







MANCHESTER PARK #11 LOT 25 BLOCK 26 707 BRAMPTON DRIVE CALDWELL, IDAHO





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PRESCRIPTIVE ENERGY COMPLIANCE

2015 INTERNATIONAL ENERGY CONSERVATION COE IECC

THE PROPSED BUILDING HAS BEEN DESIGNED TO MEET OR EXCEED THE REQUIRMENTS OF THE INTERNATION ENERGY CONSERVATION CODE

INSULATION AND FENESTRATION BY COMPONENT

WINDOW	CEILING	WOOD WALL	FLOOR	SLAB	CRAWL SPACE
SHGC	R-VALUE	R-VALUE	R-VALUE	R-VALUE	R-VALUE
.35	38	21	30	10.2	21

	SHEET INDEX
ID	Name
101	SITE PLAN
102	1st FLOOR PLAN
103	SHEAR 1
201	ELEVATIONS
202	ELEVATIONS
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102	SCHEDULES
103	HEADERS
104	SECTIONS
105	SECTIONS-DETAILS AND CA
106	ROOF FRAMING AND MECH
107	HEADERS AND BEAMS





A-101



Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1-3/8 inches (35 mm) in thichness, solid or honeycomb-core steel doors not less than 1-3/8" inches (35 mm) thick or 20- minute fire-rated doors, equipped with a self closing device.

	DUUR AND FRAME SCHEDULE								
#	MARK	3D Fro	W	HT	THK	Door Panel	GLZ	FIRE RATING	SET NO
1	INT HC		2'-4"	6'-8"	1 3/4"		NONE	NONE	PASSAGE
1	INT HC		2'-8"	6'-8"	1 3/4"		NONE	NONE	PASSAGE
1	INT HC PKT		2'-6"	6'-8"	1 3/4"		NONE	NONE	PASSAGE
1	INT HC PKT		2'-8"	6'-8"	1 3/4"		NONE	NONE	PASSAGE
1	OVERHEAD		16'	8'	1 1/2"				
2	EXT SC		2'-8"	6'-8"	1 3/4"		NONE	20 MIN	DEAD BOLT
2	EXT SC		3'	6'-8"	1 3/4"		NONE	20 MIN	DEAD BOLT
2	INT HC		1'-6"	6'-8"	1 3/4"		NONE	NONE	PASSAGE
3	BIFOLD		5'	6'-8"	1 1/2"		NONE	NONE	PULL
5	INT HC		2'-6"	6'-8"	1 3/4"		NONE	NONE	PASSAGE

#	Libra
1	W Fixed 2
1	W Fixed 2
1	W Single
1	W Sliding
1	W Sliding
2	W Single
2	W Sliding
3	W Fixed 2
3	W Fixed 2

R302.5.1 Opening protection

R308.4 Hazardous locations.

The locations specified in the Sections R308.4.1 through R308.4.7 shall be considered specific hazardous location for the purposed of glazing.

The garage walls and ceilings shall be separated from the dwelling with no less than 5/8" Type X gypsum board or equivalent per City Code.

WINDOW SCHEDULE						
y Part Name	3D Front View	SIZ WIDTH	ZE HFIG	NOTES	GLAZING	
3		1'-6"	5'		7.50	
3		5'	5'		25.00	
lung1 23		2'	3'		6.00	
23		4'	4'		16.00	
23		5'	5'	EMERGENCY EGRESS	25.00	
lung1 23	<u>t</u>	4'	5'		20.00	
23		4'	5'	EMERGENCY EGRESS	20.00	
3		1'-6"	1'-6"	EMERGENCY EGRESS	2.25	
3		2'	1'-6"	EMERGENCY EGRESS	3.00	
					175.25 sq ft	





