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ON-SITE NOT IN TRAFFIC SURVEILLANCE BACK OVER INVESTIGATION

CASE NUMBER - IN-07-026
LOCATION - MICHIGAN
VEHICLE - 1994 FORD RANGER
INCIDENT DATE - June 2007

Submitted:

November 13, 2007
Revised January 25, 2008

Contract Number: DTNH22-07-C-00044

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Washington, D.C. 20590-0003

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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.

Technical Report Documentation Page

1. *Report No.* IN-07-026	2. *Government Accession No.*	3. *Recipient's Catalog No.*	
4. *Title and Subtitle* On-Site Not In Traffic Surveillance Back Over Investigation Vehicle - 1995 Ford Ranger Location - Michigan		5. *Report Date:* November 13, 2007 6. *Performing Organization Code*	
7. *Author(s)* Special Crash Investigations Team #2		8. *Performing Organization Report No.*	
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12. *Sponsoring Agency Name and Address* U.S. Department of Transportation (NPO-122) National Highway Traffic Safety Administration National Center for Statistics and Analysis Washington, D.C. 20590-0003		13. *Type of Report and Period Covered* Technical Report Incident Date: June 2007 14. *Sponsoring Agency Code*	
15. *Supplementary Notes* On-site not in traffic surveillance back over investigation involving a 1994 Ford Ranger and a pedestrian.			
16. *Abstract* This report covers an on-site not in traffic surveillance back over investigation involving a 1994 Ford Ranger and a pedestrian. This incident is of special interest because the Ford's driver backed over a pedestrian [46-year-old female] who was injured as a result the incident. The Ford Ranger was parked in an unattached garage with the garage door closed. The driver entered the garage through a side door located on the north side of the garage. He opened the garage door via the switch next to the side door, approached the Ford from the left and entered the vehicle through the driver's door. Unknown to the driver, the pedestrian was in the yard southwest of the garage. The driver stated he "glanced" over his right shoulder out of the backlight, looked forward again and began to back up. He indicated he did not check his mirrors prior to backing. He also indicated he did not look at his mirrors or behind him the entire time he was backing. Meanwhile, as the vehicle was backing up, a cat began to run toward the path of the vehicle from its right side, and the pedestrian began to chase after the cat. As the pedestrian and the cat approached the backing vehicle, she bent down and reached for the cat and her head impacted the Ford's back right corner. She fell to the ground and the right rear tire rolled over her left arm as the Ford continued to back up. The driver thought he had backed over a piece of fire wood and stopped the vehicle and discovered the pedestrian laying on the ground. The driver took the pedestrian to the hospital. The pedestrian was admitted for treatment of a closed head injury, fracture of her C_7 vertebrae, and a large contusion of her upper left arm. The visibility study showed that had the driver been looking over his right shoulder out of the backlight as he backed up, it is likely he would have had an opportunity to see the pedestrian approaching the Ford as she was chasing the cat. In addition, the scene investigation and the visibility study indicated that the southwest section of the garage was most likely a view obstruction for the driver when he "glanced" over his right shoulder out of the backlight prior to backing up.			
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This incident was brought to NHTSA's attention on or about June 26, 2007 by NASS CDS/GES sampling activities. This incident involved a 1994 Ford Ranger pickup truck, which was involved in a back over incident with a pedestrian in a private driveway. The incident occurred in June 2007 at 12:47 p.m., in Michigan and was investigated by the applicable county sheriff's department. A standard "State of Michigan Traffic Crash Report" (i.e., UD-10) was completed and filed with the state. This incident is of special interest because the Ford's driver backed over a pedestrian [46-year-old female] who was injured as a result the incident. Initial contact with the pedestrian, who was the driver's wife, was made on July 10, 2007. However, due to the driver's work schedule, final cooperation and vehicle inspection arrangements could not be established until July 20, 2007. This contractor inspected the scene and vehicle, and interviewed the Ford's driver and the pedestrian on July 25, 2007. This report is based on the sheriff's department crash report, scene and vehicle inspections, interviews with the driver of the Ford and the pedestrian, and this contractor's evaluation of the evidence.

