

May 25, 2022

Walker Custom Homes, LLC
Attn: Jason Walker & Ryan Hamilton

Re: 2104 SW Harvest Moon Lane, Lee's Summit, MO (Lot 86, Retreat at Hook Farms – 1st Plat)

Vista Structural Engineering, LLC, was asked to address the following city inspection comment for the house being built at 2104 SW Harvest Moon Lane, in Lee's Summit, MO:

- **Address ledger to beam connection above kitchen/dining, also nail all hangers.** *The bolts are interrupting hanger installation at approximately every other hanger. We recommend removing every other carriage bolt from the steel beam and web filler, leaving bolts spaced at 32" o.c max.. Calculations are attached showing that bolts spaced at 32" o.c. with the blocking installed between the flange and the ledger will adequately support the floor joist loading. A picture is attached to the following page for clarification.*
- **Address great room windows not framed to plans.** *Per the attached calculations, we recommend strapping with minimum Simpson CS16 (or equivalent) strapping. A picture of the strapped studs is attached.*

Our firm appreciates the opportunity to serve you. If you have any questions or if you need anything further, please feel free to contact us.

Sincerely,
Vista Structural Engineering, LLC

Dennis Heier, P.E.



VISTA STRUCTURAL ENGINEERING, LLC

14718 NW DELIA STREET
PORTLAND, OREGON 97229

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PHONE: 971.233.6099
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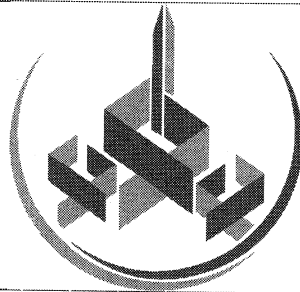
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PROJ: 2104 SW HARVEST MOON
 DATE: 5/25/2022
 PROJ #:
 ENGR: DMH



VISTA
 —STRUCTURAL—
 ENGINEERING, LLC

LOADING ON BEAM LEDGER:

$$W = 6.75' \times 55 \text{ psf} = 371 \text{ \#/ft}$$

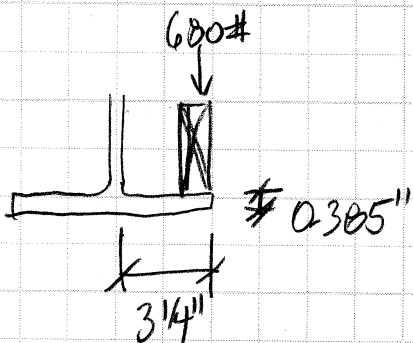
IF EVERY OTHER BOLT IS REMOVED, DETERMINE CAPACITY OF REMAINING BOLTS:

$$Z_{\perp} = 310 \text{ \#}$$

$$\text{EVERY } 2.67', \quad P = 371 \text{ \#/ft} \times 2.67 \text{ ft} = 990 \text{ \#}$$

HOW MUCH ABSORBED INTO BOTTOM FLANGE:-

$$P_{\text{FLANGE}} = 990 \text{ \#} - 310 \text{ \#} = 680 \text{ \#}$$



$$S_{xx} = \frac{bd^2}{6} = \frac{(32 \text{ in})(0.385 \text{ in})^2}{6} = 0.79 \text{ in}^3$$

$$Z_x = \frac{bh^2}{4} = \frac{(32 \text{ in})(0.385 \text{ in})^2}{4} = 1.19 \text{ in}^3$$

$$M = 680 \text{ \#} \times 2.5 \text{ in} = 1700 \text{ \#-in}$$

$$f = \frac{M}{S} = \frac{1700 \text{ \#-in}}{0.79 \text{ in}^3} = 2152 \text{ psi}$$

