fastened to the stud at the edge of the braced wall panel closest to the corner and to the foundation or framing below. The tie-down device shall be capable of providing an uplift allowable design value of at least 1,800 pounds (8 kN). The tie-down device shall be installed in accordance with the manufacturer's recommendations.

R602.10.2.1 Seismic Design Categories Other than D₂.
In Seismic Design Categories other than D₂, cripple walls
supporting exterior walls or interior braced wall panels as
required in Section R408.1.2 and R403.1.2.1 shall be
braced with an amount and type of bracing as required for
the wall above in accordance with Table R602.10.1 with the
following modifications for cripple wall bracing:

1. The percent bracing amount as determined from
   Table R602.10.1 shall be increased by 15 percent;
   and

2. The wall panel spacing shall be decreased to 18 feet
   (5486 mm) instead of 25 feet (7620 mm).

R602.10.2.2 Seismic Design Category D₂. In Seismic
Design Category D₂, cripple walls supporting exterior walls
or interior braced wall panels as required in Section
R403.1.2 and R403.1.2.1 shall be braced in accordance with
Table R602.10.1.

R602.10.5 Continuous wood structural panel sheathing. When
continuous wood structural panel sheathing is provided in
accordance with Method 3 of Section R602.10.3 on all sheathable
areas of all exterior walls including areas above and below
openings, braced wall panel lengths are not required to be in

accordance with Section R602.10.4 provided they are in accordance with Table R602.10.5. Wood structural panel sheathing shall be installed at corners in accordance with Figure R602.10.5. The bracing percentages in Table R602.10.1 for Method 3 shall be permitted to be multiplied by a factor of 0.9 for exterior walls with a maximum opening height that does not exceed 85 percent of the wall height or a factor of 0.8 for exterior walls with a maximum opening height that does not exceed 67 percent of the wall height.

R602.10.6.1 Alternate braced wall panels. Alternate braced wall panels constructed in accordance with one of the following provisions shall be permitted to replace each 4 feet (1219 mm) of braced wall panel as required by Section R602.10.4. The maximum height and minimum width of each panel shall be in accordance with Table R602.10.6.

1. In one-story buildings, each panel shall be sheathed on one face with 3/8-inch-minimum thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table R602.3(1) and blocked at all wood structural panel sheathing edges. Two anchor bolts installed in accordance with Figure R403.1(1) shall be provided in each panel. Anchor bolts shall be placed in from each end of the panel a horizontal distance of one-fourth the panel width. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an uplift capacity in accordance with Table R602.10.6. The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. When the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

2. In the first story of two-story buildings, each braced wall panel shall be in accordance with Item 1 above, except that the following:
   2.1 The wood structural panel sheathing shall be provided on both faces;
   2.2 Sheathing edge nailing spacing shall not exceed 4 inches on center; and
   2.3 Anchor bolts shall be placed at the center of the panel width and in from each end of the panel a horizontal distance of one-fifth the panel width (three total).

BOISE CASCADE - BC FRAMER 2.0 US Main Level Piece Report

BOISE

File Name:	9-386-2.bcf 5/19/2009 2:39 PM
Customer:	PROBUILD - THE DALLES
Job Name:	DELAERE
Address:	
Location:	

Company:	BOISE CASCADE BMD
City, State:	VANCOUVER, WA
Drawn By:	BH
Misc:	

AJS , ALLJOISTfi , BC RIM BOARD , BClfi , BOISE GLULAM , VERSA-LAMfi, VERSA-RIM PLUSfi , VERSA-RIMfi , VERSA-STRANDfi , VERSA-STUDfi are trademarks of Boise Wood Products, L.L.C.

NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
11-7/8" BClfi 5000-1.7 DF	11-7/8"	1	4	30' 0"	120' 0"
		2	9	25' 0"	225' 0"
		3	17	22' 0"	374' 0"
		4	14	13' 0"	182' 0"
			44		901' 0"
1-1/2" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	5	2	16' 0"	32' 0"
		6	1	14' 0"	14' 0"
		7	1	12' 0"	12' 0"
			4		58' 0"
1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	8	1	9' 0"	9' 0"
			1		9' 0"
7" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	9	1	6' 0"	6' 0"
			1		6' 0"
5-1/8" x 12" BOISE GLULAM 24F-V4/DF	12"	10	1	14' 0"	14' 0"
			1		14' 0"
STEEL BEAM BY OTHERS..	30"	11	1	29' 0"	29' 0"
			1		29' 0"

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag	Std. Block Length	Total Len.
11-7/8" BClfi 5000-1.7 DF	11-7/8"	12	14"	71' 0"

TOTAL LENGTH PRODUCTS:

Product	Depth	Tag		Total Len.
1" x 11-7/8" BC RIM BOARD OSB	11-7/8"	13		24' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Durastrand	4'x 8' FLR DECKING		43	QUANTITY ESTIMATED
Simpson Strong-Tie, Inc.	ITS2.06/11.88		45	SGL I-JST TF SNAP SEAT HNGR
Simpson Strong-Tie, Inc.	ITT211.88	H6	1	SGL TOP FLANGE HANGER 25/CTN

BOISE CASCADE - BC FRAMER 2.0 US Main Level Piece Report

BOISE™

File Name:	9-386-2.bcf 5/19/2009 2:39 PM
Customer:	PROBUILD - THE DALLES
Job Name:	DELAERE
Address:	
Location:	

Company:	BOISE CASCADE BMD
City, State:	VANCOUVER, WA
Drawn By:	BH
Misc:	

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NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	1	4	30' 0"	120' 0"
		2	9	25' 0"	225' 0"
		3	17	22' 0"	374' 0"
		4	14	13' 0"	182' 0"
			44		901' 0"
1-1/2" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	5	2	16' 0"	32' 0"
		6	1	14' 0"	14' 0"
		7	1	12' 0"	12' 0"
			4		58' 0"
1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	8	1	9' 0"	9' 0"
			1		9' 0"
7" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	9	1	6' 0"	6' 0"
			1		6' 0"
5-1/8" x 12" BOISE GLULAM 24F-V4/DF	12"	10	1	14' 0"	14' 0"
			1		14' 0"
STEEL BEAM BY OTHERS..	30"	11	1	29' 0"	29' 0"
			1		29' 0"

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag	Std. Block Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	12	14"	71' 0"

TOTAL LENGTH PRODUCTS:

Product	Depth	Tag	Total Len.
1" x 11-7/8" BC RIM BOARD OSB	11-7/8"	13	24' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Durastrand	4'x 8' FLR DECKING		43	QUANTITY ESTIMATED
Simpson Strong-Tie, Inc.	ITS2.06/11.88		45	SGL I-JST TF SNAP SEAT HNGR
Simpson Strong-Tie, Inc.	ITT211.88	H6	1	SGL TOP FLANGE HANGER 25/CTN

