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ON-SITE NOT IN TRAFFIC SURVEILLANCE BACK OVER INVESTIGATION

CASE NUMBER - IN07023
LOCATION - NEW MEXICO
VEHICLE - 2004 OLDSMOBILE ALERO
INCIDENT DATE - May 2007

Submitted:

December 3, 2007
Revised: February 18, 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.* IN07023	2. *Government Accession No.*	3. *Recipient's Catalog No.*	
4. *Title and Subtitle* On-Site Not In Traffic Surveillance Back Over Investigation Vehicle - 2004 Oldsmobile Alero Location - New Mexico		5. *Report Date:* December 3, 2007 6. *Performing Organization Code*	
7. *Author(s)* Special Crash Investigations Team #2		8. *Performing Organization Report No.*	
9. *Performing Organization Name and Address* Transportation Research Center Indiana University 222 West Second Street Bloomington, Indiana 47403-1501		10. *Work Unit No. (TRAIS)* 11. *Contract or Grant No.* DTNH22-07-C-00044	
12. *Sponsoring Agency Name and Address* U.S. Department of Transportation (NVS-411) 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: May 2007 14. *Sponsoring Agency Code*	
15. *Supplementary Notes* On-site not in traffic surveillance back over investigation involving a 2004 Oldsmobile Alero and a pedestrian.			
16. *Abstract* This report covers an on-site not in traffic surveillance back over investigation involving a 2004 Oldsmobile Alero and a pedestrian. This incident is of special interest because the Oldsmobile's driver backed into a pedestrian (89-year-old female), who sustained police reported "A" (incapacitating) injuries as a result of the incident. The Oldsmobile was parked facing north on the north side of a parking lot access roadway in a hospital parking lot. The pedestrian's vehicle was parked on the south side of the same access roadway approximately four parking spaces west of the Oldsmobile. The Oldsmobile's driver came out of the hospital, which was east of the parking lot, walked behind the Oldsmobile and entered the driver's door. In the meantime, the pedestrian had exited her vehicle and walked northeast across the access roadway toward the hospital. The pedestrian then walked east directly behind the Oldsmobile just as the driver was about to back up. The driver began to back up and the Oldsmobile's back bumper immediately impacted the pedestrian and knocked her to the ground fracturing her right hip. The driver felt the impact and immediately stopped the Oldsmobile. The pedestrian was taken to the nearby hospital and later transferred to a second hospital for treatment of her fractured right hip. Based on to the height of the pedestrian [173 centimeters (68 inches)], her upper torso would have extended well above the Oldsmobile's beltline, and therefore it would have been possible for the driver to see her as she walked behind the Oldsmobile. However, the driver stated she did not see the pedestrian at any time prior to the incident.			
17. *Key Words* Back Over Pedestrian Injury Motor Vehicle Traffic Crash Injury Severity		18. *Distribution Statement* General Public	
19 *Security Classif. (of this report)* Unclassified	20. *Security Classif. (of this page)* Unclassified	21. *No. of Pages* 17	22. *Price* $3,700

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BACKGROUND IN07023

This incident was brought to NHTSA's attention on or before July 9, 2007 by NASS GES sampling activities. This incident involved a 2004 Oldsmobile Alero and a pedestrian. The incident occurred in May, 2007 at 10:00 a.m., in New Mexico and was investigated by the applicable city police department. However, the incident was not reported to police until six days after the event. The police completed a standard "State of New Mexico Uniform Crash Report" and submitted a copy of the report to the state. This incident is of special interest because the Oldsmobile's driver backed into a pedestrian (89-year-old female), who sustained police reported "A" (incapacitating) injuries as a result of the incident. This contractor inspected the incident scene and interviewed the Oldsmobile's driver and the pedestrian on July 23-24, 2007. A second interview was conducted with the pedestrian on December 3, 2007. This contractor conducted a visibility study using an exemplar 2004 Oldsmobile Alero on August 2, 2007. The subject vehicle was not inspected. The subject vehicle did not belong to the driver and was subsequently sold by the owner prior to this contractor's investigation. This contractor was instructed by headquarters staff to conduct an on-scene investigation because this contractor had scheduled other investigations in the same city. This report is based on the police crash report, interviews with the Oldsmobile's driver and the pedestrian, scene and exemplar vehicle inspections, and this contractor's evaluation of the evidence.

