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BASIC COURSE INSTRUCTOR UNIT GUIDE

29

TRAFFIC ACCIDENT INVESTIGATION

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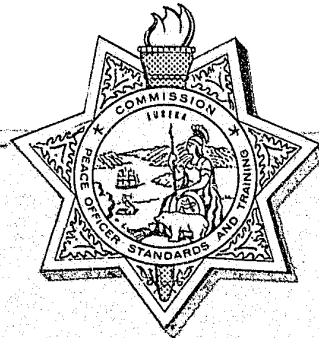
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THE COMMISSION
ON PEACE OFFICER STANDARDS AND TRAINING

STATE OF CALIFORNIA

This unit of instruction is designed as a *guideline* for performance objective-based law enforcement basic training. It is part of the POST Basic Course guidelines system developed by California law enforcement trainers and criminal justice educators for the California Commission on Peace Officer Standards and Training.

This guide is designed to assist the instructor in developing an appropriate lesson plan to cover the performance objectives which are required as minimum content of the Basic Course.

UNIT GUIDE 29

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Traffic Collision Investigation

Given a simulated traffic collision(s), the student will demonstrate the ability to investigate a traffic collision and complete the appropriate reports.

The documentation should minimally include

- A. Location and measurements of physical evidence
- B. Description of injuries (if any)
- C. Identification of the involved parties and vehicles
- D. Time and location of collision events
- E. Chronology of the collision events
- F. Elements unique to hit and run collisions, if applicable
- G. Primary and associated collision factors
- H. Point of impact/area of impact (P.O.I./A.O.I)
- I. Point of rest
- J. Preparation of a factual diagram
- K. Collection of any necessary photographs

The reporting standard should also include either verbally or in writing a determination of the student's understanding of the following terminology:

- A. **Accident or collision:** An unintended event which causes damage, death or injury
- B. **Classification of injuries:** A general category of injury such as: Fatal injury, severe injury, other visible injuries, complaint of pain
- C. **Deliberate intent:** An intentional act which directly or indirectly, involves a motor vehicle in transport which purposely causes damage to property or injury to any person
- E. **Legal intervention:** Injury or damage caused by enforcement intervention. (Usually apprehension or attempt to apprehend)
- F. **Other parties:** A person other than the operator of the motor vehicle (includes driverless vehicle, a vehicle being towed by other than a rigid tow bar or tow truck, animal drawn conveyances, injured equestrians, injured parties in a train, airplane or cable car; or in highway construction equipment not in transport, injured parties in or upon a structure
- G. **Witness(es):** A person other than an involved party or a passenger, who can provide information relevant to the collision
- H. **Passenger(s):** A person inside or upon a vehicle, excluding the driver. Includes a person behind the wheel of a parked motor vehicle who may be able to provide information relative to the collision

Performance Objective 9.14.1

CURRICULUM

- A. Economic impact
 - 1. Exceeds the value of loss due to burglary robbery and theft
 - 2. Increased insurance rates

3. Insurance fraud
 - a. Officers should be constantly aware of false or exaggerated claims and ensure that statements are consistent with damage.
- B. Volume of accidents including
 1. Death
 2. Injury
 3. Property damage
- C. Criminal vs. civil process
 1. Determination of negligence or fault
 2. Awareness of civil ramifications
- D. Three E's of traffic management
 1. Education
 2. Engineering
 3. Enforcement
- E. Terminology
 1. **Accident or collision:** An unintended event which causes damage, death or injury.
 2. **Classification of injuries:** A general category of injury such as: fatal injury, severe injury, other visible injuries, complaint of pain (refer to agency collision investigation manual for specifics).
 3. **Deliberate intent:** An intentional act which directly or indirectly, involves a motor vehicle in transport which purposely causes damage to property or injury to any person.
 4. **In transport:** This describes the state or condition of a vehicle when it is in use primarily for moving persons or property (including the vehicle itself) from one place to another. A vehicle is considered in transport when all or a portion of it is upon a roadway whether moving, stopped, stalled, disabled or abandoned. Motor vehicles in designated parking areas, shoulders, or off the highway are considered in transport only when is considered in transport off a highway only when it is moving.
 5. **Other parties:** A person other than the operator of the motor vehicle (includes driverless vehicle, a vehicle being towed by other than a rigid tow bar or tow truck, animal drawn conveyances,

injured equestrians, injured parties in a train, airplane or cable car; or in highway construction equipment not in transport, injured parties in or upon a structure.

