

Remote Not In Transport Surveillance Back Over Investigation  
Dynamic Science, Inc. (DSI), Case Number (DS07024)  
1997 Chrysler Town and Country Van  
Hawaii

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

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16. Abstract <p>This single vehicle crash occurred in December 2006 at 0815 hours. The subject vehicle is a 1997 Chrysler Town and Country van. The incident took place in the unimproved driveway of a private residence. The area was overgrown with tall grass and fruit trees. The Chrysler was initially parked facing southwest. After eating breakfast with his family, the 30-year-old male driver walked out of the house and headed for his van. He got into the van from the left side. After getting in the van, he saw his wife going into the home. He last recalled seeing their 1-year-old child standing by the stairs, close to the door of the home. The driver began to back in a northeast to south direction. The child appears to have walked in an easterly direction to a position behind the van and in the driver's blind spot. The driver was attempting to complete a two-point turn so that he could travel forward in a northwest direction. As he began backing, he heard what he described as a "pop" sound. He continued backing the van until it was facing north. It appears that the child was run over by the right rear tire. When the driver stopped, in preparation to go forward, he saw the child. He picked up the child and put him in a second vehicle. He stated that he began administering CPR and called 911, in hopes of having an ambulance meet them. The call was dropped so they took the child directly to a local hospital. The child was pronounced dead at 0909 hours. The cause of death was: "blunt force injuries of the head, due to, or as a consequence of result of run over by a motor vehicle".</p>				
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**Dynamic Science, Inc.**  
**Crash Investigation**  
**Case Number: DS07024**

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## BACKGROUND

This single vehicle crash occurred in December 2006 at 0815 hours. The case vehicle is a 1997 Chrysler Town and Country van (**Figure 1**). The incident took place in the unimproved driveway of a private residence. The area was overgrown with tall grass and fruit trees. The case vehicle was initially parked facing southwest. After eating breakfast with his family, the 30-year-old male driver walked out of the house and headed for his van, which was parked approximately 9.1 m (30.0 ft) from the home. He got into the van from the left side. After getting in the van, he saw his wife going into the home. He last recalled seeing their 1-year-old child standing by the stairs, close to the door of the home. The child appears to have walked in an easterly direction to a position behind the van and in the driver's blind spot. The driver began to back in a northeast to south direction. He was attempting to complete a two-point turn so that he could travel forward in a northwest direction. As the driver began backing, he heard what he described as a "pop" sound. He continued backing the van until it was facing north. It appears that the child was run over by the right rear tire. When the driver stopped, in preparation to go forward, he saw the child. He called for his wife. He picked up the child and put him in a second vehicle. He stated that he began administering CPR and called 911, in hopes of having an ambulance meet them. The call was dropped so they took the child directly to a local hospital. The child was pronounced dead at 0909 hours. The cause of death was: "blunt force injuries of the head, due to, or as a consequence of result of run over by a motor vehicle". The injuries included the following: multiple abrasions and contusions, multiple skull fractures, diffuse subscapular hemorrhage, diffuse subdural and subarachnoid hemorrhages, and a laceration of the brain.



**Figure 1.** Rear, 1997 Chrysler Town and Country

This remote Not In Transport Surveillance (NITS) Back Over Investigation was initiated in response to an on-line news article about a 1-year-old male killed in a back over incident. DSI was notified of the incident on March 26, 2007 with instructions to obtain sufficient data to conduct a remote investigation. The investigating police agency was located and a police report was requested. Some preliminary information was received in April 2007. The police report and on scene photographs were received on May 28, 2007. DSI was assigned the case on June 15, 2007. The following information was obtained from the police report, the on scene photographs, and an exemplar vehicle. The driver did not return any phone calls or a questionnaire.

## SUMMARY

### Incident Site

This single vehicle crash occurred in December 2006 at 0815 hours. The case vehicle is a 1997 Chrysler Town and Country van. The crash took place in the unimproved driveway of a private residence. The curved driveway was gravel covered. The driveway approaches the residence from the east. The driveway has a slight down grade. The residence is approximately 10.0 m (33.0 ft) north of the driveway. To the south of the driveway is a large rectangular shaped metal container. The container is approximately 12.8 m (42.0 ft) southeast of the residence. The entire area was overgrown with tall grass and fruit trees. The sky was overcast and cloudy, with light to moderate rain. The temperature was 19 degrees C (67 degrees F) at 0753 hours at the nearest reporting station.

### Pre-Crash

The Chrysler was initially parked facing southwest (**Figure 2**). After eating breakfast with his family, the 30-year-old male driver walked out of the house and headed for his van, which was parked approximately 9.1 m (30.0 ft) from the home. He got into the van from the left side. After getting in the van, he saw his wife going into the home. He last recalled seeing the male 1-year-old child (76 cm/30 in, 11 kg/24 lbs) standing by the stairs, close to the door of the home. The child appears to have walked in an easterly direction to a position behind the van and in the driver's blind spot. The distance between the door and the area of impact is approximately 12.1 m (40.0 ft). Given an average child walking speed of 1.1 mps (3.7 fps), it would have taken the child approximately 10-11 seconds to travel from the door to the area of impact.

The driver began to back in a northeast to south direction. He was attempting to complete a two-point turn so that he could travel forward in a northwest direction.



