HAIGHT DAVIS & ASSOCIATES, INC.

473 Cricket Ridge Court
Lawrenceville, GA 30044
(770) 979-6650
FAX (770) 979-1025

May 19, 2016

Ms. Kelly Williams
130 Galesburg Drive
Lawrenceville, GA 30044

Re: Evaluation of Structural Issues at 130 Galesburg Drive, Lawrenceville, Georgia
Project No. LS-16-114

Dear Ms. Williams:

At your request, Frank Davis, EIT performed a limited inspection at 130 Galesburg Drive in Lawrenceville, Georgia on January 12, 2016. Maureen L. Davis, PE performed a follow-up inspection on February 29, 2016. The purpose of these inspections was to evaluate the onsite conditions in the area of the home where an accidental death occurred.

This report is prepared for the exclusive use of Ms. Kelly Williams for specific application to the incident that occurred on December 20, 2015 at 130 Galesburg Drive in Lawrenceville, Georgia. The conclusions and recommendations herein are rendered using generally accepted standards for construction and engineering practice in the State of Georgia. These conclusions are based upon information provided by you, the results of my personal inspection of the property, and my past experience. No materials were removed for further observation.

No other warranty, expressed or implied, is made, nor is any other guarantee given other than that professional care and standards were applied.

DESCRIPTION AND BACKGROUND

The home located at 130 Galesburg Drive in Lawrenceville, Georgia is a two-story, wood-framed structure, veneered with brick and siding *(Photos 1 and 2)*. There is a side facing two-car garage along the left* side of the home. The structure is constructed with a crawlspace foundation and the lot is sloped gently from right to left and from rear to front.

According to the Homeowner, Ms. Kelly Williams, the residence was originally constructed in 1992 by John Wieland Homes and Neighborhoods (JWH&N). She, her

*Orientation is viewing the home facing the front door along Foxglove Lane.

husband Jeffrey and their children moved into the home in October 2004. Shortly after the family moved in, JWH&N conducted structural repairs to the home by jacking up the floor framing under the kitchen and dining room and installing additional supports. No other structural defects within the home were identified.

On December 20, 2015, Mr. Jeffrey Williams fell from the upstairs hallway to the front foyer floor. The guardrail that was present along the open second floor hallway became completely detached and fell to the foyer with Mr. Williams. Mr. Williams died due to the severity of his injuries sustained in fall.

In this report, I have made general observations about the area where Mr. Williams fell, and I have identified conditions that directly contributed to his untimely death. These conditions include an analysis of the area with respect to proper construction and safety.

GUARDRAIL DEFINITION AND HISTORY

According to the **Dictionary of Architecture & Construction, 2nd Edition**, the term guardrail is *"a protective railing system along the outer edges of locations of an accessible roof, balcony, landing, platform, or ramp."* The generic purpose for a guardrail is to keep people and/or vehicles away from straying into dangerous or off-limits areas.

In building construction, a guardrail is *"a building component or a system of building components located near the open sides of elevated walking surfaces that minimizes the possibility of a fall from the walking surface to the lower level."* The integral purpose behind the guardrail is safety. It is used to prevent injury or damage and is used as a physical barrier between two distinctly different elevations.

A handrail, by comparison, is a rail that is designed to be grasped by the hand for both support and stability. Typically handrails are used along stairs to provide people with something to hold while ascending or descending. Handrails are often constructed along with guardrails, particularly if the stairway has one or both open sides.

Guardrails have been used for centuries and in all different kinds of applications. But in the field of construction, the use of guardrails has been identified and required in the State of Georgia since the 1980s. The requirements have developed over the years with each new rendition of the building code, but the intent has always been to protect life and secure safety.

EVALUATION

A. **First Site Visit – January 12, 2016.** Upon our first inspection of the property, the guardrail had been removed from the home and stored offsite. Originally, the guardrail was taken by the Gwinnett County Police Department for analysis. Upon this analysis being complete, the guardrail was stored at the nearby home of Ms. Williams' parents.