SUMMARY

The Ford Ranger was parked in an unattached garage with the garage door closed. The driver entered the garage through a side door located on the north side of the garage. He opened the garage door via the switch next to the side door, approached the Ford from the left and entered the vehicle through the driver's door. Unknown to the driver, the pedestrian was in the yard southwest of the garage. The driver stated he "glanced" over his right shoulder out of the backlight, looked forward again and began to back up. He indicated he did not check his mirrors prior to backing. He also indicated he did not look at his mirrors or look behind him the entire time he was backing. Meanwhile, as the vehicle was backing up, a cat began to run toward the path of the vehicle from its right side, and the pedestrian began to chase after the cat. As the pedestrian and the cat approached the backing vehicle, she bent down and reached for the cat and her head impacted the Ford's back right corner. She fell to the ground and the right rear tire rolled over her left arm as the Ford continued to back up. The driver thought he had backed over a piece of fire wood and stopped the vehicle and discovered the pedestrian laying on the ground. The driver took the pedestrian to the hospital. The pedestrian was admitted for treatment of a closed head injury, fracture of her C_7 vertebrae, and a large contusion of her upper left arm. The visibility study showed that had the driver been looking over his right shoulder out of the backlight as he backed up, it is likely he would have had an opportunity to see the pedestrian approaching the Ford as she was chasing the cat. In addition, the scene investigation and the visibility study indicated that the southwest section of the garage was most likely a view obstruction for the driver when he "glanced" over his right shoulder out of the backlight prior to backing up.

CRASH CIRCUMSTANCES

Crash Environment: This incident occurred in a private driveway as the Ford Ranger's driver was backing out of his garage and down the driveway. The garage was an unattached two car garage located approximately 6 meters ($\sim$20 feet) south of the driver's residence. The Ford was parked in the approximate center of the garage and the garage door was closed. The garage floor was constructed of concrete and was level. The section of the driveway that connected to the

garage was also concrete and had a negative 3.6% grade in the direction the Ford was backing. The concrete driveway section was 4.9 meters (16.1 feet) in width and merged into the remaining portion of the driveway, which was constructed of sand and had a negative 5 % grade. At the time of the incident the light condition was daylight, the atmospheric condition was cloudy and the roadway surface was dry. The site of the incident was rural residential. See the Scene Diagram at end of this report.

Pre-Crash: The Ford Ranger's driver was in his side yard between his residence and the garage. He decided to leave to go to a nearby gas station to get gasoline for his chain saw. He thought his wife (i.e., the pedestrian) was inside their residence at the time. He entered the north side of the garage through the side door. He then pushed the button located adjacent to the side door to raise the garage door. The driver walked directly to the Ford, approaching from the left, and entered the Ford through the left front door. He immediately pushed in the clutch and started the vehicle. The driver stated he then "glanced" over his right shoulder out of the backlight, looked forward again and began to back up. He indicated he did not check his mirrors prior to backing. He also indicated he did not look at his mirrors or behind him the entire time he was backing. The driver had the radio on, which was set to moderate volume at the time. Unknown to the driver, the pedestrian was in the yard southwest of the garage. She had no recollection of her specific location in relation to the driveway or the garage door. However, based on the location of the impact and her rest position as described by the driver, she was most likely in the yard southwest of the garage and near the end of the concrete portion of the driveway or adjacent to the beginning of the sand portion of the driveway (**Figure 1**). The driver estimated that the time from entering the vehicle to starting to back up was approximately 10 seconds. His intention was to back down the driveway turning the vehicle counterclockwise into the intersecting section of his driveway. He then intended to travel northbound in his driveway to the roadway. The sheriff's department crash report indicated that the driver was not under the influence of drugs or alcohol. It also indicated that no alcohol or drug test was conducted. The crash report did not address alcohol or drugs for the pedestrian. The incident occurred after he backed out of the garage and was backing westbound down the driveway.

