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May 16, 2013

Mr. John Johnson
Pulaski County Chief Deputy Prosecutor
224 So. Spring Street
Little Rock, AR 72201

Re: State of Arkansas vs Josh Hasting, Incident # 2012-088993
Bentley Technical File # H33-19

Dear Mr. Johnson:

As you know, on April 11, 2013 an examination was made at the scene of this incident located in the parking area of Shadow Lake Apartments at 13111 West Markham Street in Little Rock, Arkansas. The incident occurred on August 12, 2012 in the early morning hours at approximately 5:20 a.m. The conditions at the time of the incident were clear atmospheric, dark nighttime, and a dry asphalt parking surface.

The incident occurred when a Little Rock Police officer, by the name of Joshua Hastings, confronted three occupants in a 2011 Honda Civic CRX. The confrontation resulted in the driver of the Honda, Bobby Joe Moore, suffering fatal gunshot wounds. According to Officer Joshua Hastings when he stepped out to make contact with the driver of the vehicle it approached at a speed traveling "somewhere between twenty-five and thirty" mph (JH #2 pg 6). Officer Joshua Hasting said "police stop the car, police stop the car" (JH pg 3). The Honda "...was still going approximately the same speed? Yes sir he never, never indicated to hit the brakes" (JH #2 pg 8). Officer Hastings fired several shots. The vehicle traveled past him up onto the rock embankment "...probably one car length" (JH #2 pg 14), and then pulled backwards. Officer Hastings describes that the dumpster to his right was "about two to three foot" away and the car was "two to three feet" to the left (JH pg 23). The vehicle rolled backward out of control from the embankment. It travelled approximately 195' contacting a column attached to the parking structure and a parked 2012 Chevrolet Camaro.

At issue in the incident is; whether or not the physical evidence is consistent with the account given that the Honda Civic travelled up the embankment to the right of the dumpster enclosure, and at what speed did the Honda Civic impact the vertical column and parked Camaro.

At this time a total station survey was conducted of the incident area. Ground level and elevated photographs were made. Attention was given to documenting the rip rap embankment elevations. The rest location of the Honda Civic was identified and surveyed.

Following this examination the 2011 Honda Civic, VIN # 19XFA1F63BE043699, was examined. Notations were made regarding its condition. A total station survey was conducted. Photographs were made. The Honda Civic undercarriage was documented. No significant contact marking was present. The Honda gear shift was operated. Without placing the driver's foot on the brake and while not applying the shifter switch, the gear shift could be moved by pushing it from drive to neutral. The gear shift could be pushed from reverse to neutral. The gear shift could be pushed from neutral to drive. The undercarriage height was documented while loaded with occupants weighing approximately 300 lbs. The undercarriage of the front profile ranged in height from 4 ⅛" of the left side air dam, 4 ¾" for the right side air dam, 6 ⅞" to the right side panel, and 6 ⅛" to the left side panel. The front middle panel height was approximately 7".

On May 14, 2013 the Honda was examined to document the reverse taillight filaments. The left rear reverse filament was unremarkable. There was no presence of hot shock or cold shock distortion. The right rear reverse filament was remarkable. It displayed cold shock distortion. The right rear turn indicator was examined and was also found to display cold shock distortion. The cold shock distortion is consistent with a filament that is not incandescent or is "off" at the time of contact. The bulbs were replaced.

The following material was examined.

i.) Arkansas Uniform Motor Vehicle Collision Report
ii.) Little Rock Police investigation documents & photographs
iii.) Video Re-enactment
iv.) Donham Video's
v.) Detective Division Summary
vi.) Bentley Technical scene and vehicle photographs
vii.) Total station survey data of the scene and vehicle
viii.) 2011 Honda Civic vehicle data
ix.) 2012 Chevrolet Camaro vehicle data
x.) Little Rock Police Department Officer's Report
xi.) Case Report
xii.) Energy Supply and Time Dependence on Filament Deformation (SAE # 970945)
xiii.) The Measured Rolling Resistance of Vehicles for Accident Reconstruction (SAE # 980368)
xiv.) Lamp Examination for on or off in Traffic Accidents (The Traffic Institute, Publication # 802)
xv.) Statement of Jeremiah Johnson Incident # 2012-088993
xvi.) Statement of Joshua Hastings 2 Incident # 2012-088993
xvii.) Statement of Joshua Hastings 3 Incident # 2012-088993
xviii.) Officer's Report (by Joshua Hastings)
xix.) Officer's Letter (by Ofc. Ralph Breshears)

A CAD plat was prepared of the incident area for the purpose of identifying the Honda travel distance from the rip rap embankment to its rest position against the column and Camaro. The travel distance was approximately 195'.

Calculations were made to determine the Honda Civic impact speed with the vertical column and Camaro. Structural beam bending equations were utilized. The vertical column was identified as being a 3" aluminum square tubing. A momentum analysis was performed utilizing the Camaro post impact travel distance and vehicle weights. The Honda was treated with a weight of 3300 lbs, including 300 lbs for occupants. The Camaro was treated with a weight of 4000 lbs, with no occupant weight. The beam bending equation resulted in an energy equivalent Honda speed of 4.65 mph. The momentum analysis resulted in an energy equivalent Honda speed of 9.63 mph. The combined speed equation resulted in an initial Honda impact speed of 10.69 mph.

In view of the foregoing, certain observations and opinions were made, they are:

- The physical evidence would indicate that the Honda Civic did not travel up the rip rap embankment.

    a. No tread tracks were identified.
    b. Considering the size of the rip rap and the barrier it presented to the vehicle front as a whole, there was no disturbance of the rip rap. The rip rap was nested and undisturbed in the embankment soil. The Honda Civic with its weight, speed described, and the low profiled front could easily have upended and disturbed the rip rap material.
    c. Considering the size of the rip rap and the barrier it presented to the vehicle front as a whole, clear and obvious markings should have been present on the Honda undercarriage. The markings should be consistent with the unique impacting manner of a sizable object.
    d. The described speed of the Honda would have resulted in considerable energy and travel.

- The Honda Civic was in a neutral transmission position at impact based upon the cold shock condition of the right rear bulb filaments.

- The Honda Civic impacted the parking deck column at a speed of approximately 10 to 11 mph.

Respectfully submitted,

John M. Bentley III, P.E.

JB/mel