

126537

BASIC COURSE UNIT GUIDE

50

TRAFFIC COLLISION INVESTIGATION

This unit guide covers the following learning goals contained in the POST Basic Course performance objective document:

- 9.13.0 Traffic Collision Management
- 9.14.0 Traffic Collision Investigation

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THE COMMISSION
ON PEACE OFFICER STANDARDS AND TRAINING
STATE OF CALIFORNIA

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This unit of instruction is designed as a *guideline* for Performance Objective-based law enforcement basic training. This unit 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.

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Learning Goals and Performance Objectives

9.13.0 TRAFFIC COLLISION SCENE MANAGEMENT

Learning Goal: The student will understand the basic concepts of proper traffic collision scene management.

9.13.6 The student will identify the following elements of traffic collision scene management:

- A. Upon approach, survey scene for hazards
- B. Position patrol vehicle properly
- C. Check for injuries, their extent, and obtain or provide necessary medical assistance
- D. Protect persons and property involved
- E. Remove any conditions which may cause additional accidents
- F. Determine support needs and request assistance if necessary
- G. Apply personal safety measures
- H. Take the necessary steps to identify a driver involved in a collision who leaves the scene without being properly identified
- I. Preserve scene as appropriate
- J. Restore traffic flow which could include alternate routes
- K. Clear the scene
- L. Complete appropriate traffic collision reports

9.14.0 TRAFFIC COLLISION INVESTIGATION

Learning Goal: The student will understand the basic concepts of traffic collision investigation.

9.14.1 Given a simulated traffic collision, the student will demonstrate the ability to investigate and document the collision.

9.14.2 The student will identify the basic definitions relevant to traffic collision reports.

- A. Accident or collision: an unintended event which causes damage, death or injury
- B. Classification of injuries: 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

Material/Equipment

Each training institution should develop its own list of equipment and materials for each unit. This list is dependent upon the instructional strategies methods/media considerations.

Accident Collision Investigation Forms

Learning Goal 9.14.0: The student will understand the basic concepts of proper traffic collision investigation.

Unit Outline & Presentation	Objectives & Instructional Cues
<p>I. TRAFFIC COLLISION INVESTIGATION (9.14.0)</p> <p>A. Definitions of Traffic Collisions Terms</p> <ol style="list-style-type: none"> 1. Accident or collision (highway or private property) <ol style="list-style-type: none"> a. Unintended event b. Damage, injury, or death 2. Classification of injuries <ol style="list-style-type: none"> a. Fatal b. Severe c. Other visible injuries d. Complaint of pain 3. Deliberate intent <ol style="list-style-type: none"> a. Not a motor vehicle accident b. Act beyond original intent is a motor vehicle accident 4. In transport <ol style="list-style-type: none"> a. Motor vehicle (Roadway) <ol style="list-style-type: none"> (1) Moving (2) Stopped (3) Stalled (4) Disabled (5) Abandoned (6) Portion of vehicle in roadway 	<p>9.14.2</p> <p>The student will identify the basic definitions relevant to traffic collision reports.</p> <ol style="list-style-type: none"> A. Accident or collision: an unintended event which causes damage, death or injury B. Classification of injuries: 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 D. 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 E. Other parties: a person other than the operator of the motor vehicle (includes driverless vehicle, a vehicle being towed)

Learning Goal 9.14.0 : The student will understand the basic concepts of proper traffic collision investigator.

Unit Outline & Presentation	Objectives & Instructional Cues
<p>b. Motor vehicle (off roadway) must be moving</p> <p>5. Other parties</p> <p>a. Non-contact involved party</p> <p>(1) Causing another to become involved in a collision</p> <p>(2) Violation is corroborated</p> <p>(a) Disinterested witness</p> <p>(b) Physical evidence</p> <p>(c) Statement from non-contact party</p> <p>b. Special circumstances (train, equestrian, etc.)</p> <p>C. Uninvolved partner</p> <p>6. Witness</p> <p>a. Disinterested person(s)</p> <p>b. Information relevant to accident</p> <p>B. Collision Investigation Information</p> <p>Each traffic collision investigation will require basic information that will be obtained from the involved parties, witnesses, and physical evidence.</p> <p>An officer should achieve the following:</p> <p>1. Identification of all involved parties and vehicles. This includes:</p> <p>a. Drivers</p> <p>b. Passengers</p> <p>c. Vehicles, including those directly involved, parked, or involved by influence</p> <p>d. Property damaged</p>	<p>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.</p> <p>F. Witness: a person other than an involved party or a passenger who can provide information relevant to the accident</p> <p>9.14.5</p> <p>The student will identify the information to be obtained during a collision investigation interview.</p> <p>A. Identify the involved parties and vehicles</p> <p>B. Establish the time and location of collision events</p> <p>C. Establish the chronology of collision events</p> <p>D. Elements unique to hit and run collisions, if applicable</p>

Learning Goal 9.14.0 : The student will understand the basic concepts of proper traffic collision investigation.

Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none"> 2. Establish the time and location of collision events. 3. Establish the chronology of collision events and what each driver was doing prior to, during, and after the collision. 4. Elements unique to hit and run collisions, if applicable. Did the driver(s) stop, render aid, and identify self are the questions to be answered. <p>C. Interviewing Techniques</p> <ul style="list-style-type: none"> 1. Witnesses <ul style="list-style-type: none"> a. Interviewed first in most cases because they don't have a duty to stay. b. Statements from a third party corroborates the driver's statement and the evidence at the scene. c. Disinterested witness is best. d. Record identities before they leave the scene. 2. Drivers and passengers <ul style="list-style-type: none"> a. Biased <ul style="list-style-type: none"> (1) Economic loss (2) Loss of driving privileges (3) Potential criminal prosecution (4) Civil liability b. Passengers are not considered independent witnesses. c. Separate involved parties before interviewing. 	
<p>D. Basic Elements For Collision Diagram</p> <p>Each collision investigation may require collecting statements and physical evidence for completion of a collision sketch. The basic elements needed are:</p>	<p>9.14.3 The student will identify the basic elements necessary to complete a factual diagram and/or sketch</p>

Learning Goal 9.14.0 : The student will understand the basic concepts of proper traffic collision investigator.

Unit Outline & Presentation	Objectives & Instructional Cues
<p>1. Indication of a compass direction. Use the standards North, South, East, West legend with an arrow and "N" to indicate North.</p> <p>2. The diagram will require a measurement of distances to establish point of impact with a certain degree of reliability. The measurements used, such as 1/4" equals 2', will be proportional.</p> <p>3. The diagram should contain appropriate illustration to identify the vehicles, traffic lights, cross-walks, etc.</p> <p>4. Establishing P.O.I.</p> <p>a. A geographical location(s) at which involved parties come into contact with one another, another object, or surface.</p> <p>b. Determining point of impact (also called area of impact)</p> <p>c. Also need to indicate point of rest (P.O.R.) of vehicle, pedestrian, etc.</p> <p>d. The point of impact can be established by:</p> <ul style="list-style-type: none"> (1) Distortion of skid marks (2) Gouge marks (3) Debris (4) Extreme change of direction of skids (5) Liquids (6) Statements (7) Damage to fixed objects <p>Be aware of other forces which will propel debris beyond point of impact (Newton's Laws of Motion)</p> <p>Diagramming</p> <p>1. Traffic templates</p> <ul style="list-style-type: none"> a. How used b. Limitations 	<p>when investigating the scene of a traffic collision. The elements are:</p> <ul style="list-style-type: none"> A. Indications of compass direction B. Measurements of the scene in proportion, but not necessarily to scale C. Use of appropriate illustrations D. Determine the point of impact (P.O.I.) and the point of rest (P.O.R.)

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Unit Outline & Presentation	Objectives & Instructional Cues
<p>2. Sketches</p> <p>A sketch should be made for all traffic collision reports and investigations. A sketch reflects the officer's <u>opinion</u> of how the accident occurred. It should include the following:</p> <ol style="list-style-type: none">(1) Compass direction(2) Identify all highway and roadway widths(3) <u>Relevant</u> elements of the collision scene(4) Point of impact symbols(5) Directions of travel of involved vehicles(6) Sketch should be in proportion, but not to scale(7) Write parallel to bottom of page(8) Should not be done freehand <p>3. Factual diagram</p> <p>A diagram represents the scene as found upon the officer's arrival and should contain factual information only. Diagrams should be drawn if the collision involves a fatality, serious injury, or if a diagram would assist in prosecution. It should be drawn as follows:</p> <ol style="list-style-type: none">(1) Compass direction(2) Not show point of impact(3) Not be freehand(4) Measurements of the scene, evidence, and vehicles(5) Be in proportion, but need not be to scale	