					-		-	
Spacing	Method	Start	BWL	Walls	R-E	Exposure	Required	Provided
50	WSP	9'	1.0	.95	1.0	1.0	8'7"	16'
50	WSP	9'	1.0	.95	1.0	1.0	8'7"	12'
50	CS	7'6"	1.0	.95	1.0	1.0	7'2"	30'
50	CS	7'6"	1.0	.95	1.0	1.0	7'2"	19'6"
	Spacing 50 50 50 50 50	SpacingMethod50WSP50WSP50CS50CS	Spacing Method Start 50 WSP 9' 50 WSP 9' 50 CS 7'6" 50 CS 7'6"	Spacing Method Start BWL 50 WSP 9' 1.0 50 WSP 9' 1.0 50 WSP 9' 1.0 50 CS 7'6" 1.0 50 CS 7'6" 1.0	Spacing Method Start BWL Walls 50 WSP 9' 1.0 .95 50 WSP 9' 1.0 .95 50 WSP 9' 1.0 .95 50 CS 7'6" 1.0 .95 50 CS 7'6" 1.0 .95	Spacing Method Start BWL Walls R-E 50 WSP 9' 1.0 .95 1.0 50 WSP 9' 1.0 .95 1.0 50 WSP 9' 1.0 .95 1.0 50 CS 7'6" 1.0 .95 1.0 50 CS 7'6" 1.0 .95 1.0 50 CS 7'6" 1.0 .95 1.0	Spacing Method Start BWL Walls R-E Exposure 50 WSP 9' 1.0 .95 1.0 1.0 50 WSP 9' 1.0 .95 1.0 1.0 50 WSP 9' 1.0 .95 1.0 1.0 50 CS 7'6" 1.0 .95 1.0 1.0 50 CS 7'6" 1.0 .95 1.0 1.0	Spacing Method Start BWL Walls R-E Exposure Required 50 WSP 9' 1.0 .95 1.0 1.0 8'7" 50 WSP 9' 1.0 .95 1.0 1.0 8'7" 50 WSP 9' 1.0 .95 1.0 1.0 8'7" 50 CS 7'6" 1.0 .95 1.0 1.0 7'2" 50 CS 7'6" 1.0 .95 1.0 1.0 7'2"









 $\boxed{1} = WSP - 4' U.N.O.$

PFH = Portal Frame with hold-downs





CRAWL AREA SQ. FT./150= SQ FT VENT REQ=10.64 SQ.FT.

S-101

awing Title:

wing No

FOUNDATION

	FOOTING CONCRETE					
ID	WIDTH	LENGTH	CUBIC YDS			
FOOTING	1'-2"	2.33'	0.07			
FOOTING	1'-2"	2.42'	0.07			
FOOTING	1'-2"	2.75'	0.08			
FOOTING	1'-2"	4.00'	0.12			
FOOTING	1'-2"	5.96'	0.17			
FOOTING	1'-2"	6.00'	0.17			
FOOTING	1'-2"	6.00'	0.17			
FOOTING	1'-2"	9.00'	0.26			
FOOTING	1'-2"	10.96'	0.32			
FOOTING	1'-2"	11.50'	0.33			
FOOTING	1'-2"	11.50'	0.33			
FOOTING	1'-2"	13.91'	0.40			
FOOTING	1'-2"	17.50'	0.50			
FOOTING	1'-2"	20.50'	0.59			
FOOTING	1'-2"	21.00'	0.60			
FOOTING	1'-2"	22.89'	0.66			
FOOTING	1'-2"	29.02'	0.84			
FOOTING	1'-2"	29.27'	0.84			
FOOTING	1'-2"	39.17'	1.13			
FOOTING	1'-2"	39.58'	1.14			
FOOTING	1'-2"	45.50'	1.31			
		350.76'	10.10 cu yard			
PIER	1'-6"	1.50'	0.06			
PIER	1'-6"	1.50'	0.06			
PIER	1'-6"	1.50'	0.06			
		4.50'	0.18 cu yard			
PIER	2'	2.00'	0.10			
		2.00'	0.10 cu yard			
PIER	2'-8"	2.67'	0.10			
PIER	2'-8"	2.67'	0.10			
		5.34'	0.20 cu yard			
		362.60'	10.58 cu yard			

	FOUNDA	TION WALLS
ID	Thickness	LENGTH
FND BLOCK OUT	r WALLS	
	6"	3.01'
	6"	16.17'
		19.18'
Foundation		
	6"	2.33'
	6"	2.41'
	6"	2.42'
	6"	2.61'
	6"	2.75'
	6"	2.75'
	6"	4.00'
	6"	6.00'
	6"	6.00'
	6"	6.55'
	6"	9.00'
	6"	10.96'
	6"	11.50'
	6"	11.50'
	6"	14.24'
	6"	17.50'
	6"	17.57'
	6"	20.50'
	6"	21.19'
	6"	22.31'
	6"	39.17'
		233.26'
		252.44'