**Figure 2.** Initial parked area. House is to the right, container to the left. Looking southwest.



**Figure 3.** 1997 Chrysler Town and Country at final rest

## **Crash**

As he began backing, he heard what he described as a “pop” sound. The van had traveled rearward approximately 2.7 m (9.0 ft). Given an acceleration rate of 4.8 ft/sec<sup>2</sup>, the vehicle would have been going no faster than 10.1 km/h (6.3 mph) at impact. It appears that the child was knocked down by the bumper and then run over by the right rear tire. The driver continued backing the van until it was facing north (**Figure 3**).

## **Post-Crash**

When the driver stopped, in preparation to go forward, he saw the child. He called for his wife. He picked up the child and put him in a second vehicle. He stated that he began administering CPR and called 911, in hopes of having an ambulance meet them. The call was dropped so they took the child directly to a local hospital. He was carried into the hospital by the driver. He arrived at 0856 hours. The emergency room staff called a “code blue” and began to work on the child.

The child was pronounced dead at 0909 hours. The cause of death was: “blunt force injuries of the head, due to, or as a consequence of result of run over by a motor vehicle”. The injuries included the following: multiple abrasions and contusions, multiple skull fractures, diffuse subscapular hemorrhage, diffuse subdural and subarachnoid hemorrhages, and a laceration of the brain.

## **VEHICLE DATA - 1997 Chrysler Town and Country**

The 1997 Chrysler Town and Country was identified by the Vehicle Identification Number (VIN) on the police report: 1C4GP64L6VBxxxxxx. The Chrysler Town and Country was a four-door van that was equipped with a 3.8 liter, six cylinder engine, an automatic transmission, and front disc/rear drum brakes. The Town and Country was configured with General Amerite P215/65R16 tires. The tire tread for all the tires was reported to be in fair condition.

## **Vehicle Damage - 1997 Chrysler Town and Country**

There was no exterior or interior damage to the 1997 Chrysler Town and Country (**Figures 4-5**). The police indicated the presence of what appeared to be a small blood stain on the right rear tire and on the right rear fender well. The stain was not visible in any of the police vehicle photographs.

## **Manual Restraints - 1997 Chrysler Town and Country**

The Town and Country was equipped with 3-point manual lap and shoulder belts for the front seating positions. It has been reported that the driver was wearing the lap and shoulder belt.

## Supplemental Restraint Systems - 1997 Chrysler Town and Country

The 1997 Chrysler Town and Country was equipped with dual frontal air bags. The driver's air bag was mounted in the center of the steering wheel hub. The front right passenger air bag was mounted in the top of the instrument panel. There were no air bag deployments.



**Figure 4.** Front right, Chrysler



**Figure 5.** Right bumper and right rear tire

## Vehicle Dimensions

Dimensions obtained from Canadian vehicle specifications and an exemplar vehicle. Eye height was based on a surrogate driver of the same height as the driver.

Ground to belt line:	108.0 cm (42.5 in)
Ground to top of trunk/tailgate:	106.0 cm (41.7 in)
Ground to top of rear bumper:	63.0 cm (24.8 in)
Ground to bottom of rear bumper:	41.0 cm (16.1 in)
Driver's seated eye height:	138.0 cm (54.3 in)
Eye position (seated forward facing):	12.0 cm (4.7 in)
Overall vehicle height:	174.0 cm (68.5 in)
Overall vehicle width:	192.0 cm (75.6 in)
Overall vehicle length:	507.0 cm (199.6 in)
Rear overhang:	111.0 cm (43.7 in)
Track width:	162.0 cm (63.8 in)
Longitudinal distance between the backlight top molding and front door latch pillar:	264.0 cm (103.9 in)



## Parking Aids/Sensors

The case vehicle was not equipped with any parking aids or backing up sensor/video technology.

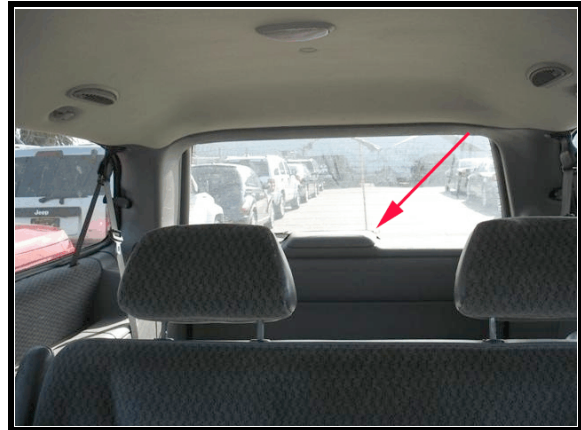
## Vehicle Sight Distances

A visibility study was conducted in order to determine the nominal blind zone behind the vehicle as well as the nominal blind zone of both side view mirrors. Measurements were taken using an exemplar vehicle. The standard 71.0 cm (28.0 in) high target was used to obtain the measurements. The measurements were taken on a paved level surface.

The driver's actual height was not known. The driver's seated eye height when measured from the seat bottom was estimated to be 72.0 cm (28.3 in) and when measured from the ground was 1.48 m (4.86 ft). The SCI investigator was able to duplicate the estimated seated eye height by measuring his own eye height from the seat bottom.

