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DME

January 4, 2024

City of Lee's Summit Inspection

Subject: Notched Joist Repair for 2207 S.W. Brook Farm Dr. Lee's Summit, MO

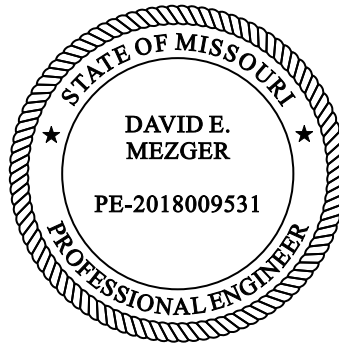
Dear Sirs,

I am the EOR for the residence under construction at the subject address. The contractor notified me that one of the trades had over notched a joist for a pipe clearance and asked for a repair recommendation. The location of the notch would only impact the shear capacity of the member in the higher shear area near the end of the joist. As shown in the attached calculation, I checked the shear capacity of the remaining area of the joist and found it to be sufficient. I recommend that a 2x8 #2 Doug fir (or #2 SPF) or better joist be sistered to the side of the notched joist and extend at least half of the span. The added joist should be nailed at 12" OC with (2) 16d nails minimum. This will add significant shear capacity to the affected joist.

Please feel free to contact me with any questions you may have. Thank you.

Sincerely,

David E. Mezger P.E.



Check shear at notch in joist 2x4d x 4x4 L @ 12" from end

* Notch is deeper than $D/6$ as allowed by IRC Fig R502.B
Notch is longer than $D/3$ " " " " " "

$$L = 12' \quad 2 \times 10 \text{ joist}$$

$$w = 40(1.33) L \quad 3.2 \text{ plf } D \quad w = 56.5 \text{ plf}$$

$$\text{Shear @ } 1' = 56.5 \left(\frac{12}{2} - 1 \right) = 282.5 \text{ lbs}$$

$$f_v = \text{Shear stress} = \frac{V}{A} = \frac{282.5}{1.5(9.25 - 2.25)} = 26.9 \text{ psi}$$

$$F_v = \text{Allowable shear} = 115 \text{ psi}$$

$$\frac{f_v}{F_v} = \frac{26.9}{115} = .23 \quad \underline{\underline{OK}}$$

Recommendation: Add 2x8 #2 (DF, SPF) at least half the span length, sistered to side of existing joist.

Fasten with (2) 16d nails at 12" OC min.

To further increase shear and bending capacity at notch.