6. **Witness(es):** A person other than an involved party or a passenger, who can provide information relevant to the collision.
7. **Passenger(s):** A person inside or upon a vehicle, excluding the driver. Includes a person behind the wheel of a parked motor vehicle who may be able to provide information relative to the collision.
8. **Legal Intervention:** Injury or damage caused by enforcement intervention (usually apprehension or attempt to apprehend).
9. **Statewide Integrated Traffic Records System "SWITRS":** A state supported traffic accident records management system used to collect and evaluate traffic accident information.
10. **Non-contact involved party:**
 - a. A party causing another to become involved in a collision, and
 - b. The violation by the non-contact party is corroborated by one of the following:
 - (1) a disinterested witness
 - (2) physical evidence
 - (3) statement of the non-contact party
11. **Perception time:** The interval of time lapse between detecting some object or situation and comprehending its hazardous significance.
12. **Reaction time:** The time after you have perceived the danger until the action is initiated (the interval of time lapse or the minimal time between a stimulus and the response).
13. **Stopping distance:** Braking distance plus the distance traveled during the perception/reaction time.
14. **Sketch:** A drawing of how the collision occurred based on the officer's opinions.
15. **Factual diagram:** A drawing of factual details of the collision scene.
16. **Vehicle Code definitions:**
 - a. **Street** (Section 590 of the Vehicle Code) A way or place of whatever nature, publicly maintained and open to the use

of the public for purposes of vehicular travel. Includes highway.

- b. **Freeway** (Section 332 of the Vehicle Code) A highway in respect to which the owners of abutting lands have no right or easement of access to or from their abutting lands or in respect to which such owners have only limited or restricted right or easement of access.
- c. **Roadway** (Section 530 of the Vehicle Code) That portion of a highway improved, designed, or ordinarily used for vehicular travel.
- d. **Sidewalk** (Section 555 of the Vehicle Code) That portion of a highway, other than the roadway, set apart by curbs, barriers, markings or other delineation for pedestrian travel.
- e. **Crosswalk** (Section 275 of the Vehicle Code) either:
 - (1) That portion of a roadway included within the prolongation or connection of the boundary lines of sidewalks at intersection where the intersecting roadways meet at approximately right angles, except the prolongation of such lines from an alley across a street, or:
 - (2) Any portion of a roadway distinctly indicated for pedestrian crossing by lines or other markings on the surface.
- f. **Limit line** (Section 377 of the Vehicle Code) A solid white line not less than 12 nor more than 24 inches wide, extending across a roadway or any portion thereof to indicate the point at which traffic is required to stop in compliance with legal requirements.
- g. **Intersection** (Section 365 of the Vehicle Code) The area embraced within the prolongations of the lateral curb lines, or, if none, then the lateral boundary lines of the roadways, of two highways which join one another at approximately right angles or the area within which vehicles traveling upon different highways joining at any other angle may come in conflict.
- h. **Highway** (Section 360 of the Vehicle Code) A way or place of whatever nature, publicly maintained and open to the use of the public for purposes of vehicular travel. Highway includes street.
- i. **Traffic** (Section 620 of the Vehicle Code) Includes pedestrians, ridden animals, vehicles, street cars, and other conveyances, either singly or together, while using any highway for purposes of travel.

j. **Vehicle** (Section 670 of the Vehicle Code) A device by which any person or property may be propelled, moved, or drawn upon a highway, excepting a device moved exclusively by human power or used exclusively upon stationary rails or tracks.

k. **Pedestrian** (Section 467 of the Vehicle Code) Any person who is afoot or who is using a means of conveyance propelled by human power other than a bicycle. Includes any person who is operating a self-propelled wheelchair, invalid tricycle, or motorized quadricycle.

17. **Primary collision factor:** The one element that best describes the cause of the collision or, if removed, would have prevented the collision from occurring.

18. **Associated collision factor(s):** Other factors or violations that contributed, but were not the main cause of the collision.

19. **Point of impact or area of impact (P.O.I/A.O.I):** Point or area at which involved parties come into contact with another, another object, or surface as a result of a traffic collision.

20. **Point of rest:** Point at which involved parties come to a final position of rest after impact with one another, another object, or surface as a result of a traffic collision.