CONCRETE FLATWORK						
ID	SQ FT	CUE				
FRONT PORCH	88.00	1.90				
GARAGE DRIVE	430.03	5.31				
GARAGE FLOOR	456.42	5.63				
GARAGE STOOP	10.99	0.14				
REAR PATIO	165.00	2.04				
SIDEWALK	73.44	0.91				
	1,223.88 sq ft	15.93 cu y				

FLC	DOR JOIST A	ND PONY WA	LLS
ID	Quantity	3D Front A	Length of t
9 1/2 I JOIST	, , , , , , , , , , , , , , , , , , ,		
	1		10.45'
	1		10.45'
	1		10.97'
	1		10.97'
	1		10.97'
	1		10.97'
	1		13.97'
	1		13.97'
	1		19.97'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		27.92'
	1		31.48'
	1		31.48'
	1		31.48'
	1		48.96'
	1		48.96'
	1		48.96'
	1		48.96'
	1		48.96'
	1		48.96'
			752.17'

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Project: MANCHESTER 4 BEAMS AND FOOTING	
Location: FTG1	
Footing	

[2015 International Building Code(2015 NDS)] Footing Size: 2.0 FT x 2.0 FT x 10.00 IN Reinforcement: #4 Bars @ 5.83 IN. O.C. E/W / (4) min. Section Footing Design Adequate

OOTING PROPERTIES				LOADING DIAG
llowable Soil Bearing Pressure: Qs =	1500 psf			
oncrete Compressive Strength: F'c =	2500 psi			
einforcing Steel Yield Strength: Fy = 4	40000 psi			
oncrete Reinforcement Cover: c =	3 in			
OOTING SIZE				
/idth: W =	2 ft			
enath: L =	2 ft			
epth: Depth	= 10 in			
ffective Depth to Top Layer of Steel: d =	6.25 in			
OI UMN AND BASEPI ATE SIZE				
olumn Type: Steel				
olumn Width: m =	4 in			
olumn Depth: n =	4 in			
aseplate Width: bsw =	6 in			
aseplate Length: bsl =	6 in			
Some Greecernone				
earing Calculations:				
JItimate Bearing Pressure:	Qu =	1091	psf	
Effective Allowable Soil Bearing Pressure:	Qe =	1375	psf	
Required Footing Area:	Area =	3.17	sf	10 in
Area Provided:	A = '	4.00	sf	
aseplate Bearing:				
Bearing Required:	Bear =	6243	lb	
Allowable Bearing:	Bear-A =	99450	lb	
eam Shear Calculations (One Way Shear)	:			
Beam Shear:	Vu1 =	845	lb	
Allowable Beam Shear:	Vc1 =	11250	lb	
unching Shear Calculations (Two Way Sh	ear):			FOOTING LOAD
Critical Perimeter:	Bo =	45	in	Live Load:
Punching Shear:	Vu2 =	4871	lb	Dead Load:
Allowable Punching Shear (ACI 11-35):	vc2-a =	63281	lb	Total Load:
Allowable Punching Shear (ACI 11-36):	vc2-b =	79688	lb	Ultimate Factore
Allowable Punching Shear (ACI 11-37):	vc2-c =	42188	lb	Footing plus soil
Controlling Allowable Punching Shear:	vc2 =	42188	lb	* Load obtained f
ending Calculations:			I	
Factored Moment:	Mu =	11739	in-lb	
Nominal Moment Strength:	Mn =	167925	in-lb	
einforcement Calculations:				
Concrete Compressive Block Depth:	a =	0.62	in	
Steel Required Based on Moment:	As(1) =	0.05	in2	
Vin. Code Req'd Reinf. Flex. Members (ACI	-10.5.1): As(2) =	0.75	in2	
Controlling Reinforcing Steel:	As-reqd =	0.75	in2	
Selected Reinforcement: #4	s @ 5.8 in. o.c. e/v	v (4) Min.		
Reinforcement Area Provided:	As =	0.79	in2	
evelopment Length Calculations:				
Development Length Required:	Ld =	15	in	
Development Length Supplied:	Ld-sup =	6.5	in	
· · · · · · ·				

Note: Plain concrete adequate for bending, therefore adequate development length not required.