BOISE CASCADE - BC FRAMER 2.0 US Upper Level Piece Report

BOISE™

File Name:	9-386-2.bcf 5/19/2009 2:39 PM			
Customer:	PROBUILD - THE DALLES	**Company:**	BOISE CASCADE BMD
Job Name:	DELAERE	**City, State:**	VANCOUVER, WA
Address:		**Drawn By:**	BH
Location:		**Misc:**	

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NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	1	3	31' 0"	93' 0"
		2	8	23' 0"	184' 0"
		3	23	14' 0"	322' 0"
			34		**599' 0"**
1-1/2" x 9-1/2" VERSA-LAMfi 2.0 2800 DF	9-1/2"	4	3	14' 0"	42' 0"
			3		**42' 0"**
1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	5	1	17' 0"	17' 0"
		6	1	9' 0"	9' 0"
			2		**26' 0"**
3-1/2" x 9-1/2" VERSA-LAMfi 2.0 3100 DF	9-1/2"	7	9	14' 0"	126' 0"
			9		**126' 0"**
3-1/2" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	8	1	12' 0"	12' 0"
			1		**12' 0"**
5-1/4" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	9	1	19' 0"	19' 0"
		10	1	14' 0"	14' 0"
			2		**33' 0"**

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag	Std. Block Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	11	14"	16' 0"

TOTAL LENGTH PRODUCTS:

Product	Depth	Tag	Total Len.
1" x 11-7/8" BC RIM BOARD OSB	11-7/8"	12	180' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Durastrand	4'x 8' FLR DECKING		33	QUANTITY ESTIMATED
Simpson Strong-Tie, Inc.	HGUS5.50/10		1	FACE MOUNT LVL HANGER 12/CTN
Simpson Strong-Tie, Inc.	HU11	H2	1	SGL FACE MOUNT LVL HANGER 25/CTN
Simpson Strong-Tie, Inc.	HU410	H3	9	JOIST HANGER 25/CTN
Simpson Strong-Tie, Inc.	IUS2.06/11.88		15	SINGLE FACE MOUNT HANGER 25/CTN

BOISE™

File Name:	9-386-2.bcf 5/19/2009 2:39 PM	
Customer:	PROBUILD - THE DALLES	**Company:** BOISE CASCADE BMD
Job Name:	DELAERE	**City, State:** VANCOUVER, WA
Address:		**Drawn By:** BH
Location:		**Misc:**

AJS   , ALLJOISTfi , BC RIM BOARD   , BCIfi , BOISE GLULAM   , VERSA-LAMfi , VERSA-RIM PLUSfi , VERSA-RIMfi ,
VERSA-STRANDfi , VERSA-STUDfi are trademarks of Boise Wood Products, L.L.C.

NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
14" BCIfi 6000-1.7 DF	14"	1	24	16' 0"	384' 0"
		2	14	14' 0"	196' 0"
			38		580' 0"
1-3/4" x 14" VERSA-LAMfi 2.0 2800 DF	14"	3	6	16' 0"	96' 0"
		4	2	14' 0"	28' 0"
		5	1	3' 0"	3' 0"
			9		127' 0"
5-1/8" x 12" BOISE GLULAM 24F-V4/DF	12"	6	2	14' 0"	28' 0"
			2		28' 0"
5-1/8" x 19-1/2" BOISE GLULAM 24F-V4/DF	19-1/2"	7	1	17' 0"	17' 0"
		8	2	14' 0"	28' 0"
			3		45' 0"

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag		Std. Block Length	Total Len.
14" BCIfi 6000-1.7 DF	14"	9		21-11/16"	88' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Simpson Strong-Tie, Inc.	HUCQ5.25/11-SDS		1	HUCQ5.25/11-SDS2.5 CONC FLG HGR
Simpson Strong-Tie, Inc.	LSSUI25	H8	4	SGL ADJ FACE MOUNT SLOPE/SKEW
Simpson Strong-Tie, Inc.	LSSUI35	H9	38	SGL ADJ FACE MOUNT SLOPE/SKEW 5/CTN

BOISE
Single 1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF Floor Beam\UPPER\D6

BC CALC® 2.0 Design Report - US
Build 285

1 span | No cantilevers | 0/12 slope

Tuesday, May 19, 2009 15:10

Job Name:	DELAERE	File Name:	9-386-2.BCC
Address:		Description:	UPPER\D6
City, State, Zip: ,		Specifier:	BH
Customer:	PROBUILD - THE DALLES	Designer:	
Code reports:	ESR-1040	Company:	BOISE CASCADE BMD
		Misc:	

16-09-00

B0
LL 260 lbs
DL 735 lbs

B1, 3-1/2"
LL 261 lbs
DL 750 lbs

Total Horizontal Product Length = 16-09-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Floor Load	Unf. Area (psf)	Left	00-00-00	16-06-08	40	30				00-09-07
2	Floor Load	Unf. Area (psf)	Left	16-06-08	16-09-00	40	30				00-08-00
3	Interior Wall / Railing	Unf. Lin. (plf)	Left	00-00-00	16-09-00	0	60				n/a

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	4,107 ft-lbs	42.8%	100%	1	1 - Internal
End Shear	872 lbs	22.1%	100%	1	1 - Left
Total Load Defl.	L/480 (0.413")	50.0%		1	1
Live Load Defl.	L/1,836 (0.108")	19.6%		1	1
Max Defl.	0.413"	41.3%		1	1
Span / Depth	16.7	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Hanger Load	n/a	994 lbs	n/a	n/a	Hanger
B1	Post	3-1/2" x 1-3/4"	1,011 lbs	n/a	22.0%	Unspecified

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER® , AJS™, ALLJOIST® , BC RIM BOARD™, BCI® , BOISE GLULAM™, SIMPLE FRAMING SYSTEM® , VERSA-LAM®, VERSA-RIM PLUS® , VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Wood Products, L.L.C.

Cautions

Header for the hanger at B0 is a Single 7" x 11-7/8" VERSA-LAM® 2.0 3100 DF.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.

