APEX
ENGINEERS, INC.

November 18, 2015

Summit Custom Homes, LLC
120 SE 30th St
Lee's Summit, MO 64082

Re: 3102 SE 3rd Ter
Lot 99 Mill Creek
Lee's Summit, MO

Apex Engineers, Inc. observed the house under construction at the above referenced address. For the purpose of this report, the house will be referred to as facing south. Our firm has been asked to address the following rough inspection comments:

1. Engineer to address 12" on center and discontinuous wall at west great room.
    a. The studs that span from the floor to the plate line are minimum (2) 2x6's. These (2) 2x6's shall be extended above the plate to the underside of the ceiling.
    b. The studs that are then discontinuous due to the plate break shall have a single Simpson CS22 strap installed on the interior face of the studs and installed per manufacturer's specifications.

Contingent upon the aforementioned repairs, our firm recommends approval of this structural item.

LIMITATIONS

The scope of our services includes only those items specifically addressed herein. All other items are outside the scope of this report; including any environmental assessment (such as, but not limited to mold, mildew, or presence of any other toxic substance or environmental risks).

In addition, the scope our services does not include any evaluation of the building or site for job-site safety and/or hazardous conditions. All construction shall be performed in compliance with IRC and OSHA standards at all times. Our firm has not been retained to examine the site or building for any of these conditions. In addition, the contractor shall retain sole responsibility for the quality of work, for adhering to plans, specifications, appropriate codes, and, for repairing defects, deficiencies or omission, regardless of when they are found. By the use of this report it is understood the above conditions are agreed to.

Please call if Apex Engineers, Inc. can be of further assistance.

Best Regards,
Apex Engineers, Inc.

Blake Hollingshead

Blake O. Hollingshead
Project Engineer

STATE OF MISSOURI
CLAYTON J. HESS
NUMBER PE-2003000003
PROFESSIONAL ENGINEER
Clayton J. Hess, P.E.
Principal

APEX ENGINEERS, INC.

Project Information

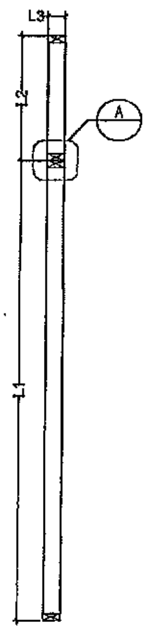
Project	3102 SE 3rd Terr
Client	Summit Custom Homes, LLC
Engineer	Blake Hollingshead
Broken Wall Calculation	West Great Room Wall

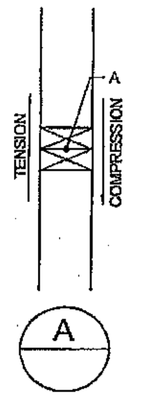
L1	14	ft
L2	1.5	ft
L3	5.5	in
Stud Spacing	30	in

Wind Load	36.00	psf

Moment (A)	0.3375	kft

Tension and Compression	736.36	lbs





Model No.	Total L	Ga	DF/SP Fasteners 160	DF/SP End Length 160	SPF/HF Fasteners 160	SPF/HF End Length 160	Allowable Tension Loads (160)	Code Ref.
CMST12	40'	12	74 - 16d	33"	84 - 16d	38"	9215	
			86 - 10d	39"	98 - 10d	44"	9215	
CMST14	52½'	14	56 - 16d	26"	66 - 16d	30"	6490	
			66 - 10d	30"	76 - 10d	34"	6490	
CMSTC16	54'	16	50 - 16d sinker	20"	58 - 16d sinker	25"	4585	
CS14	100'	14	26 - 10d	15"	30 - 10d	16"	2490	
			30 - 8d	16"	36 - 8d	19"	2490	I4, L3, F2
CS16	150'	16	20-10d	11"	22 - 10d	12"	1705	
			22 - 8d	13"	26 - 8d	14"	1705	
CS18	200'	18	16 - 10d	9"	18 - 10d	10"	1370	
			18 - 8d	11"	22 - 8d	12"	1370	
CS20	250'	20	12 - 10d	8"	14 - 10d	8"	1030	
			14 - 8d	9"	16 - 8d	9"	1030	
CS22	300'	22	10 - 10d	7"	12 - 10d	7"	845	
			12 - 8d	6"	14 - 8d	8"	845	

Simpson Straps

STATE OF MISSOURI
CLAYTON J. HESS
NUMBER
PE-2003000003
PROFESSIONAL ENGINEER

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1600 Baltimore Ave, Suite 102
Kansas City, MO 64108
Ph. 816.421.3222
Fax 816.421.1050
www.apex-engineers.com

APEX ENGINEERS,INC.