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Unit Outline & Presentation	Objectives & Instructional Cues
<p>E. Skidmarks/Tiremarks Identification</p> <p>1. Definitions and characteristics</p> <p>a. Skidmarks</p> <p>(1) Definition - a mark left by a non-rotating tire due to the sliding of the tire over a surface.</p> <p>(2) Characteristics</p> <p>b. The three basic methods of leaving visible tire skidmarks:</p> <p>(1) Extreme deceleration - the braking system causes the wheels to cease rotating.</p> <p>(2) 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.</p> <p>(3) Extreme acceleration - occurs when a propelling force or thrust is generated in an amount exceeding the pavement efficiency.</p> <p>2. Physical Evidence</p> <p>a. Collection and preservation of evidence</p> <p>(1) Identify, photograph, measure, and record</p> <p>(2) Collect</p> <p>b. Debris/roadway marks</p> <p>(1) Basic application of Newton's First Law of Motion</p> <p>(2) Relationship to debris</p>	<p>9.14.4</p> <p>The student will identify the following types of physical evidence which are used to determine the cause of a collision:</p> <p>A. Locked wheel skid, critical speed scuff, impending skid, side skids, and acceleration scuff.</p> <p>B. Debris, glass, vehicle parts, fluids, and other related property damage.</p> <p>C. Photographs of the scene.</p>

Learning Goal 9.14.0 : The student will understand the basic concepts of proper traffic collision investigation.

Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none">c. Lab analysis<ul style="list-style-type: none">(1) Lamps(2) Paint sample and transfer(3) Speedometer(4) Fabric/hair/tissue(5) Matching vehicle parts(6) Debris from vehicle2. Types of skidmarks/tiremarks<ul style="list-style-type: none">a. Impending - wheel rotating slower than forward motion of the vehicle.b. Locked wheel - non-rotating wheel moving in a straight or curved line in the original direction of travel.c. Side skid (brush marks) - a locked, braked, or rotating wheel of a vehicle sliding in other than a forward direction, except when known to be caused by centrifugal force.d. Critical speed scuffs - rotating wheel of a vehicle rounding a curve or turning at such a speed that centrifugal force entirely or partially overcomes frictional resistance.e. Skip - left by a locked wheel that bounces off the roadway.f. Gap - left by a locked wheel that is released, and then locked again.g. Acceleration mark - propelling force or thrust generated in an amount exceeding the pavement efficiency.h. Collision scrub - a short, usually broad, skidmark made during engagement of the vehicles in a collision.	

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Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none">3. Characteristics and identification of skids<ul style="list-style-type: none">a. Locked wheel skid<ul style="list-style-type: none">(1) Difference between front and rear wheel(2) Weight transfer(3) Skip skid(4) Gap skidb. Impending skidc. Side skidd. Critical speed scuff (centrifugal)<ul style="list-style-type: none">(1) Cause of striation4. Vehicle inspection<ul style="list-style-type: none">a. Methods to tie the vehicle to tiremarksb. Condition of tiresc. Brake test5. Measuring devices/techniques<ul style="list-style-type: none">a. Pace<ul style="list-style-type: none">(1) Inaccurate(2) Need to know average pace lengthb. Rolotape<ul style="list-style-type: none">(1) Good for long distances(2) Tape must be checked for accuracy(3) Factors causing inaccuracy	

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Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none">(a) Operator error(b) Line of path(c) Measured surface <p>c. Tape measures</p> <ul style="list-style-type: none">(1) Various types<ul style="list-style-type: none">(a) Steel(b) Plastic(c) Cloth(d) Fiberglassd. Various lengths <p>6. Recording and measuring</p> <ul style="list-style-type: none">a. Measure and record each skid separately<ul style="list-style-type: none">(1) Impending skid(2) Locked wheel skid(3) Side skid(4) Skip skid(5) Gap skid(6) Critical speed scuffsb. Skid observation techniques<ul style="list-style-type: none">(1) Looking at both ends from a distance(2) Using polarized lenses during daylight conditions(3) Use of auxiliary lighting at night	

