APEX
ENGINEERS, INC.

RECEIVED

MAR 11 2013

CITY OF LEE'S SUMMIT
CODES ADMINISTRATION

March 4, 2013

Summit Custom Homes
40 SE 30th Street
Lee's Summit, MO 64082

Re: 1321 NE Country Lane
Lot 6, Fritchie Bluff

Apex Engineers, Inc. observed the framing for the house located at the address above. Our firm was retained to address a structural issue noted during the rough-in inspection.

Several floor joists were bored with a larger diameter hole than allowed by code. The holes are 3-1/2" in diameter and are a minimum of 2" from the bottom of the joist. One of the joists was severed and headered off to the adjacent joists. After computations, our firm recommends the following:

- The floor joists on either side of the severed joist need to be doubled.
- Centered under each 3-1/2" diameter hole, fasten, to the bottom of the joist, a 1-1/4" wide, 36" long by 20 gauge steel strap (Simpson CS20) with a minimum of (8) 10d common nails on each side of the hole. See attached sketch for clarity.

Contingent upon the aforementioned repairs, our firm recommends approval of this framing item. Please call if our firm can be of further assistance.

LIMITATIONS

The scope of our services includes only those items specifically addressed herein. All other items are outside the scope of this inspection; including but not limited to, any environmental assessment (such as, but not limited to mold, mildew, presence of hazardous or toxic materials in the soil, surface water, ground water, etc.).

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.

Best Regards,
Apex Engineers, Inc.

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

Clayton J. Hess, P.E.
Principal

cc: City of Lee's Summit

Apex Engineers, Inc.
9000 W 64th Terrace
Merriam, KS 66202

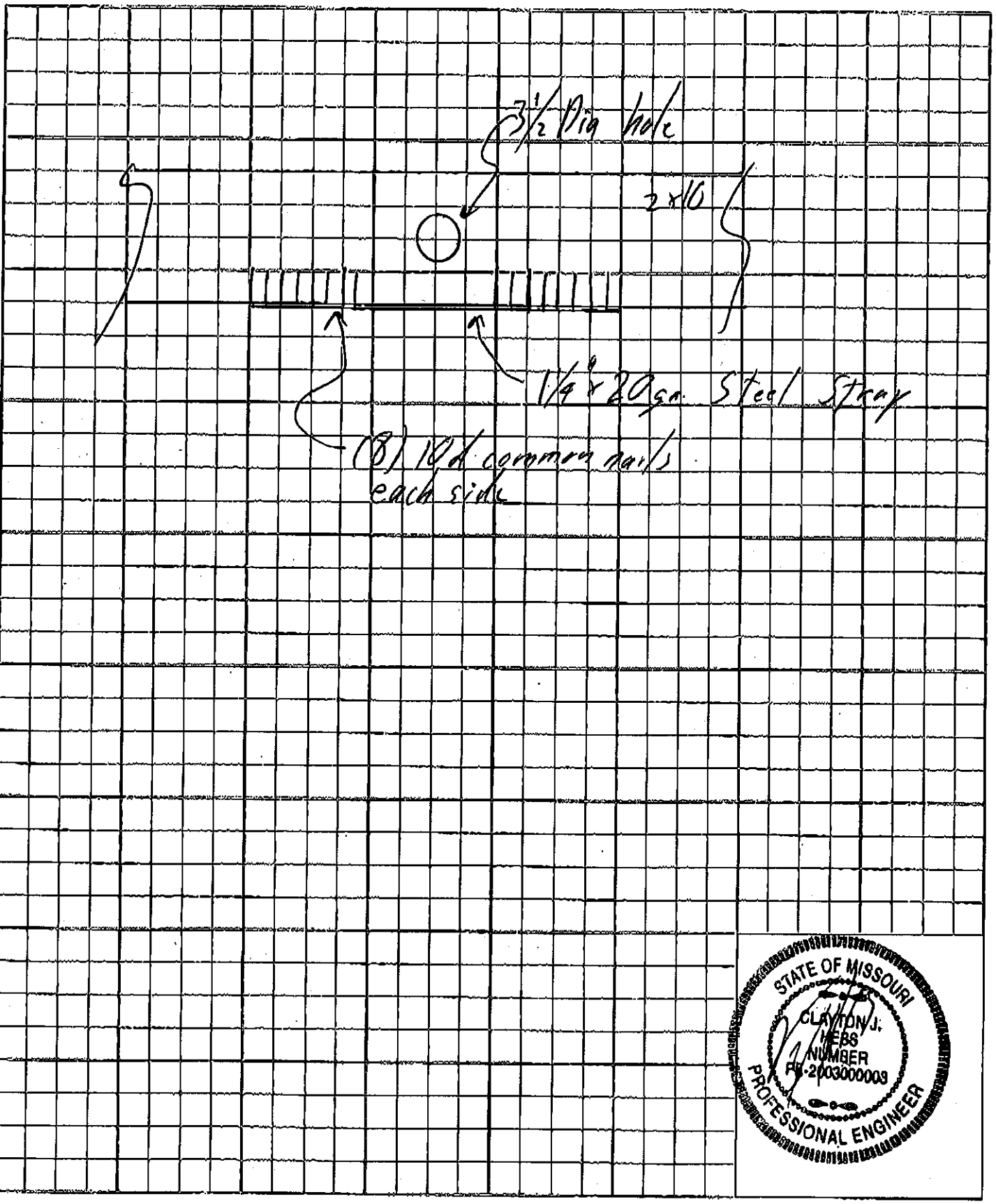
www.apex-engineers.com

Job Address: 1321 NE County Line Summit

Sheet # 1 of 3

Engineer: CJH

Date:



