February 3, 2025

Walker Custom Homes, LLC
Attn: Tyler Lockler

**Re: 2314 SW Serena Place (Lot 78, Summit View Farms) – city inspection**

Vista Structural Engineering, LLC, was asked to address a city rough-in inspection item for the new house being built at 2314 SW Serena Place (Lot 78, Summit View Farms). The following are the comments from the city, and our responses.

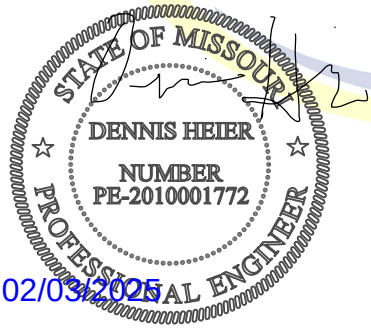
- **Have engineers letter address hole drilled in double car garage LVL header.** *We were informed that a vertical hole was drilled, ½"in diameter, through the center of two plies of 1 ¾" x 14" LVL's above the 2-car garage opening. Per the builder's representative, the hole was drilled evenly into each ply, extending ¼" into each. We were informed that the hole was drilled 4'-0" from the end of the beam. Per the attached calculations, the maximum bending stress ratio (demand/capacity ratio) is 40.1%, which occurs at mid-span of the beam. At 4'-0" from the end of the beam, the demand/capacity ratio is approximately 30.1%. Since only ½" of the total width of 3 ½" has been removed at this location (85.7% remaining capacity), the remaining section is adequate to resist all bending moment imposed. The maximum demand/capacity ratio for shear stress at the ends of the beam is 22.5%. At 4'-0" in from the ends of the header, this ratio is reduced to 11.3%. Again, with 85.7% of the section remaining, the altered header is adequate to resist all imposed shear stresses. We recommend approval of the header with the aforementioned altered condition, without any upgrades required.*

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
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(971) 233-6099
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Project Title:
Engineer:
Project ID:
Project Descr:

Printed: 3 FEB 2025, 7:08PM

# Wood Beam

File: SVF078.ec6

Software copyright ENERCALC, INC. 1983-2020, Build:12.20.10.3:

Lic. # : KW-06010523 — Vista Structural Engineering, LLC

DESCRIPTION: Lot 78, Summit View Farms - garage door header

## CODE REFERENCES

Calculations per NDS 2012, IBC 2012, CBC 2013, ASCE 7-10
Load Combination Set : IBC 2018

## Material Properties

Analysis Method : Allowable Stress Design
Load Combination : IBC 2018

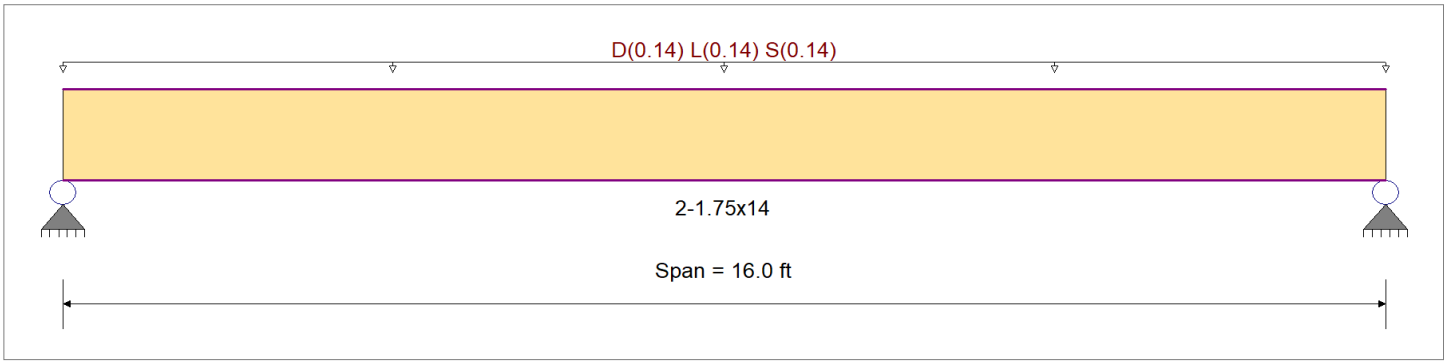
Wood Species : iLevel Truss Joist
Wood Grade : MicroLam LVL 2.0 E