NOTE: The officer should be aware that vehicle could have been moved from the original point of rest prior to his/her arrival at the scene.

21. **Reference points:** A point or points from which measurements are made to locate spots in an area; sometimes the intercept of two reference lines. A reference point is described in terms of its relationship to permanent landmarks.

F. Response considerations

1. Plan your route of approach

a. Recognize the need to abide by local response policy

b. Consider traffic congestion caused by the collision

2. Accident scene priorities

a. Plan of action should begin the moment of notification

b. When approaching the scene (look for hit-run vehicles)

(1) Identify hazards, recognize and identify hazardous materials

(a) Placards

- (b) Bills of lading
 - (c) Statements
 - (2) Evaluate and request additional assistance
 - (a) Ambulance/paramedics
 - (b) Fire department/rescue
 - (c) Additional police units
 - (d) Tow trucks
 - c. Protect the scene from further accidents
 - (1) Scene hazards
 - (a) Electrical wires down
 - (b) Victims trapped
 - (c) Hazardous materials
 - (2) Position of patrol vehicle
 - d. Be aware and prepared for unique safety situations involved in traffic collision investigation
 - (1) Setting flare patterns
 - (2) Directing traffic
 - (3) Gathering evidence
 - (4) Tow trucks
 - (5) Passing traffic
 - e. Determine collision is hit and run
- G. Scene management
- 1. Care for injured or dead
 - a. Administer first aid as needed
 - b. Transportation of injured
 - c. Determine if coroner is necessary. Coroner will assume responsibility for body and property.
 - 2. Traffic control

- a. Appropriate traffic control devices
- b. Lights of patrol vehicle
- c. Officer(s) directing traffic
- 3. Spectator control
 - a. Protection of evidence/property
 - b. Spectator safety
 - c. Interference with emergency personnel
- 4. Removal of vehicle(s), if appropriate
 - a. Pros and cons of removing vehicle(s)
 - b. Vehicle Code authority for impounds
- 5. Hit and run
 - a. Obtain description
 - (1) Suspect vehicle(s)
 - (2) Suspect driver(s) and occupants

H. Report writing

- 1. Uses of the report
 - a. Criminal prosecution
 - b. Civil litigation
 - c. Indicator of engineering needs
 - d. Indicator of enforcement needs
- 2. Report formats
 - a. Collision report
 - b. Collision investigation
 - c. Counter report
 - d. PDO (property damage only)
- 3. Report components (may depend on type of format)
 - a. Face sheet
 - b. Statistical information

- c. Narrative (facts, statements, opinions, conclusions, and recommendations)
- d. Sketch/diagram

4. Narrative

NOTE: Refer to agency traffic collision manual for specific details regarding narrative content. The following are some general subjects common to collision report narratives.

a. Facts

- (1) Notification/origin (time of call, details of response, etc.)
- (2) Scene description
- (3) Physical evidence
- (4) Information concerning involved parties and vehicles (e.g., driver's license restrictions, vehicle points of rest, etc.)
- (5) Hit and run (factual information concerning hit and run vehicles and suspects such as available descriptions)
- (6) Hazardous materials, if applicable

b. Statements

- (1) May be (depending on local policy)
 - (a) Verbatim
 - (b) Paraphrased
 - (c) Recorded
 - (d) Hand written
- (2) Should be obtained from the following:
 - (a) All involved drivers
 - (b) Other involved persons
 - (c) Passengers
 - (d) Witnesses. Anyone who can provide relevant information (e.g., doctors, paramedics, family members, other persons who may be able to provide information regarding a hit and run

collision, etc.).

c. Opinions and conclusions

(1) Summary

(a) The officer should give his/her opinion of:

- 1) What took place
- 2) How the collision occurred
- 3) Why the collision occurred

(b) The events described should be expressed in a logical and time sequential manner noting:

- 1) Pre-collision relationship of involved parties
- 2) The direction of travel
- 3) Highway upon which the involved vehicles were traveling
- 4) Speed that involved vehicles were traveling
- 5) Lanes in which the involved vehicles were traveling

(c) The officers' opinions should be based on evidence at the scene and/or statements of involved parties or witnesses.

(2) Point(s) of impact/Area(s) of impact (P.O.I./A.O.I)

(a) The officer should state how the P.O.I./A.O.I was determined (physical evidence, point of rest, etc.)

