CRASH DATA RESEARCH CENTER

Calspan Corporation
Buffalo, NY 14225

NOT-IN-TRAFFIC SURVEILLANCE

CALSPAN ON-SITE BACK OVER INCIDENT INVESTIGATION

SCI CASE NO.: CA08015

VEHICLE: 2006 KIA SPECTRA

LOCATION: FLORIDA

INCIDENT DATE: MARCH 2008

Contract No. DTNH22-07-C-00043

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

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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 are 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 This on-site investigation focused on the rear visibility study and the backing issues that caused injury to a two-year old female non-motorist. The non-motorist ran behind a 2006 Kia Spectra as the driver was backing from a parking space at a laundry mat. The rear bumper fascia knocked the non-motorist to the asphalt parking lot surface where she sustained abrasions and contusions of the extremities, and a left pulmonary contusion. A family member to the non-motorist was in close proximity to the backing vehicle and alerted the driver as he struck the child. The driver immediately stopped the vehicle. The non-motorist was not run over by the rear tires. She was transported to a local hospital for treatment and transferred by helicopter to a regional trauma center for evaluation and observation, and released the following day. The non-motorist was previously struck by a backing vehicle during the summer of 2007 and sustained an injury of the spleen. The overnight hospitalization was to ensure that no additional injury to the spleen occurred. The driver was fully cooperative with the Not-In Traffic Surveillance study.			
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NOT-IN-TRAFFIC SURVEILLANCE
CALSPAN ON-SITE BACK OVER INVESTIGATION
SCI CASE NO. – CA08015

VEHICLE – 2006 KIA SPECTRA
LOCATION – FLORIDA
INCIDENT DATE – MARCH 2008

BACKGROUND

This on-site investigation focused on the rear visibility study and the backing issues that caused injury to a two-year old female non-motorist. The non-motorist ran behind a 2006 Kia Spectra **(Figure 1)** as the driver was backing from a parking space in a laundry mat. The rear bumper fascia knocked the non-motorist to the asphalt parking lot surface where she sustained abrasions and contusions of the extremities, and a left pulmonary contusion. A family member to the non-motorist was in close proximity to the backing vehicle and alerted the driver as he struck the child. The driver immediately stopped the vehicle. The non-motorist was not run over by the rear tires. She was transported to a local hospital for treatment and transferred by helicopter to a regional trauma center for evaluation and observation, and released the following day. The non-motorist was previously struck by a backing vehicle during the summer of 2007 and sustained an injury of the spleen. The overnight hospitalization was to ensure that no additional injury to the spleen occurred. The driver was fully cooperative with the Not-In Traffic Surveillance study.

Figure 1. Rear view of the 2006 Kia Spectra.

The Calspan Special Crash Investigations (SCI) team identified this back over incident through an Internet news search for potential cases of interest to the SCI program. The notification was forwarded to the Crash Investigation Division of the National Highway Traffic Safety Administration for approval of an on-site investigation. Cooperation was established with the investigating police agency. The SCI investigator secured the cooperation of the driver and the grandmother of the non-motorist. Both provided detailed descriptions of this back over incident. The driver fully participated in the rear visibility study to determine his field of view through the rear view mirrors.

SUMMARY

Incident Location

This back over incident occurred in a commercial parking lot of a laundry mat during daylight hours. At the time of the incident, the weather was clear and dry with a temperature of 22 degrees C (72 degrees F), with 61 percent humidity and a wind speed of 32 km/h (20 mph) from the north.

The laundry mat consisted of an L-shaped building with an open air facility adjacent to the parking lot. The parking lot was surfaced with asphalt and was not delineated into designated parking spaces. Five composite parking curbs (wheel stops) were positioned 2.2 m (7.2') outboard of the open laundry mat. A gap of 0.8 m (2.6') separated these parking curbs. At the time of this incident, two vehicles were parked in front of the facility; the vehicle operated by the mother of the non-motorist, and the involved Kia Spectra that was parked to the right of the non-contact vehicle. The mother's non-contact vehicle was parked in the center space. The parking lot was open and level. **Figure 2** is a look back view of the incident site. The schematic of the incident site is attached as **Figure 12**.