Beam Bracing : Beam is Fully Braced against lateral-torsional buckling

| | |
|---|---|
| Fb + | 2600 psi |
| Fb - | 2600 psi |
| Fc - Prll | 2510 psi |
| Fc - Perp | 750 psi |
| Fv | 285 psi |
| Ft | 1555 psi |

*E : Modulus of Elasticity*

| | |
|---|---|
| Ebend- xx | 2000 ksi |
| Eminbend - xx | 1016.535 ksi |
| Density | 42.01 pcf |




## Applied Loads

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

Uniform Load : D = 0.020, L = 0.020, S = 0.020 ksf, Tributary Width = 7.0 ft

## DESIGN SUMMARY

**Design OK**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Bending Stress Ratio | = | 0.401 : 1 | Maximum Shear Stress Ratio | = | 0.225 : 1 |
| Section used for this span | | 2-1.75x14 | Section used for this span | | 2-1.75x14 |
| fb: Actual | = | 1,175.51 psi | fv: Actual | = | 73.83 psi |
| Fb: Allowable | = | 2,927.97 psi | Fv: Allowable | = | 327.75 psi |
| Load Combination | | +D+0.750L+0.750S | Load Combination | | +D+0.750L+0.750S |
| Location of maximum on span | = | 8.000 ft | Location of maximum on span | = | 14.891 ft |
| Span # where maximum occurs | = | Span # 1 | Span # where maximum occurs | = | Span # 1 |

### Maximum Deflection

| | | | |
|---|---|---|---|
| Max Downward Transient Deflection | 0.130 in | Ratio = | 1480 >=360 |
| Max Upward Transient Deflection | 0.000 in | Ratio = | 0 <360 |
| Max Downward Total Deflection | 0.324 in | Ratio = | 592 >=180 |
| Max Upward Total Deflection | 0.000 in | Ratio = | 0 <180 |

## Maximum Forces & Stresses for Load Combinations

| Load Combination / Segment Length | Span # | Max Stress Ratios M | V | $C_d$ | $C_{F/V}$ | $C_i$ | $C_r$ | $C_m$ | $C_t$ | $C_L$ | Moment Values M | fb | F'b | Shear Values V | fv | F'v |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| D Only | | | | | | | | | | | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.205 | 0.115 | 0.90 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 4.48 | 470.20 | 2291.45 | 0.96 | 29.53 | 256.50 |
| +D+L | | | | | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.369 | 0.207 | 1.00 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 8.96 | 940.41 | 2546.06 | 1.93 | 59.06 | 285.00 |
| +D+S | | | | | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.321 | 0.180 | 1.15 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 8.96 | 940.41 | 2927.97 | 1.93 | 59.06 | 327.75 |
| +D+0.750L | | | | | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.259 | 0.145 | 1.25 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 7.84 | 822.86 | 3182.57 | 1.69 | 51.68 | 356.25 |
| +D+0.750L+0.750S | | | | | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.401 | 0.225 | 1.15 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 11.20 | 1,175.51 | 2927.97 | 2.41 | 73.83 | 327.75 |
| +0.60D | | | | | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | | | 0.00 | 0.00 | 0.00 | 0.00 |
| Length = 16.0 ft | 1 | 0.069 | 0.039 | 1.60 | 0.979 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.69 | 282.12 | 4073.70 | 0.58 | 17.72 | 456.00 |

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# Wood Beam

File: SVF078.ec6

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Lic. # : KW-06010523 — Vista Structural Engineering, LLC

DESCRIPTION: Lot 78, Summit View Farms - garage door header

## Overall Maximum Deflections

| Load Combination | Span | Max. "-" Defl | Location in Span | Load Combination | Max. "+" Defl | Location in Span |
|---|---|---|---|---|---|---|
| +D+0.750L+0.750S | 1 | 0.3243 | 8.058 | | 0.0000 | 0.000 |