The area where the guardrail originally was in place was blocked off with yellow caution tape to visually warn those in the near proximity that the railing was no longer in place *(Photos 3, 4, 5 and 6)*. However, nothing else had been touched or repaired. The drywall surface where the rail detached was still intact *(Photos 7, 8 and 9)*.

B. **Second Site Visit – February 29, 2016.** Repairs to the guardrail were completed in the months of January and February. When we arrived to re-evaluate the condition of the site, the entire guardrail along the second floor landing and along the stairs had been fully replaced *(Photos 10, 11 and 12)*.

C. **Guardrail Assessment.** The failed section of guardrail measured 8 feet long and 41 inches in height *(Photo 13)*. The balusters were constructed of painted wood with an appropriate railing along the top.

On the right side, the guardrail was attached to the drywall surface with a wood rosette *(Photos 14 and 15)*. Along the left side, the guardrail was connected to a newel post. The top railing was jointed at the newel location with a 90-degree angle piece providing a change in direction of the railing *(Photos 16 and 17)*. The continuation of the guardrail provided a barrier between the second floor foyer and the descending stairs *(Photo 18)*.

The guardrail failed at both of these ends. The rail came completely detached from the drywall surface without causing any significant damage to the drywall. The exposed area under the rosette indicated that only a small amount of glue was used to hold the rosette in place *(Photos 19 and 20)*. Additionally, three 2-inch finish nails were used to attach the rosette to the drywall *(Photo 21)*. The attachment, however, did not extend properly into the structural framing of the wall cavity. This lack of proper attachment allowed the railing to easily pull out of the wall.

At the newel post, the top railing completely separated from the 90-degree angled section of railing. Six metal cleats were used to attach the two pieces of wood railing *(Photo 22)*. Some of these metal cleats remained in place while others detached with the top railing *(Photo 23)*.

Each individual baluster completely detached at the base of the guardrail as well *(Photos 24, 25 and 26)*. The horizontal baseplate, however, remained intact and in place. In some areas, small finish nails stayed fixed in the baseplate *(Photo 27)*.

CONCLUSIONS AND RECOMMENDATIONS

The failure to abide by good building practices and guidance from the building industry with respect to guardrail construction led to the unnecessary death of Mr. Jeffrey Williams. In my opinion, had the guardrail at this home been properly constructed, this tragic event would have never happened.

It is my understanding that other homes in the community are of similar construction. It is imperative that these homes be inspected and that this defect be immediately repaired so that similar accidents can be avoided.

Should further assistance be required concerning this issue, I can be reached in the office at 770-979-6650 or via e-mail at maureen@haight-davis.com.