Figure 1: Overview of area on south side of garage where pedestrian was located prior to the driver backing up, arrow shows area of impact

Crash: The Ford's driver stated that after he glanced out of the backlight, he let out the clutch and then looked straight ahead as he started to roll out of the garage and down the driveway. He stated he never looked in any of his mirrors or looked behind him the entire time he was backing. Meanwhile, as the vehicle was rolling down the driveway, a cat began to run toward the path of the vehicle from its right side, and the pedestrian began to chase after the cat. As the driver backed, he turned the wheels to the right to back counterclockwise to the south into the

intersecting portion of the driveway. As the pedestrian and the cat approached the backing vehicle, and the vehicle entered the sandy portion of the driveway (**Figure 2**), she bent down and reached for the cat and her head impacted the truck bed rear of the right rear wheel (**Figure 3**). However, it could not be determined if the pedestrian made contact with the back or right side plane of the vehicle. She fell to the ground toward the southwest and the right rear tire rolled over her left arm as the Ford continued to back counterclockwise. The driver stated he thought he had run over a piece of fire wood. He stopped the Ford, got out, walked around behind the vehicle to the passenger side, and discovered the pedestrian laying face down on the right side of the Ford with her head toward the front of the vehicle (**Figure 2**). It is not known if she had moved any prior to the driver reaching her.

Figure 2: Rest position of Ford as positioned by driver, green arrow shows approximate impact location, red arrow shows area of final rest of pedestrian

Figure 3: Overview of back right corner of truck bed; unknown if impact was to back plane or right side plane, black/white increments on scale are 0.3 meter (1 foot)

Based on the driver indicated areas of impact and final rest, and the scene investigation, it was determined that the Ford had backed approximately 8 meters (~26 feet) from its parked position to impact and traveled an additional approximate 3.8 meters (~13 feet) to its rest position. The Ford's driver demonstrated how he had backed out of the garage and down the driveway to the area where he stopped his vehicle. His demonstration indicated he essentially rolled down the driveway with some slight braking action. The SCI investigator timed his travel to the approximate impact area as he backed. Based on this information, the impact speed was estimated to have been approximately 4 km.p.h. (~3 m.p.h.).

Post-Crash: The Ford's driver drove the pedestrian to the hospital where she was admitted for treatment of her injuries. The pedestrian reported that she sustained a closed head injury, fracture of her C_7 vertebrae and a large contusion under her left arm.

The 1994 Ford Ranger LX (**Figure 4**) was a rear wheel drive, regular cab, pickup truck VIN: 1FTCR10A8RU------) equipped with a 2.3L, I4 engine and five-speed manual transmission. The Ford was not equipped with any backup/parking aid. The vehicle's left front window, right front window and backlight were all tinted with original equipment manufacturer tinting. The center portion of the Ford's backlight was constructed with two sliding windows. These windows as well as the left front and right front windows were closed at the time of the incident. The Ford was also equipped with a step-type back bumper and had a truck bed cover installed (**Figure 5**), which increased the height of the bed approximately 15 centimeters (~6 inches). The Ford's specified wheelbase was 274 centimeters (108 inches). The specified rear overhang was 109 centimeter (43 inches) and the specified overall length was 467 centimeters (184 inches). The beltline height was measured as 109 centimeters (43 inches). The distance from the ground to the bottom of the back bumper was 46 centimeters (18 inches). The distance from the ground to the top of the tailgate was approximately 114 centimeters (45 inches). The distance from the ground to the truck bed lid (at the centerline) was 125 centimeters (49 inches).

Figure 4: Front left view of case vehicle

Figure 5: Overview of back of case vehicle, scale graduated in feet and inches

CASE VEHICLE DAMAGE

There was no evidence of pedestrian contact to the Ford's back bumper or the back right corner of the truck bed. The Ford was driven from the scene.

CASE VEHICLE DRIVER

The Ford's driver was a White (non-Hispanic) 48-year-old male. He was 180 centimeters (71 inches) tall and weighed 91 kilograms (200 pounds). He indicated he drives the Ford daily and drives in and out of the garage at least once a day. The driver had no vision deficiency and was not wearing sunglasses at the time of the incident.

