

XXXV

EMERGENCY DRIVING SKILLS, PART III

THE I.P.D.E. SYSTEM

ABSTRACT

This self-instructional unit is designed to present an overview of the I.P.D.E. System developed by Maryland State Department of Education for instruction in traffic safety. The program assists the operator in Identifying, Predicting, Deciding, and Executing the driving task. The unit also presents information both on identifying hazards and on those factors which put the driver at an advantage or disadvantage.

BEHAVIORAL OBJECTIVES

Upon completion of this self-instructional unit the student will be able to:

- Identify those factors which would influence the decision-making process relative to prediction of a hazard.
- Describe the variables related to the closing potential of hazards.

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EMERGENCY DRIVING SKILLS - III

I. RECOGNIZING HAZARDS

A. "The I.P.D.E. System"

All drivers use some sort of system, whether organized or not, to drive their vehicles. The State of Maryland has adopted for its basic driver education programs a system known as the I.P.D.E. System: Identifying, Predicting, Deciding and Executing the driving task. This is a system for processing that information necessary for safe driving in which the driver identifies problems, predicts what may occur, decides upon a plan of action, and executes the plan. Each of these system procedures will be described briefly below and then given ample consideration and discussion in the pages that follow.

1. Identify Hazards

The process of identifying hazards involves searching and scanning for potential problems which may happen into your path of motion. Drive Right, Chapter 5, presents a set of rules for identifying potential hazards:

- a. Aim high in steering
- b. Keep your eyes moving
- c. Get the big picture
- d. Make sure others see you
- e. Leave yourself an out

a. Aim High in Steering

In order to see better on the roadway, look ahead, beyond the vehicle or objects in your immediate line of vision. As a rule of thumb, try to look more than a half mile in front of you. Take advantage of natural open lines of vision in the roadway such as hills and curves to determine conditions in front of you.

b. Keep Your Eyes Moving

It is the sign of a seasoned driver who takes selective glances at various points while driving. Glances should be taken to the side, rear, and instrument panel, and returned subsequently to the straight-ahead position. Staring straight ahead may often result in missing key elements or details which may contribute to the cause of an accident.

c. Get the Big Picture

By following the previous two rules, aiming high and moving the eyes, you will be in a better position to take in the greatest number of details in front of you. Predicting and decision-making are enhanced as a result of getting the big picture.

Staying attentive and knowing what to look for are two elements which support your overall perspective of roadway hazards. Both elements help you to piece together the various details encountered on the roadway.

d. Make Sure Others See You

It is just as important to make sure that other drivers see and are able to anticipate your actions as it is for you to be aware of the other driver's plans. This requires that you communicate with other drivers. Communication takes place by means of lights, signals, car position, horn, eye contact, and body movement.

e. Leave Yourself an Out

Make sure that you always have an escape route open for your vehicle. A cushion of space should exist around your vehicle at all times. An emergency vehicle must enter the stream of traffic in a few seconds, assume a position which ensures safety to self and others, and nevertheless be instantaneously responsive to dynamics of the situation, e.g., hot pursuit, response to crime scene, accident investigation, etc. It is imperative that the operator of an emergency vehicle maintain complete control of the situation such that the vehicle never becomes "boxed in", thus forcing the operator to take unnecessary or unwarranted risks.

## 2. Predicting Hazards

The ability to predict hazards depends on several factors, among which are changes in speed, road conditions, traffic patterns, and the like. In addition to the knowledge of the performance characteristics of one's own vehicle in relation to the above variables, the emergency vehicle operator must also be conscious of what the other drivers on the road can be expected to do.

Predicting involves judgment. The driver must exercise careful judgment especially in predicting what other drivers will do. The variables necessary include judging speed, the distance between vehicles, estimates of time, and determinations regarding the amount of space on either side of your vehicle. Also included are judgments regarding road visibility and traction.

Predicting, therefore, involves concerns about both your own emergency vehicle and the actions of other drivers. As indicated above, the three safety factors which you must attend to regarding your emergency vehicle are space, speed, and time. You should have your vehicle under control at all times in order to vary these three factors to avoid accidents endangering the lives of others. By estimating the closing time of your vehicle to potential hazards, you may increase or decrease your space and/or distance between your vehicle and others.