Sincerely,

Maureen L. Davis, PE

Enclosures: Photographs

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PHOTO 1

Williams Residence, 130 Galesburg Drive, Lawrenceville, GA

PHOTO 2

Williams Residence, 130 Galesburg Drive, Lawrenceville, GA

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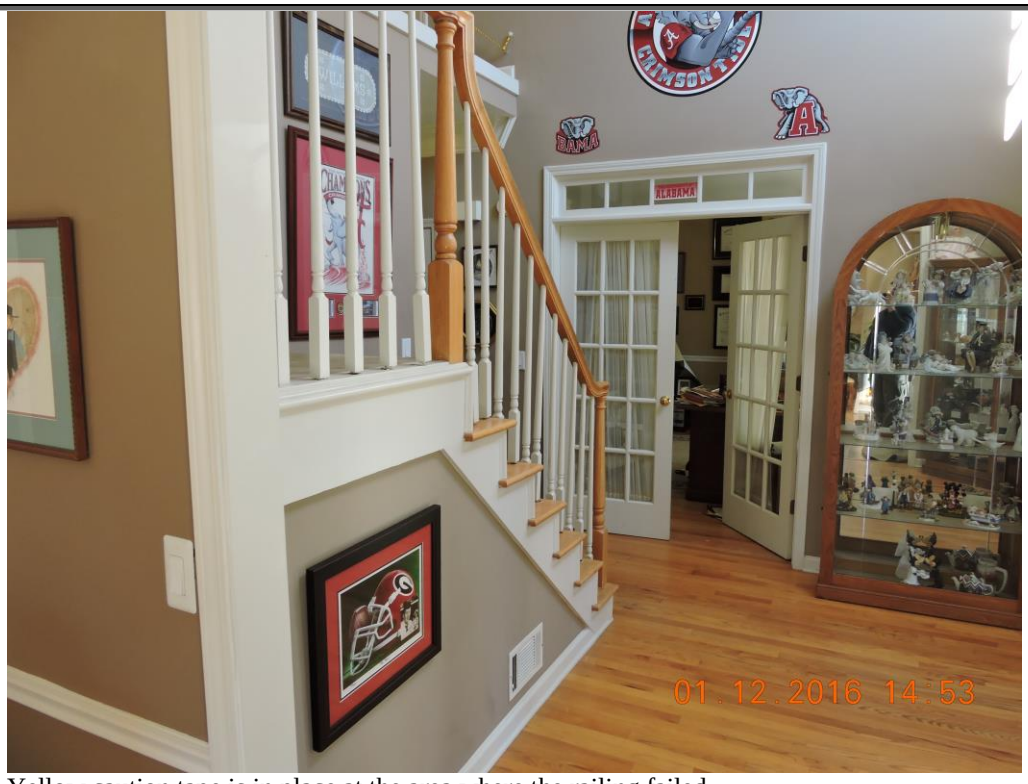
PHOTO 3

Yellow caution tape is in place at the area where the railing failed.

PHOTO 4



Yellow caution tape is in place at the area where the railing failed.

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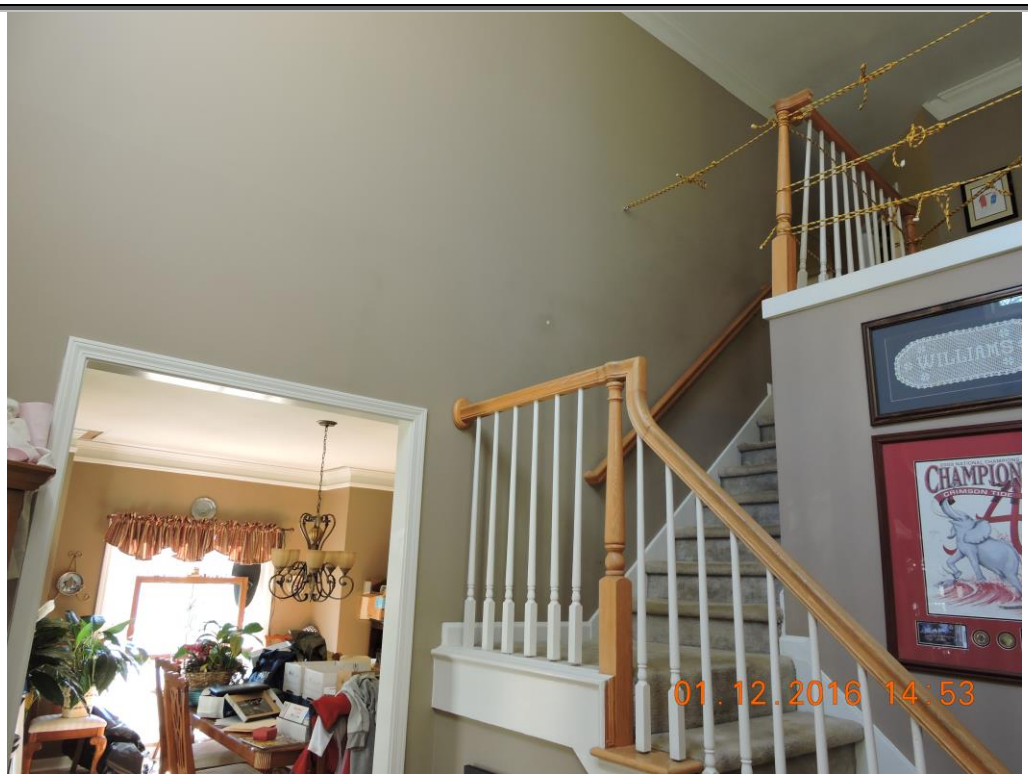
PHOTO 5



Yellow caution tape is in place at the area where the railing failed.