Figure 2. Look back view of the incident site.

Vehicle Data – 2006 Kia Spectra EX

The involved vehicle in this back over incident was a 2006 Kia Spectra, four-door sedan. The Spectra was manufactured in November 2005 and was identified by Vehicle Identification Number (VIN) KNAFE121865 (production number deleted). The Spectra was a four-door sedan that that was powered by a 2.0 liter transverse mounted engine linked to a four-speed automatic transmission with a console mounted shifter. The service brakes were four-wheel disc without anti-lock. The standard safety features included manual three-point safety belts for the five designated positions, dual stage frontal air bags, front seat back mounted side impact air bags, and inflatable curtain air bags. The vehicle's odometer reading at the time of the SCI inspection was 62,806 km (39,027 miles). The Kia was equipped with OEM steel wheels concealed by plastic hubcaps. The tires were mismatched, but were the recommended size of P195/60R15. The vehicle manufacturer recommended cold tire pressure was 210 kPa (30 PSI). The specific tire data at the time of the SCI inspection was as follows:

Position	Tire Manufacturer/ Model	Measured Pressure	Measured Tread Depth	Damage
LF	Mirada Sport GTX	241 kPa (35 PSI)	6 mm (7/32")	None
LR	Goodyear Eagle LS	241 kPa (35 PSI)	2 mm (3/32")	None
RF	Goodyear Eagle LS	234 kPa (34 PSI)	6 mm (7/32")	None
RR	Kenda Kenetica	241 kPa (35 PSI)	3 mm (4/32")	None

The exterior of the Kia was dark gray in color and was extremely dirty with road film. A wipe of the lower surfaces of the vehicle transferred black onto hands and fabric. Previous damage consisted on a large dent to the aft area of the right quarter panel and a yellow paint transfer to the left aspect of the back bumper fascia. The glazing was standard AS1 for the windshield and AS2 for the side door windows and backlight. The side and backlight glazing were standard solar tint without deep tint or aftermarket film. Although the painted exterior was dirty, the windows were clear. There were no appliqué or other obstructions to the glazing.

The four outboard seating positions were equipped with adjustable head restraints. The left rear head restraint was adjusted 3 cm (1") above the rear seat back. The other head restraints were adjusted to the full-down positions.

There was no visible contact evidence from this incident present on the vehicle at the time of the SCI inspection. The Kia Spectra was not equipped with a back-up/parking aid system.

Vehicle Measurements

Component	Clearance Height Measurements
Beltline	102 cm (40")
Top of Trunk	107 cm (42")
Bottom of Bumper Fascia	33 cm (13")
Top of Bumper Fascia	61 cm (24")
Undercarriage	
Tailpipe	25 cm (10")
Muffler	24 cm (9.6")
Bottom of Spare Tire Well	29 cm (11.25")
Rear Alignment Link Arm (mid point)	23 cm (9.1")

Driver Data

The driver of the Kia was a 30-year old male with a stated height of 175 cm (69") and a weight of 77 kg (170 lb). He did not require prescription eyewear and was not wearing sunglasses at the time of this incident. The driver stated that he did not have the radio on and that he routinely drives with the front windows open 8-10 cm (3-4"). The on-scene police images of the incident depicted the left front door window as fully open, the right front open approximately one-third, and the rears fully closed. The driver was extremely cooperative for this investigation, providing a detailed interview and conducting the rear visibility study.

Non-Motorist Data

The non-motorist was a two-year old female (2 days shy of two years) with a height and weight (estimated by the child's grandmother) at 76 cm (30") and 14 kg (30 lb). This non-motorist was also involved in a previous back over incident. During the summer of 2007, her mother inadvertently backed over the non-motorist in Missouri as she was backing from a residential driveway. The non-motorist was apparently run over by the vehicle's tire resulting in a spleen injury.