BOISE

Single 5-1/4" x 11-7/8" VERSA-LAM® 2.0 3100 DF   Floor Beam\UPPER\D4

BC CALC® 2.0 Design Report - US
Build 285

2 spans | No cantilevers | 0/12 slope

Tuesday, May 19, 2009 15:10

		File Name:	9-386-2.BCC
Job Name:	DELAERE	Description:	UPPER\D4
Address:		Specifier:	BH
City, State, Zip: ,		Designer:	
Customer:	PROBUILD - THE DALLES	Company:	BOISE CASCADE BMD
Code reports:	ESR-1040	Misc:	

B0
LL 0 lbs
DL 651 lbs

B1
LL 4,076 lbs
DL 8,259 lbs
SL 13,972 lbs

B2
LL 1,180 lbs
DL 0 lbs

14-00-00   04-05-06

Total of Horizontal Design Spans = 18-05-06

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Exterior Wall	Unf. Lin. (plf)	Left	00-00-00	14-04-00	0	100				n/a
2	Reaction from Designs\ROO...	Conc. Pt. (lbs)	Left	14-00-00	14-00-00		2,365	6,986			n/a
3	Reaction from Designs\ROO...	Conc. Pt. (lbs)	Left	14-00-00	14-00-00		2,365	6,986			n/a
50	Transferred Load	Conc. Pt. (lbs)	Left	13-10-14	13-10-14	260	109				n/a
51	Transferred Load	Conc. Pt. (lbs)	Left	14-00-10	14-00-10	2,892	1,684				n/a
52	Transferred Load	Conc. Pt. (lbs)	Left	15-04-00	15-04-00	727	174				n/a
53	Transferred Load	Conc. Pt. (lbs)	Left	16-08-00	16-08-00	721	172				n/a
54	Transferred Load	Conc. Pt. (lbs)	Left	18-00-00	18-00-00	627	149				n/a

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	1,826 ft-lbs	6.4%	90%		1 - Internal
Neg. Moment	-2,619 ft-lbs	8.2%	100%	1	1 - Right
End Shear	528 lbs	4.9%	90%		1 - Left
Cont. Shear	1,610 lbs	13.6%	100%	1	2 - Left
Uplift	166 lbs	n/a		13	2 - Right
Total Load Defl.	L/4,603 (0.036")	5.2%		13	1
Live Load Defl.	L/82,062 (0.001")	0.4%		15	2
Total Neg. Defl.	-0.002"	0.5%		13	2
Max Defl.	0.036"	3.6%		13	1
Span / Depth	14.1	n/a			1

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

BC CALC®, BC FRAMER® , AJS™, ALLJOIST® , BC RIM BOARD™, BCI® , BOISE GLULAM™, SIMPLE FRAMING SYSTEM® , VERSA-LAM®, VERSA-RIM PLUS® , VERSA-RIM®, VERSA-STRAND®, VERSA-STUD® are trademarks of Boise Wood Products, L.L.C.

Cautions

Uplift of 166 lbs found at span 2 - Right.

Notes

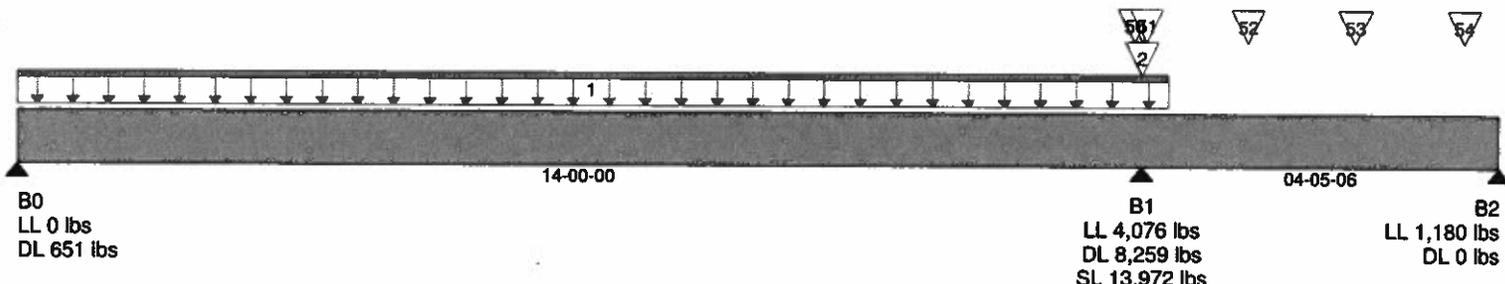Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Minimum bearing length for B0 is 1-1/2".
Minimum bearing length for B1 is 6-5/8".
Minimum bearing length for B2 is 1-1/2".
Entered/Displayed Horizontal Span Length(s) = Clear Span + 1/2 min. end bearing + 1/2 intermediate bearing

oi

BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BCI® 5000-1.7 DF
2 spans | No cantilevers | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\UPPER\D16
Tuesday, May 19, 2009 15:10

Job Name:	DELAERE		File Name:	9-386-2.BCC
Address:			Description:	UPPER\D16
City, State, Zip: ,			Specifier:	BH
			Designer:	
Customer:	PROBUILD - THE DALLES		Company:	BOISE CASCADE BMD
Code reports:	ESR-1336		Misc:	
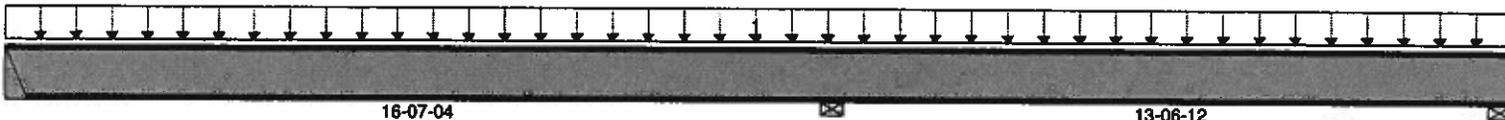
	16-07-04	13-06-12
B0	B1, 3-1/2"	B2, 5"
LL 384 lbs	LL 1,000 lbs	LL 332 lbs
DL 265 lbs	DL 750 lbs	DL 192 lbs

Total Horizontal Product Length = 30-02-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Standard Load	Unf. Area (psf)	Left	00-00-00	30-02-00	40	30				16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	2,191 ft-lbs	69.6%	100%	14	1 - Internal
Neg. Moment	-2,669 ft-lbs	84.7%	100%	1	1 - Right
End Reaction	634 lbs	59.3%	100%	14	1 - Left
Int. Reaction	1,723 lbs	76.6%	100%	1	1 - Right
Cont. Shear	918 lbs	56.5%	100%	1	1 - Right
Total Load Defl.	L/630 (0.314")	38.1%		14	1
Live Load Defl.	L/992 (0.2")	48.4%		14	1
Total Neg. Defl.	-0.049"	9.8%		14	2
Max Defl.	0.314"	31.4%		14	1
Span / Depth	16.7	n/a			1

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Hanger Load	2" x 2"	649 lbs	54.8%	n/a	IUS2.06/11.88
B1	Wall/Plate	3-1/2" x 2"	1,750 lbs	n/a	n/a	Unspecified
B2	Wall/Plate	5" x 2"	524 lbs	n/a	n/a	Unspecified