## Vertical Reactions

Support notation : Far left is #1 — Values in KIPS

| Load Combination | Support 1 | Support 2 |
|---|---|---|
| Overall MAXimum | 2.800 | 2.800 |
| Overall MINimum | 1.120 | 1.120 |
| D Only | 1.120 | 1.120 |
| +D+L | 2.240 | 2.240 |
| +D+S | 2.240 | 2.240 |
| +D+0.750L | 1.960 | 1.960 |
| +D+0.750L+0.750S | 2.800 | 2.800 |
| +0.60D | 0.672 | 0.672 |
| L Only | 1.120 | 1.120 |
| S Only | 1.120 | 1.120 |

## Summary of Values per Beam Span

## Beam Span Moments & Shears at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Shear (k) | Moment (ft-k) |
|---|---|---|---|---|
| D Only | 0.00 | Span 1 | 1.120 | 0.000 |
| D Only | 1.64 | Span 1 | 0.891 | 1.644 |
| D Only | 3.27 | Span 1 | 0.662 | 2.914 |
| D Only | 4.91 | Span 1 | 0.433 | 3.810 |
| D Only | 6.54 | Span 1 | 0.204 | 4.331 |
| D Only | 8.18 | Span 1 | -0.025 | 4.478 |
| D Only | 9.81 | Span 1 | -0.253 | 4.251 |
| D Only | 11.45 | Span 1 | -0.482 | 3.649 |
| D Only | 13.08 | Span 1 | -0.711 | 2.673 |
| D Only | 14.72 | Span 1 | -0.940 | 1.323 |
| +D+L | 0.00 | Span 1 | 2.240 | 0.000 |
| +D+L | 1.64 | Span 1 | 1.782 | 3.288 |
| +D+L | 3.27 | Span 1 | 1.324 | 5.828 |
| +D+L | 4.91 | Span 1 | 0.867 | 7.619 |
| +D+L | 6.54 | Span 1 | 0.409 | 8.662 |
| +D+L | 8.18 | Span 1 | -0.049 | 8.956 |
| +D+L | 9.81 | Span 1 | -0.507 | 8.501 |
| +D+L | 11.45 | Span 1 | -0.965 | 7.298 |
| +D+L | 13.08 | Span 1 | -1.422 | 5.347 |
| +D+L | 14.72 | Span 1 | -1.880 | 2.647 |
| +D+S | 0.00 | Span 1 | 2.240 | 0.000 |
| +D+S | 1.64 | Span 1 | 1.782 | 3.288 |
| +D+S | 3.27 | Span 1 | 1.324 | 5.828 |
| +D+S | 4.91 | Span 1 | 0.867 | 7.619 |
| +D+S | 6.54 | Span 1 | 0.409 | 8.662 |
| +D+S | 8.18 | Span 1 | -0.049 | 8.956 |
| +D+S | 9.81 | Span 1 | -0.507 | 8.501 |
| +D+S | 11.45 | Span 1 | -0.965 | 7.298 |
| +D+S | 13.08 | Span 1 | -1.422 | 5.347 |
| +D+S | 14.72 | Span 1 | -1.880 | 2.647 |

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Vista Structural Engineering, LLC