Project: MANCHESTER 4 BEAMS AND FOOTING Location: FTG2 Footing

Footing [2015 International Building Code(2015 NDS)] Footing Size: 2.67 FT x 2.67 FT x 10.00 IN Reinforcement: #4 Bars @ 5.11 IN. O.C. E/W / (6) min. Section Footing Design Adequate

FOOTING PROPERTIES					LOAD	DING DIAGR	ł۸
Allowable Soil Bearing Pressure: C	s = 1500 p	sf					
Concrete Compressive Strength: F	'c= 2500 p	si					
Reinforcing Steel Yield Strength: F	y= 40000 p	si					
Concrete Reinforcement Cover: c	= 3 ir	1					
FOOTING SIZE							
Width: V	/ = 2.67	ft					
Length: L	= 2.67	ft					
Depth: D	epth = 10	in					
Effective Depth to Top Layer of Steel: d	= 6.25	in					
COLUMN AND BASEPLATE SIZE							
Column Type: S	teel						
Column Width: m	n = 4 in						
Column Depth: n	= 4 in						
Baseplate Width: b	sw = 6 in						
Baseplate Length: b	sl= 6 in						
FOOTING CALCULATIONS							
Bearing Calculations:					_		
Ultimate Bearing Pressure:		Qu =	1211	psf			
Effective Allowable Soil Bearing Pressu	ire:	Qe =	1375	psf			
Required Footing Area:		Area =	6.28	sf			
Area Provided:		A = '	7.13	sf	10 in		
Baseplate Bearing:						ρ	
Bearing Required:		Bear =	12280	lb			
Allowable Bearing:		Bear-A =	99450	lb			
Beam Shear Calculations (One Way S	hear):					L	
Beam Shear:		Vu1 =	2786	lb			
Allowable Beam Shear:		Vc1 =	15019	lb			
Punching Shear Calculations (Two Wa	ay Shear):			ſ	FOOT	ING LOAD	N
Critical Perimeter:		Bo =	45	in	Live L	oad:	
Punching Shear:		Vu2 =	10766	lb	Dead	Load:	
Allowable Punching Shear (ACI 11-35):		vc2-a =	63281	lb	Total I	Load:	
Allowable Punching Shear (ACI 11-36):		vc2-b =	79688	lb	Ultima	ate Factored	L
Allowable Punching Shear (ACI 11-37):		vc2-c =	42188	lb	Footir	ng plus soil a	abo
Controlling Allowable Punching Shear:		vc2 =	42188	lb	* Load	d obtained fr	or
Bending Calculations:				-			
Factored Moment:		Mu =	35028	in-lb			
Nominal Moment Strength:		Mn =	250275	in-lb			
Reinforcement Calculations:							
Concrete Compressive Block Depth:		a =	0.69	in			
Steel Required Based on Moment:		As(1) =	0.16	in2			
Min. Code Regid Reinf. Flex. Members	(ACI-10.5.1):	As(2) =	1.00	in2			
Controlling Reinforcing Steel:		As-reqd =	1.00	ın2			
Selected Reinforcement:	#4's @ 5.1	In. o.c. e/w	(6) Min.				
Reinforcement Area Provided:		AS =	1.18	ın2			
Development Length Calculations:		- I -	4-				
Development Length Required:		L0 =	10 50	in in			
Noto: Bloin concrete adaguate for here	ling	La-sup =	10.52	111			
Note. Frain concrete adequate for bend							

therefore adequate development length not required.

CUBIC YDS
0.08
0.55
0.63 cu yard
0.11
0.11
0.11
 0.12
0.13
0.13
0.19
0.28
0.28
0.30
0.42
0.51
0.53
0.53
0.66
0.81
0.81
0.95
0.98
1.03
1.81
10.80 cu yard
11.43 cu ya

u yard	
UBIC YDS	

This drawing must not be scaled. The contractor shall verify all levels, datums and dimensions prior to commencement of work. All errors and omissions must be reported to Lawson Design immediately.