In order to more accurately predict the actions of others you should consider the following factors: the path of approaching vehicles, the expected action, anticipated timing, potential threat to your safety, and approximate point of conflict. Additional important information regarding the predicting of hazards will be presented in Unit 36.

### 3. Deciding Hazards

Decision-making involves constant pre-planning on the part of the emergency vehicle operator. In addition, drivers are called upon to demonstrate split-second timing in making their decisions. While following a pre-determined route, drivers are required to decide upon adjustments to their speed, position, and path, while at the same time being ready to change their decision as a result of additional factors or problems which may suddenly emerge.

The key to good decision-making in driving is the ability to consider all possible alternatives before a final choice is made. To do this you should collect and analyze as much information as possible about your driving situation. In addition, you should keep in mind the consequences of your choice of alternatives. Obviously, you want to consider those consequences which are most favorable to you. Once again, your choice may require split-second timing.

Ideally, decision-making as described above should be made with split-second timing. It is not always possible, however, to make decisions instantaneously. Decisions may take longer under certain circumstances such as complex driving situations, absence of a pre-determined plan, the presence of more than one possible alternative, illness, fatigue, new environment, and preoccupations or distractions.

It is difficult to formulate hard and fast decision-making rules for the emergency vehicle operator. Further information will be presented in the following unit (#36) to assist you in formulating your own guidelines. As with all such judgmental activities, however, there can be no substitute for continual practice in the decision-making process.



#### 4. Executing the Decision

Emergency vehicle operators should always be concerned with proper execution of their decisions. Deciding upon a course of action is one thing, but executing that decision may not always prove easy. As discussed above, the driver must decide upon the best path, position, and speed to avoid collisions or endangering lives. Three basic actions are possible: accelerating, braking, and steering. The outcome of any emergency driving situation depends largely upon the skill which the operator demonstrates. Of utmost importance is the driver's precision and timing in execution.

As regards the pathway, the driver may steer through a predetermined path of travel, accelerating or braking to maintain a safe course. Positioning can also be maintained or changed by steering, accelerating, or braking. The safest emergency vehicle position is one in which a cushion of space is maintained between the emergency vehicle and other vehicles encountered on the roadway. Varying the speed through acceleration or braking is based upon the premise that you use speed intelligently. A safe speed is one in which you maintain control despite the changes or variations in road traction, visibility, or the flow of traffic.

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet circle the letter of possible action described in Column II which corresponds to the I.P.D.E. driving task found in Column I. Use each letter only once.

Column I

1. Identify hazards
2. Predict hazards
3. Decide hazards
4. Execute decision

Column II

- a. Consider possible alternatives before a final choice is made
- b. Accelerating, braking, and steering
- c. Estimate closing potential in terms of rate of close
- d. Aim high in steering
- e. Depends on factors such as changes in speed, road conditions, and traffic patterns

Please check your responses with the key on Page 25 and review those items you missed before proceeding.