Project Title:
Engineer: 3102 SE 3RD TER
Project Descr:

Project ID:

Printed: 24 NOV 2015, 7:38AM

Wood Column

om Homes\Lot 99 MC - Glenwood 2 Craftsman\Inspections\2015.11.18 - Structural #1\Engineering\beam calcs.ec6
ENERCALC, INC. 1983-2015, Build:6.15.10.6, Ver:6.15.10.6

Lic. # : KW-06005244 Licensee : APEX ENGINEERS INC

Description : Stud Calc

Code References

Calculations per 2012 NDS, IBC 2012, CBC 2013, ASCE 7-10
Load Combinations Used : ASCE 7-10

General Information

Analysis Method : Allowable Stress Design
End Fixities: Top & Bottom Pinned
Overall Column Height: 15.50 ft
(Used for non-slender calculations)
Wood Species: Douglas Fir - Larch
Wood Grade: Stud

Fb - Tension	700 psi	Fv	180 psi
Fb - Compr	700 psi	Ft	450 psi
Fc - Prll	850 psi	Density	31.2 pcf
Fc - Perp	625 psi		

E : Modulus of Elasticity . . .	x-x Bending	y-y Bending	Axial
Basic	1400	1400	1400 ksi
Minimum	510	510	

Wood Section Name: 2-2x6
Wood Grading/Manuf.: Graded Lumber
Wood Member Type: Sawn

		Allow Stress Modification Factors	
Exact Width	3.0 in	Cf or Cv for Bending	1.0
Exact Depth	5.50 in	Cf or Cv for Compression	1.0
Area	16.50 in^2	Cf or Cv for Tension	1.0
Ix	41.594 in^4	Cm : Wet Use Factor	1.0
Iy	12.375 in^4	Ct : Temperature Factor	1.0
		Cfu : Flat Use Factor	1.0
		Kf : Built-up columns	1.0 *NDS 15.3.2*
		Use Cr : Repetitive ?	No *(non-glb only)*

Brace condition for deflection (buckling) along columns :
X-X (width) axis : Fully braced against buckling along X-X Axis
Y-Y (depth) axis : Unbraced Length for X-X Axis buckling = 15.50 ft, K = 1.0

Applied Loads

Service loads entered. Load Factors will be applied for calculations.

Column self weight included : 55.413 lbs * Dead Load Factor
BENDING LOADS . . .
Lat. Uniform Load creating Mx-x, W = 0.0360 k/ft

DESIGN SUMMARY

Bending & Shear Check Results

PASS	Max. Axial+Bending Stress Ratio =	0.7421 : 1
	Load Combination	+D+0.60W+H
	Governing NDS Forumla	Comp + Mxx, NDS Eq. 3.9-3
	Location of max.above base	7.698 ft
	At maximum location values are . . .	
	Applied Axial	0.05541 k
	Applied Mx	0.6486 k-ft
	Applied My	0.0 k-ft
	Fc : Allowable	325.995 psi
PASS	Maximum Shear Stress Ratio =	0.05636 : 1
	Load Combination	+D+0.60W+H
	Location of max.above base	15.50 ft
	Applied Design Shear	15.218 psi
	Allowable Shear	180.0 psi

Maximum SERVICE Lateral Load Reactions . .

Top along Y-Y	0.2790 k	Bottom along Y-Y	0.2790 k
Top along X-X	0.0 k	Bottom along X-X	0.0 k

Maximum SERVICE Load Lateral Deflections . . .