(b) The P.O.I./A.O.I should be measured from at least two reference points

(3) Intoxication narrative

NOTE: Opinions regarding the sobriety of involved parties are a matter of the officer's opinions and conclusions. This information, however, may be contained in a separate report depending on the practice of the officer's agency.

Additional information concerning the requirements of driving under the influence reports are contained in Unit Guide #28 (Traffic).

(4) Cause

- (a) The officer's opinion as to who was most at fault in a collision listing:
 - 1) primary collision factor
 - 2) other associated factors
 - 3) basis upon which fault was determined (e.g., physical evidence, statements)

d. Recommendations

- (1) Describe any follow up actions needed
- (2) Describe need for notice of violation or other prosecution
- (3) Describe need for district attorney review, if applicable (e.g., vehicle homicide)
 - (a) Include how the act or neglect was the proximate cause of the injury justifying the felony charge
- (4) If no recommendations, state "NONE"

I. Interview considerations

1. Witnesses

- a. Statements from a person not involved in the accident can corroborate the driver's statement and the evidence at the scene.
- b. Interviewed first in most cases because they don't have a duty to stay
- c. Record identities before witnesses leave the scene

2. Drivers and passengers

- a. Biased
 - (1) Economic loss
 - (2) Loss of driving privileges
 - (3) Potential criminal prosecution
 - (4) Civil liability
- b. Passengers are not considered independent witnesses (but they should be interviewed)

c. Separate involved parties before interviewing

3. Typical questions

NOTE: The following list is not intended to be all inclusive but may summarize some questions that will be valuable during the conduct of the investigation. Generally, this will presuppose that the officer has determined that the person interviewed has information pertinent to the investigation.

a. General questions

- (1) How did you first know about this accident?
- (2) Where were you at that time?
- (3) What were you doing?
- (4) What is your name, address, DOB, etc?

b. General questions of any person in an involved vehicle

- (1) Which direction were you traveling before the accident?
- (2) Who was driving the car you were in?
- (3) What was he/she (you) planning to do?
- (4) How did he/she (you) try to avoid the accident?
- (5) Show me exactly where the collision occurred.

c. General questions of witnesses

- (1) Show me where the vehicle (pedestrian) was when first seen by you.
- (2) What was the vehicle (pedestrian) doing at that time?
- (3) If you saw the actual collision, show me exactly where it occurred.
- (5) Show me where the vehicle (pedestrian) came to rest.

J. Establishing point of impact/area of impact (P.O.I./A.O.I)

1. Point at which involved parties come into contact with one another, another object, or surface as a result of a traffic collision.
2. Determining point of impact/area of impact

NOTE: Determination of the P.O.I./A.O.I is generally based on several of these factors. A.O.I (area of impact) is the emerging

term based on the fact that it is often difficult if not impossible to determine a single point or collection of points where impact occurred.

- a. Vehicle damage
- b. Gouge marks
- c. Debris
- d. Extreme change of direction of skids
- e. Liquids
- f. Statements
- g. Damage to fixed objects

3. Be aware of other forces which will propel debris beyond point of impact (Newton's Laws of Motion)

K. Determining primary collision factor and associated collision factors

1. Determining Collision Factor

- a. The primary collision factor should be a Vehicle Code violation, when applicable

NOTE: Additional information concerning the specific elements of a variety of hazardous violations are contained in Unit Guide #28 (Traffic).

- (1) Vehicle Code section violated
- (2) Other improper driving
- (3) Other than driver
- (4) Unknown
- (5) Fell asleep

- b. The associated collision factor may be a Vehicle Code violation or other factors such as:

- (1) Vision obscurement
- (2) Inattention
- (3) Stop and go traffic
- (4) Entering or leaving a ramp
- (5) Previous collision

- (6) Unfamiliar with road
- (7) Defective vehicle equipment
- (8) Uninvolved vehicle
- (9) Runaway vehicle

Note: The student's collision investigation manual will generally include additional information requiring a detailed description of the above associated factors (e.g., specific type of vision obscurement involved).

- c. Any primary or associated factor noted in the report must be described and substantiated in the narrative.