The non-motorist and her mother were visiting Florida and were staying with the child's grandmother. On the day prior to this incident, the grandmother purchased the clothing the non-motorist was wearing at the time of this back over incident. She was dressed in a white cotton sleeveless top with embroidery and trim, matching cotton Capri's that was yellowish green in color, white sandals, and a diaper. The non-motorist had ear-length blond hair. Immediately prior to this incident, the child was playing with her mother at an open air laundry mat and was drinking a milkshake that she held in her right hand.

Incident

Pre-Incident

The driver drove the Kia Spectra to the laundry mat and parked the vehicle in front of the open air facility with the front of the Spectra against the second from right parking curb (wheel stop). He exited the vehicle and transported his three loads of laundry from the trunk to the facility.

The mother of the non-motorist drove to the laundry mat with the non-motorist and the grandmother of the non-motorist. She parked her vehicle to the left of the Kia Spectra. They exited the vehicle and carried their laundry into the facility. The non-motorist had a milkshake in a carry-out paper cup with a lid and a straw. While at the laundry mat, the mother of the non-motorist positioned a chair in front of her vehicle as she waited for the wash and dry cycles to complete. The grandmother of the non-motorist was inside the facility, immediately forward of the parked Kia.

The driver completed his laundry and placed the loads in the trunk of the Spectra. He stated that as he was transporting the laundry to the Kia, he was talking to an acquaintance inside the facility. The driver further noted that each trip to the trunk of the vehicle, he walked along the left side of the Kia. As he placed the third load in the trunk, he walked forward and opened the driver's door and entered the Kia. He immediately started the vehicle and checked his rear view mirrors prior to backing.

The grandmother of the non-motorist called for the assistance of the child's mother as she was attending to the dryer-cycles. The mother got up from the chair and the non-motorist ran from her mother's position across the front of the Kia and down the right side of the vehicle. The grandmother observed the driver as he looked in his rear view mirror and placed the vehicle's transmission in reverse.

The driver stated that as he entered the Kia and started the engine, he was aware of the non-motorist's position as he walked past her three times. He estimated the time frame at less than five seconds from the time he started the vehicle to the time he began to back from his parked position. As he backed, the driver stated that he never lifted his foot from the braked pedal. The grandmother noted that the driver never looked other than in the rearview mirror prior to and during the backing maneuver. The driver estimated his backing speed at 3-5 km/h (2-3 mph). The driver stated that he never detected the non-motorist as she ran in front or along the right side of his vehicle.

As the grandmother observed the non-motorist run along the right side of the vehicle and dart behind the Spectra, she yelled to get the attention of the driver and the non-motorist. She also noted that as she yelled, she observed the driver looking in his rear view mirror as he backed. **Figure 3** represents the trajectory of the non-motorist as viewed from the grandmother's position within the laundry mat.

Figure 3. Trajectory of the non-motorist.

Incident

As the non-motorist turned to her right to cross behind the backing Kia Spectra, the back right area of the bumper fascia struck the child and knocked her to the pavement. The yells of the grandmother alerted the driver and he immediately stopped the vehicle. The driver estimated that he stopped within 0.6 m (2'). The on-scene police photographs indicated that the driver backed an SCI estimated distance of 1.8-2.4 m (6-8'). While backing, the driver applied a slight clockwise steering input to back on a counterclockwise arc. The non-motorist fell onto her left side and sustained abrasions of the lower left anterior leg, contusion with abrasions of the left forearm and elbow, a left shoulder abrasion, and a left pulmonary contusion.

Figure 4. Backing trajectory of the Kia and the spilled milkshake from the non-motorist.

Figure 5. Final rest position of the Kia Spectra.