The initial set of measurements were taken as if the driver were looking over his right shoulder through the backlight (**Figure 6**). The target was moved rearward from the back bumper along the vehicle's centerline until it became visible to the investigator. The point at which the target became visible to the investigator measured 3.96 m (12.99 ft) rearward of the rear bumper. This measurement was used as the point of origin for two sets of lateral measurements which were then taken. Measurements taken laterally to the left and right resulted in a visibility zone that could be viewed through the backlight. Two sets of lateral measurements were taken due to the presence of second row head restraints which blocked the investigator's rearward vision. The first set of lateral measurements were taken from the vehicle's center line to the far left and right sides of the backlight. The second set of lateral measurements were taken from the vehicle's center line to the left and right head restraints. The point at which the roadway surface became visible to the investigator measured 10.33 m (33.89 ft) rearward of the rear bumper.

Another set of measurements were taken to simulate the driver using the rear view mirror to look through the backlight. The target was moved rearward from the rear bumper along the vehicle's centerline until it became visible to the investigator. The point at which the target became visible



**Figure 6.** View over shoulder with reference highlighted by arrow (exemplar vehicle)



**Figure 7.** View through rear view mirror (exemplar vehicle)

to the investigator measured 4.03 m (13.22 ft) rearward of the rear bumper. This measurement was used as the point of origin for a set of lateral measurements which were then taken. Measurements taken laterally to the left and right resulted in a visibility zone that could be viewed through the backlight.

Since the SCI investigator was using an exemplar vehicle, he adjusted the side mirrors appropriately for the driver's seated eye height. With the SCI investigator seated, the side views were examined. The target was placed at the right side of the rear bumper. The target was moved from the side of the vehicle laterally to the right until the target became visible through the right side view mirror. The target was then moved laterally to the right to the point where the target was no longer visible. These measurements resulted in a visibility zone which could be viewed through the side view mirror. This process was repeated on the left side of the vehicle. The area between the left and right visibility zones resulted in a blind zone. Directly behind the rear bumper, the blind zone measured 1.98 m (6.50 ft) in width. The overall width of the vehicle was 1.92 m (6.30 ft). The target was then placed at 3.96 m (12.99 ft) rearward of the rear bumper. Lateral measurements were taken to the left and right at the points at which the investigator could view the target through the side view mirrors. The area between the two visible points resulted in a blind zone. At 3.96 m (12.99 ft) rearward of the rear bumper, the blind zone was approximately 1.82 m (5.97 ft) in width. The target was then moved further to the left and right until it could no longer be viewed through the rear view mirrors. The areas to the left and right in which the target could be viewed resulted in side view visibility zones.



