

OBJECTIVE 2.14 Identify driving movements that frequently contribute to law enforcement collisions.

## INTRODUCTION

It is important for the student to identify situations which result in a high incidence of collision involvement while the officer is performing routine driving tasks. Collision prevention requires a conscious identification of specific driving behaviors and a motivated student who recognizes acceptable behaviors and develops them into low-risk habits.

By organizing a driving maneuver into specific behaviors, the student can follow a step-by-step sequence to success. Feedback is more accurate, as "okay" or "not okay" performances are more easily evaluated. Successful results are more consistent; corrections more easily made.

This objective will serve as a step-by-step standard for performance.

## CONTENT

1. Driving movements frequently contributing to law enforcement collisions are:
  - a. Backing
  - b. Parking maneuvers
  - c. Road positioning
  - d. Turnabouts and turns
  - e. Lane changes
  - f. Driving too fast for conditions
    - (1) While approaching intersections
    - (2) While approaching hills
    - (3) While approaching curves
    - (4) Passing vehicles

(5) Following vehicles

### BACKING

1. Over 50 percent of all non-emergency law enforcement related collisions occur while the vehicle is in reverse. The officer needs to complete reverse maneuvering at a point where there is the least amount of vulnerability and with full control over the vehicle.
2. Maneuvering in reverse driving situations necessitates a slightly different application of road position. Of primary consideration is the swing of the vehicle's front end during turning motions. During constant, increasing, and decreasing radius turns, the part of the reverse driving line most affected will be the entry point. As soon as the steering wheel is turned, the vehicle's front end will begin its turning arc (swing). Sufficient room must be allowed between the vehicle and the curb line to permit a continuous driving line without steering alteration or impacting of obstacles.
3. Limited area maneuvering presents the driver with other considerations. Driving limits may be imposed by roadway width, space between obstacles, or both. Should ample roadway width exist, a driving line which angles through the obstacle spacing should be used to take full advantage of the available driving area. This will benefit vehicle control through minimal steering input and consequently minimal weight transfer. Limited driving area may also necessitate a driving line to crowd the existing obstacles or hazards. Depending on vehicle placement, the hazards will be kept close to the vehicle's right or left side, to allow the vehicle to avoid a collision while maintaining the available roadway. A vehicle turning point (pivot point) must be selected. This can be either the vehicle's bumper or rear axle, based on driver preference.

### PARKING MANEUVERS

The following methods are suggested to aid the driver when completing reverse maneuvering:

1. Straight line backing
  - a. Driver's body should be turned.
  - b. Driver is looking out of the rear window.
  - c. Driver's right arm is over the front seat.

- d. Left hand is kept at the 12 o'clock position.
  - e. Have a clear view to the rear.
  - f. Accelerate lightly.
  - g. There should be minimum hand movement on the steering wheel.
2. Backing and turning
- a. Properly position hand(s) on the steering wheel.
  - b. Driver's body is turned to look to the rear in the direction the rear of the vehicle will travel. If turning to the right, look over the right shoulder. If turning to the left, look over the left shoulder.
  - c. Frequent checks of the front corners are made to check the swing of the car before turning.
  - d. Turn steering wheel with a firm control of the hands, hands always on the wheel.
  - e. Maintain speed control; in close quarters creep the vehicle.
  - f. If backing is necessary, do the backing when first arriving at a destination rather than when leaving. In non-emergency situations, always back into a parking space.
3. Parking
- a. Perpendicular or stall parking  

Backing into a perpendicular parking space is recommended. If you back into a parking space, you can get into and out of a tighter area than if you pulled in forward. When a police vehicle is backed into a space, the officer is able to quickly and safely move the vehicle out if an emergency situation develops after the car is parked.
  - b. Angle parking  

Angle parking used when there are 30-45° angle parking spaces. This type of parking is designed for head-in parking.

c. Parallel Parking

Parallel parking is used for backing between two vehicles that are parked next to a curb.