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Cautions

Header for the hanger IUS2.06/11.88 at B0 is a Single 5-1/4" x 11-7/8" VERSA-LAM® 2.0 3100 DF.
Hanger IUS2.06/11.88 requires (10) 10d face nails, (2) teardrop joist nails.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Hanger Manufacturer: Simpson Strong-Tie, Inc.
Composite EI value based on 23/32" thick sheathing glued and nailed to joist.

oi
BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BCI® 5000-1.7 DF
1 span | No cantilevers | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\UPPER\D14
Tuesday, May 19, 2009 15:09

Job Name: DELAERE	File Name: 9-386-2.BCC
Address:	Description: UPPER\D14
City, State, Zip: ,	Specifier: BH
Customer: PROBUILD - THE DALLES	Designer:
Code reports: ESR-1336	Company: BOISE CASCADE BMD
	Misc:
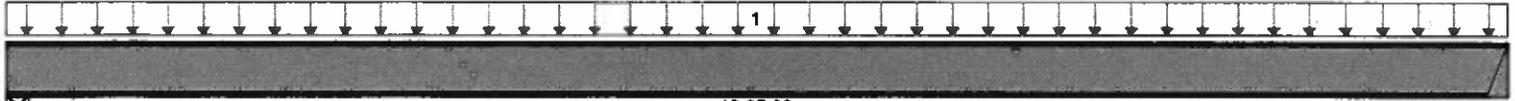
13-05-00

B0, 2-1/2"
LL 359 lbs
DL 269 lbs

B1
LL 357 lbs
DL 268 lbs

Total Horizontal Product Length = 13-05-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Standard Load	Unf. Area (psf)	Left	00-00-00	13-05-00	40	30				16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	2,023 ft-lbs	64.2%	100%	1	1 - Internal
End Reaction	609 lbs	56.9%	100%	1	1 - Right
Total Load Defl.	L/714 (0.221")	33.6%		1	1
Live Load Defl.	L/1,250 (0.126")	38.4%		1	1
Max Defl.	0.221"	22.1%		1	1
Span / Depth	13.3	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	2-1/2" x 2"	628 lbs	n/a	n/a	Unspecified
B1	Hanger Load	2" x 2"	624 lbs	52.7%	n/a	IUS2.06/11.88

Disclosure

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Cautions

Header for the hanger IUS2.06/11.88 at B1 is a Single 3-1/2" x 11-7/8" VERSA-LAM® 2.0 3100 DF.
Hanger IUS2.06/11.88 requires (10) 10d face nails, (2) teardrop joist nails.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Hanger Manufacturer: Simpson Strong-Tie, Inc.
Composite EI value based on 23/32" thick sheathing glued and nailed to joist.

BOISE
BC CALC® 2.0 Design Report - US
Build 285

Single 3-1/2" x 11-7/8" VERSA-LAM® 2.0 3100 DF Floor Beam\UPPER\D13
1 span | No cantilevers | 0/12 slope

Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name: 9-386-2.BCC
Address:		Description: UPPER\D13
City, State, Zip: ,		Specifier: BH
Customer:	PROBUILD - THE DALLES	Designer:
Code reports:	ESR-1040	Company: BOISE CASCADE BMD
		Misc:

B0, 6"
LL 1,680 lbs
DL 2,333 lbs
SL 1,320 lbs

12-00-00

B1, 6"
LL 1,680 lbs
DL 2,332 lbs
SL 1,320 lbs

Total Horizontal Product Length = 12-00-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Standard Load	Unf. Area (psf)	Left	00-00-00	12-00-00	40	30				07-00-00
2	Exterior Wall	Unf. Lin. (plf)	Left	00-00-00	12-00-00	0	100				n/a
3	Low Roof Trib	Unf. Area (psf)	Left	00-00-00	12-00-00		17	55			01-00-00
4	Upper Roof Trib & Eave	Unf. Area (psf)	Left	00-00-00	12-00-00		17	55			03-00-00

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	13,755 ft-lbs	56.2%	115%	2	1 - Internal
End Shear	4,010 lbs	44.2%	115%	2	1 - Left
Total Load Defl.	L/425 (0.314")	56.4%		2	1
Live Load Defl.	L/756 (0.177")	47.6%		2	1
Max Defl.	0.314"	31.4%		2	1
Span / Depth	11.2	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	6" x 3-1/2"	5,333 lbs	n/a	33.9%	Unspecified
B1	Wall/Plate	6" x 3-1/2"	5,331 lbs	n/a	34.0%	Unspecified

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets Code minimum (L/360) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.

BOISE

BC CALC® 2.0 Design Report - US
Build 285

Single 14" BCI® 6000-1.7 DF
1 span | No cantilevers | 1/12 slope
24" OCS | Repetitive

Rafter\ROOF\D18
Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name:	9-386-2.BCC	
Address:		Description:	ROOF\D18	
City, State, Zip: ,		Specifier:	BH	
Customer:	PROBUILD - THE DALLES	Designer:		
Code reports:	ESR-1336	Company:	BOISE CASCADE BMD	
		Misc:		

15-08-12

B0
DL 261 lbs
SL 841 lbs

B1, 6"
DL 276 lbs
SL 889 lbs

Total Horizontal Product Length = 15-08-12

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Roof Load	Unf. Area (psf)	Left	00-00-00	15-08-12	17		55			24"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	4,213 ft-lbs	84.2%	115%	3	1 - Internal
End Reaction	1,093 lbs	62.3%	115%	3	1 - Right
Total Load Defl.	L/509 (0.362")	47.1%		3	1
Live Load Defl.	L/666 (0.276")	72.0%		3	1
Max Defl.	0.362"	36.2%		3	1
Span / Depth	13.1	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Hanger Load	n/a	1,102 lbs	Unspecified	n/a	Hanger
B1	Wall/Plate	6" x 2-5/16"	1,165 lbs	n/a	n/a	Unspecified

Slope and Cut Length

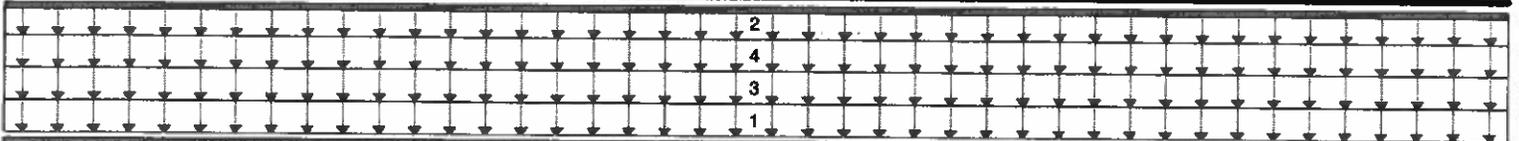|	Slope	Facia Depth	Horiz. Length	Product Length
Plumb Cut with Hanger to dbl. top plate	1/12	11-7/8"	15-08-12	15-10-09

Cautions

Web stiffeners required at bearing B0.