A visibility study was conducted during the Ford Ranger inspection in order to determine the nominal blind zone behind the Ford. In addition, the blind zones of the side view mirrors and rearview mirror were also determined. The visibility measurements were made to provide general documentation of the Ford's blind zones. The driver did not look out the backlight or through his mirrors as he was backing.

The Ford's driver assisted the SCI investigator in making the visibility observations. The driver's eye height was 142 centimeters (56 inches) above the ground as he sat in the driver's seat. The driver had his seat track adjusted to the full rear position, which was his normal seat track adjustment. The Ford was positioned in the garage by the driver in the approximate same location as on the day of the incident. The vehicle was placed in this position because the driver had indicated that he had "glanced" out the backlight (**Figure 6**) just prior to beginning to back up, but did not look out of the backlight as he backed up. All the visibility observations were made with the vehicle in this position. Please refer to the Nominal Visibility Diagram at the end of this report when reading the following discussion.

The initial observations were made with the driver looking over his right shoulder out of the backlight while the SCI investigator moved the standard 71 centimeters (28 inch) high target rearward from the back of the vehicle along the vehicle's approximate centerline until the driver could see it. The target had to be moved rearward 12.3 meters (40.2 feet) down the negative grade of the driveway (3.6% negative on the concrete portion and 5% negative on the sand portion) before it came into the driver's view (**Figure 7**). The target was then moved to the right 4.9 meters (16.1) where it became obstructed by a fence and tree. The target was moved an additional 7 meters (23.1 feet) to the right where it became obstructed by the edge of the garage door frame

Figure 6: View out of Ford's backlight from driver's seat; Ford parked in garage by driver in same location as at time of incident

Figure 7: View from south side of driveway showing target (arrow) at location driver stated he could first see it as he looked over his right shoulder out of the Ford's backlight (Ford parked in the garage)

Figure 8: View through rear view mirror from driver's seat

and could no longer be seen. The target was then moved to the left from the vehicle's approximate center line 2.1 meters (6.9 feet) where it went out of the driver's view because it was unnatural for him to turn his head any further to the right.

The driver was then asked to view out the backlight through the rearview mirror (**Figure 8** above). The target was again moved rearward from the back of the vehicle down the negative grade of the driveway until the driver could see it. It had to be moved rearward 16.6 meters (54.4 feet) before the driver could see it. The target was then moved from this location 3.6 meters (11.8 feet) right of the Ford's approximate centerline where it went out of the rearview mirror's field of view. The target was then moved to the left from the centerline 3.4 meters (11.2 feet) where it again went out of the rearview mirror's field of view.

The target was also placed at the left side of the Ford adjacent to the driver's seat position as the driver viewed through the left side view mirror. The target was then moved rearward from the driver's seated position 2.4 meters (7.8 feet) before it came into the driver's view. The target was then moved to the left from the side of the vehicle 0.6 meters (1.9 feet) where it went out of the left side view mirror's field of view. The left side view mirror had a small after market convex mirror, which the driver had mounted to the regular mirror. The convex mirror provided a wide angle view of the area adjacent to the left side of the vehicle as well as behind the left side of the vehicle (**Figure 9**). The visibility zone of the convex mirror was not assessed because it was a non-standard mirror, the driver did not look through the left side view mirror prior to backing, and the pedestrian approached the Ford from the right. The target was repositioned on the right side of the vehicle adjacent to the driver's seated position and moved rearward as he looked through the right side view mirror. The target had to be moved rearward 1.2 meters (3.8 feet) before the driver could see it in the right side view mirror. The target was then moved to the right from the side of the vehicle 0.8 meter (2.5 feet) where it went out of the mirror's field of view.