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Unit Outline & Presentation	Objectives & Instructional Cues
<p>F. Determining Primary Collision Factor and Associated Collision Factors</p> <p>1. Definitions</p> <p>a. Primary collision factor: The one element that best describes the cause of the collision or, if removed, would have prevented the collision from occurring.</p> <p>b. Associated collision factors: Other factors or violations that contributed, but were not the main cause of the collision.</p> <p>2. Determining Collision Factor</p> <p>a. The primary collision factor should be a Vehicle Code violation, when applicable.</p> <p>b. The associated collision factor may be a Vehicle Code violation or other factors such as:</p> <p>(1) Inattention</p> <p>(2) Fatigue</p> <p>c. Any primary or associated factor noted in the report must be described and substantiated in the narrative.</p>	<p>9.14.6 Given a Vehicle Code and a description of a traffic collision, the student will determine the Vehicle Code violation, where applicable, and identify the primary collision along with any associated collision factors.</p>
<p>G. Traffic Collision Problem</p> <p>The purpose of the simulated traffic collision is to give the student the opportunity to put to practice the procedures, methods, and techniques learned in this module.</p>	<p>9.14.1 Given a simulated traffic collision, the student will demonstrate the ability to investigate and document the collision.</p>

Learning Goal 9.13.0 : The student will understand the basic concepts of proper traffic collision scene management.

Unit Outline & Presentation	Objectives & Instructional Cues
<p>II. TRAFFIC COLLISION SCENE MANAGEMENT</p> <p>A. Responding to the Scene</p> <ol style="list-style-type: none"> 1. Emergency vehicle operations <ol style="list-style-type: none"> a. 21055 CVC, 21056 CVC b. Plan a safe, efficient route of approach 2. Collision scene priorities <ol style="list-style-type: none"> a. Plan should begin the moment of notification b. Approaching the scene (look for hit-run vehicles) <ol style="list-style-type: none"> (1) Identify hazards (2) Evaluate and request additional assistance <ol style="list-style-type: none"> (a) Ambulance/paramedics (b) Fire department/rescue (c) Additional police units (d) Tow trucks c. Protect the scene from further collisions <ol style="list-style-type: none"> (1) Scene hazards <ol style="list-style-type: none"> (a) Electrical wires down (b) Victims trapped (c) Hazardous materials (2) Position of patrol vehicle Protection, communications, equipment d. Life saving requirements (First Aid/CPR) e. Determine if hit-run 	<p>9.13.6 The student will identify the following elements of traffic collision scene management:</p> <ol style="list-style-type: none"> A. Upon approach, survey scene for hazards B. Position patrol vehicle properly C. Check for injuries, their extent, and obtain or provide necessary medical assistance D. Protect persons and property involved E. Remove any conditions which may cause additional accidents F. Determine support needs and request assistance if necessary G. Apply personal safety measures H. Take the necessary steps to identify a driver involved in a collision who leaves the scene without being properly identified I. Preserve scene as appropriate J. Restore traffic flow which could include alternate routes <p>Cross reference Functional Area 8.0,</p>

Learning Goal 9.13.0 : The student will understand the basic concepts of proper traffic collision scene management.

Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none"> c. Broadcast description d. Collect and preserve evidence unique to hit and run investigations, e.g., debris, paint transfers and damage measurements. <p>C. Photography</p> <ul style="list-style-type: none"> 1. 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. 2. Case law relating to photography <ul style="list-style-type: none"> a. Photographer need not be present if the officer at the scene can testify that the photographs accurately depict the scene. b. The developer need not be present in court. 3. What to photograph includes: <ul style="list-style-type: none"> a. Driver's view upon approach b. Multiple views of damage c. Overall view of vehicles including license plates d. Physical evidence <ul style="list-style-type: none"> (1) Skid marks (2) Debris (3) Liquids (4) Gauges <p>D. Officer Safety</p> <ul style="list-style-type: none"> 1. Be aware and prepared for unique safety situations involved in traffic collision investigation 	

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Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none"> a. Setting flare patterns b. Directing traffic c. Gathering evidence d. Tow trucks e. Intoxicated drivers <p>E. Hazardous Materials - Investigation of traffic collisions create potential exposure to hazardous materials.</p> <ul style="list-style-type: none"> 1. Recognition and identification <ul style="list-style-type: none"> a. Placards b. Bill of lading c. Driver's statement 2. First responder <ul style="list-style-type: none"> a. Is responsible for hazardous material scene management until properly relieved (2454a CVC) b. Traffic investigators should attend a first responder scene management class 3. Notification for assistance <ul style="list-style-type: none"> a. Fire department b. Road department c. Shippers d. Office of Emergency Services 4. Emergency Response Guide 	

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Unit Outline & Presentation	Objectives & Instructional Cues
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F. Nine-Cell Matrix