Notes

Design meets User specified (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.

Disclosure

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BOISE

Single 5-1/8" x 19-1/2" BOISE GLULAM™ 24F-V4/DF Floor Beam\ROOF\D12

BC CALC® 2.0 Design Report - US
Build 285

1 span | No cantilevers | 0/12 slope

Tuesday, May 19, 2009 15:09

Job Name: DELAERE	File Name: 9-386-2.BCC
Address:	Description: ROOF\D12
City, State, Zip: ,	Specifier: BH
Customer: PROBUILD - THE DALLES	Designer:
Code reports: ICBO 5745, LA - 01365	Company: BOISE CASCADE BMD
	Misc:
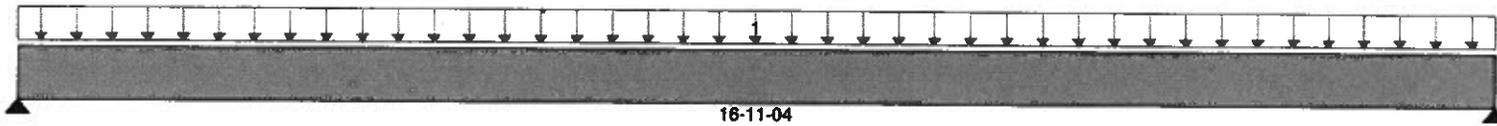
16-11-04

B0
DL 2,365 lbs
SL 6,987 lbs

B1
DL 2,365 lbs
SL 6,987 lbs

Total of Horizontal Design Spans = 16-11-04

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	Trib.
1	Roof Trib	Unf. Area (psf)	Left	00-00-00	16-11-04		17	55			15-00-00

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	39,599 ft-lbs	54.5%	115%	3	1 - Internal
End Shear	7,477 lbs	36.8%	115%	3	1 - Left
Total Load Defl.	L/567 (0.359")	42.4%		3	1
Live Load Defl.	L/758 (0.268")	63.3%		3	1
Max Defl.	0.359"	35.9%		3	1
Span / Depth	10.4	n/a			1

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Minimum bearing length for B0 is 2-3/4".
Minimum bearing length for B1 is 2-3/4".
Entered/Displayed Horizontal Span Length(s) = Clear Span + 1/2 min. end bearing +
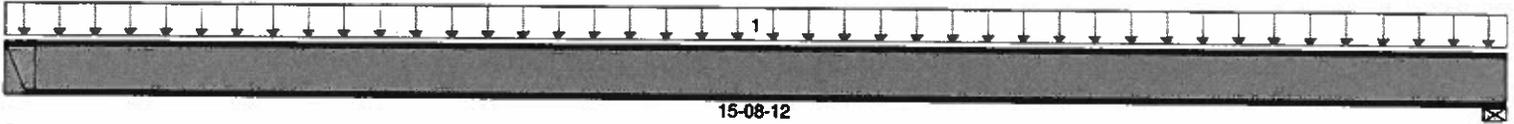1/2 intermediate bearing

Disclosure

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BC CALC® 2.0 Design Report - US
Build 285

Single 14" BCI® 6000-1.7 DF
1 span | No cantilevers | 1/12 slope
24" OCS | Repetitive

Rafter\ROOF\D11
Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name:	9-386-2.BCC
Address:		Description:	ROOF\D11
City, State, Zip: ,		Specifier:	BH
Customer:	PROBUILD - THE DALLES	Designer:	
Code reports:	ESR-1336	Company:	BOISE CASCADE BMD
		Misc:	
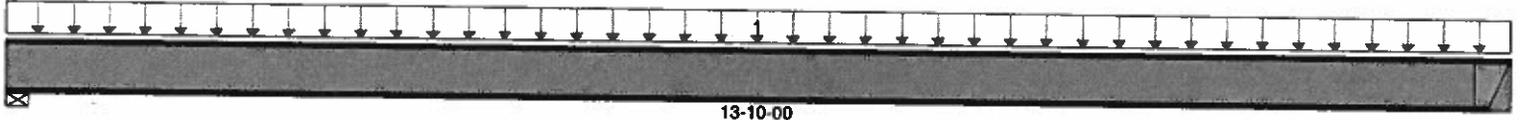
B0, 6"
DL 243 lbs
SL 785 lbs

13-10-00

B1
DL 229 lbs
SL 737 lbs

Total Horizontal Product Length = 13-10-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Roof Load	Unf. Area (psf)	Left	00-00-00	13-10-00	17		55			24"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	3,233 ft-lbs	64.6%	115%	3	1 - Internal
End Reaction	956 lbs	54.5%	115%	3	1 - Left
Total Load Defl.	L/727 (0.222")	33.0%		3	1
Live Load Defl.	L/951 (0.17")	50.5%		3	1
Max Defl.	0.222"	22.2%		3	1
Span / Depth	11.5	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	6" x 2-5/16"	1,028 lbs	n/a	n/a	Unspecified
B1	Hanger Load	n/a	965 lbs	Unspecified	n/a	Hanger

Slope and Cut Length

	Slope	Facia Depth	Horiz. Length	Product Length
Plumb Cut with Hanger to dbl. top plate	1/12	11-7/8"	13-10-00	13-11-12

Cautions

Web stiffeners required at bearing B1.

Notes

Design meets User specified (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.

Disclosure

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BOISE

BC CALC® 2.0 Design Report - US
Build 285

Single 14" BCI® 6000-1.7 DF
1 span | No cantilevers | 1/12 slope
24" OCS | Repetitive

Rafter\ROOF\D10
Tuesday, May 19, 2009 15:09

Job Name: DELAERE	File Name: 9-386-2.BCC
Address:	Description: ROOF\D10
City, State, Zip: ,	Specifier: BH
Customer:	Designer:
Code reports: ESR-1336	Company: BOISE CASCADE BMD
	Misc:

B0, 6"
DL 278 lbs
SL 895 lbs

B1
DL 263 lbs
SL 847 lbs

Total Horizontal Product Length = 15-10-00

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Roof Load	Unf. Area (psf)	Left	00-00-00	15-10-00		17	55			24"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	4,270 ft-lbs	85.4%	115%	3	1 - Internal
End Reaction	1,100 lbs	62.7%	115%	3	1 - Left
Total Load Defl.	L/500 (0.371")	48.0%		3	1
Live Load Defl.	L/654 (0.283")	73.4%		3	1
Max Defl.	0.371"	37.1%		3	1
Span / Depth	13.2	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	6" x 2-5/16"	1,172 lbs	n/a	n/a	Unspecified
B1	Hanger Load	n/a	1,109 lbs	Unspecified	n/a	Hanger

Slope and Cut Length

	Slope	Facia Depth	Horiz. Length	Product Length
Plumb Cut with Hanger to dbl. top plate	1/12	11-7/8"	15-10-00	15-11-13

Cautions

Web stiffeners required at bearing B1.