2. Nine-Cell Matrix

- a. A properly documented collision should address each cell of the matrix shown below:

	PRE-CRASH	CRASH	POST-CRASH
VEHICLE			
HUMAN			
ENVIRONMENT			

b. Pre-collision phase

- (1) Vehicle
 - (a) Equipment
 - (b) Mechanical condition
 - (c) Approach angle
- (2) Human
 - (a) Blood-alcohol level
 - (b) Physical condition
 - (c) Attention span
- (3) Environment

- (a) Lighting conditions
 - (b) Roadway conditions
 - (c) Visibility
- c. Collision phase
- (1) Vehicle
 - (a) Number of occupants
 - (b) Estimated speed(s) of vehicles
 - (c) Vehicle load
 - (d) Point of impact/Area of impact (P.O.I./A.O.I)
 - (2) Human
 - (a) Seating positions
 - (b) Portion of the vehicle interior the parties struck
 - (3) Environment
 - (a) Traffic conditions at time of collision
 - (b) Coefficient(s) of friction
 - (c) Traffic control devices
- d. Post-collision phase
- (1) Vehicle
 - (a) Controlled vs uncontrolled point(s) of rest
 - (b) Location of debris
 - (c) Identify departure angles
 - (2) Human
 - (a) Direction of ejected party
 - (b) Order appropriate chemical test
 - (3) Environment
 - (a) Change in environment during investigation
3. The students should refer to their agency collision investigation manual for specific information concerning the determination of

(3) Environment

(a) Change in environment during investigation

3. The students should refer to their agency collision investigation manual for specific information concerning the determination of the primary collision factor since differences can exist between documents

a. Differences in treatment of involved intoxicated driver

(SWITRS requires that driving under the influence be listed as the primary collision factor in all instances where a DUI driver is most at fault regardless of any other Vehicle Code violation committed by that driver.)

L. Prosecution/court presentations

1. Prosecution preparation

a. Review documents

b. Prepare testimony as to the elements of the violation(s)

c. Be prepared to do a courtroom diagram

d. Pre-trial conference, if applicable

2. Court testimony

NOTE: Additional information regarding courtroom demeanor and testimony is included in Unit Guide #30 (Investigations)



TRAFFIC COLLISION SKETCH

Given an audio-visual presentation, transparency picture, handout or other depiction of an accident scene, the student will generate a traffic scene sketch consistent with the student's collision investigation manual.

This sketch will minimally include the following:

- A. Compass direction
- B. Basic measurements of the roadway
- C. Appropriate symbols/illustrations
- D. Point of impact/Area of impact (P.O.I./A.O.I.)
- E. Travel paths of vehicles and parties involved
- F. Reference points and direction
- G. Items labeled appropriately (parties, streets, signs, etc.)

In addition the sketch should meet the following standards:

- A. Legible
- B. Proportional
- C. Text written parallel to the bottom of the page

The sketching exercise should include either verbally or in writing a determination of the student's understanding of the following terminology:

- A. Sketch: a sketch reflects an officer's opinion as to how the collision occurred
- B. Factual diagram: a factual diagram contains factual details only. It represents the scene as found upon the officer's arrival.

Performance Objective 9.14.8

CURRICULUM

- A. Traffic templates
 - 1. How used
 - 2. Limitations
- B. Sketches
 - 1. A sketch should be made for all traffic collision reports and investigations. A sketch reflects the officer's opinion of how the accident occurred.
 - 2. A sketch should include the following:
 - a. Compass direction
 - b. Basic measurements of the roadway
 - c. Appropriate symbols/illustrations

- d. Point of Impact/Area of impact (P.O.I./A.O.I)
 - e. Travel paths of vehicles and parties involved
 - f. Reference points and direction
 - g. Items labeled appropriately (parties, streets, signs, etc.)
3. A sketch should meet the following standards:
- a. Legible
 - b. Proportional
 - c. Text written parallel to the bottom of the page

C. Factual diagrams

1. A factual diagram contains factual details only. It represents the scene as found upon the officer's arrival. A factual diagram should be generated when:
 - a. The collision involves a fatality
 - b. The collision involves a serious injury
 - c. A diagram would assist in prosecution
2. A factual diagram should contain the following:
 - a. Compass direction
 - b. Basic measurements of the roadway, evidence and vehicles
 - c. Appropriate symbols/illustrations
 - d. Reference points
 - e. Items labeled appropriately (streets, signs, etc.)
3. A factual diagram does not contain:
 - a. Point of impact/area of impact
 - b. Directions of travel of involved vehicles
4. A factual diagram should meet the following standards:
 - a. Legible
 - b. Proportional (but not necessarily to scale)
 - c. Text written parallel to the bottom of the page
 - d. Should not be drawn freehand

TRAFFIC COLLISION PHYSICAL EVIDENCE

Given audio-visual presentation(s), transparency picture(s), handout(s) or other representation(s) of physical evidence commonly associated with traffic collisions, the student will identify the type(s) of physical evidence present.