**Figure 8.** View showing right outside mirror (exemplar vehicle)

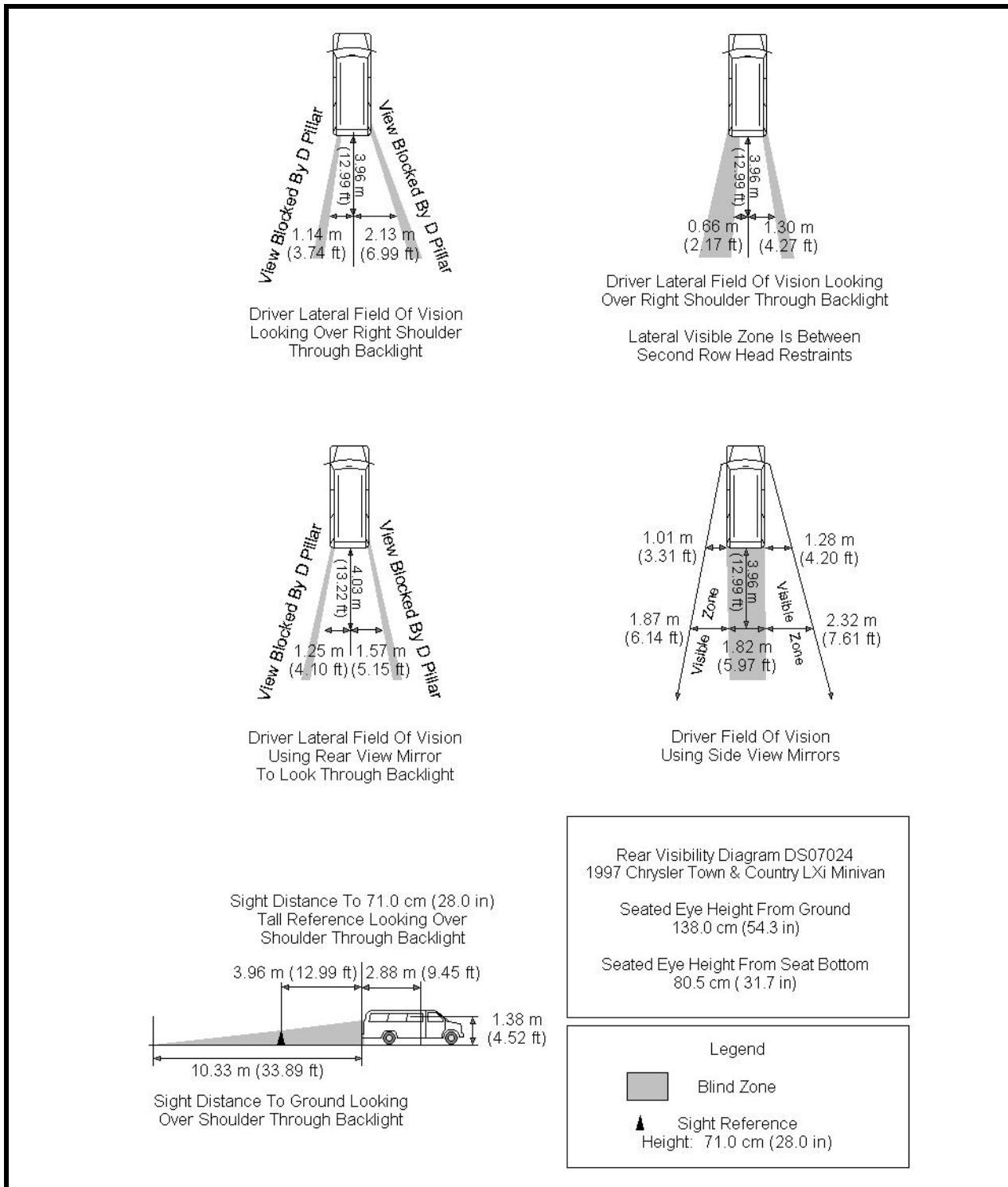


Figure 9. Nominal Visibility Diagram

**OCCUPANT DEMOGRAPHICS - 1997 Chrysler Town and Country**

<b>Driver</b>	
Age/Sex:	30/Male
Seated Position:	Front left
Seat Type:	Bucket
Height:	Unknown
Weight:	Unknown
Occupation:	Unknown
Pre-existing Medical Condition:	None noted
Alcohol/Drug Involvement:	None
Driving Experience:	Unknown
Body Posture:	Presumed upright
Hand Position:	Unknown
Foot Position:	Unknown
Restraint Usage:	Lap and shoulder belt available, used.

**NON MOTORIST DEMOGRAPHICS**

Age/Sex:	1/Male
Height:	76 cm (30 in)
Weight:	11 kg (24 lbs)
Pre-existing Medical Condition:	None
Alcohol/Drug Involvement:	None

**INJURIES - 1997 Chrysler Town and Country**

Driver: Not injured.

Non-Motorist (1-year-old): Injuries obtained from the autopsy report (which was included in the police report), police report itself, and police photos.

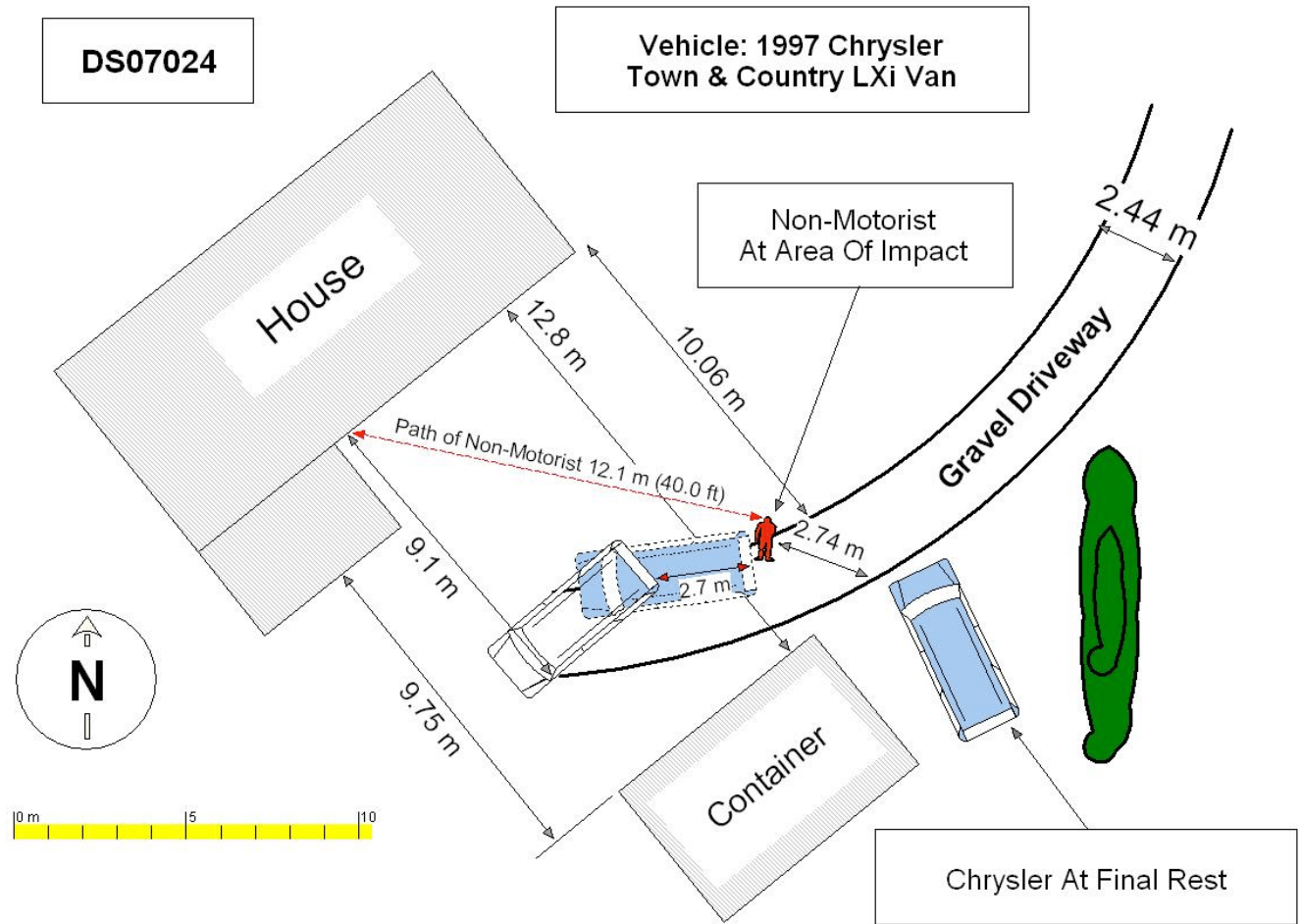
<u>Injury</u>	<u>OIC Code</u>	<u>Injury Mechanism</u>	<u>Confidence Level</u>
Laceration, left temporal brain	140474.4,6	Tire	Certain
Diffuse subdural and subarachnoid hemorrhages	140466.3,6	Tire	Certain
Fractures of the left frontal, temporal, and parietal bones, right and left occipital bones, left petrous ridge and mid portions of the middle cranial fossa, and linear fracture of the right middle cranial fossa <sup>1</sup> .	150400.2,5 150400.2,1 150400.2,2 150400.2,6 150400.2,2	Tire	Certain
Fracture, left orbital plate	251200.2,2	Tire	Certain
Transection, left optic nerve	230204.2,2	Tire	Certain
Head abrasion, lateral right frontal region	190202.1,5	Tire	Certain
Forehead contusion	290402.1,7	Tire	Certain
Left frontal scalp, abraded contusions	190402.1,5	Tire	Certain
Contusion, lateral to left eye	290402.1,2	Tire	Certain
Right zygomatic region, abrasions	190202.1,1	Tire	Certain
Contusion, below left eye	290402.1,2	Tire	Certain
Contusions, lower left cheek area	290202.1,2	Tire	Certain
Contusion, chin	290202.1,8	Tire	Certain
Contusions, posterior left parietal scalp	190402.1,2	Tire	Certain
Contusions, left shoulder	790402.1,2	Tire	Certain
Linear contusions, left side of back	490402.1,2	Tire	Certain