Notes

Design meets User specified (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
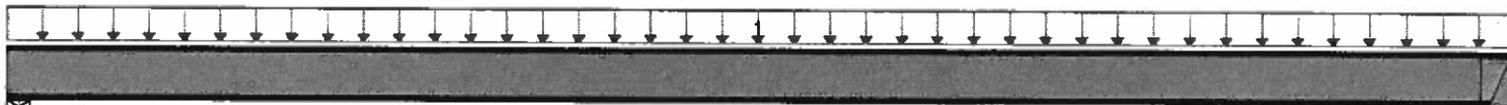Design meets arbitrary (1") Maximum load deflection criteria.

Disclosure

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oi
BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BCI® 5000-1.7 DF
1 span | No cantilevers | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\MAIN\D7
Tuesday, May 19, 2009 15:09

		File Name:	9-386-2.BCC
Job Name:	DELAERE	Description:	MAIN\D7
Address:		Specifier:	BH
City, State, Zip: ,		Designer:	
Customer:	PROBUILD - THE DALLES	Company:	BOISE CASCADE BMD
Code reports:	ESR-1336	Misc:	

12-10-08

B0
LL 339 lbs
DL 254 lbs

B1, 2-1/2"
LL 347 lbs
DL 260 lbs

Total Horizontal Product Length = 12-10-08

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Floor Load	Unf. Area (psf)	Left	00-00-00	12-10-08	40	30				16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	1,889 ft-lbs	60.0%	100%	1	1 - Internal
End Reaction	588 lbs	49.5%	100%	1	1 - Right
Total Load Defl.	L/783 (0.195")	30.6%		1	1
Live Load Defl.	L/1,371 (0.111")	35.0%		1	1
Max Defl.	0.195"	19.5%		1	1
Span / Depth	12.9	n/a			1

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Hanger Load	n/a	593 lbs	Unspecified	n/a	Hanger
B1	Wall/Plate	2-1/2" x 2"	607 lbs	n/a	n/a	Unspecified

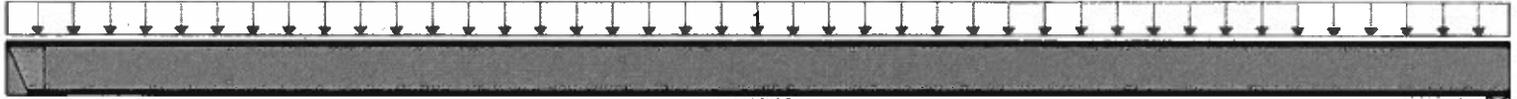## Cautions
Web stiffeners required at bearing B0.

Notes
Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Composite EI value based on 23/32" thick sheathing glued and nailed to joist.

Disclosure
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oi

BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BCI® 5000-1.7 DF
3 spans | No cantilevers | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\MAIN\D21
Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name:	9-386-2.BCC
Address:		Description:	MAIN\D21
City, State, Zip: ,		Specifier:	BH
Customer:	PROBUILD - THE DALLES	Designer:	
Code reports:	ESR-1336	Company:	BOISE CASCADE BMD
		Misc:	
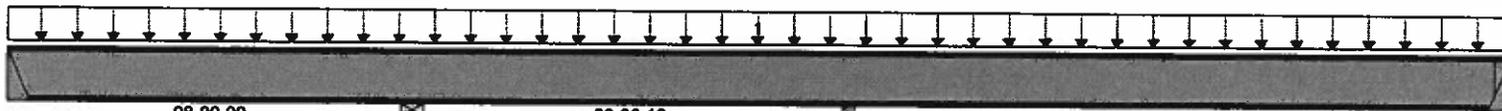
B0	B1, 3-1/2"	B2, 8"	B3
LL 213 lbs	LL 530 lbs	LL 740 lbs	LL 295 lbs
DL 139 lbs	DL 300 lbs	DL 530 lbs	DL 212 lbs

Total Horizontal Product Length = 29-06-12

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Standard Load	Unf. Area (psf)	Left	00-00-00	29-06-12	40	30				16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	1,378 ft-lbs	43.7%	100%	14	3 - Internal
Neg. Moment	-1,487 ft-lbs	47.2%	100%	20	2 - Right
End Reaction	504 lbs	35.1%	100%	14	3 - Right
Int. Reaction	1,208 lbs	47.8%	100%	20	3 - Left
Cont. Shear	690 lbs	42.5%	100%	20	3 - Left
Total Load Defl.	L/1,184 (0.132")	20.3%		14	3
Live Load Defl.	L/1,971 (0.079")	24.4%		14	3
Total Neg. Defl.	-0.022"	4.4%		14	2
Max Defl.	0.132"	13.2%		14	3
Span / Depth	13.1	n/a			3

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Hanger Load	2" x 2"	352 lbs	25.3%	n/a	ITS2.06/11.88
B1	Wall/Plate	3-1/2" x 2"	830 lbs	n/a	n/a	Unspecified
B2	Beam	8" x 2"	1,270 lbs	12.7%	n/a	Douglas Fir
B3	Hanger Load	n/a	507 lbs	Unspecified	n/a	Hanger

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Cautions

Header for the hanger ITS2.06/11.88 at B0 is a Single 7" x 11-7/8" VERSA-LAM® 2.0 3100 DF.
Hanger ITS2.06/11.88 requires (2) 10d x 1-1/2" face nails, (4) 10d x 1-1/2" TF nails, (2) teardrop joist nails.
Web stiffeners required at bearing B3.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Hanger Manufacturer: Simpson Strong-Tie, Inc.
Composite EI value based on 23/32" thick sheathing glued and nailed to joist.