## ROAD POSITIONING

1. Road positioning means the position of the vehicle on the road to best facilitate the negotiation of a turn or curve at a safe rate of speed, and the use of the available roadway to its fullest advantage with the least amount of steering. Road position could also be referred to as the “driving line” through a turn. (See diagram in appendix on road positioning).
2. Typical turn classifications are constant radius (90E), decreasing radius, increasing radius, multiple turn situations, and 180E turns (See diagram in appendix on turn classification).
  - a. The constant radius (90E) turn is the most efficient driving line utilized to negotiate a turn - a driving line with a constant radius. This turn would become a full circle if permitted to continue a full 360E. The actual driving distance of the turn would be approximately 1/4 of the theoretical circle.
    - (1) Three essential points of reference are relevant to a constant radius turning maneuver.
      - (a) Point #1 is the entry position, placing the vehicle to the extreme outside of the available roadway. This is also the point of steering input to perform the turning maneuver.
      - (b) Point #2 is the tightest, most inner part of the available roadway, and is referred to as the geometric apex. It is directly centered within the driving arc.
      - (c) Point #3 is the exit position, placing the vehicle again to the extreme outside of the roadway. If steering is input correctly from entry and maintained to the apex, the vehicle will seek the exit point on its own accord (See diagram in index on driving points).
    - (2) The driving advantages are to minimize weight transfer and steering input, achieve smooth vehicle control, and the greatest attainable safe speed through the turn (See diagram in appendix on road position/turning).
  - b. A decreasing radius curve is one in which the turn angle becomes sharper in relation to the distance driven. In this situation, the driving speed will necessarily be decreased in proportion to the severity of the turn angle. Negotiate the turn by taking the line of least resistance to the vehicle’s travel.

- c. An increasing radius turn is one where an initial sharp turning angle gradually straightens away from the apex area. Vehicle speed will be slow at the entry point and can be increased upon exiting, relative to the configuration of the roadway.
- d. A multiple turn situation is where vehicle control problems are likely to occur. The correct roadway position through multiple turns is a path that will reduce the amount of directional change from one turn to another. This will lessen side-to-side weight transfer, to give the tires improved traction and allow for a greater potential for control. In order to drive correct roadway position, the driver will have to equalize necessary turning motions from one turn to another, while maintaining a consistent speed. The reason for equalizing turning motions and speed is that these two ingredients combine to create centrifugal force.

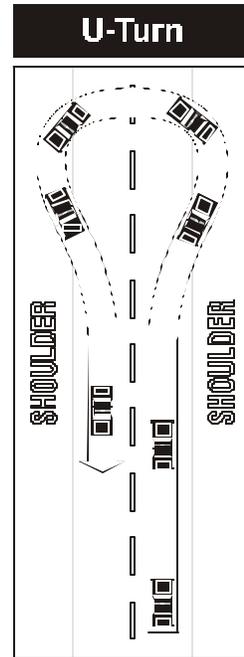
Correct road position will vary as to the configuration of the multiple turns. The driving line selected should provide for optimum efficiency and control at the exit of the final turn.

- e. The configuration of a 180E turn corresponds to driving through half a circle. Entry should be slightly to the left of the center of the driveable roadway. This line will be maintained to the approach of the apex. Although not any faster, speed-wise, than an “inside” or “outside” driving line, this route provides a degree of safety for maneuvering in the case of a slide. The apex area is relatively close to the exit of the turn, not geometrically located. The exit point will be on the outside of the roadway, beyond the apex area.
3. Control considerations are important. While attempting to maintain a proper position or line through a turn, the driver must scan the curve during the approach. The path of travel should bring the vehicle to the driving apex or low side just prior to being pointed out of the turn. The length of time and distance at the apex may vary, depending on the radius of the turn being negotiated. The vehicle should be held as close as possible to the apex to allow adequate distance when exiting the turn. Vehicle stress and weight transfer may be reduced by allowing the vehicle to smoothly drift out to the high side (outside) upon leaving the turn. The driver should attempt to stay in an appropriate traffic lane after completing each turn.

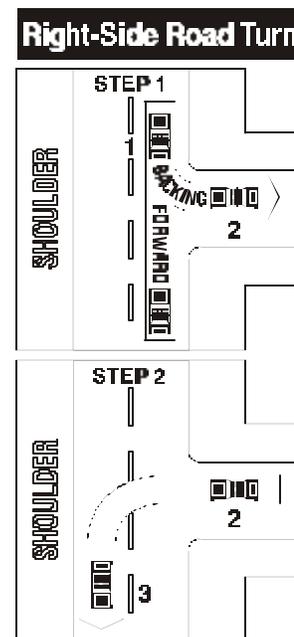
**TURNABOUTS AND TURNS**

Some agencies have guidelines on when to turn (or not to turn) on a public roadway. In lieu of any definite guidance, some suggestions are:

1. "U"-turn and broken "U"-turn
  - a. Slow vehicle.
  - b. Pull to extreme right of lane or shoulder.
  - c. Check traffic.
  - d. Signal intent to turn.
  - e. Do not accelerate until after the turn is completed.
  - f. If the turn cannot be completed in one motion, back only so far as to allow for completion of the turnabout.