Figure 9: View through Ford's left side view mirror from driver's seat

The on-site investigation revealed that the pedestrian approached the Ford from the right as the driver was backing the vehicle down the driveway. The driver stated he "glanced" over his right shoulder out of the backlight just prior to backing, and then looked straight ahead as he backed up. He did not look at his mirrors or look behind him the entire time he was backing. The on-site investigation and the visibility study showed that had the driver looked over his right shoulder out of the backlight as he backed up, it is likely that he would have had an opportunity to see the pedestrian approaching the vehicle from the right as she was chasing the cat. This conclusion is based on scaled diagrams of the Ford, the visibility measurements, the incident scene environment and the height of the pedestrian. The scaled diagrams showed that the pedestrian's

upper torso would have extended above the blind zone behind the Ford. In addition, the scene investigation and the visibility study indicated that the southwest section of the garage (**Figure 6** above) was most likely a view obstruction for the driver when he "glanced" over his right shoulder out of the backlight prior to backing up.

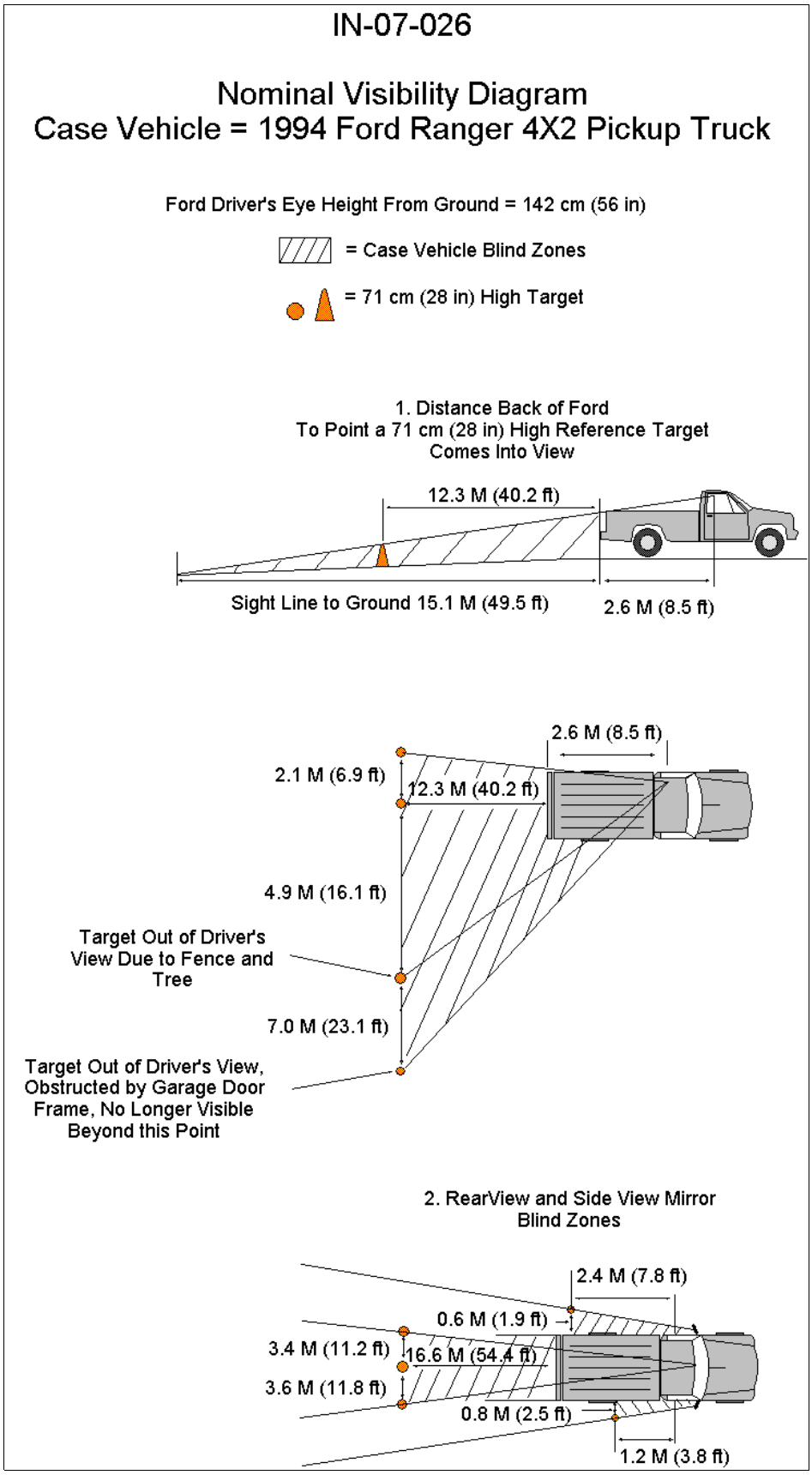
PEDESTRIAN

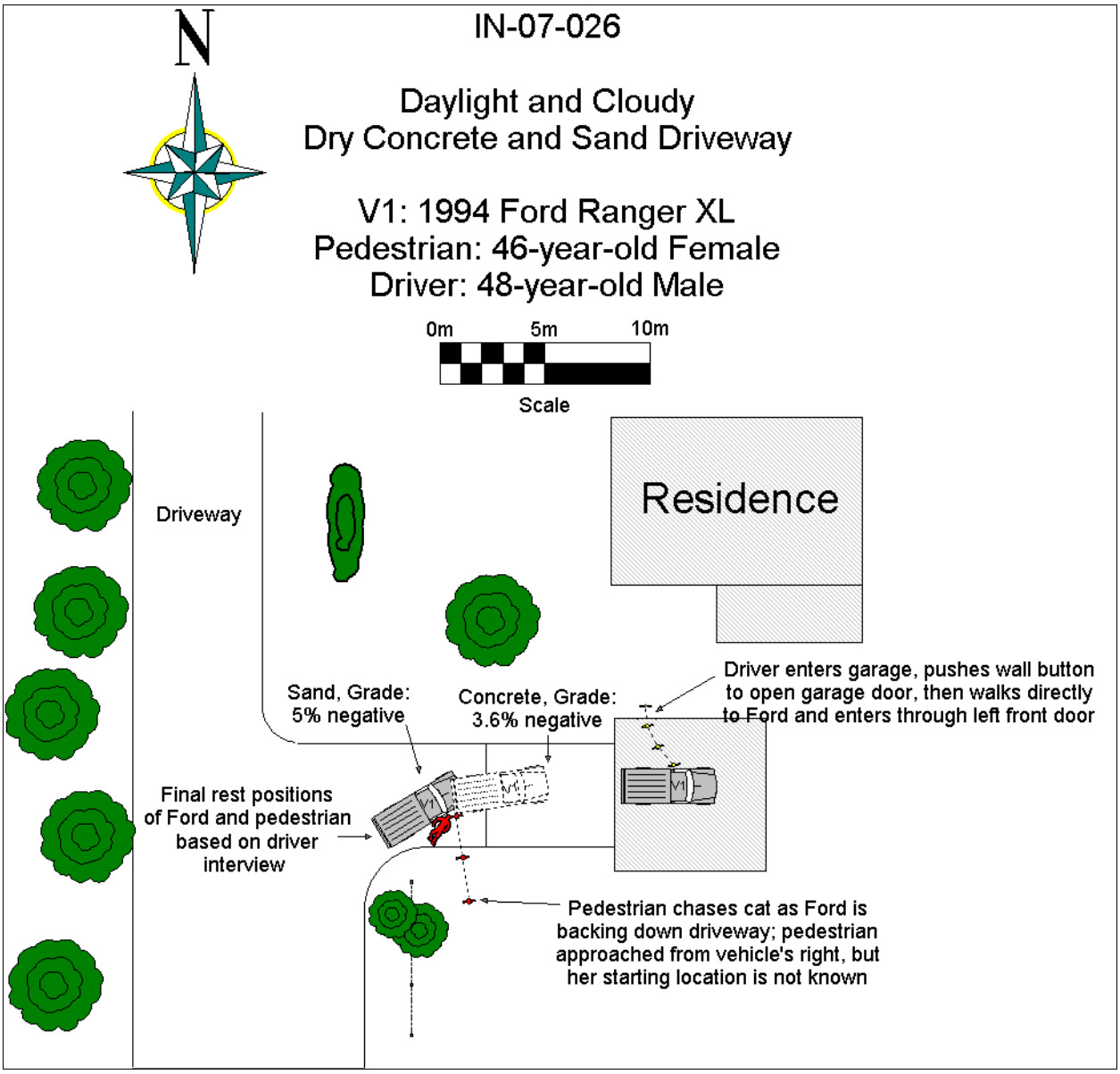
The pedestrian was a 46-year-old, White (non-Hispanic) female. She was 155 centimeters (61 inches) tall and weighed 44 kilograms (97 pounds). She stated she was wearing a white T-shirt and blue sweat pants. The pedestrian had no recollection of the type or color of shoes she was wearing at the time of the incident. She was transported from the scene by her husband to a hospital and was admitted. She reported that she was hospitalized for three days and received one follow-up visit for an additional X-ray and checkup. She was still on medical leave from her job at the time of this contractor's investigation.