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<sup>1</sup>No indications of extrusion or displacement of brain matter

Contusions, lateral left side of torso	490402.1,2	Tire	Certain
Contusions, dorsal surface of right hand at base of thumb	790402.1,1	Unknown	Unknown
Contusions, radial aspect of right 2 <sup>nd</sup> through 5 <sup>th</sup> fingers	790402.1,1	Unknown	Unknown
Contusion, palmar surface of right hand below the thumb	790402.1,1	Unknown	Unknown
Contusion, dorsal aspect of left 4 <sup>th</sup> finger	790402.1,2	Unknown	Unknown
Contusion, distal anterior right lower leg	890402.1,1	Unknown	Unknown

Attachment 1. Scene Diagram



## Attachment 2. Calculations

Comments: Time to travel from house to POI - walking

### \*\* TIME W/ DISTANCE AND VELOCITY \*\*

$$t = \frac{D}{V}$$

$$t = \frac{40.00}{3.70}$$

$$t = 10.81$$

t = The Time in Seconds.  
D = The Distance in Feet.  
V = The Velocity in FPS.

INPUTS:		RESULTS:	
The Distance in Feet is:	40.00	The Time in Seconds is:	10.81
The Velocity in FPS is:	3.70		



Comments: Backing speed

**\*\* END VEL W/ A RATE, I VEL, DISTANCE \*\***

$$V_e = \sqrt{V_i^2 + 2 \times a \times D}$$

$$V_e = \sqrt{0.00^2 + 2 \times 4.80 \times 9.00}$$

$$V_e = \sqrt{0.00 + 86.40}$$

$$V_e = \sqrt{86.40}$$

$$V_e = 9.29$$

$V_e$  = Ending Velocity in FPS.  
 $V_i$  = Initial Velocity in FPS.  
 $a$  = Acceleration in FPS<sup>2</sup>.  
 $D$  = The Distance in Feet.  
 $2$  = A Constant.

INPUTS:	
The Initial Vel in FPS is:	0.00
The Acceleration Rate is:	4.80
The Distance in Feet is:	9.00

RESULTS:	
The Ending Vel in FPS is:	9.29
The Ending Speed in MPH is:	6.33

**Attachment 3. Field Data Forms**



1. Case Number

\_\_\_\_\_

### IDENTIFICATION

2. Date of Crash \_\_\_\_ / \_\_\_\_ / \_\_\_\_

3. Time of Crash \_\_\_\_\_

Code reported military time of crash.