PHOTO 6

Yellow caution tape is in place at the area where the railing failed.

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PHOTO 7

The drywall surface is still intact.

PHOTO 8

The drywall surface is still intact.

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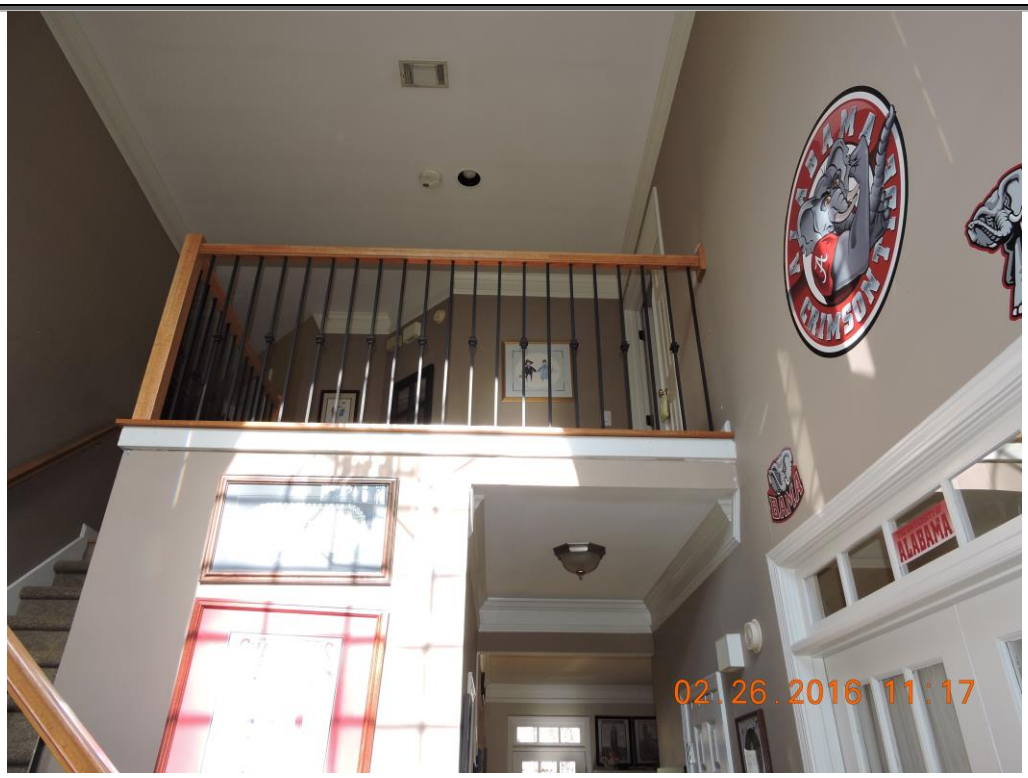
PHOTO 9

The drywall surface is still intact.

PHOTO 10



The guardrail has been replaced.