Project: MANCHESTER 4 B Location: MSRB1 GREAT R Multi-Span Roof Beam [2015 International Building 3.5 IN x 7.25 IN x 4.0 FT #2 - Douglas-Fir-Larch - Dry Section Adequate By: 76.5% Controlling Factor: Moment	EAMS AND FOOTING M HEADERS Code(2015 NDS)] Use	StruCalc V
	r	
Live Load 0.02 IN	<u>-</u> ./2695	
Dead Load 0.01 in		
Total Load 0.03 IN	/1522	
Live Load Deflection Criter	a: L/240 Total Load Deflection Criteria	a: L/180
REACTIONS A	<u>B</u>	
Live Load 1100 lb	1100 lb	
Dead Load 847 lb	847 lb	
Iotal Load 1947 lb	1947 Ib 0.80 in	
	0.89 11]
BEAM DATA	<u>Center</u>	
Unbraced Length-Top		
Unbraced Length-Bottom	4 ft	A
Roof Pitch 6	:12	
Roof Duration Factor 1.1	5	
Notch Depth 0.0)	ROOF LO
MATERIAL PROPERTIES		Roof Dea
#2 - Douglas-Fir-Larch		Roof Trib
5	Base Values Adjuster	d Roof Trib
Bending Stress:	Fb = 900 psi Fb' = 134	l6 psi Wall Load
	Cd=1.15 CF=1.30	BEAMLO
Shear Stress:	Fv = 180 psi Fv' = 20)7 psi Total Live
	Cd=1.15	Total Dea
Modulus of Elasticity:	E = 1600 ksi E' = 1600 si	D KSI Beam Se
Comp to Grain:	FC = 625 psi FC = 625	Total Load
Controlling Moment:	1947 ft-lb	
2.0 Ft from left support of	span 2 (Center Span)	
Created by combining all	dead loads and live loads on span(s) 2	
Controlling Shear:	1363 lb	
At a distance d from left s	upport of span 2 (Center Span)	
Created by combining all	dead loads and live loads on span(s) 2	
Comparisons with requir	d sections: Reald Provides	1
Section Modulus:	17 37 in 3 30 66 in	3
Area (Shear):	9.88 in2 25.38 in2	2
Moment of Inertia (deflection	n): 13.14 in4 111.15 in4	1
Moment:	, 1947 ft-lb 3438 ft-	b

1363 lb 3502 lb

Shear:

Version 10.0.1.6

	LOADING DIAGRAM				
	A	4 ft			
	A				В
1			Cont	or.	
	Roof Live Load	RII =	25	nsf	
	Roof Dead Load	RDL =	17	psf	
	Roof Tributary Width Side One	TW1 =	19	ft	
	Roof Tributary Width Side Two	TW2 =	3	ft	
	Wall Load	WALL =	0	plf	
1	BEAM LOADING		Се	nter	
	Total Live Load		550	D plf	
	Total Dead Load (Adjusted for R	loof Pitch)	418	, B plf	
	Beam Self Weight		(6 plf	
	Total Load		07	1 nlf	

cation: MSRB2 DINING RO Ilti-Span Roof Beam 15 International Building Co 5 IN x 7.25 IN x 5.0 FT - Douglas-Fir-Larch - Dry U ction Adequate By: 24.2% ntrolling Factor: Moment	OM WINDOW ode(2015 NDS)] se		LAWSO 607 LINI NAMPA, StruCalc Version 10.0.1.6
EFLECTIONS Center ive Load 0.04 IN L/ ² ead Load 0.03 in otal Load 0.07 IN L/8 ive Load Deflection Criteria:	1518 357 L/240 Total Load Do	eflection Criteria: L/180	
EACTIONS A ive Load 1250 lb ead Load 964 lb otal Load 2214 lb earing Length 1.01 in	<u>₽</u> 250 lb 964 lb 1.01 in		
EAM DATA C pan Length 5 nbraced Length-Top 0 nbraced Length-Bottom 5 oof Pitch 6 oof Duration Factor 1.15	enter ft ft ft :12		A ROOF LOADING
otch Depth 0.00 IATERIAL PROPERTIES 2 - Douglas-Fir-Larch ending Stress:	<u>Base Values</u> Fb = 900 psi	<u>Adjusted</u> Fb' = 1346 psi	Roof Live Load Roof Dead Load Roof Tributary Width Side Roof Tributary Width Side Wall Load
hear Stress: lodulus of Elasticity: omp. [⊥] to Grain:	$Cd=1.15 \ CF=1.30$ $Fv = 180 \ psi$ Cd=1.15 $E = 1600 \ ksi$ $Fc - \perp = 625 \ psi$	Fv' = 207 psi E' = 1600 ksi Fc - ⊥' = 625 psi	BEAM LOADING Total Live Load Total Dead Load (Adjuste Beam Self Weight Total Load
ontrolling Moment: 2.5 Ft from left support of sp	2768 ft-lb ban 2 (Center Span)		