NOTE: Midnight = 2400  
Unknown = 9999

### AMBIENT CONDITIONS

4. Light Conditions

- Daylight
- Dark
- Dark but lighted
- Dawn
- Dusk
- Unknown

5. Atmospheric Conditions  
(Select all that apply)

- Clear-No adverse conditions
- Cloudy
- Rain
- Snow
- Fog, Smog, Smoke
- Sleet, Hail (freezing rain or drizzle)
- Blowing Snow
- Severe Crosswinds
- Blowing Sand, Soil, Dirt
- Other (specify):
- Unknown

6. Temperature

- Below 0 degrees Celsius (Below 32 F)
- 1-10 degrees Celsius (33-50 F)
- >10-24 degrees Celsius (51-75 F)
- Over 24 degrees Celsius (Over 75 F)
- Unknown

### SCENE INFORMATION

7. Type of area in which crash occurred  
(Select all that apply)

- Single family residential
- Row houses/townhouses
- Multi family housing
- Commercial
- Industrial
- Rural
- Unknown

8. Driver exterior sightline obstructions  
(Select all that apply)

- None
- Other vehicles
- Building
- Trees
- Shrubby
- Other (specify) \_\_\_\_\_
- Utility poles
- Signs
- Glare
- Unknown
- No driver present

9. Crash location

- Driveway
- Parking Lot
- Sidewalk
- Alley
- Intersection of driveway and sidewalk
- Road / street
- Roadside / shoulder
- Other (specify) \_\_\_\_\_
- Unknown

10. Non motorist sightline obstructions  
(Select all that apply)

- None
- Other vehicles
- Building
- Trees
- Shrubby
- Utility poles
- Signs
- Glare
- Other (specify) \_\_\_\_\_
- Unknown

11. Grade at parked position \_\_\_\_\_ +/- %

12. Estimated distance from parked position to impact

\_\_\_\_\_ m

13. Estimated speed at impact \_\_\_\_\_ +/- kmph

14. Grade at impact \_\_\_\_\_ +/- %

15. Estimated distance from impact to vehicle final rest

\_\_\_\_\_ m

Unknown = 999 Reference Items 11,12, 13, 14, 15



# VEHICLE FORM

1. Case Number \_\_\_\_\_

## VEHICLE IDENTIFICATION

2. VIN \_\_\_\_\_

3. Model Year \_\_\_\_\_

4. Vehicle Make (specify): \_\_\_\_\_

5. Vehicle Model (specify): \_\_\_\_\_

## GLAZING

Location	Presence (check)	Status (select)	Clarity (select)	Tint (check)	Glazing Obstructions (specify if present)
Windshield		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
LF		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
RF		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
2 <sup>nd</sup> Left		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
2 <sup>nd</sup> Right		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
3 <sup>rd</sup> Left		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
3 <sup>rd</sup> Right		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
Backlight		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
Left Backlight		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
Right Backlight		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
Roof		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		
Other (specify)		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown		

## TIRE DATA

6. Vehicle Manufacturer Recommended Tire Size \_\_\_\_\_

7. LF Tire Size \_\_\_\_\_

9. RF Tire Size \_\_\_\_\_

8. LR Tire Size \_\_\_\_\_

10. RR Tire Size \_\_\_\_\_

**Seats / Head Restraint Data**

Seat Position	Seat Type (Select from below )	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left			Full Down / Mid / Full Up	
Front Middle			Full Down / Mid / Full Up	
Front Right			Full Down / Mid / Full Up	
2 <sup>nd</sup> Left			Full Down / Mid / Full Up	
2 <sup>nd</sup> Middle			Full Down / Mid / Full Up	
2 <sup>nd</sup> Right			Full Down / Mid / Full Up	
3 <sup>rd</sup> Left			Full Down / Mid / Full Up	
3 <sup>rd</sup> Middle			Full Down / Mid / Full Up	
3 <sup>rd</sup> Right			Full Down / Mid / Full Up	

**Seat Type codes:**

- |   |                                      |
|---|--------------------------------------|
| 0 = No seat or seat folded down           | 8 = Pedestal (i.e. column supported) |
| 1 = Bucket                                | 9 = Box mounted (i.e. van type)      |
| 2 = Bucket w/ folding back                | 10= Other seat type (specify)        |
| 3 = Bench                                 | 99= Unknown seat type                |
| 4 = Bench with folding back cushions      |                                      |
| 5 = Bench w/ folding back                 |                                      |
| 6 = Split bench w/ separate back cushions |                                      |
| 7 = Split bench w/ separate folding back  |                                      |

**VEHICLE MEASUREMENTS**

Clearance Heights	Measurements (all from ground, and in centimeters)	NOTES
Beltline		
Top of trunk/tailgate		
Bottom of bumper		
Trailer hitch (if applicable)		
Undercarriage		
Sway bar		
Axle		
Differential		
Other (specify):		
Sensor Height (if equipped)		
Camera Height (if equipped)		



1. Case Number

\_\_\_\_\_

### PARKING AID PRESENCE

2. Type of backing/parking aid present

- OEM camera
- OEM ultrasonic/radar sensor
- OEM combination camera-ultrasonic/radar sensor
- OEM Fresnel lens
- OEM interior mirrors
- Aftermarket camera
- Aftermarket ultrasonic/radar sensor
- Aftermarket combination camera-ultrasonic radar sensor
- Aftermarket Fresnel lens
- Aftermarket interior mirrors
- Other (specify): \_\_\_\_\_