SUMMARY

The Oldsmobile was parked facing north on the north side of a parking lot access roadway in a hospital parking lot. The pedestrian's vehicle was parked on the south side of the same access roadway approximately four parking spaces west of the Oldsmobile. The Oldsmobile's driver came out of the hospital, which was east of the parking lot, walked behind the Oldsmobile and entered the driver's door. In the meantime, the pedestrian had exited her vehicle and walked northeast across the access roadway toward the hospital. The pedestrian then walked east directly behind the Oldsmobile just as the driver was about to back up. The driver began to back up and the Oldsmobile's back bumper immediately impacted the pedestrian and knocked her to the ground fracturing her right hip. The driver felt the impact and immediately stopped the Oldsmobile. The pedestrian was taken to the nearby hospital and later transferred to a second hospital for treatment of her fractured right hip. Based on to the height of the pedestrian [173 centimeters (68 inches)], her upper torso would have extended well above the Oldsmobile's beltline, and therefore it would have been possible for the driver to see her as she walked behind the Oldsmobile. However, the driver stated she did not see the pedestrian at any time prior to the incident.

CRASH CIRCUMSTANCES

Crash Environment: The Oldsmobile Alero's driver accompanied the SCI investigator to the parking lot where the incident occurred and showed the investigator where the Oldsmobile had been parked and approximately where she thought the pedestrian was located at the time of the impact. The Oldsmobile was parked in a hospital parking lot. The hospital was located at the east end of the parking lot access roadway, which traversed east and west from the hospital. Parking spaces were located on the north and south sides of the access roadway (**Figure 1** below). The width of the access roadway was 7.2 meters (23.6 feet), and each parking space was

approximately 2.4 meters (~8 feet) in width. The Oldsmobile was parked on the north side of the access roadway in the fifth parking space from the east end of the parking lot. The pedestrian's vehicle was parked on the south side of the access roadway approximately four parking spaces west of the Oldsmobile. The parking lot was nearly full of vehicles. At the time of the incident the light condition was daylight, the atmospheric condition was clear, and the roadway pavement was dry bituminous with a positive 4.3% grade to the east. The grade in the Oldsmobile's parking space was 1% negative to the south (i.e., the direction the Oldsmobile was backing). The site of the incident was urban commercial. Refer to the Scene Diagram at the end of this report.

Figure 1: View south to parking space where Oldsmobile was parked; arrow shows path of pedestrian; tripod shows driver reported point of impact and area of final rest of pedestrian.

Pre-Crash: The Oldsmobile Alero's driver (45-year-old female) had been in the hospital. She stated that she exited the hospital and walked west along the roadway approaching her vehicle from the right. She walked around the back of the Oldsmobile to the driver's side and entered the vehicle. The driver stated that she looked over her right shoulder out of the backlight, turned to her left and looked behind her, then checked the rearview mirror and began to back up. The driver continued to look though the rearview mirror as she backed up. The driver estimated the elapsed time between entering the Oldsmobile and beginning the back up maneuver was 10 seconds or less. As the driver was approaching the Oldsmobile, the pedestrian may have been exiting her vehicle; however, the Oldsmobile's driver stated that she never saw the pedestrian prior to the incident. As the pedestrian walked east from her car toward the hospital, she crossed the access roadway and walked directly behind the Oldsmobile.

Crash: As the pedestrian was walking east across the back of the Oldsmobile, the driver began to back out of her parking space. The driver stated that she was looking at the rearview mirror as she began to back up. Her intention was to back the vehicle to the southwest, then proceed east out of the parking lot. Almost immediately after the backing maneuver began, the pedestrian was struck in the left thigh by the right portion of the Oldsmobile's back bumper (**Figure 2**), knocked to the ground and fractured her right hip due to contact with the pavement. According to the pedestrian, she tried to get back up but thought she was struck again by the back bumper of the Oldsmobile. At this point, the pedestrian did not remember anything else. The Oldsmobile's driver

Figure 2: Overview of back of exemplar Oldsmobile Alero; pedestrian was struck by right portion of back bumper of subject vehicle

stated that soon afer beginning to back up, she "felt something" and stopped the vehicle. She estimated that the elapsed time between the start of the backing maneuver and impact was approximately one second or less. Based on the statements of the driver and the pedestrian, and the reported impact location, it was determined that the driver backed approximately 0.8 meter (~3 feet) to impact and was most likely traveling approximately 2 km.p.h (~1 m.p.h.) when the impact occurred. In addition, the Oldsmobile traveled approximately 0.4 meter (~1 foot) from impact to final rest. Lastly, it could not be determined if the pedestrian was in fact impacted a second time as she was getting up.