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BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BCI® 5000-1.7 DF
2 spans | No cantilevers | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\MAIN\D20
Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name:	9-386-2.BCC
Address:		Description:	MAIN\D20
City, State, Zip: ,		Specifier:	BH
Customer:	PROBUILD - THE DALLES	Designer:	
Code reports:	ESR-1336	Company:	BOISE CASCADE BMD
		Misc:	

08-07-08   13-00-00

B0, 2-1/2"
LL 212 lbs
DL 98 lbs

B1, 8"
LL 743 lbs
DL 557 lbs

B2
LL 294 lbs
DL 210 lbs

Total Horizontal Product Length = 21-07-08

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Standard Load	Unf. Area (psf)	Left	00-00-00	21-07-08	40	30				16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	1,361 ft-lbs	43.2%	100%	16	2 - Internal
Neg. Moment	-1,524 ft-lbs	48.4%	100%	1	1 - Right
End Reaction	501 lbs	34.9%	100%	16	2 - Right
Int. Reaction	1,237 lbs	49.0%	100%	1	2 - Left
Cont. Shear	693 lbs	42.6%	100%	1	2 - Left
Total Load Defl.	L/1,206 (0.129")	19.9%		16	2
Live Load Defl.	L/1,982 (0.079")	24.2%		16	2
Total Neg. Defl.	-0.019"	3.7%		16	1
Max Defl.	0.129"	12.9%		16	2
Span / Depth	13.1	n/a			2

Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	2-1/2" x 2"	310 lbs	n/a	n/a	Unspecified
B1	Beam	8" x 2"	1,299 lbs	13.0%	n/a	Douglas Fir
B2	Hanger Load	n/a	504 lbs	Unspecified	n/a	Hanger

Cautions

Web stiffeners required at bearing B2.

Notes

Design meets Code minimum (L/240) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
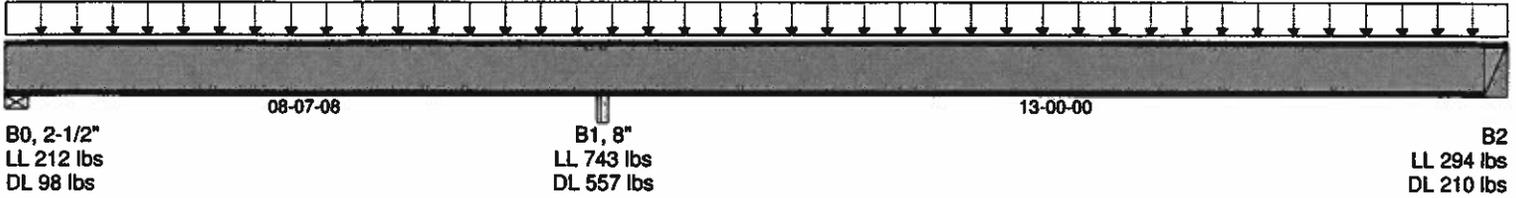Design meets arbitrary (1") Maximum load deflection criteria.
Composite EI value based on 23/32" thick sheathing glued and nailed to joist.

Disclosure

Completeness and accuracy of input must be verified by anyone who would rely on output as evidence of suitability for particular application. Output here based on building code-accepted design properties and analysis methods. Installation of BOISE engineered wood products must be in accordance with current Installation Guide and applicable building codes. To obtain Installation Guide or ask questions, please call (800)232-0788 before installation.

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BC CALC® 2.0 Design Report - US
Build 285

Single 11-7/8" BClfi 5000-1.7 DF
3 spans | Right cantilever | 0/12 slope
16" OCS | Repetitive | Glued & nailed construction

Joist\MAIN\D19
Tuesday, May 19, 2009 15:09

Job Name:	DELAERE	File Name:	9-386-2.BCC
Address:		Description:	MAIN\D19
City, State, Zip: ,		Specifier:	BH
		Designer:	
Customer:	PROBUILD - THE DALLES	Company:	BOISE CASCADE BMD
Code reports:	ESR-1336	Misc:	

Total Horizontal Product Length = 24-01-04

B0, 1-3/4"
LL 213 lbs
DL 112 lbs
SL 18 lbs

B1, 8"
LL 757 lbs
DL 495 lbs

B2, 8"
LL 432 lbs
DL 558 lbs
SL 268 lbs

Load Summary

Tag	Description	Load Type	Ref.	Start	End	Live 100%	Dead 90%	Snow 115%	Wind 160%	Roof Live 125%	OCS
1	Standard Load	Unf. Area (psf)	Left	00-00-00	24-01-04	40	30				16"
2	Exterior Wall	Conc. Lin. (plf)	Right	00-00-00	00-00-00	0	100				16"
3	Roof Trib & Eave	Conc. Lin. (plf)	Right	00-00-00	00-00-00		51	165			16"

Controls Summary

	Value	% Allowable	Duration	Case	Span
Pos. Moment	1,197 ft-lbs	38.0%	100%	16	2 - Internal
Neg. Moment	-1,428 ft-lbs	45.3%	100%	18	1 - Right
End Reaction	312 lbs	30.9%	100%	14	1 - Left
Int. Reaction	1,191 lbs	47.2%	100%	18	2 - Left
Cont. Shear	658 lbs	40.5%	100%	18	2 - Left
Total Load Defl.	2xL/975 (0.054")	18.5%		13	3 - Cantilever
Live Load Defl.	L/1,869 (0.086")	25.7%		16	2
Total Neg. Defl.	-0.042"	8.3%		16	3 - Cantilever
Max Defl.	0.116"	11.6%		16	2
Span / Depth	13.5	n/a			2

Disclosure

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Bearing Supports

		Dim. (L x W)	Value	% Allow Support	% Allow Member	Material
B0	Wall/Plate	1-3/4" x 2"	343 lbs	n/a	n/a	Unspecified
B1	Beam	8" x 2"	1,253 lbs	12.5%	n/a	Douglas Fir
B2	Wall/Plate	8" x 2"	1,257 lbs	n/a	n/a	Unspecified

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Cautions

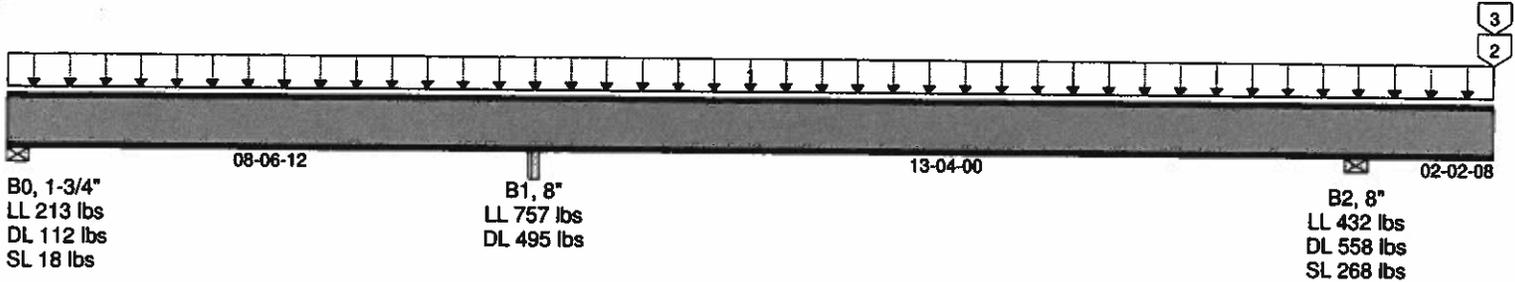Design assumes Top and Bottom flanges to be restrained at cantilever.