2. Right-Side Roadway Turn or Use of Driveway
  - a. Requires a two-lane roadway.
  - b. Use same method as backing into a perpendicular parking space.
  - c. Check roadway for traffic before and during maneuver.
  - d. Avoid driving head-in into a driveway, as this reduces maneuverability when exiting the driveway.



3. Making Left and Right Turns

By using an acceptable method for turning, the driver is able to practice the necessary steps for best habit development. When the driver is aware of the necessary steps, the potential increases for avoiding errors that can cause a collision. An acceptable method is:

- a. Get speed under control.

- b. Signal intentions.
- c. Check mirrors and blind spots.
- d. Get proper side position before making the turn.
- e. Scan intersection to the left, front, and before beginning to turn to be sure the new path-of-travel is clear.
- f. Look into the direction of the turn before beginning to turn to be sure the new path-of-travel is clear.
- g. Maintain the proper tracking control.
- h. Keep braking forces applied (on turn initiated from a moving position) until half way into the turn.
- i. Hand-over hand or the shuffle steering technique will give positive steering control.
- j. Accelerate after the turn.

## LANE CHANGES

Why make the lane change? What is there to gain by the change? These questions are seldom considered by those drivers having lane changing collisions. If the lane change is necessary, then consider the following method:

1. Check other lanes for problems and a clear path.
2. Check mirrors to find an opening in the adjacent lane.
3. Signal intentions by having the signal lever in the on position for at least 3 seconds before change lanes.
4. Headcheck, into the blind spot, by making a quick glance over the shoulder in the direction the car is to travel.
5. Tracking control requires a slight turn of the wheel for a smooth, gradual, accurate movement.

6. Speed control may require a slight increase in speed.
7. Time vehicle arrival into the adjacent lane to avoid interfering with other traffic.

**DRIVING TOO FAST FOR CONDITIONS**

1. Collision data for officers indicates that collisions result from driving too fast for conditions when:
  - a. Approaching intersections
  - b. Approaching hills
  - c. Approaching curves
  - d. Passing vehicles
  - e. Following vehicles
  - f. Passing slower traffic
2. Approaching intersections
  - a. Observe the intersection early.
  - b. Check the mirror for an update of rear traffic.
  - c. Select the best lane and positioning for negotiating the intersection.
  - d. Scan left, front, right of intersection location for potential or actual conflicts, especially restrictions to the lane.
  - e. Get the best speed control by either covering the brake or applying the brake if any conflicts are present or if there are line-of-sight restrictions.
3. Approaching hills
  - a. Determine the hill grade by observing cars disappearing.

- b. Check area to the right for possible escape path from oncoming traffic.
  - c. Check mirrors for closeness of fast approaching vehicles.
  - d. Keep following distance.
  - e. Avoid extreme movements to either side of the lane when visibility is restricted.
  - f. Reduce speed to gain more time to see over the hill crest.
  - g. Try to determine immediately, while driving over the hill crest, if the path of travel is "okay" or "not okay."
  - h. Search ahead and see what the next problem might be.
4. Approaching curves
- a. For purposes of speed control in a turning maneuver, consideration must be given to throttle and brake application in relation to the vehicle's position within the driving lane.
  - b. This is accomplished by dividing the driving line into zones of activity regarding brake and throttle usage.
    - (1) Zone #1 (speed adjustment) consists of the approach roadway up to the turn entry point. The vehicle's speed will be brought to entry within this area. This can be accomplished by speed increase, speed reduction (straight line threshold braking or extended release).
    - (2) Zone #2 (entry) consists of the turning arc (driving line) between the entry point and the apex. Depending on the desired technique, vehicle speed is either maintained by constant throttle, or adjusted by brake release.
    - (3) Zone #3 (exit) - optional. This area consists of the roadway from the apex to the exit point. Options exercised in this area are speed maintenance or speed increase, speed decrease, or vehicle stop. Use of the appropriate option will be determined by the situation confronting the driver.
  - c. The following rules apply to rounding curves:

- (1) Determine sharpness of curve ahead.
  - (2) Check mirrors for condition to the rear.
  - (3) Keep the following distance.
  - (4) Check area to right for possible escape path from oncoming traffic.
  - (5) Going in to left curve; keep to the right edge of the lane if the left traffic flow is okay. This will give best line of vision into the curve and best drive line into the curve.
  - (6) Going into a right curve; keep to the left edge of the lane if the left traffic flow is okay. If oncoming traffic exists, center the vehicle in the lane.
  - (7) Establish an effective speed control before going into the curve.
  - (8) Look into the curve, trying to see to the end of the curve, and continually evaluate the condition of the path of travel.
  - (9) Acceleration can be increased after the vehicle is beyond the halfway point in the curve and if the new path of travel is okay.
5. Approaching and passing slower vehicles
- a. Look ahead of the vehicles to be passed.
  - b. Observe the traffic conditions to determine the best passing location.
  - c. Make mirror checks, head checks, and signal intentions.
  - d. Check location to the side.
  - e. If crossing lanes into oncoming traffic, put headlights on to increase visibility and separation.
  - f. Accelerate smoothly and quickly.
  - g. Pass to the left of the vehicle and keep as far away as possible for best visibility and separation.

- h. Keep searching for changes in the traffic conditions, knowing what the escape options are.
- i. When the headlights of the passed vehicle are seen in rear view mirror use turn signal and return to original lane.

**6. Following vehicles**

- a. There are three major reasons why an acceptable following distance should be emphasized for patrol vehicles:
  - (1) The patrol vehicle may be traveling faster than other vehicles, which means the closure rate of the patrol vehicle to the front vehicle will be rapid.
  - (2) The motoring public, after seeing a law enforcement vehicle approaching from the rear, will often make quick and unexpected braking actions, which could increase the closure rate.
  - (3) An officer is often performing surveillance of the area surrounding conditions, which creates distraction away from the front vehicle.
- b. Some law enforcement courses recommend a two-second following distance and others recommend a four-second following distance. The more space the driver is able to routinely keep, the less the number of surprises there will be. With fewer surprises there will be maximum control and minimum stress. An acceptable following distance can be measured by the use of seconds.
- c. How to estimate following distance by using seconds:

Estimate how many seconds you are away from the vehicle you are following. Then find a fixed marker, such as a traffic sign or a telephone pole, that the front vehicle is about to pass. As soon as its rear bumper is even with the marker, begin counting by 1001, 1002, 1003, 1004, and so on until the front of your vehicle is even with the same marker. Repeat this process until you can estimate the distance covered in 4 seconds. Do this for different speeds.

**SUMMARY**

There are many situations which have a high frequency of collision involvement for an officer. This objective presented a sequencing of driving tasks that are divided into measurable steps. If followed, these steps can help the student acquire specific behaviors and develop good driving habits. With these actions the student can perform safely and consistently in a high-risk situation.

**SUGGESTED INSTRUCTIONAL METHODOLOGY****LECTURE**

Present the class with statistics for law enforcement-related collisions from local agency records. Give the class a printed handout of the various maneuvers and procedures as listed in the content section. Explain how and why each procedure is recommended and how such performance can minimize a potential collision.

**SMALL GROUP DISCUSSION**

Divide the class into groups of 3-6 students and ask them to formulate the steps they would use to perform one of the maneuvers listed in the content. After the group has had time to develop their steps for the maneuver, give them a printed sheet with a recommended procedure and have them make comparisons.

Divide the class into groups of 3-6 students and ask them to list problems to anticipate while performing any one of the maneuvers listed in this objective. Then have each group report their findings to the whole class. The instructor can fill in the missing information.

Divide the class into groups of 3-6 students and have one student within each group explain to the others the proper steps to take for any of the parking maneuvers. The other group members will check the accuracy by reading the printed guidelines for the recommended procedures.

**RANGE OR STREET**

While operating the vehicle, the student should be able to demonstrate the correct procedure, step-by-step, for any of the maneuvers recommended for this objective.

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**RESOURCES AND AIDS**

1. Driver training textbooks
2. Traffic safety programs at the university level
3. *Mottola's Guide for In-Car Instruction*, by Frederick Mottola
4. "In-Car Curriculum Guide," Washington Department of Education
5. Driver training vehicle
6. Practice driving area and community streets

**SUGGESTED EVALUATION METHODOLOGY**

**STUDENTS**

1. Written or verbal responses to questions relating to the leading causes of law enforcement vehicle collisions
2. Written or verbal responses to questions concerning the elements of acceptable performance of the methods and maneuvers mentioned in this objective
3. Observation of performance of these maneuvers and methods during practice driving, on the practice range or on the street

**COURSE**

1. On-the-job observation, evaluation, or analysis of these maneuvers and methods
2. Analysis of collision reports for feedback on performance



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# **Contributing Factors for Law Enforcement Collisions**

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- **Backing**
- **Parking**
- **Road Positioning**
- **Turnabouts and Turns**
- **Lane Changes**
- **Driving Too Fast for Conditions**