Post-Crash: After the impact, the driver stopped the Oldsmobile and attended to the pedestrian. The pedestrian was then taken to the nearby hospital and subsequently transferred by ambulance to a second hospital for treatment of her fractured right hip.

CASE VEHICLE

The 2004 Oldsmobile Alero was a front wheel drive, four-door sedan (VIN: 1G3NL52F94C------) equipped with an I-4, 2.2L engine and automatic transmission. The Oldsmobile was not equipped with any backup/parking aid. The Oldsmobile's recommended tire size was P225/50R16. The size of the tires on the vehicle at the time of the incident is not known. The Oldsmobile's specified wheelbase was 272 centimeters (107 inches), the specified rear overhang was 100 centimeters (39.4 inches), and the specified overall length was 474 centimeters (186.7 inches).

CASE VEHICLE DAMAGE

The Oldsmobile Alero had been sold and was not available for inspection. The police crash report as well as the Oldsmobile's driver indicated that the Oldsmobile sustained no damage as a result of the incident. The Oldsmobile was driven from the scene by the driver.

CASE VEHICLE DRIVER

The Oldsmobile Alero's driver was a White (Hispanic), 45-year-old female. The driver's height was 160 centimeters (63 inches) and her weight was 68 kilograms (150 pounds). The driver indicated that she drives the vehicle daily. She also indicated that she occasionally drove in the parking lot where the incident occurred. The driver was wearing eyeglasses at the time of the incident. The driver's vision deficiency is not known.

A visibility study was conducted using an exemplar 2004 Oldsmobile Alero (**Figure 3** and **Figure 4**) in order to determine the nominal blind zone behind the Oldsmobile, the nominal blind zone due to the right C-pillar, and the nominal blind zone of both side view mirrors and the rearview mirror. The surrogate driver for this study was 180 centimeters (71 inches) tall and his eye height, as he sat in the driver's seat, was 116 centimeters (45.7 inches) above the ground. The surrogate driver's seat track was adjusted to the approximate middle position for this study. The standard 71 centimeters (28 inches) high target was used for the observations. Please refer to the Nominal Visibility Diagram at the end of this report when reading the following discussion.

Figure 3: Front left view of exemplar Oldsmobile Alero

Figure 4: Back left view of exemplar Oldsmobile Alero.

The initial observations were made with the surrogate driver looking over his right shoulder out of the backlight (**Figure 5**). The target was moved rearward from the back of the vehicle along the vehicle's approximate centerline until it came into the surrogate driver's view. The target had to be moved rearward from the exemplar Oldsmobile's back bumper 4 meters (13.1 feet) before it became visible to the surrogate driver. The Oldsmobile was equipped with a spoiler mounted to the back edge of the trunk lid (**Figure 4**), and there was a gap between the top of the trunk lid and the bottom of the spoiler. It was through this gap that the target appeared when it first became visible to the surrogate driver. Although the gap was narrow, the surrogate driver had a small but clear field of view and could clearly see the target. Due to the position of the gap relative to the surrogate driver's eye height, the driver's normal line of sight passed through the gap when the surrogate driver looked over his right shoulder, although it was natural to look over the spoiler. When looking over the spoiler, it was necessary to move the target 8.7 meters (28.5 feet) rearward from the back bumper before the surrogate driver could see it. The lateral extent of the blind zone was assessed from the point where the target could first be seen in the gap between the trunk lid and the spoiler. When moved 3 meters (9.8 feet) to the right of the

Figure 5: View through exemplar Oldsmobile's backlight from driver's seat.

Oldsmobile's approximate centerline, the target became obstructed by the right "C"-pillar. The target became visible again when it was moved an additional 1.2 meters (3.9 feet) to the right. When moved 1.2 meters (3.9 feet) to the left of the centerline, the target went out of view because it was unnatural for the surrogate driver to turn his head any further to the right.

Figure 6: View through rearview mirror from driver's seat of exemplar Oldsmobile Alero

The surrogate driver then looked through the rearview mirror (**Figure 6**) as the target was again moved rearward from the back bumper. The target had to be moved rearward 5.4 meters (17.7 feet) before it became visible to the surrogate driver. At this point, the target was moved 2.1 meters (6.9 feet) to the right of the approximate centerline where it became obstructed by the top right of the spoiler. The target was out of the rearview mirror's field of view when moved right beyond this point. The target was then moved to the left from the centerline. At 1.4 meters (4.6 feet) left of the centerline, the target became obstructed by the top left of the spoiler. The target was out of the rearview mirror's field of view when moved left beyond this point.