### CAMERA INFORMATION

*Specify field of view measurements on diagram*

3. System make/model

\_\_\_\_\_

4. Video monitor type

- None present
- LCD (color)
- CRT (black & white)
- Unknown

5. Video display size \_\_\_\_\_ cm  
(Diagonal)

6. Camera location

- None present
- Bumper
- License plate
- Tailgate/Hatch/Trunk
- Other (specify): \_\_\_\_\_

7. Video image quality under scene lighting conditions

- None present
- Good
- Average
- Poor (specify): \_\_\_\_\_
- Unknown

8. Was the camera functioning properly

- None present
- Yes
- No, poor image quality due to glare
- No, poor image quality due to atmospheric conditions
- No, camera turned off
- No, camera inoperable
- Unknown

### ULTRASONIC/RADAR SENSOR

*Specify object detection range on diagram*

9. System make/model

\_\_\_\_\_

10. Auditory warning illumination

- No sensor present
- Yes
- No
- Unknown

11. Number of sensors \_\_\_\_\_

12. Sensor locations  
(Select all that apply)

- No sensor present
- Left bumper
- Center bumper
- Right bumper
- License plate area
- Tailgate/Hatch/Trunk

13. Was warning system functioning properly

- No sensor present
- Yes, system alerted driver
- No, system did not alert driver
- No, system turned off
- No, system inoperable
- Unknown

14. Did driver react to warning

- No sensor present
- Yes
- No
- Unknown

15. Did driver report common false warnings

- No sensor present
- Yes
- No
- Unknown



# DRIVER FORM

1. Case Number  
\_\_\_\_\_

### DRIVER PROFILE

2. Driver's Age \_\_\_\_\_  
99 = Unknown

3. Driver's Sex  Male  
 Female  
 Unknown

4. Driver's Height \_\_\_\_\_ cm  
999 = Unknown

5. Driver's Weight \_\_\_\_\_ kg  
999 = Unknown

6. Driver eyewear worn  
(Select all that apply)  
 None  
 Eyeglasses  
 Sunglasses  
 Contacts  
 Unknown

7. Driver vision deficiency condition  
(Select all that apply)  
 None  
 Near sighted  
 Far sighted  
 Astigmatism  
 Other (specify) \_\_\_\_\_  
 Unknown

8. Non motorist's relationship to driver  
 No relationship  
 Child  
 Grandchild  
 Sibling  
 Neighbor  
 Friend  
 Other (specify): \_\_\_\_\_  
 Unknown

### DRIVER ACTIONS

9. Driver approach to vehicle for entry  
From left front  
 From left  
 From left rear  
 From right rear  
 From right front  
 Circled vehicle  
 Return trip (backing into driveway/lot)  
 Other (specify): \_\_\_\_\_  
 N/A  
 Unknown

10. Driver entry interruption  
(Select all that apply)  
 Direct trip from building to vehicle  
 Loaded items into vehicle  
 Spoke with family  
 Spoke with neighbors  
 Spoke with contacted nonmotorist  
 Return trip (backing into driveway/lot)  
 Other (specify): \_\_\_\_\_  
 N/A  
Unknown

11. Purpose of backing  
 Leaving parking space in parking lot  
 Backing onto roadway from driveway  
 Entering parking space in parking lot  
 Backing into driveway from roadway  
 Other (specify): \_\_\_\_\_  
 N/A  
Unknown

12. Where was driver going  
Description:  
\_\_\_\_\_  
\_\_\_\_\_

13. Driver in a hurry  
 Yes N/A  
 No Unknown  
 Unknown

14. How did driver check behind (rear area of vehicle)  
after vehicle entry  
(Select all that apply)  
 Did not look  
 Checked mirrors  
 Turned right and looked back  
 Turned left and looked back  
 Viewed Camera  
 Listened for auditory/visual warning from system  
 Other (specify): \_\_\_\_\_  
N/A Unknown

15. Estimated time between vehicle entry and start  
of backing  
 0-10 Seconds  Over 60 Seconds  
 11-30 Seconds  N/A  
 31-60 Seconds  Unknown