The grandmother and mother of the non-motorist ran to the aid of the child. The driver placed the vehicle in park and immediately exited the Kia. As he moved to the rear of the vehicle, the grandmother picked the non-motorist up to comfort her as she was crying. The grandmother stated that the non-motorist came to rest on her back directly under the rear bumper fascia with her head toward the left side of the vehicle. The milkshake the non-motorist was carrying was displaced forward of her impact position and came to rest on the parking lot immediately aft and outboard of the left rear tire. The non-motorist was not struck or run over by the right rear tire.

The grandmother stated during the SCI interview that a tire mark was visible on the shorts and the diaper of the child; however, the non-motorist came to rest rearward of the right rear tire. On-scene police photographs captured a black transfer over the left hip and flank area of the non-motorist **(Figure 6)**. This transfer was the road film that was noted to the lower aspect of the Kia Spectra. Although the non-motorist was struck on the right side and knocked down onto her left side, the transfer probably occurred as the grandmother picked the child up from under the rear bumper and brushed the clothing against the fascia. The on-scene police images provided a view of the rear bumper fascia that revealed wipe marks (area where road film was removed) across the full length of the top surface of the fascia. These marks potentially occurred as the driver unloaded/loaded the trunk of the Kia Spectra.

Figure 6. Black transfer of the clothing over the left hip area of the non-motorist.

Figure 7. Soft tissue injuries to the non-motorist.

Post-Incident

The investigating officer was located outside his police vehicle at an intersection that was in close proximity to the laundry mat. He was conducting a follow-up investigation of a fatal crash that occurred earlier. He responded to the yells of the grandmother and screams of the non-motorist and ran to the incident site. An ambulance was called to the scene. The non-motorist was placed on a backboard and positioned on the ambulance cot. The investigating officer photographed the final rest position of the Kia and the soft tissue injuries of the non-motorist as he conducted his investigation.

The non-motorist was transported by ambulance to a local hospital where she was treated for her soft tissue injuries. Due to her previous spleen injury from the other back over incident and the suspected tire mark on her clothing, the non-motorist was transferred by helicopter to a regional trauma center where she was held overnight for evaluation and observation. The pulmonary contusion was diagnosed at this facility. The non-motorist was released to her family on the day following this back over incident.

Non-Motorist's Injuries

Injury	Injury Severity (AIS 90/Update 98)	Injury Source
Left pulmonary contusion	Serious (441402.3,2)	Pavement
Abrasion of the left anterior leg at the ankle	Minor (890202.1,2)	Pavement
Contusions and abrasions of the left forearm and elbow	Minor (790402.1,2; 790202.1,2)	Pavement
Abrasion on left lateral shoulder	Minor (790202.1,2)	Pavement

Source – Non-motorist's grandmother

Rear Visibility Study

The driver stated during the SCI interview that he used the rear view mirrors exclusively when backing. The Kia was not equipped with a back-up/parking assist system.

During the on-site investigation of this incident, the Kia was inspected at the driver's residence. The Spectra was parked on a large concrete pad that extended in front and adjacent to the residential property. The Kia was repositioned on this pad to provide a level surface for this study. The standard red reflective marker was set in a fixture and adjusted to a height of 71 cm (28") from ground to the bottom of the reflector. The driver was positioned in the vehicle. He checked the seat track adjustment and mirror adjustments to ensure that these were set to his normal positions. In his driving position, the seat track was set to the rear track position and the seat back was reclined approximately 22 degrees. In this position, his measured eye height was 117 cm (46") above the concrete surface.

The driver was asked to look into the rear view mirror and locate the full diameter of the red reflective marker. He indicated that the reflector was fully visible to him at a point that was 5.6 m (18.4') rearward of the back bumper of the Kia. The driver was asked to locate an object in the rear view mirror that was placed on the ground on the centerline of the back plane of the vehicle. The driver noted that the object was in full view at a measured distance of 15.7 m (51.5') aft of the back bumper **(Figure 8)**.

Figure 8. Rear line of sight for the driver to the reflector as viewed through the rear view mirror.