In order to determine the blind zone as well as the visibility triangle of the left side view mirror, the target was placed at the side of the vehicle adjacent to the surrogate driver and moved rearward until the surrogate driver could see it in the mirror. The target had to be moved rearward from the surrogate driver's position 0.6 meters (2.0 feet) before the surrogate driver could see it in the mirror. The target was then positioned at the left rear bumper corner and moved to the left 1.1 meters (3.6 feet) where it went out of the mirror's field of view. The target was then placed at the right front door adjacent to the surrogate driver's seated position and moved rearward as the surrogate driver looked through the right side view mirror. The target had to be moved rearward 1.0 meter (3.3 ft) before the driver could see it in the mirror. The target was then placed at the right rear bumper corner and moved to the right 1.8 meters (5.9 feet) where it went out of the right side view mirror's field of view.

Based on to the height of the pedestrian [173 centimeters (68 inches)], her upper torso would have extended well above the Oldsmobile's beltline, and therefore it would have been possible for the driver to see her as she walked behind the Oldsmobile. However, the Oldsmobile's driver stated she did not see the pedestrian at any time prior to the incident. One possible reason why the driver did not see the pedestrian could have been the sequence and timing of the driver's actions as the driver entered the Oldsmobile and prepared to back up. It is possible that as the driver looked over her right shoulder out of the backlight, the pedestrian was approaching or just crossing the left rear corner of the vehicle and was out of the driver's field of view. As the driver then turned back forward and to her left and looked behind, the pedestrian could have just passed out of the driver's field of view. As the driver then looked through the rearview mirror and began to back up, she may not have see the pedestrian in the mirror, who by this time was just to the right of the rearview mirror's field of view.

The pedestrian was a White (non-Hispanic), 89-year-old female. The pedestrian's height was 173 centimeters (68 inches) and her weight was 70 kilograms (155 pounds). It is unknown what type and color clothing the pedestrian was wearing at the time of the incident. The pedestrian had no recollection of what she was wearing the day of the incident. She sustained police reported "A" (incapacitating) injuries and was taken to the nearby hospital. She was then transported by ambulance to another hospital and admitted for surgery for a fractured right hip. She reported that she was hospitalized for seven days.

PEDESTRIAN INJURIES

The pedestrian's injury and injury source is 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	Fracture right hip, not further specified	moderate 852600.2,1	Ground	Certain	Interviewee (same person)

IN07023

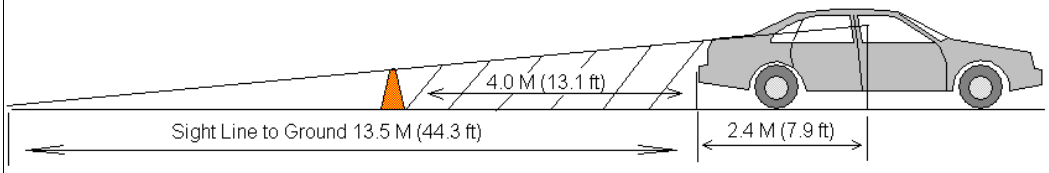
Nominal Visibility Diagram
Exemplar Vehicle = 2004 Oldsmobile Alero 4-Door Sedan

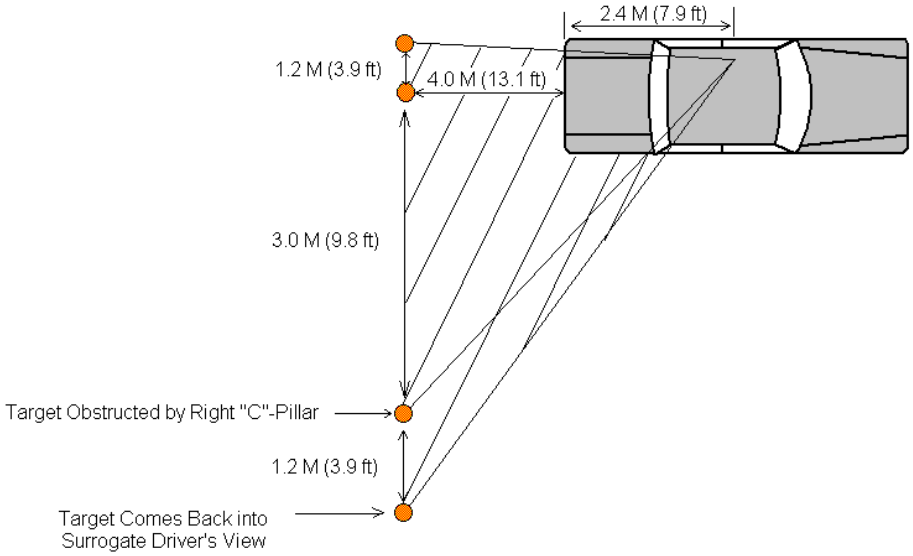
Surrogate Driver's Eye Height From Ground = 116 cm (45.6 in)