Notes

Design meets Code minimum (2xL/180) Total load deflection criteria.
Design meets User specified (L/480) Live load deflection criteria.
Design meets arbitrary (1") Maximum load deflection criteria.
Composite El value based on 23/32" thick sheathing glued and nailed to joist.

BOISE™

File Name:	9-386-2.bcf 5/19/2009 2:39 PM		
Customer:	PROBUILD - THE DALLES	**Company:**	BOISE CASCADE BMD
Job Name:	DELAERE	**City, State:**	VANCOUVER, WA
Address:		**Drawn By:**	BH
Location:		**Misc:**	

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NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
11-7/8" BClfi 5000-1.7 DF	11-7/8"	1	3	31' 0"	93' 0"
		2	8	23' 0"	184' 0"
		3	23	14' 0"	322' 0"
			34		599' 0"
1-1/2" x 9-1/2" VERSA-LAMfi 2.0 2800 DF	9-1/2"	4	3	14' 0"	42' 0"
			3		42' 0"
1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	5	1	17' 0"	17' 0"
		6	1	9' 0"	9' 0"
			2		26' 0"
3-1/2" x 9-1/2" VERSA-LAMfi 2.0 3100 DF	9-1/2"	7	9	14' 0"	126' 0"
			9		126' 0"
3-1/2" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	8	1	12' 0"	12' 0"
			1		12' 0"
5-1/4" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	9	1	19' 0"	19' 0"
		10	1	14' 0"	14' 0"
			2		33' 0"

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag	Std. Block Length	Total Len.
11-7/8" BClfi 5000-1.7 DF	11-7/8"	11	14"	16' 0"

TOTAL LENGTH PRODUCTS:

Product	Depth	Tag		Total Len.
1" x 11-7/8" BC RIM BOARD OSB	11-7/8"	12		180' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Durastrand	4'x 8' FLR DECKING		33	QUANTITY ESTIMATED
Simpson Strong-Tie, Inc.	HGUS5.50/10		1	FACE MOUNT LVL HANGER 12/CTN
Simpson Strong-Tie, Inc.	HU11	H2	1	SGL FACE MOUNT LVL HANGER 25/CTN
Simpson Strong-Tie, Inc.	HU410	H3	9	JOIST HANGER 25/CTN
Simpson Strong-Tie, Inc.	IUS2.06/11.88		15	SINGLE FACE MOUNT HANGER 25/CTN

BOISE™

File Name:	9-386-2.bcf 5/19/2009 2:39 PM		
Customer:	PROBUILD - THE DALLES	**Company:**	BOISE CASCADE BMD
Job Name:	DELAERE	**City, State:**	VANCOUVER, WA
Address:		**Drawn By:**	BH
Location:		**Misc:**	

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NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
14" BClfi 6000-1.7 DF	14"	1	24	16' 0"	384' 0"
		2	14	14' 0"	196' 0"
			38		580' 0"
1-3/4" x 14" VERSA-LAMfi 2.0 2800 DF	14"	3	6	16' 0"	96' 0"
		4	2	14' 0"	28' 0"
		5	1	3' 0"	3' 0"
			9		127' 0"
5-1/8" x 12" BOISE GLULAM 24F-V4/DF	12"	6	2	14' 0"	28' 0"
			2		28' 0"
5-1/8" x 19-1/2" BOISE GLULAM 24F-V4/DF	19-1/2"	7	1	17' 0"	17' 0"
		8	2	14' 0"	28' 0"
			3		45' 0"

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag		Std. Block Length	Total Len.
14" BClfi 6000-1.7 DF	14"	9		21-11/16"	88' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Simpson Strong-Tie, Inc.	HUCQ5.25/11-SDS		1	HUCQ5.25/11-SDS2.5 CONC FLG HGR
Simpson Strong-Tie, Inc.	LSSUI25	H8	4	SGL ADJ FACE MOUNT SLOPE/SKEW
Simpson Strong-Tie, Inc.	LSSUI35	H9	38	SGL ADJ FACE MOUNT SLOPE/SKEW 5/CTN

BOISE

File Name:	9-386-2.bcf 5/19/2009 2:39 PM		
Customer:	PROBUILD - THE DALLES	**Company:**	BOISE CASCADE BMD
Job Name:	DELAERE	**City, State:**	VANCOUVER, WA
Address:		**Drawn By:**	BH
Location:		**Misc:**	

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NOMINALIZED MEMBERS:

Product	Depth	Tag	Qty	Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	1	4	30' 0"	120' 0"
		2	9	25' 0"	225' 0"
		3	17	22' 0"	374' 0"
		4	14	13' 0"	182' 0"
			44		**901' 0"**
1-1/2" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	5	2	16' 0"	32' 0"
		6	1	14' 0"	14' 0"
		7	1	12' 0"	12' 0"
			4		**58' 0"**
1-3/4" x 11-7/8" VERSA-LAMfi 2.0 2800 DF	11-7/8"	8	1	9' 0"	9' 0"
			1		**9' 0"**
7" x 11-7/8" VERSA-LAMfi 2.0 3100 DF	11-7/8"	9	1	6' 0"	6' 0"
			1		**6' 0"**
5-1/8" x 12" BOISE GLULAM 24F-V4/DF	12"	10	1	14' 0"	14' 0"
			1		**14' 0"**
STEEL BEAM BY OTHERS..	30"	11	1	29' 0"	29' 0"
			1		**29' 0"**

STANDARD BLOCKING: (Total Length blocking run)

Product	Depth	Tag		Std. Block Length	Total Len.
11-7/8" BCIfi 5000-1.7 DF	11-7/8"	12		14"	71' 0"

TOTAL LENGTH PRODUCTS:

Product	Depth	Tag			Total Len.
1" x 11-7/8" BC RIM BOARD OSB	11-7/8"	13			24' 0"

ACCESSORIES:

Manufacturer	Product	Tag	Qty	Description
Durastrand	4'x 8' FLR DECKING		43	QUANTITY ESTIMATED
Simpson Strong-Tie, Inc.	ITS2.06/11.88		45	SGL I-JST TF SNAP SEAT HNGR
Simpson Strong-Tie, Inc.	ITT211.88	H6	1	SGL TOP FLANGE HANGER 25/CTN