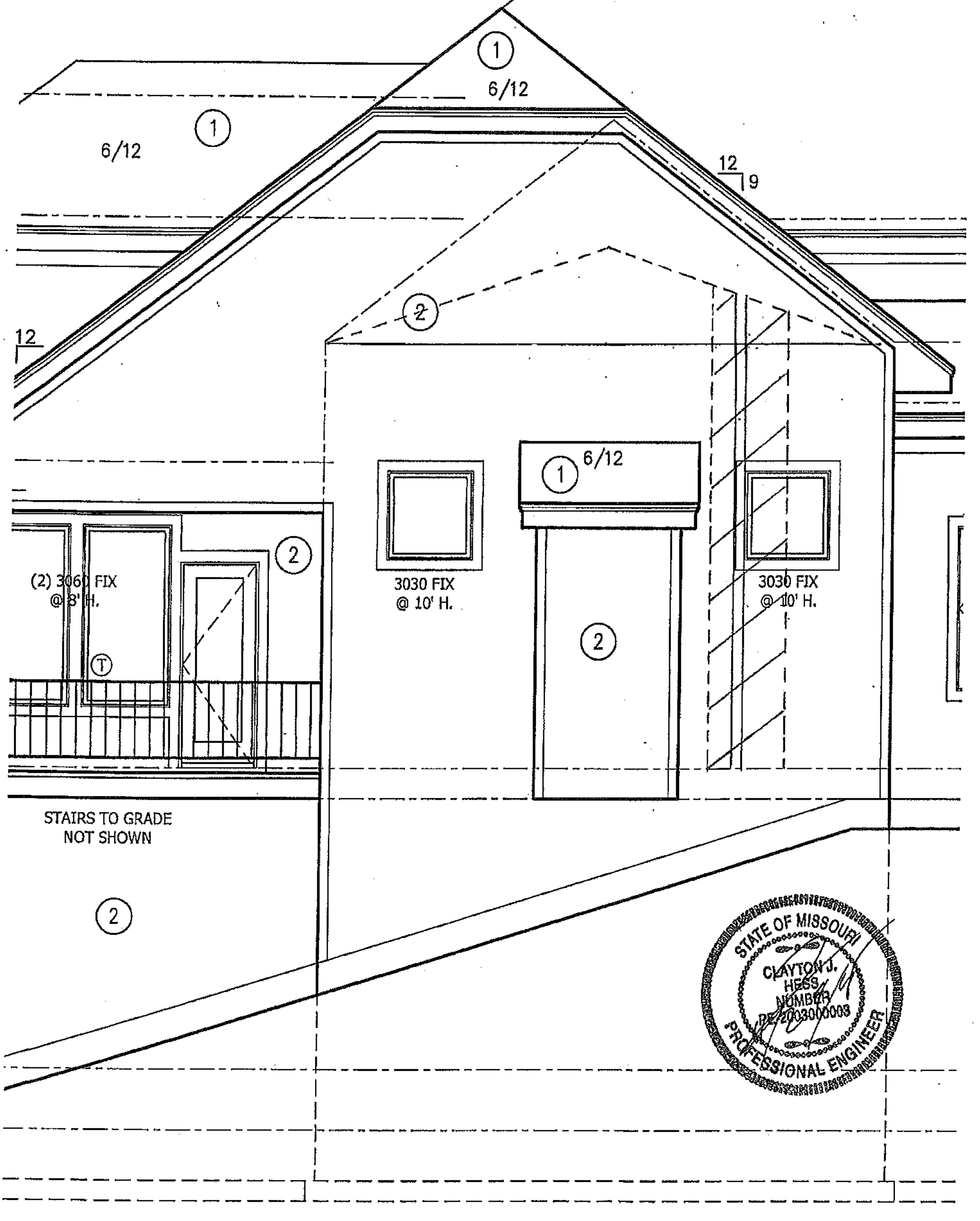
Along Y-Y 0.8116 in at 7.802 ft above base
for load combination : W Only
Along X-X 0.0 in at 0.0 ft above base
for load combination : n/a

Other Factors used to calculate allowable stresses . . .

Bending Compression Tension

Load Combination Results

Load Combination	C_D	C_P	Maximum Axial + Bending Stress Ratios: Stress Ratio	Status	Location	Maximum Shear Ratios: Stress Ratio	Status	Location
+D+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+L+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+Lr+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+S+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+0.750Lr+0.750L+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+0.750L+0.750S+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+0.60W+H	1.000	0.384	0.7421	PASS	7.698 ft	0.05636	PASS	15.50 ft
+D+0.70E+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+D+0.750Lr+0.750L+0.450W+H	1.000	0.384	0.5566	PASS	7.698 ft	0.04227	PASS	0.0 ft
+D+0.750L+0.750S+0.450W+H	1.000	0.384	0.5566	PASS	7.698 ft	0.04227	PASS	0.0 ft
+D+0.750L+0.750S+0.5250E+H	1.000	0.384	0.01030	PASS	0.0 ft	0.0	PASS	15.50 ft
+0.60D+0.60W+0.60H	1.000	0.384	0.7393	PASS	7.698 ft	0.05636	PASS	15.50 ft


1
6/12
1
6/12
12
9
12
2
6/12
1
(2) 3060 FIX
@ 8' H.
2
T
3030 FIX
@ 10' H.
2
3030 FIX
@ 10' H.
STAIRS TO GRADE
NOT SHOWN
2
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