DESCRIPTION: Lot 78, Summit View Farms - garage door header

## Beam Span Moments & Shears at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Shear (k) | Moment (ft-k) |
|---|---|---|---|---|
| +D+0.750L | 0.00 | Span 1 | 1.960 | 0.000 |
| +D+0.750L | 1.64 | Span 1 | 1.559 | 2.877 |
| +D+0.750L | 3.27 | Span 1 | 1.159 | 5.099 |
| +D+0.750L | 4.91 | Span 1 | 0.758 | 6.667 |
| +D+0.750L | 6.54 | Span 1 | 0.358 | 7.579 |
| +D+0.750L | 8.18 | Span 1 | -0.043 | 7.836 |
| +D+0.750L | 9.81 | Span 1 | -0.444 | 7.439 |
| +D+0.750L | 11.45 | Span 1 | -0.844 | 6.386 |
| +D+0.750L | 13.08 | Span 1 | -1.245 | 4.678 |
| +D+0.750L | 14.72 | Span 1 | -1.645 | 2.316 |
| +D+0.750L+0.750S | 0.00 | Span 1 | 2.800 | 0.000 |
| +D+0.750L+0.750S | 1.64 | Span 1 | 2.228 | 4.110 |
| +D+0.750L+0.750S | 3.27 | Span 1 | 1.655 | 7.285 |
| +D+0.750L+0.750S | 4.91 | Span 1 | 1.083 | 9.524 |
| +D+0.750L+0.750S | 6.54 | Span 1 | 0.511 | 10.827 |
| +D+0.750L+0.750S | 8.18 | Span 1 | -0.061 | 11.195 |
| +D+0.750L+0.750S | 9.81 | Span 1 | -0.634 | 10.627 |
| +D+0.750L+0.750S | 11.45 | Span 1 | -1.206 | 9.123 |
| +D+0.750L+0.750S | 13.08 | Span 1 | -1.778 | 6.683 |
| +D+0.750L+0.750S | 14.72 | Span 1 | -2.350 | 3.308 |
| +0.60D | 0.00 | Span 1 | 0.672 | 0.000 |
| +0.60D | 1.64 | Span 1 | 0.535 | 0.986 |
| +0.60D | 3.27 | Span 1 | 0.397 | 1.748 |
| +0.60D | 4.91 | Span 1 | 0.260 | 2.286 |
| +0.60D | 6.54 | Span 1 | 0.123 | 2.598 |
| +0.60D | 8.18 | Span 1 | -0.015 | 2.687 |
| +0.60D | 9.81 | Span 1 | -0.152 | 2.550 |
| +0.60D | 11.45 | Span 1 | -0.289 | 2.189 |
| +0.60D | 13.08 | Span 1 | -0.427 | 1.604 |
| +0.60D | 14.72 | Span 1 | -0.564 | 0.794 |

## Beam Span Deflections at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Deflection (in) |
|---|---|---|---|
| Overall MAXimum Envelope | 0.00 | Span 1 | 0.000 |
| Overall MAXimum Envelope | 1.64 | Span 1 | 0.103 |
| Overall MAXimum Envelope | 3.27 | Span 1 | 0.195 |
| Overall MAXimum Envelope | 4.91 | Span 1 | 0.267 |
| Overall MAXimum Envelope | 6.54 | Span 1 | 0.311 |
| Overall MAXimum Envelope | 8.18 | Span 1 | 0.324 |
| Overall MAXimum Envelope | 9.81 | Span 1 | 0.305 |
| Overall MAXimum Envelope | 11.45 | Span 1 | 0.256 |
| Overall MAXimum Envelope | 13.08 | Span 1 | 0.180 |
| Overall MAXimum Envelope | 14.72 | Span 1 | 0.086 |
| Overall MAXimum Envelope | 16.00 | Span 1 | 0.004 |

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## Beam Span Deflections at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Deflection (in) |
|---|---|---|---|
| D Only | 0.00 | Span 1 | 0.000 |
| D Only | 1.64 | Span 1 | 0.041 |
| D Only | 3.27 | Span 1 | 0.078 |
| D Only | 4.91 | Span 1 | 0.107 |
| D Only | 6.54 | Span 1 | 0.124 |
| D Only | 8.18 | Span 1 | 0.130 |
| D Only | 9.81 | Span 1 | 0.122 |
| D Only | 11.45 | Span 1 | 0.102 |
| D Only | 13.08 | Span 1 | 0.072 |
| D Only | 14.72 | Span 1 | 0.034 |
| D Only | 16.00 | Span 1 | 0.002 |
| +D+L | 0.00 | Span 1 | 0.000 |
| +D+L | 1.64 | Span 1 | 0.083 |
| +D+L | 3.27 | Span 1 | 0.156 |
| +D+L | 4.91 | Span 1 | 0.213 |
| +D+L | 6.54 | Span 1 | 0.249 |
| +D+L | 8.18 | Span 1 | 0.259 |
| +D+L | 9.81 | Span 1 | 0.244 |
| +D+L | 11.45 | Span 1 | 0.205 |
| +D+L | 13.08 | Span 1 | 0.144 |
| +D+L | 14.72 | Span 1 | 0.068 |
| +D+L | 16.00 | Span 1 | 0.003 |
| +D+S | 0.00 | Span 1 | 0.000 |
| +D+S | 1.64 | Span 1 | 0.083 |
| +D+S | 3.27 | Span 1 | 0.156 |
| +D+S | 4.91 | Span 1 | 0.213 |
| +D+S | 6.54 | Span 1 | 0.249 |
| +D+S | 8.18 | Span 1 | 0.259 |
| +D+S | 9.81 | Span 1 | 0.244 |
| +D+S | 11.45 | Span 1 | 0.205 |
| +D+S | 13.08 | Span 1 | 0.144 |
| +D+S | 14.72 | Span 1 | 0.068 |
| +D+S | 16.00 | Span 1 | 0.003 |
| +D+0.750L | 0.00 | Span 1 | 0.000 |
| +D+0.750L | 1.64 | Span 1 | 0.072 |
| +D+0.750L | 3.27 | Span 1 | 0.137 |
| +D+0.750L | 4.91 | Span 1 | 0.187 |
| +D+0.750L | 6.54 | Span 1 | 0.218 |
| +D+0.750L | 8.18 | Span 1 | 0.227 |
| +D+0.750L | 9.81 | Span 1 | 0.214 |
| +D+0.750L | 11.45 | Span 1 | 0.179 |