16. What direction was the driver looking during backing maneuver  
(Select all that apply)
- Straight ahead
  - Right
  - Left
  - Rearward
  - At object inside the car
  - At mirrors
  - Other (specify): \_\_\_\_\_
  - N/A
  - Unknown
17. Was the driver distracted during back up maneuver  
(Select all that apply)
- No non-driving activities
  - External**
  - Looking at other vehicles
  - Looking at other non motorist
  - Looking at intended turn destination
  - External focus, not specified
  - Other external focus (specify): \_\_\_\_\_
  - Internal**
  - Looking at other occupant
  - Talking to passenger
  - Dialing phone
  - Talking on phone
  - Listening to radio/cd/portable playback device
  - Adjusting radio/cd player
  - Adjusting climate controls
  - Using a device/controls integral to vehicle (specify): \_\_\_\_\_
  - Reading/adjusting navigation system
  - Eating or drinking
  - Smoking related
  - Retrieving fallen object (specify): \_\_\_\_\_
  - Internal focus, not specified
  - Focused on other internal object (specify): \_\_\_\_\_
  - N/A
  - Unknown
18. Driver avoidance actions prior to impact  
(Select all that apply)
- None
  - Braking
  - Steering left
  - Steering right
  - Accelerating
  - Other (specify): \_\_\_\_\_
  - N/A
  - Unknown
19. Did driver see struck non motorist prior to impact  
(Select all that apply)
- No, never saw non motorist
  - Saw non motorist prior to entering vehicle
  - Saw non motorist after entering vehicle
  - Other (specify): \_\_\_\_\_
  - N/A
  - Unknown
20. Est time between start of backing and impact
- <2 or = 1 second
  - 2-5 seconds
  - 6-10 seconds
  - > 10 seconds
  - N/A
  - Unknown
21. Driver interior sightline obstructions  
(Select all that apply)
- Pillar
  - Headrest
  - Cargo
  - Other occupant
  - Other (specify) \_\_\_\_\_
  - Unknown
  - None
22. Recent experience driving this vehicle
- More than 10 times the last three months
  - 6-10 times the last three months
  - 2-5 times the last three months
  - Less than 2 times the last three months
  - First time driving this vehicle
  - N/A
  - Unknown
23. Frequency of driving in this parking lot/driveway
- Daily
  - Weekly
  - Several times a month
  - Monthly
  - Rarely
  - First time in lot/driveway
  - N/A
  - Unknown
24. Driver Impairment  
(Select all that apply)
- No drugs or alcohol present
  - Alcohol present (specify BAC): \_\_\_\_\_
  - Drugs present (specify): \_\_\_\_\_
  - Unknown
25. Source of alcohol/drug results
- Police reported
  - Medical record
  - Other (specify) \_\_\_\_\_
  - Not Tested
  - Unknown if tested



# Non Motorist Form

1. Case Number  
\_\_\_\_\_

## NON-MOTORIST PROFILE

2. Non-motorist's Age \_\_\_\_\_ Months  
\_\_\_\_\_ Years  
99 = Unknown

3. Non-motorist's Sex  
 Male  
 Female  
 Unknown

4. Non-motorist's Height \_\_\_\_\_ cm  
999 = Unknown

5. Non-motorist's Weight \_\_\_\_\_ kg  
999 = Unknown

6. Medical outcome  
 Not injured  
 ER only  
 Hospitalized 1-4 days  
 Hospitalized 5 days or more  
 Treatment later  
 Fatal  
 Unknown

7. Source of most severe injury  
 Bumper  
 Tire  
 Undercarriage  
 Other Specify: \_\_\_\_\_  
 Ground  
 N/A  
 Unknown

8. Non-motorist impairment  
*(Select all that apply)*  
 No drugs or alcohol present  
 Positive for alcohol (specify BAC): \_\_\_\_\_  
 Positive for drugs (specify): \_\_\_\_\_  
 Unknown

9. Source of alcohol/drug results  
 Police reported  
 Medical Report  
 Other (specify) \_\_\_\_\_  
 Not Tested  
 Unknown if tested

## NON-MOTORIST ACTIONS

10. Non-motorist attitude  
 Standing  
 Bending at waist  
 Sitting  
 Crouching  
 Kneeling  
 On skates/skateboard  
 On bike/scooter  
 Other (specify) \_\_\_\_\_  
 Unknown

11. Non-motorist motion  
 Not moving  
 Walking slowly  
 Walking rapidly  
 Running or jogging  
 Skipping/Hopping/Jumping  
 Falling/Stumbling/Rising  
 On skates/skateboard  
 On bike/scooter  
 Other (specify): \_\_\_\_\_  
 Unknown

12. Non-motorist approach relative to rear of vehicle  
 Stationary  
 From left  
 From right  
 From behind  
 Other (specify): \_\_\_\_\_  
 Unknown

13. Non-motorist first avoidance action  
 No avoidance actions  
 Stopped  
 Accelerated pace  
 Ran away (along vehicle path)  
 Jumped  
 Turned away from vehicle  
 Turned toward vehicle and braced  
 Dove or fell away from vehicle  
 Other (specify): \_\_\_\_\_  
 Unknown

14. Non-motorist primary focus of attention  
 Striking vehicle  
 Play object  
 Person  
 Surrounding traffic  
 Animal  
 Handheld electronic (phone, MP3 player, etc.)  
 Other Object (specify) \_\_\_\_\_  
 Unknown

15. Were any other Non-motorists present?  
*(Select all that apply)*  
 Alone  
 One adult present  
 One other child present  
 Multiple adults present  
 Multiple children present  
 Unknown

**NON MOTORIST CLOTHING**

**NOTES:**

- Specify Color, Fabric and Texture/Weight for outermost layer only
- Indicate "NONE" if applicable
- Available codes:

	<u><b>Colors</b></u>		<u><b>Fabrics</b></u>		<u><b>Textures</b></u>		<u><b>Weights</b></u>
Black	Charcoal gray		Natural		Soft		Heavy
Lt gray/silver	Brown		Synthetic		Slick		Medium
Gold/tan	Purple		Blend		Coarse		Light
Dark blue	Light blue						
Dark green	Light green						
Maroon	Red						
Orange	Yellow						
White	Other (specify)						

	<b>Clothing</b>	<b>Color</b>	<b>Fabric</b>	<b>Texture</b>	<b>Weight</b>
<b>H E A D W E A R</b>	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
<b>U P P E R  B O D Y</b>	Short Sleeve				
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
<b>L O W E R  B O D Y</b>	Shorts				
	Pants				
	Shoes				
	Other (specify): _____				