The exercise should include either verbally or in writing a determination of the student's understanding of tire mark terminology which may include the ability to correctly measure the marks.

Physical evidence types:

- A. Debris (which may include glass, vehicle parts, fluids, etc.)
- B. Vehicle or property damage
- B. Gouge marks
- C. Photographs
- D. Tire marks (which may include):
 - 1. **Locked wheel skid:** A mark left by a non-rotating wheel moving in a straight or curved line in the original direction of travel
 - 2. **Impending skid:** A mark left by a braked wheel rotating slower than the forward motion of the vehicle in a straight or curved line
 - 3. **Skip skid:** A mark that occurs when a locked wheel bounces off the roadway. The spaces are usually two to three feet
 - 4. **Gap skid:** A mark left by a locked wheel that is released and locked again. The gaps are usually ten feet or more
 - 5. **Side skids:** Marks left by locked or rotating wheel of a vehicle sliding in other than a forward direction, except when known to be caused by centrifugal force
 - 6. **Acceleration mark:** A mark created by a propelling force or thrust generated in an amount exceeding the pavement efficiency
 - 7. **Critical speed scuff:** A mark left by a rotating wheel of a vehicle rounding a curve or turning at such a speed that centrifugal force entirely or partially overcomes frictional resistance.

Performance Objective 9.14.9

CURRICULUM

- A. Identification of evidence
 - 1. Types of evidence found at traffic collision scenes can include:
 - a. Debris
 - b. Liquids
 - c. Gouge marks
 - d. Tire marks
 - e. Paint transfers
 - f. Fabric, hair and tissue

- g. Vehicle parts
 - h. Blood and serological fluids
- B. Preservation of evidence
- 1. Fragile/perishable evidence
 - 2. Adverse weather conditions
- C. Measurement of evidence
- 1. Measurement from fixed points
 - 2. Should be measured from two separate reference points
 - 3. Measurement techniques and devices:
 - a. Tape measures
 - (1) Various types
 - (a) Steel
 - (b) Cloth
 - 1) Lacks accuracy due to stretching
 - (c) Fiberglass
 - (2) Various lengths
 - b. Rolotape
 - (1) Good for long distances
 - (2) Must be checked for accuracy
 - (3) Factors causing inaccuracy
 - (a) Operator error
 - (b) Line of path
 - (c) Measured surface
 - c. Standard pace method
 - (1) Generally inaccurate
 - (2) Need to know your own pace length
 - d. Visual estimate

(1) Unreliable

D. Documentation

1. Written record

- a. Creation of evidence list

2. Photographs

- a. Photography is a valuable tool in accident investigation. It is used to preserve the scene and evidence for later evaluation and court presentation. In addition, photographs could be used for reconstruction purposes.
- b. Case law relating to photography (People vs Ah Lee 164 Cal 350)
- (1) Photographer need not be present if the officer at the scene can testify that the photographs accurately depict the scene.
- (2) The developer need not be present in court.
- c. Photographs are visual renderings of the collision scene or specific articles of evidence. The photographs themselves however, can later be considered as evidence in and of themselves.

3. Video tapes

E. Collection of evidence

1. Evidence properly marked
2. Evidence properly packaged
3. Chain of custody maintained

NOTE: Instruction concerning collection, identification and preservation of physical evidence is covered in detail in a separate learning domain.

F. Lab analysis of collision evidence

1. Lamps
2. Paint sample and transfer
3. Speedometer
4. Trace evidence
5. Physical match of vehicle parts

6. Debris from vehicle

G. Tire mark evidence

1. The three basic causes of visible tire marks:

- a. Extreme deceleration - the braking system causes the wheels to cease rotating.
- b. Extreme change of direction - this may result from an intentional effort on the part of the driver or an impact/contact with a fixed object or other vehicles.
- c. Extreme acceleration - occurs when a propelling force or thrust is generated in an amount exceeding the pavement efficiency.