PEDESTRIAN INJURIES

The pedestrian indicated that she sustained a closed head injury and fracture of her C_7 vertebrae, as well as a large contusion under her left upper arm. The pedestrian's injuries and injury mechanisms are shown in the table below.

Injury Number	Injury Description (including Aspect)	NASS Injury Code & AIS 90	Injury Source (Mechanism)	Source Confidence	Source of Injury Data
1	Closed head injury, not further specified	unknown 115099.7,0	Exterior of motor vehicle: truck bed back or right side	Probable	Interviewee (same person)
2	Fracture C_7, not further specified	moderate 650216.2,6	Exterior of motor vehicle: truck bed back or right side	Probable	Interviewee (same person)
3	Contusion, large, under left upper arm	minor 790402.1,2	Tire, right rear	Probable	Interviewee (same person)


IN-07-026
Nominal Visibility Diagram
Case Vehicle = 1994 Ford Ranger 4X2 Pickup Truck
Ford Driver's Eye Height From Ground = 142 cm (56 in)
= Case Vehicle Blind Zones
= 71 cm (28 in) High Target
1. Distance Back of Ford
To Point a 71 cm (28 in) High Reference Target
Comes Into View
12.3 M (40.2 ft)
Sight Line to Ground 15.1 M (49.5 ft)
2.6 M (8.5 ft)
2.6 M (8.5 ft)
2.1 M (6.9 ft)
12.3 M (40.2 ft)
4.9 M (16.1 ft)
Target Out of Driver's View Due to Fence and Tree
7.0 M (23.1 ft)
Target Out of Driver's View, Obstructed by Garage Door Frame, No Longer Visible Beyond this Point
2. RearView and Side View Mirror
Blind Zones
2.4 M (7.8 ft)
0.6 M (1.9 ft)
3.4 M (11.2 ft)
16.6 M (54.4 ft)
3.6 M (11.8 ft)
0.8 M (2.5 ft)
1.2 M (3.8 ft)


N
IN-07-026
Daylight and Cloudy
Dry Concrete and Sand Driveway
V1: 1994 Ford Ranger XL
Pedestrian: 46-year-old Female
Driver: 48-year-old Male
0m
5m
10m
Scale
Driveway
Residence
Sand, Grade:
5% negative
Concrete, Grade:
3.6% negative
Driver enters garage, pushes wall button to open garage door, then walks directly to Ford and enters through left front door
Final rest positions of Ford and pedestrian based on driver interview
Pedestrian chases cat as Ford is backing down driveway; pedestrian approached from vehicle's right, but her starting location is not known

Not Applicable ☐

Reset Values

Print Forms

U.S. Department of Transportation
National Highway Traffic Safety Administration

SCENE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 7 0 2 6

IDENTIFICATION

2. Date of Crash 0 6 / x x / 0 7

3. Time of Crash 1 2 4 7

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
- ○ Shrubbery
- ○ 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
- ○ Shrubbery
- ○ Utility poles
- ○ Signs
- ○ Glare
- ○ Other (specify) _____
- ○ Unknown