= Exemplar Oldsmobile Alero Blind Zones

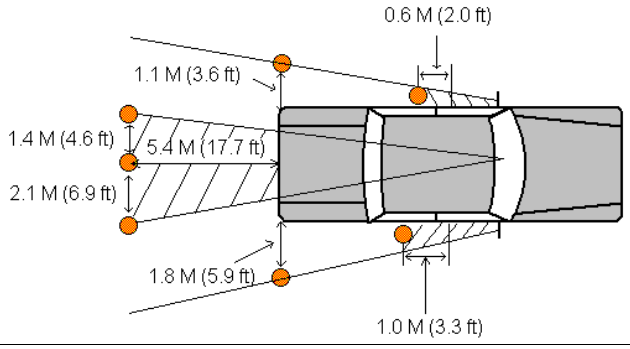
= 71 cm (28 in) High Target

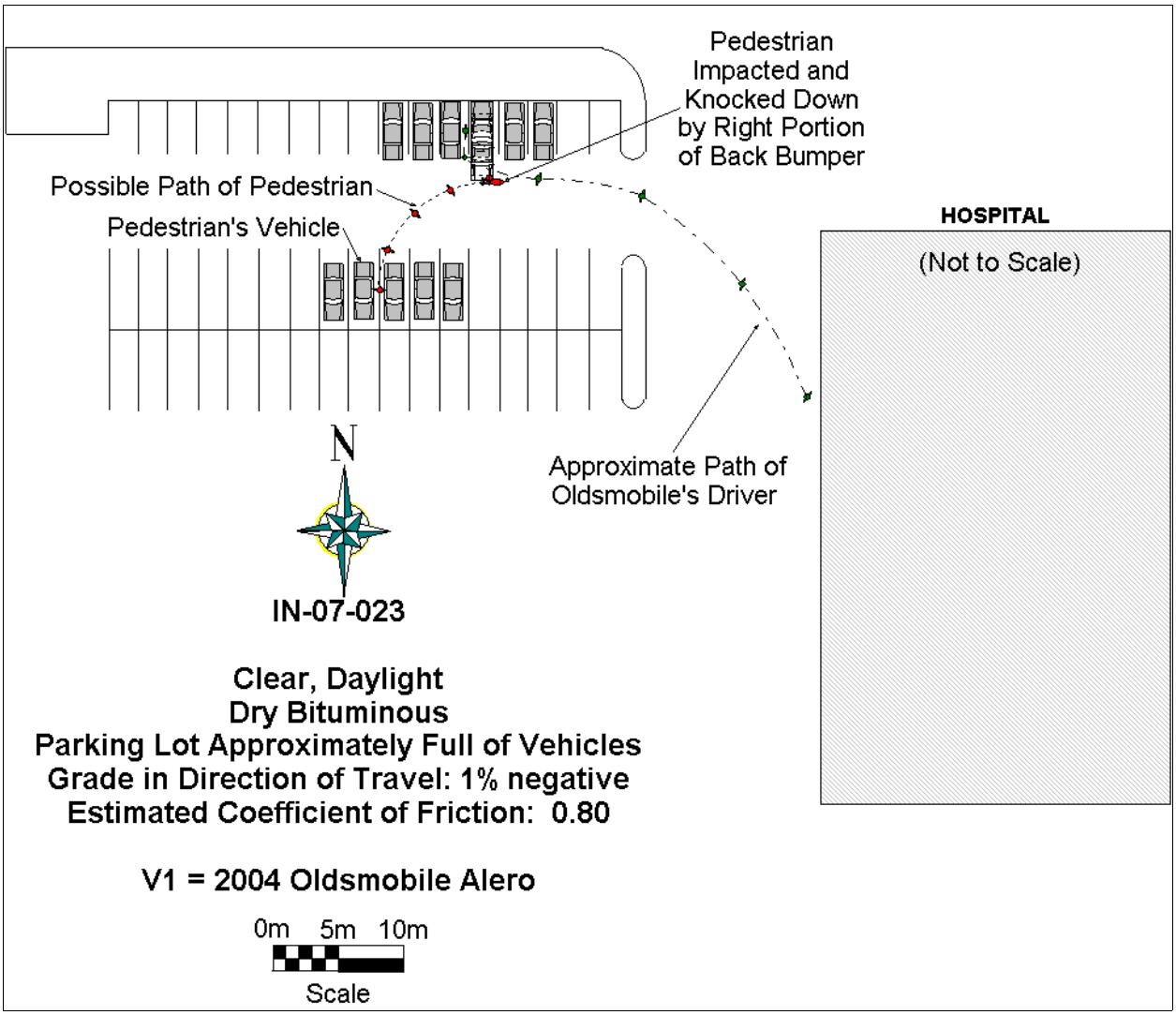
1. Distance Back of Exemplar Oldsmobile
To Point a 71 cm (28 in) High Reference Target
Comes Into View in Gap Between Trunk Lid and Spoiler
(Note: Taget had to be moved rearward 8.7 M (28.5 ft) before it came into view over top of spoiler)