2. Definition, characteristics and measurement of tire mark evidence

NOTE: Visibility of tire marks will depend on roadway surfaces.

Antilock braking systems (ABS) will affect tire mark evidence

a. **Locked wheel skid**

- (1) Definition: A mark left by a non-rotating wheel moving in a straight or curved line in the original direction of travel.
- (2) Characteristics:
 - (a) Differences between front and rear
 - (b) Weight transfer
- (3) Measurement:
 - (a) Each mark should be measured individually from beginning to end

b. **Impending skid**

- (1) Definition: A mark left by a braked wheel rotating slower than the forward motion of the vehicle in a straight or curved line.
- (2) Characteristics:
 - (a) Perishable
 - (b) Starts lighter ends darker
- (3) Measurement:

- 1) Each mark should be measured individually from beginning to end. The end of the impending mark will generally be the beginning of a locked wheel skid.

c. **Skip skid**

- (1) Definition: A mark that occurs when a locked wheel bounces off the roadway.
- (2) Characteristics:
 - (a) Marks are usually uniform in length
 - (b) The spaces are usually two to three feet in length
- (3) Measurement:
 - (a) The mark should be measured from the beginning of the first mark to the end of the last mark (measurement includes skips).

d. **Gap skid**

- (1) Definition: A mark left by a locked wheel that is released and locked again.
- (2) Characteristics:
 - (a) The gaps are usually ten feet or more in length
 - (b) Each mark preceded by an impending skid
- (3) Measurement:
 - (a) Each mark should be measured individually

e. **Side skids:**

- (1) Definition: Marks left by locked or rotating wheel of a vehicle sliding in other than a forward direction, except when known to be caused by centrifugal force.
- (2) Characteristics:
 - (a) Wider than a locked wheel skid mark
 - (b) Brush marks parallel to the skid mark
- (3) Measurement:

- (a) Each mark should be measured individually from beginning to end. The end of the impending mark will generally be the beginning of a locked wheel skid.

f. **Acceleration scuff**

- (1) Definition: A mark created by a propelling force or thrust generated in an amount exceeding the pavement efficiency.
- (2) Characteristics:
 - (a) Usually caused by no more than one or two wheels
 - (b) Tire powder beyond end of skid mark
 - (c) May not be in a straight line
 - (d) Usually a dark to light mark
- (3) Measurement:
 - (a) Each mark should be measured individually from beginning to end. The end of the impending mark will generally be the beginning of a locked wheel skid.

g. **Critical speed scuff**

- (1) Definition: A mark left by a rotating wheel of a vehicle rounding a curve or turning at such a speed that centrifugal force entirely or partially overcomes frictional resistance.
- (2) Characteristics:
 - (a) Mark is in the form of a arc
 - (b) Mark starts very narrow and broadens
 - (c) Striations marks are at an angle to the scuff marks
- (3) Measurement:
 - (a) Must measure a chord and mid-ordinate

3. **Skid observation techniques**

- a. Looking at both ends from a distance
- b. Using polarized lenses during daylight conditions

- c. Use of auxiliary lighting at night
- 4. Tying the vehicle to the tiremarks
 - a. Mark on tire
 - b. Wheel and track of vehicle
 - c. Position of vehicle
 - d. Width of marks in relation to tire widths
 - e. Sidewall scuffing

SUPPORTING MATERIAL

AND

REFERENCES

This section is set up as reference information for use by training institutions. These materials can be used for instruction, remediation, additional reading, viewing, or for planning local blocks of instruction. This list is not an endorsement of any author, publisher, producer, or presentation. Each training institution should establish its own list of reference materials.

TOPICAL LIST OF SUPPORTING MATERIALS AND
REFERENCES INCLUDED IN THIS SECTION

None included

REFERENCES

California Vehicle Code, State of California.

"Photography in Traffic Accident Investigation", Eastman Kodak Company, Rochester, N. Y. Kodak
Publication No. M-21.

California Statewide Integrated Traffic Records System Collision Investigation Manual (CIM)

The Traffic Accident Investigation Manual Northwestern University Traffic Institute

Manual on Classification of Motor Vehicle Traffic Accidents