$$F_b = 0.66 F_y = 0.66 (36,000 \text{ psi}) = 23,760 \text{ psi} \geq f$$

OK



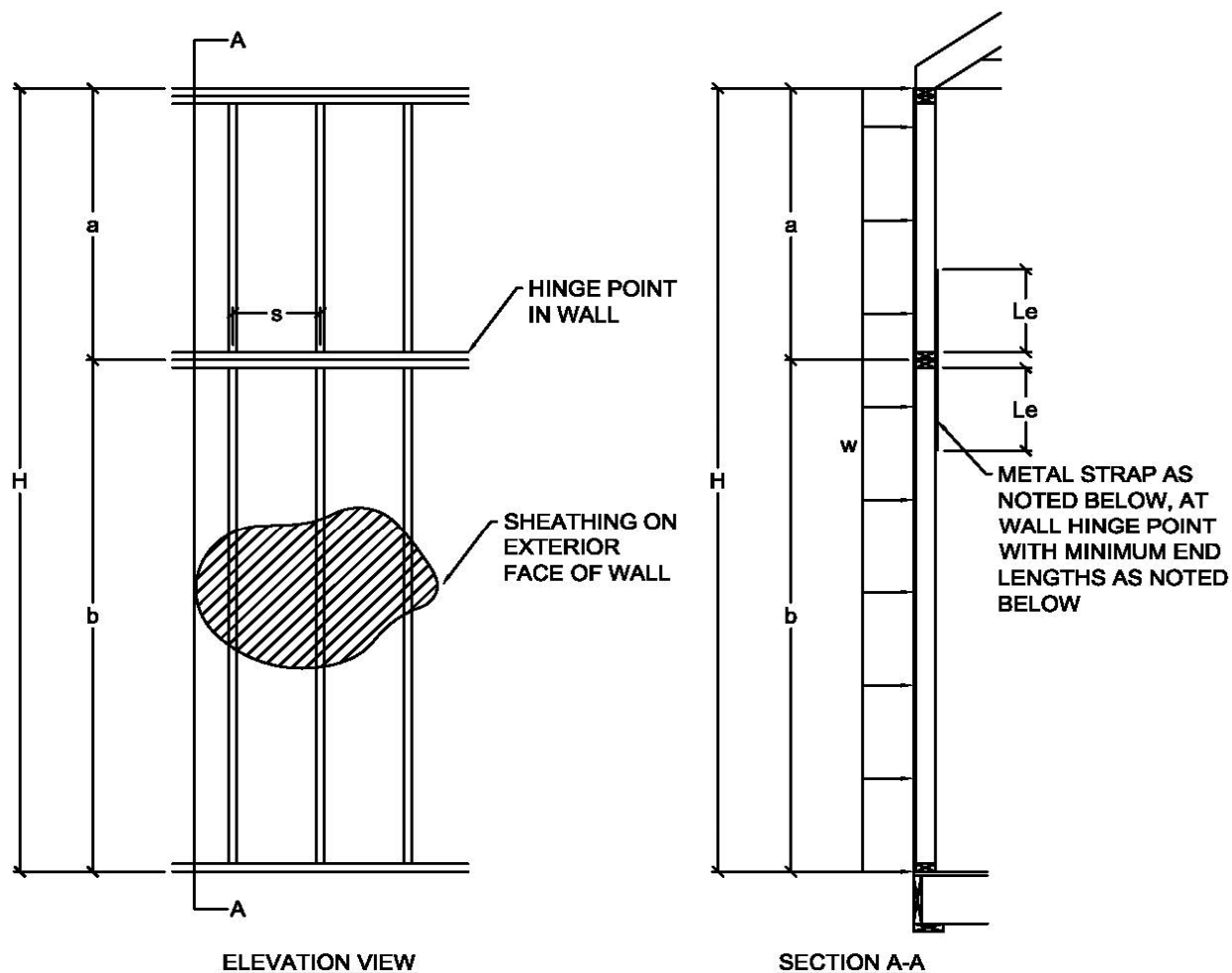
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Vista Structural Engineering, LLC
14718 NW Delia Street
Portland, Oregon 97229
(971) 233-6099

Client: Walker Custom Homes
Job Description: 2104 SW Harvest Moon
Great Room
Jurisdiction: Lee's Summit, MO



STUD WALL WITH HINGE AT MID-HEIGHT

| | | | |
|------------------------|----------------|----------------|------------|
| Wall height, H | 18 ft | = | 216 inches |
| a | 9 ft | = | 108 inches |
| b | 9 ft | = | 108 inches |
| Wind pressure | 9.6 psf | (per ASCE7-10) | |
| Stud spacing, s | 24 inches o.c. | | |
| Maximum Moment, M | 9331 in-lbs | | |
| Moment at Hinge, M_h | 9331.2 in-lbs | | |
| Depth of stud | 5.5 inches | | |
| Tension force of strap | 1697 pounds | | |

| | |
|---|------------------|
| Use Simpson steel strap or equivalent, model number: | CS16 |
| With the following end lengths above and below hinge, L_e : | 13 inches |
| With the following quantity and size of nails in each end length: | (11) 8d |