Lateral cones of visibility were established using the outside mirrors. The markers were placed at an arbitrary distance of 5.6 m (18.4') aft of the back bumper. Using the left outside mirror, the driver could detect the full diameter of the reflector 74 cm (29") left of the vehicle's centerline, or approximately 15 cm (6") inboard of the left side line of the Kia. The outboard location of the reflector was visible to the driver 216 cm (85") left of the centerline, or 127 cm (50") outboard of the extended left side plane of the vehicle.
The right outside mirror yielded similar results. The driver located the inboard reflector 74 cm (29") right of the vehicle's centerline, or 15 cm (6") inboard of the extension of the right bodyline. The maximum outboard position the driver could detect the marker was 287 cm (113") right of the vehicle's centerline, or 198 cm (78") outboard of the extended right side line of the Kia.

The established sight distances are depicted in the Rear Visibility Diagram that follows this section as **Figure 11** of this report.

Figure 9. Lateral cone of visibility through the right outside mirror.

Figure 10. Visibility cone through the right mirror.

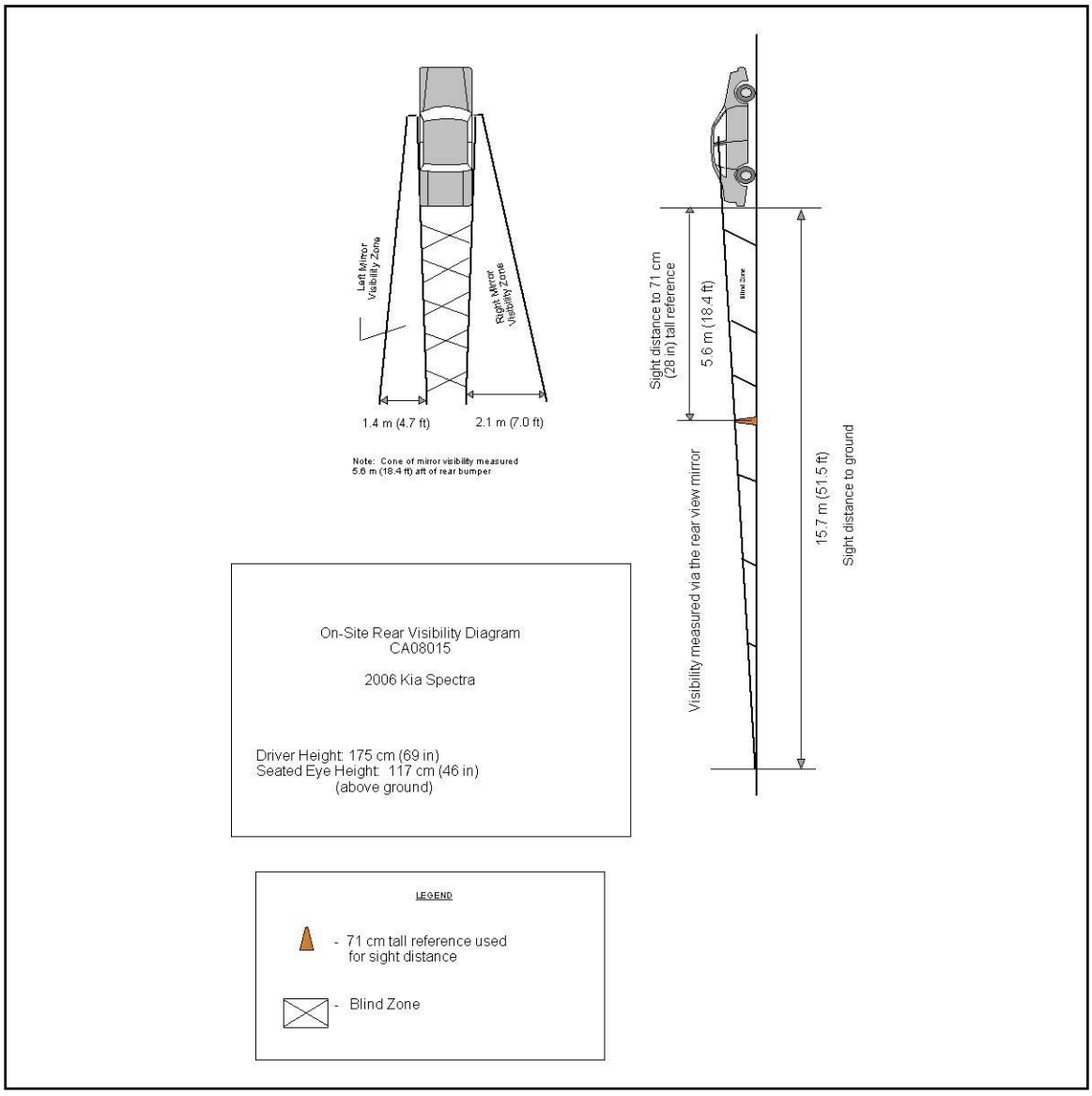

Figure 11. Rear Visibility Diagram

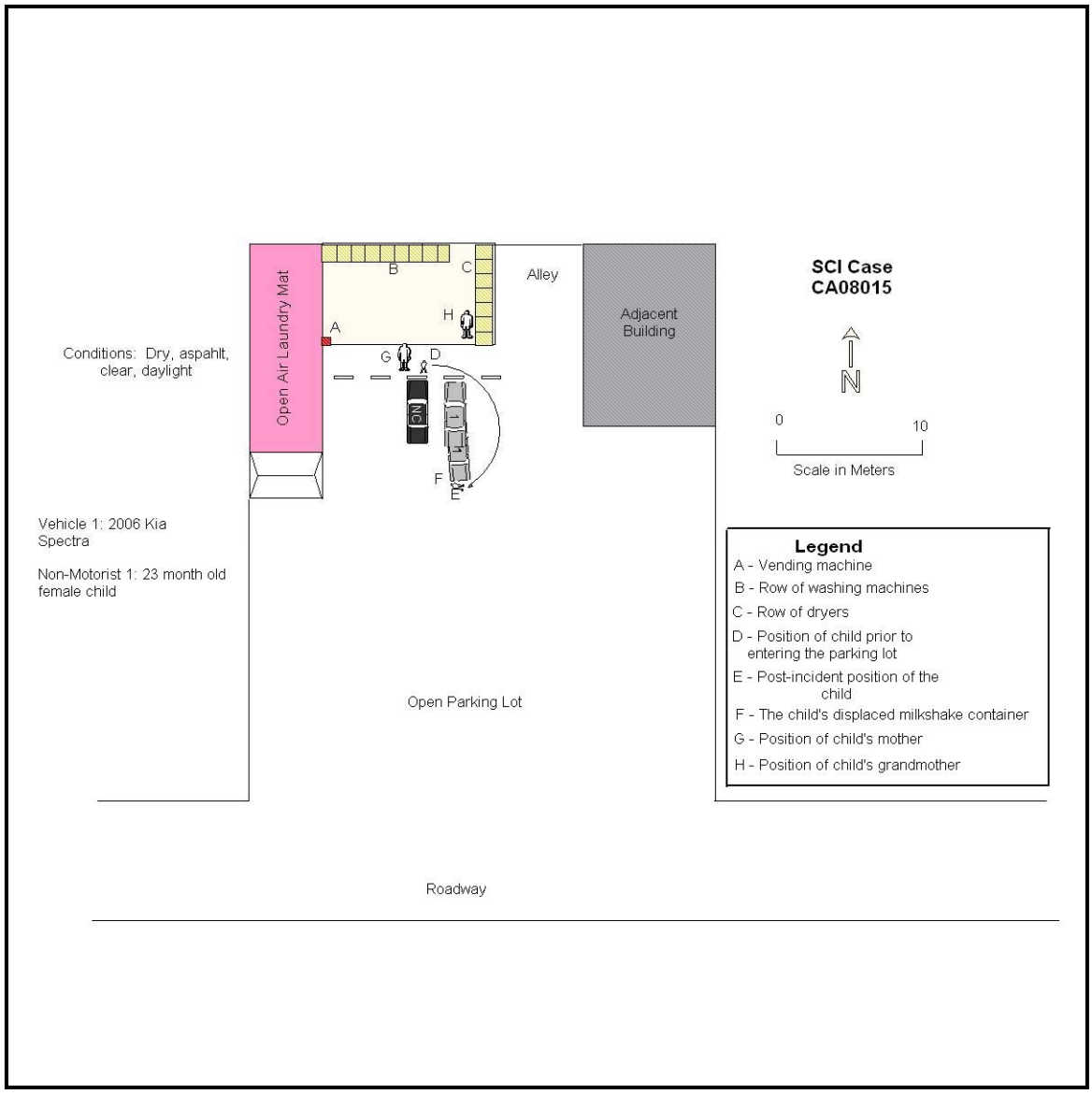

Figure 12. Incident Schematic

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

C A 0 8 0 1 5

IDENTIFICATION

2. Date of Crash 0 3 / X X / 0 8