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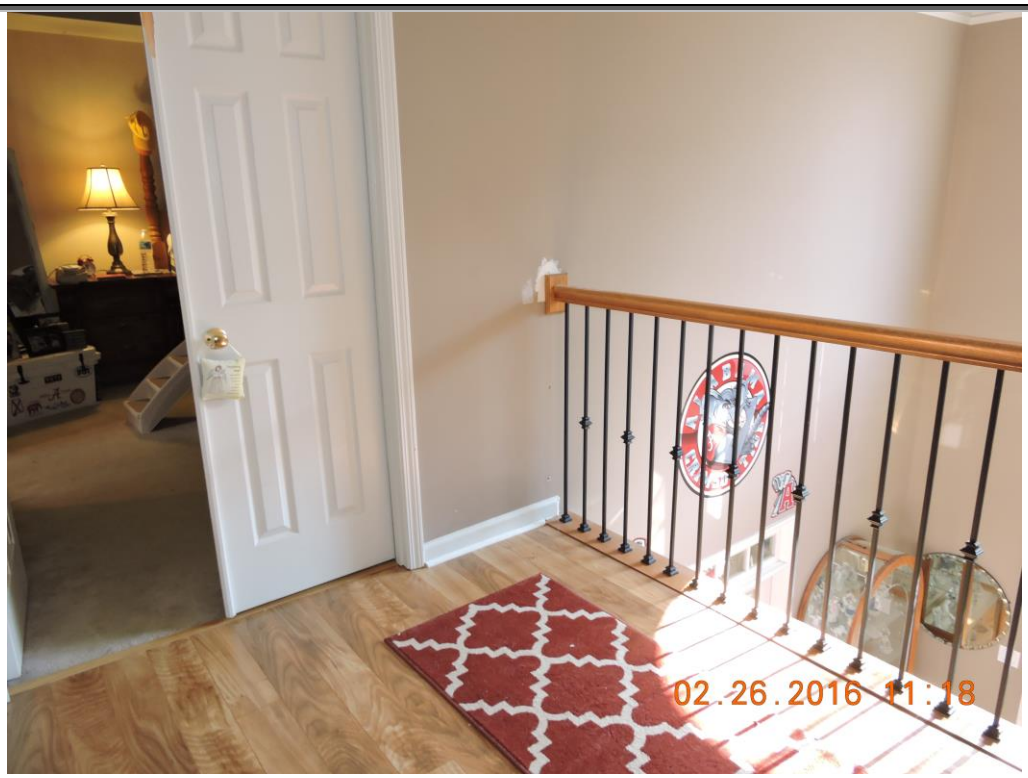
PHOTO 11



The guardrail has been replaced.

PHOTO 12

The guardrail has been replaced.

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PHOTO 13

The failed section of guardrail.

PHOTO 14

The guardrail was attached to the drywall surface with a wood rosette.

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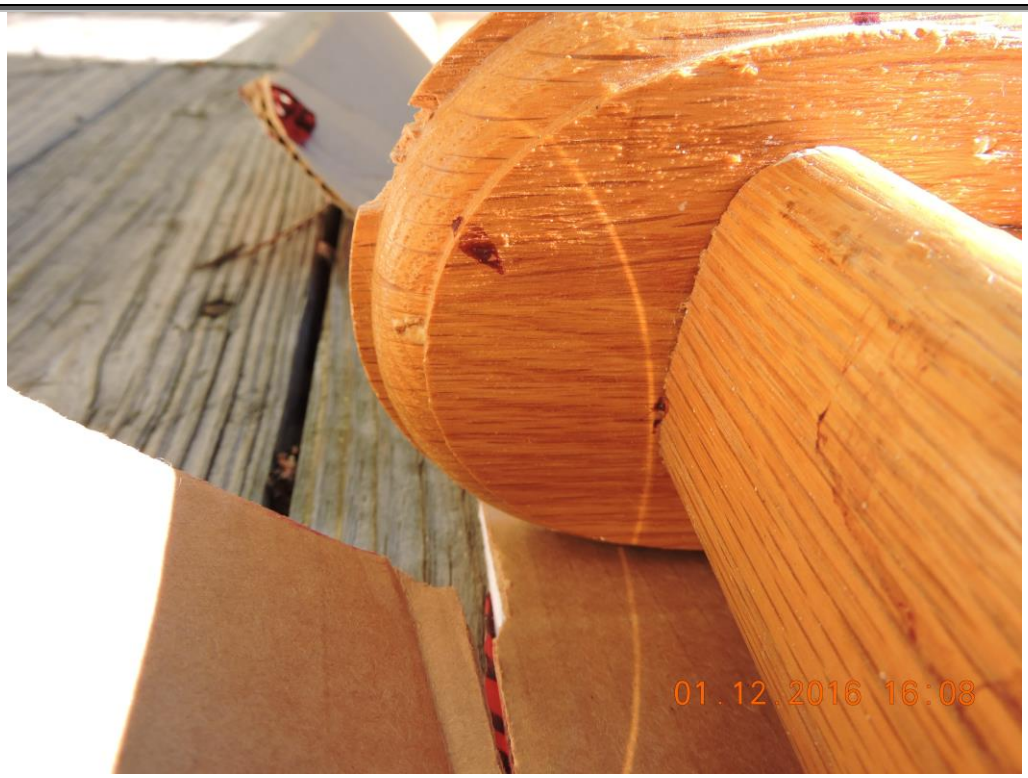
PHOTO 15



The guardrail was attached to the drywall surface with a wood rosette.