<u> </u>	——————————————————————————————————————				 B
ROOF LOADING		Cent	er		
Roof Live Load	RLL =	25	ps	f	
Roof Dead Load	RDL =	17	ps	f	
Roof Tributary Width Side Two	TW2 =	10	n ft		
Vall Load	WALL =	0	plf		
BEAM LOADING		Ce	ente	r	
lotal Live Load		50	0	plf	
Total Dead Load (Adjusted for R	oof Pitch)	38	0	plf	
Beam Self Weight			6	plf	
otal Load		88	6	plf	

Project: MANCHESTER 4 BEAMS AND FOOTING

Created by combining all dead loads and live loads on span(s) 2

Controlling Shear: -1683 lb At a distance d from right support of span 2 (Center Span) Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections:	<u>Req'd</u>	Provided
Section Modulus:	24.68 in3	30.66 in3
Area (Shear):	12.19 in2	25.38 in2
Moment of Inertia (deflection):	23.35 in4	111.15 in4
Moment:	2768 ft-lb	3438 ft-l
Shear:	-1683 lb	3502 lb

Project: MANCHESTER 4 BEAMS AND FOOTING Location: MSRB3 GARAGE DOOR HDR Multi-Span Roof Beam [2015 International Building Code(2015 NDS)] (3) 1.75 IN x 14.0 IN x 16.0 FT 1.9E Microllam - iLevel Trus Joist Section Adequate By: 21.2%

Controlling Factor: Moment

CAUTIONS

LOADING DIAGRAM

ROOF LOADING

Roof Live Load

Roof Dead Load

BEAM LOADING

Total Live Load

Beam Self Weight

Wall Load

Total Load

<u>Center</u>

<u>Center</u>

600 plf

23 plf

page

/ of

1079 plf

RLL = 25 psf

RDL = 17 psf

WALL = 0 plf

Roof Tributary Width Side One TW1 = 22 ft

Roof Tributary Width Side Two TW2 = 2 ft

Total Dead Load (Adjusted for Roof Pitch) 456 plf

Project: MANCHESTER 4 BEAMS AND FOOTING Location: MLB2 Multi-Loaded Multi-Span Beam [2015 International Building Code(2015 NDS)] (2) 1.75 IN x 11.875 IN x 10.0 FT 1.9E Microllam - iLevel Trus Joist

Section Adequate By: 93.7% Controlling Factor: Moment	1
CAUTIONS * Laminations are to be fully	y connected to provide uniform transfer
DEFLECTIONS Center Live Load 0.09 IN L Dead Load 0.07 in Total Load 0.16 IN L Live Load Deflection Criteria Deflection Criteria	<u>r</u> _/1361 _/771 a: L/360 Total Load Deflection Criteri
REACTIONSALive Load2513Dead Load1852Total Load4365Bearing Length1.66	B 1188 lb 883 lb 2071 lb 0.79 in
BEAM DATA Span Length Unbraced Length-Top Unbraced Length-Bottom Live Load Duration Factor Notch Depth	Center 10 ft 0 ft 10 ft 1.00 0.00
MATERIAL PROPERTIES 1.9E Microllam - iLevel Trus	s Joist

	Base	Base Values		<u>ljusted</u>
nding Stress:	Fb =	2600 psi	Fb' =	2604
	Cd=1.0	00 CF=1.00		
ear Stress:	Fv =	285 psi	Fv' =	285
	Cd=1.0	00		
dulus of Elasticity:	E =	1900 ksi	E' =	1900
mp.	Fc - ⊥	= 750 psi	Fc - ⊥'	= 750

Co

Controlling Moment: 9214 ft-lb 3.5 Ft from left support of span 2 (Center Span) Created by combining all dead loads and live loads on span(s) 2 Controlling Shear: 3217 lb At a distance d from left support of span 2 (Center Span) Created by combining all dead loads and live loads on span(s) 2

Comparisons with required sections: Section Modulus: Area (Shear): Moment of Inertia (deflection): Moment: Shear:

* Laminations are to be fully connected to provide uniform transfer of loads to all members DEFLECTIONS Center Live Load 0.39 IN L/495 Dead Load 0.31 in Total Load 0.70 IN L/275 Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180 REACTIONS A B Live Load 4800 lb 4800 lb Dead Load 3833 lb 3833 lb Total Load 8633 lb 8633 lb Bearing Length 2.19 in 2.19 in BEAM DATA <u>Center</u> Span Length 16 ft Unbraced Length-Top 0 ft Unbraced Length-Bottom 16 ft Roof Pitch 6 :12 Roof Duration Factor 1.15 Notch Depth 0.00 MATERIAL PROPERTIES 1.9E Microllam - iLevel Trus Joist Base Values <u>Adjusted</u> Fb = 2600 psi Fb' = 2928 psi Bending Stress: Cd=1.15 CF=0.98 Fv = 285 psi Fv' = 328 psi Shear Stress: Cd=1.15 E = 1900 ksi E' = 1900 ksi Modulus of Elasticity: Comp. [⊥] to Grain: Fc-⊥= 750 psi Fc-⊥'= 750 psi 34532 ft-lb Controlling Moment: 8.0 Ft from left support of span 2 (Center Span) Created by combining all dead loads and live loads on span(s) 2 Controlling Shear: 7424 lb At a distance d from left support of span 2 (Center Span)

Created by combining all dead loads and live loads on span(s) 2 Comparisons with required sections: <u>Req'd</u> <u>Provided</u> Section Modulus: 141.53 in3 171.5 in3 Area (Shear) 33.08 in 2 73.5 in 2

Area (Shear).	33.90 IIIZ	13.5 1112
Moment of Inertia (deflection):	785.02 in4	1200.5 in4
Moment:	34532 ft-lb	41845 ft-lb
Shear:	7424 lb	16060 lb

Project: MANCHESTER 4 BEAMS AND FOOTING
Location: MSRB4 FRONT PORCH
Multi-Span Roof Beam

[2015 International Building Code(2015 NDS)] (2) 1.75 IN x 9.5 IN x 16.83 FT (10.5 + 6.3) 1.9É Microllam - iLevel Trus Joist

Section Adequate By: 1067.5% Controlling Factor: Shear

CAUTIONS

* Laminations are to be fully connected to provide uniform transfer of loads to all DEFLECTIONS Left <u>Center</u> Live Load -0.01 IN L/MAX 0.01 IN L/MAX Dead Load 0.00 in 0.01 in Total Load -0.01 IN L/MAX 0.01 IN L/6094 Live Load Deflection Criteria: L/240 Total Load Deflection Criteria: L/180 REACTIONS <u>A B C</u> 0 lb 455 lb 358 lb Live Load 28 lb 441 lb 273 lb Dead Load Total Load 28 lb 896 lb 631 lb Uplift (1.5 F.S) -4 lb 0 lb 0 lb Bearing Length 0.01 in 0.34 in 0.24 in BEAM DATA Left Center Span Length10.5 ft6.33 ftUnbraced Length-Top0 ft0 ft Unbraced Length-Bottom 10.5 ft 6.33 ft Roof Pitch 4 :12 Roof Duration Factor 1.15 Notch Depth 0.00 MATERIAL PROPERTIES 1.9E Microllam - iLevel Trus Joist <u>Base Values</u> Fb = 2600 psi Fb' = 3087 psi Bending Stress: Cd=1.15 CF=1.03 Shear Stress: Fv = 285 psi Fv' = 328 psi Cd=1.15 E = 1900 ksi E' = 1900 ksi Modulus of Elasticity: Fc - ⊥ = 750 psi Fc - ⊥' = 750 psi Comp. [⊥] to Grain: Controlling Moment: 885 ft-lb 3.54 Ft from left support of span 2 (Center Span)

Created by combining all dead loads and live loads on span(s) 1, 2

Controlling Shear: 622 lb At a distance d from left support of span 2 (Center Span) Created by combining all dead loads and live loads on span(s) 1, 2

Comparisons with required sections: Section Modulus:	<u>Req'd</u> 3.44 in3	Provided 52.65 in3
Area (Shear):	2.85 in2	33.25 in2
Moment of Inertia (deflection):	7.39 in4	250.07 in4
Moment:	885 ft-lb	13541 ft-lb
Shear:	622 lb	7265 lb