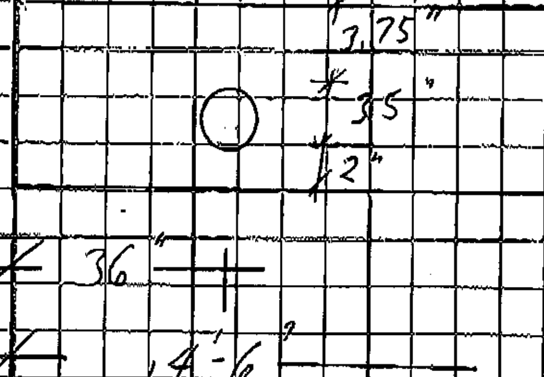
STATE OF MISSOURI
CLAYTON J. HEBS
NUMBER PE-2003000009
PROFESSIONAL ENGINEER

APEX ENGINEERS, INC.
Apex Engineers, Inc.
9000 W 64th Terrace
Merriam, KS 66202
www.apex-engineers.com

Job Address: 1321 NE Country Lane
Summit

Sheet # 2 of 3
Engineer: CJH
Date: 3/8/13

Design Loads (Service)
@ 36"
V = 276
M = 1,173 lb-ft.



Capacity @ hole

Va Fv = 180 psi

Vcap = 2/3 (9.25 - 3.5)(1.5") = 180 psi
= 1040#

SF = 1040/276 = 3.76 ∴ OK

d = 7.25 Use top 2" and bottom 2"

Fb = 575 psi

Mcap = 2" x 1.5" x 575 psi x 7.25 in
= 12506 in-lb (1 kip / 1000#)(1 ft / 12 in) = 1.04 k-ft.

∴ Add Strap

Mstrap = 0.0329 in x 1.25 in x 8.25" x 26,400 psi
= 6786 in-# = 0.565

∴ OK

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

3-3

Apex Engineers, Inc.
Clayton J. Hess, P.E.
9000 W 64th Terrace
Merriam, KS 66202
913-432-3222
info@apex-engineers.com

Multiple Simple Beam

Description : 1321 NE Country Lane - Summit

Wood Beam Design : --None--

Calculations per 2005 NDS

BEAM Size : **2x10, Sawn, Fully Braced**
Using Allowable Stress Design with ASCE 7-05 Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

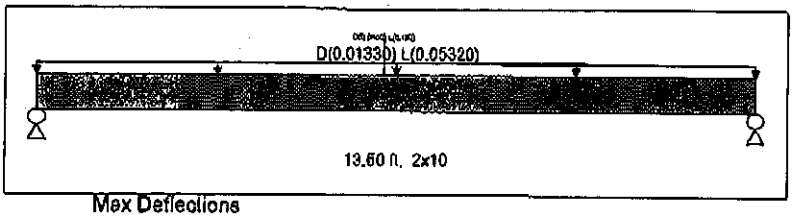
Applied Loads

Unif Load: D = 0.010, L = 0.040 k/ft, Trib= 1.330 ft
Point: D = 0.0450, L = 0.180 k @ 6.50 ft

Design Summary

Max fb/Fb Ratio = **1.118 : 1**
fb : Actual : 1,272.84 psi at 6.525 ft in Span # 1
Fb : Allowable : 1,138.50 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.309 : 1**
fv : Actual : 55.64 psi at 0.000 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.11	0.45					
Right Support	0.11	0.45					

Max Deflections

Downward L+Lr+S	0.354 in	Downward Total	0.442 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	458 >360	Total Defl Ratio	366 >180

Wood Beam Design : --None--

Calculations per 2005 NDS

BEAM Size : **2x10, Sawn, Fully Braced**
Using Allowable Stress Design with ASCE 7-05 Load Combinations, Major Axis Bending

Wood Species :	Douglas Fir - Larch				Wood Grade : No.2				
Fb - Tension	900.0 psi	Fc - Prll	1,350.0 psi	Fv	180.0 psi	Ebend- xx	1,600.0 ksi	Density	32.210 pcf
Fb - Compr	900.0 psi	Fc - Perp	625.0 psi	Ft	575.0 psi	Eminbend - xx	580.0 ksi		

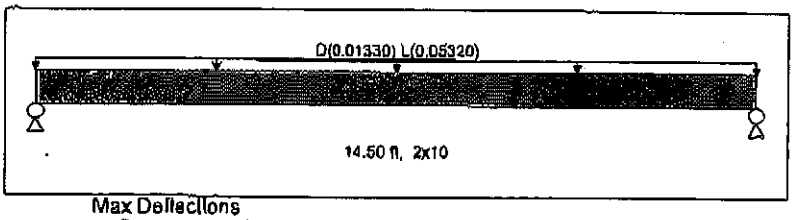
Applied Loads

Unif Load: D = 0.010, L = 0.040 k/ft, Trib= 1.330 ft

Design Summary

Max fb/Fb Ratio = **0.861 : 1**
fb : Actual : 980.45 psi at 7.250 ft in Span # 1
Fb : Allowable : 1,138.50 psi
Load Comb : +D+L+H

Max fv/FvRatio = **0.261 : 1**
fv : Actual : 46.91 psi at 13.775 ft in Span # 1
Fv : Allowable : 180.00 psi
Load Comb : +D+L+H



Max Reactions (k)	D	L	Lr	S	W	E	H
Left Support	0.10	0.39					
Right Support	0.10	0.39					

Max Deflections

Downward L+Lr+S	0.336 in	Downward Total	0.420 in
Upward L+Lr+S	0.000 in	Upward Total	0.000 in
Live Load Defl Ratio	517 >360	Total Defl Ratio	414 >240