11. Grade at parked position + / - 0 0 0 %

12. Estimated distance from parked position to impact

0 0 8 . 0 m

13. Estimated speed at impact 0 0 4 kmph

14. Grade at impact +/ - - 0 5 %

15. Estimated distance from impact to vehicle final rest

0 0 3 . 8 m

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

Not Applicable ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

VEHICLE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number I N 0 7 0 2 6

VEHICLE IDENTIFICATION

2. VIN 1 F T C R 1 0 A 8 R U X X X X X X

3. Model Year 1 9 9 4

4. Vehicle Make (specify): Ford

5. Vehicle Model (specify): Ranger XL

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	☑	
2nd Left	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
2nd Right	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
3rd Left	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
3rd 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 P225/70R14

7. LF Tire Size P215/75R14

8. LR Tire Size P215/75R14

9. RF Tire Size P215/75R14

10. RR Tire Size P225/70R14

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	7	☑	☐ ☐ ☑ Full Down / Mid / Full Up	Head restraint is integral
Front Middle	7	☐	☐ ☐ ☐ Full Down / Mid / Full Up	
Front Right	7	☑	☐ ☐ ☑ Full Down / Mid / Full Up	Head restraint is integral
2nd Left		☐	☐ ☐ ☐ Full Down / Mid / Full Up	
2nd Middle		☐	☐ ☐ ☐ Full Down / Mid / Full Up	
2nd Right		☐	☐ ☐ ☐ Full Down / Mid / Full Up	
3rd Left		☐	☐ ☐ ☐ Full Down / Mid / Full Up	
3rd Middle		☐	☐ ☐ ☐ Full Down / Mid / Full Up	
3rd Right		☐	☐ ☐ ☐ Full Down / Mid / Full Up	

Seat Type codes:

0 = No seat or seat folded down
1 = Bucket
2 = Bucket w/ folding back
3 = Bench
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
8 = Pedestal (i.e. column supported)
9 = Box mounted (i.e. van type)
10= Other seat type (specify)
99= Unknown seat type

VEHICLE MEASUREMENTS

Clearance Heights		Measurements (all from ground, and in centimeters	NOTES
Beltline		109	
Top of trunk/tailgate		114	
Bottom of bumper		46	
Trailer hitch (if applicable)		36	
Undercarriage			
	Sway bar	N/A	
	Axle	28	
	Differential	18	
	Other (specify): ____	124	Other= Top of truck bed cap
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

Not Applicable ☑

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 7 0 2 6

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

No Driver Present ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

I N 0 7 0 2 6

DRIVER PROFILE

2. Driver's Age 4 8
   99 = Unknown

3. Driver's Sex
   - (•) Male
   - ( ) Female
   - ( ) Unknown

4. Driver's Height 1 8 0 cm
   999 = Unknown

5. Driver's Weight 0 9 1 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): Wife
   - ( ) 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): Turn around and leave
    - ( ) N/A
    - ( ) Unknown

12. Where was driver going
    Description:

    To gas station of get gasoline for chain saw

13. Driver in a hurry
    - ( ) Yes
    - (•) No
    - ( ) N/A
    - ( ) 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
    - ( ) 11-30 Seconds
    - ( ) 31-60 Seconds
    - ( ) Over 60 Seconds
    - ( ) N/A
    - ( ) 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

Not Applicable ☐

U.S. Department of Transportation
National Highway Traffic Safety Administration

Non Motorist Form

Reset Values

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number
I N 0 7 0 2 6

NON-MOTORIST PROFILE

2. Non-motorist's Age — 4 6 ○ Months ◉ Years
99 = Unknown

3. Non-motorist's Sex
○ Male
◉ Female
○ Unknown

4. Non-motorist's Height — 1 5 5 cm
999 = Unknown

5. Non-motorist's Weight — 0 4 4 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: Truck bed
○ 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:

Colors		***Fabrics***	***Textures***	***Weights***
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)			

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
UPPER BODY	Short Sleeve	White	Natural	Soft	Light
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
LOWER BODY	Shorts				
	Pants	Light blue	Natural	Soft	Light
	Shoes	Unknown	Unknown	Unknown	Unknown
	Other (specify): _____				