PHOTO 16

A 90 degree angle piece provided a change in direction of the railing.

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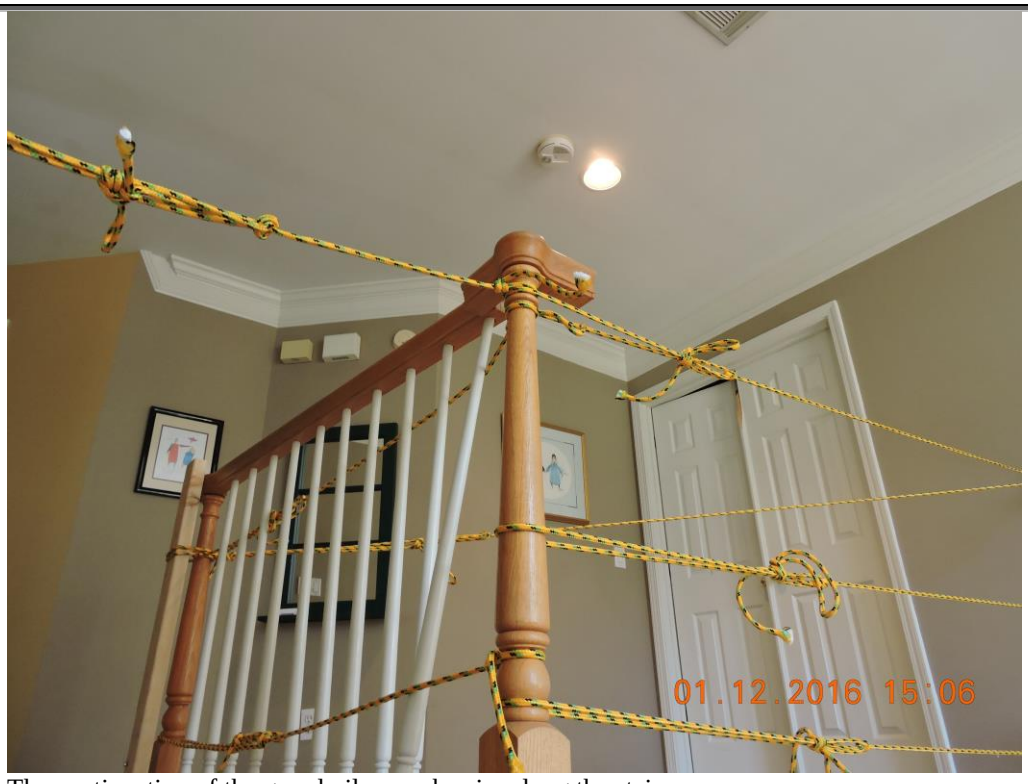
PHOTO 17

A 90 degree angle piece provided a change in direction of the railing.

PHOTO 18



The continuation of the guardrail was a barrier along the stairs.

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PHOTO 19

A small amount of glue was used to hold the rosette in place.

PHOTO 20

A small amount of glue was used to hold the rosette in place.

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PHOTO 21

Finish nails were used to attach the rosette.

PHOTO 22

Metal cleats were used to attach the two pieces of wood railing.

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PHOTO 23

Metal cleats were used to attach the two pieces of wood railing.

PHOTO 24

Each individual baluster completely detached at the base.

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PHOTO 25

Each individual baluster completely detached at the base.

PHOTO 26

Each individual baluster completely detached at the base.

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PHOTO 27

The horizontal baseplate remained in place.