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## Beam Span Deflections at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Deflection (in) |
|---|---|---|---|
| +D+0.750L | 13.08 | Span 1 | 0.126 |
| +D+0.750L | 14.72 | Span 1 | 0.060 |
| +D+0.750L | 16.00 | Span 1 | 0.003 |
| +D+0.750L+0.750S | 0.00 | Span 1 | 0.000 |
| +D+0.750L+0.750S | 1.64 | Span 1 | 0.103 |
| +D+0.750L+0.750S | 3.27 | Span 1 | 0.195 |
| +D+0.750L+0.750S | 4.91 | Span 1 | 0.267 |
| +D+0.750L+0.750S | 6.54 | Span 1 | 0.311 |
| +D+0.750L+0.750S | 8.18 | Span 1 | 0.324 |
| +D+0.750L+0.750S | 9.81 | Span 1 | 0.305 |
| +D+0.750L+0.750S | 11.45 | Span 1 | 0.256 |
| +D+0.750L+0.750S | 13.08 | Span 1 | 0.180 |
| +D+0.750L+0.750S | 14.72 | Span 1 | 0.086 |
| +D+0.750L+0.750S | 16.00 | Span 1 | 0.004 |
| +0.60D | 0.00 | Span 1 | 0.000 |
| +0.60D | 1.64 | Span 1 | 0.025 |
| +0.60D | 3.27 | Span 1 | 0.047 |
| +0.60D | 4.91 | Span 1 | 0.064 |
| +0.60D | 6.54 | Span 1 | 0.075 |
| +0.60D | 8.18 | Span 1 | 0.078 |
| +0.60D | 9.81 | Span 1 | 0.073 |
| +0.60D | 11.45 | Span 1 | 0.061 |
| +0.60D | 13.08 | Span 1 | 0.043 |
| +0.60D | 14.72 | Span 1 | 0.021 |
| +0.60D | 16.00 | Span 1 | 0.001 |
| L Only | 0.00 | Span 1 | 0.000 |
| L Only | 1.64 | Span 1 | 0.041 |
| L Only | 3.27 | Span 1 | 0.078 |
| L Only | 4.91 | Span 1 | 0.107 |
| L Only | 6.54 | Span 1 | 0.124 |
| L Only | 8.18 | Span 1 | 0.130 |
| L Only | 9.81 | Span 1 | 0.122 |
| L Only | 11.45 | Span 1 | 0.102 |
| L Only | 13.08 | Span 1 | 0.072 |
| L Only | 14.72 | Span 1 | 0.034 |
| L Only | 16.00 | Span 1 | 0.002 |
| S Only | 0.00 | Span 1 | 0.000 |
| S Only | 1.64 | Span 1 | 0.041 |
| S Only | 3.27 | Span 1 | 0.078 |
| S Only | 4.91 | Span 1 | 0.107 |
| S Only | 6.54 | Span 1 | 0.124 |

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## Beam Span Deflections at Incremental Locations

| Load Type/ Combination | Span Location (ft) | Span ID | Deflection (in) |
|---|---|---|---|
| S Only | 8.18 | Span 1 | 0.130 |
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| S Only | 14.72 | Span 1 | 0.034 |
| S Only | 16.00 | Span 1 | 0.002 |