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Imembers						
LOADING DIAGRAM						
		(0			
A 10.5 ft			B		-6.33 f	Č
			\ft	Cont	or	
ROOF LOADING						
Roof Live Load	RII =	25	nsf	25	nsf	
Roof Live Load Roof Dead Load	RLL = RDL =	25 17	psf psf	25 17	psf psf	
Roof Live Load Roof Dead Load Roof Tributary Width Side One	RLL = RDL = TW1 =	25 17 0	psf psf ft	25 17 3	psf psf ft	
Roof Live Load Roof Dead Load Roof Tributary Width Side One Roof Tributary Width Side Two	RLL = RDL = TW1 = TW2 =	25 17 0 0	psf psf ft ft	25 17 3 2	psf psf ft ft	
Roof Live Load Roof Dead Load Roof Tributary Width Side One Roof Tributary Width Side Two Wall Load	RLL = RDL = TW1 = TW2 = WALL =	25 17 0 0 0	psf psf ft ft plf	25 17 3 2 0	psf psf ft ft plf	
Roof Live Load Roof Dead Load Roof Tributary Width Side One Roof Tributary Width Side Two Wall Load BEAM LOADING	RLL = RDL = TW1 = TW2 = WALL =	25 17 0 0 0	psf psf ft ft plf	25 17 3 2 0 <u>Cer</u>	psf psf ft ft plf	
Roof Live Load Roof Dead Load Roof Tributary Width Side One Roof Tributary Width Side Two Wall Load BEAM LOADING Total Live Load	RLL = RDL = TW1 = TW2 = WALL =	25 17 0 0 0 <u>L</u> 0	psf psf ft plf <u>eft</u> plf	25 17 3 2 0 <u>Cer</u> 125	psf psf ft ft plf <u>tter</u>	
Roof Live Load Roof Dead Load Roof Tributary Width Side One Roof Tributary Width Side Two Wall Load BEAM LOADING Total Live Load Total Dead Load (Adjusted for R	RLL = RDL = TW1 = TW2 = WALL =	25 17 0 0 0 <u>L</u> 0 0	psf psf ft plf <u>eft</u> plf	25 17 3 2 0 <u>Cer</u> 125 90	psf psf ft plf <u>tter</u> plf	

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	StruCalc Version	10.0.1.6		1/15/2020 8:51:22 PM	-
of loads to a	all members				
ı: L/240		<u>3RAM</u> 2	3		

	w			
	A 10 ft B			
	UNIFORM LOADS Center			
	Uniform Live Load 120 plf			
	Uniform Dead Load 68 plf			
<u>Adjusted</u>	Beam Self Weight 13 plf			
o'= 2604 psi	Total Uniform Load 201 plf			
	POINT LOADS - CENTER SPAN			
/' = 285 psi	Load Number <u>One Two</u> <u>Three</u> *			
4000 1	Live Load 575 lb 575 lb 1350 lb			
= 1900 KSI	Dead Load 391 lb 391 lb 1143 lb			
= /50 psi	Location 0 ft 2 ft 3.5 ft			
	* Load obtained from Load Tracker. See Summary Report for details.			

Req'd	Provided
42.46 in3	82.26 in3
16.93 in2	41.56 in2
152.1 in4	488.41 in4
9214 ft-lb	17848 ft-lb
3217 lb	7897 lb

- R-21 INSULATION

8

7 KITCHEN SCALE: 1/2" = 1'-0"

2 LEVEL 1 MECHANICAL

MECHANCIAL LEDGEND					
2D Symbol	ITEM	Quanti			
	220	2			
	BAR LIGHT	3			
ц О	BATH FIFTY CFM	1			
	CAN LIGHT	11			
FIXT.	CEILING LIGHT	11			
AND.	CHANDLER	1			
	DUPLEX	32			
\star	FAN LIGHT	1			
	PENDANT	2			
SMOKE DET.	SMOKE DECTOR	3			
	WALL SCONCE	3			

HEADERS AND BEAMS					
Full Element ID	Quantity	Length (A)	3D Front Axonometry		
4X8 DF HDR	1	2'-3"			
4X8 DF HDR	1	3'-1 1/2"			
4X8 DF HDR	1	4'-3"			
4X8 DF HDR	1	4'-3"			
4X8 DF HDR	1	4'-3 1/4"			
4X8 DF HDR	1	5'-3"			
4X8 DF HDR	1	5'-3"			
4X8 DF HDR	1	5'-3 1/2"			
4X8 DF HDR	2	4'-3"			
4X8 DF HDR	3	1'-9"			
		47'-8 1/4"			
KING	28	5 1/2"			
		12'-10"			
ML BEAM 9 1/2	2	17'-2 3/4"			
		34'-5 1/2"			
ML BEAM 11 7/8"	2	3'-6 3/4"			
ML BEAM 11 7/8"	2	9'-9"			
ML BEAM 11 7/8"	3	21'-3"			
		90'-4 1/2"			
TR	38	5 1/2"			
		17'-5"			
		202'-9 1/4"			