2. Rearview Mirror and Side View Mirror Blind Zones




Pedestrian Impacted and Knocked Down by Right Portion of Back Bumper
Possible Path of Pedestrian
Pedestrian's Vehicle
HOSPITAL
(Not to Scale)
N
Approximate Path of Oldsmobile's Driver
IN-07-023
Clear, Daylight
Dry Bituminous
Parking Lot Approximately Full of Vehicles
Grade in Direction of Travel: 1% negative
Estimated Coefficient of Friction: 0.80
V1 = 2004 Oldsmobile Alero
0m 5m 10m
Scale

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 3

IDENTIFICATION

2. Date of Crash 0 5 / x x / 0 7

3. Time of Crash 1 0 0 0

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 1 %

12. Estimated distance from parked position to impact

0 0 0 . 8 m

13. Estimated speed at impact 0 0 2 kmph

14. Grade at impact +/- - 0 1 %

15. Estimated distance from impact to vehicle final rest

0 0 0 . 4 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 3

VEHICLE IDENTIFICATION

2. VIN 1 G 3 N L 5 2 F 9 C x x x x x x x

3. Model Year 2 0 0 4

4. Vehicle Make (specify): Oldsmobile

5. Vehicle Model (specify): Alero

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 P225/50R16

7. LF Tire Size Unknown

8. LR Tire Size Unknown

9. RF Tire Size Unknown

10. RR Tire Size Unknown

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	99	☑	Full Down / Mid / Full Up	Head restraint adjustment unknown
Front Middle	99	☐	Full Down / Mid / Full Up	
Front Right	99	☑	Full Down / Mid / Full Up	Head restraint adjustment unknown
2nd Left	99	☐	Full Down / Mid / Full Up	
2nd Middle	99	☐	Full Down / Mid / Full Up	
2nd Right	99	☐	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		Unk	
Top of trunk/tailgate		Unk	
Bottom of bumper		Unk	
Trailer hitch (if applicable)		Unk	
Undercarriage			
	Sway bar	Unk	
	Axle	Unk	
	Differential	Unk	
	Other (specify): Unk	Unk	
Sensor Height (if equipped)		Unk	
Camera Height (if equipped)		Unk	

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 3

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 3

DRIVER PROFILE

2. Driver's Age 4 5
   99 = Unknown

3. Driver's Sex
   - ○ Male
   - ◉ Female
   - ○ Unknown

4. Driver's Height 1 6 0 cm
   999 = Unknown

5. Driver's Weight 0 6 6 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:

    Going home

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 3

NON-MOTORIST PROFILE

2. Non-motorist's Age 8 9 ○ Months ◉ Years
99 = Unknown

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

4. Non-motorist's Height 1 7 3 cm
999 = Unknown

5. Non-motorist's Weight 0 7 0 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) Travel path
○ 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				
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): Unk closth	Unknown	Unknown	Unknown	Unknown
LOWER BODY	Shorts				
	Pants				
	Shoes				
	Other (specify): Unk cloths	Unknown	Unknown	Unknown	Unknown