3. Time of Crash 1 2 2 3

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 1 . 8 m

13. Estimated speed at impact 0 0 3 kmph

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

15. Estimated distance from impact to vehicle final rest

0 0 0 . 6 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 C A 0 8 0 1 5

VEHICLE IDENTIFICATION

2. VIN K N A F E 1 2 1 8 6 5 X X X X X X

3. Model Year 2 0 0 6

4. Vehicle Make (specify): KIA

5. Vehicle Model (specify): SPECTRA EX

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 P195/60R15

7. LF Tire Size P195/60R15

8. LR Tire Size P195/60R15

9. RF Tire Size P195/60R15

10. RR Tire Size P195/60R15

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)
Front Left	2	☑	☑ Full Down / ☐ Mid / ☐ Full Up
Front Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
Front Right	2	☑	☑ Full Down / ☐ Mid / ☐ Full Up
2nd Left	4	☑	☐ Full Down / ☑ Mid / ☐ Full Up
2nd Middle	4	☐	☐ Full Down / ☐ Mid / ☐ Full Up
2nd Right	4	☑	☑ Full Down / ☐ Mid / ☐ Full Up
3rd Left	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
3rd Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
3rd Right	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up

NOTES:

LR head restraint adjusted 3 cm (1 in) above full down position

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		102	
Top of trunk/tailgate		107	
Bottom of bumper		33	
Trailer hitch (if applicable)		n/a	
Undercarriage			
	Sway bar	23	
	Axle	n/a	
	Differential	n/a	
	Other (specify): n/a	n/a	
Sensor Height (if equipped)		n/a	
Camera Height (if equipped)		n/a	

Not Applicable ☑

Undo 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

C A 0 8 0 1 5

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

Not Applicable

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

C A 0 8 0 1 5

DRIVER PROFILE

2. Driver's Age 3 0
   99 = Unknown

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

4. Driver's Height 1 7 5 cm
   999 = Unknown

5. Driver's Weight 0 7 7 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:

    Returning to residence

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): Center rear view only
- ☐ 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
C A 0 8 0 1 5

NON-MOTORIST PROFILE

2. Non-motorist's Age — 2 3 ◉ Months ☐ Years
99 = Unknown

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

4. Non-motorist's Height — 0 7 6 cm
999 = Unknown

5. Non-motorist's Weight — 0 1 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:_____
◉ 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)			
Pink				

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat	None			
	Helmet	None			
	Hood	None			
	Other (specify): _____				
UPPER BODY	Short Sleeve	White	Natural	Soft	Light
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
LOWER BODY	Shorts				
	Pants	Light green	Natural	Soft	Light
	Shoes	White	Natural	Soft	Light
	Other (specify): _____				