1. A properly documented collision should address each cell of the matrix below

	PRE-CRASH	CRASH	POST-CRASH
VEHICLE			
HUMAN			
ENVIRONMENT			

2. Pre-crash phase
 - a. Vehicle
 - (1) Equipment
 - (2) Mechanical condition
 - (3) Approach angle
 - b. Human
 - (1) Blood-alcohol level
 - (2) Physical condition
 - (3) Attention span

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Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none"> c. Environment <ul style="list-style-type: none"> (1) Lighting conditions (2) Roadway conditions (3) Visibility 3. Crash phase <ul style="list-style-type: none"> a. Vehicle <ul style="list-style-type: none"> (1) Number of occupants (2) Estimated speed(s) of vehicles (3) Vehicle load (4) Point(s) of impact b. Human <ul style="list-style-type: none"> (1) Seating positions (2) Portion of the vehicle interior the parties struck c. Environment <ul style="list-style-type: none"> (1) Traffic conditions at time of collision (2) Coefficient(s) of friction (3) Traffic control devices 4. Post-crash phase <ul style="list-style-type: none"> a. Vehicle <ul style="list-style-type: none"> (1) Point(s) of rest (2) Location of debris (3) Identify departure angles 	

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Unit Outline & Presentation	Objectives & Instructional Cues
<ul style="list-style-type: none">b. Human<ul style="list-style-type: none">(1) Direction of ejected party(2) Order appropriate chemical testc. Environment<ul style="list-style-type: none">(1) Change in environment during investigationG. Traffic Accident Reports<ul style="list-style-type: none">1. Functions<ul style="list-style-type: none">a. State-Wide Integrated Traffic Records System (SWITRS)b. Engineering needsc. Enforcement needsd. Civil and criminal proceedings2. Report writing<ul style="list-style-type: none">a. Face sheetb. Statistical informationc. NarrativesH. Prosecution/Court Presentations<ul style="list-style-type: none">1. Prosecution preparation<ul style="list-style-type: none">a. Review documentsb. Prepare testimony as to the elements of the crimec. Be prepared to do a courtroom diagramd. Pre-trial conference, if applicable2. Court testimony	

SUPPORTING MATERIAL

AND

REFERENCES

TRAFFIC ACCIDENT FIELD PROBLEM

Did the student respond appropriately to the following situations:

Yes No

___ ___ Did the student park the law enforcement vehicle in the safest and most efficient location?

___ ___ Did the student request necessary assistance?

___ ___ Did the student assist injured person?

___ ___ Did the student protect persons and property?

___ ___ Did the student remove any situation(s) that may cause additional accidents?

___ ___ Did the student care for his/her personal safety?

___ ___ Did the student complete all related reports required by his/her agency?

___ ___ Was the accident thoroughly investigated?

Reference Materials

This section is set up as reference information for use by training institutions. These materials can be utilized for prime instruction; remediation, additional reading, viewing or for planning local units of instruction. They are presented here as instructional materials that may assist the learner or the academy staff in the teaching-learning process. Each training institution is encouraged to expand this list but only after careful viewing and reading to determine its acceptability.

"Accident Investigation I", AC-69, Motorola Teleprograms:
Illinois.

"Accident Investigation II", AC-79, Motorola Teleprograms;
Illinois.

"Accident Investigation III", AD-02, Motorola Teleprograms:
Illinois.

Basham, Donald J., Traffic Accident Management. Springfield,
Illinois: Charles C. Thomas Publisher, 1979.

California Vehicle Code, State of California.

Hand, Sherman, Cavanaugh, Traffic Investigation and Control.
Ohio: Charles E. Merrill Publishers, 1976.

"Handling Traffic Hazards", Module 242.04, 242.02, Project MILE,
Los Angeles Police Department.

"Hit and Run", Module 247.01, Project MILE, Los Angeles Police
Department.

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

Reizes, The Mechanics of Vehicle Collisions. California: Davis
Publishing Company, Inc., 1973.

"Techniques of Traffic Control", California Highway Patrol
Academy, 1969.

"Traffic Accident Investigation", AD-46, Motorola Teleprograms,
Inc., Illinois.

"Traffic Accident Investigation", Modules 246.01, 246.02, Project
MILE, Los Angeles Police Department.

In no way is this list an endorsement of any author, publisher, producer, or presentation. Each training institution must read or view these materials, and others to establish their own list of reference materials.