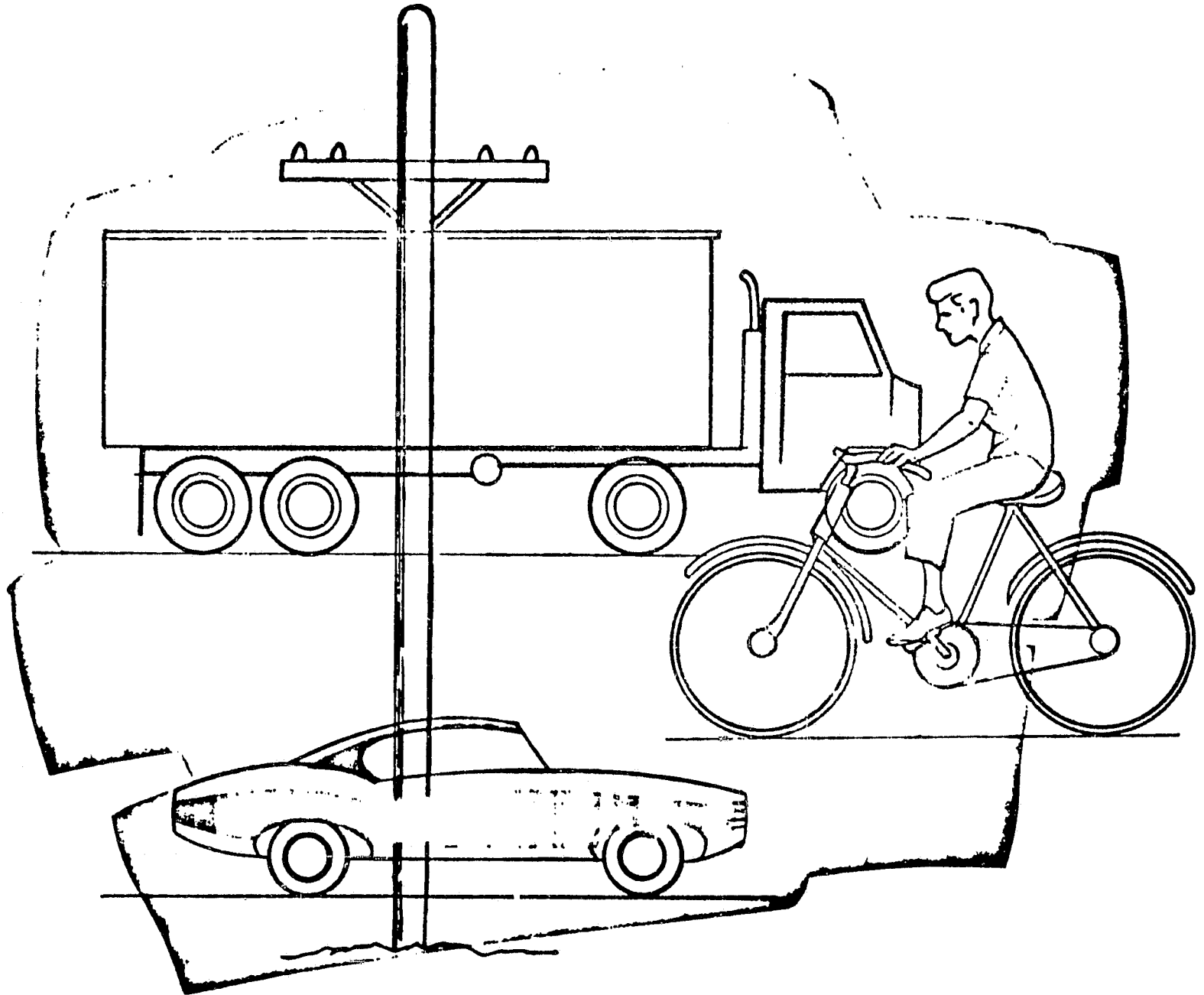
## B. Collision Potential of Hazards

Throughout the I.P.D.E. System emphasis is placed on critical driving hazards. To assure that this emphasis is established early (the identification phase) in the program of instruction, Figures 35-1 and 35-2 illustrate two common characteristics of hazardous elements within the Highway Traffic System, collision and closing potential.

A way to clarify the collision potential of hazards is to consider what driving would be like if there were no elements within the Highway Traffic System that had collision potential. If we could assume that the driver would maneuver the vehicle effectively and wouldn't encounter any Highway Traffic System element with a collision potential, then driving would be absolutely safe. Absurd? Yes. But this type of example may assist you to focus your attention on the nature of critical hazards.

Since the driver, by the very nature of the Highway Traffic System, must encounter Highway Traffic System elements that have a collision potential, consider how the hazards illustrated in Figure 35-1 can be defined and rated primarily on their collision consequences. A simple question might be: If you were faced with an inevitable collision, which of these elements would create the worst consequences? The answer to the question really depends on which value you are going to measure the consequences against. The primary point to be emphasized is that hazards should be thought of in terms of their collision potential. Based upon this concept, hazards can be defined as other highway users (to include vehicular users), objects, and obstructions.

# All Hazards Have A COLLISION Potential



STATE OF MARYLAND—AUTO SAFETY 5  
FIGURE 35-1  
XXXV-12

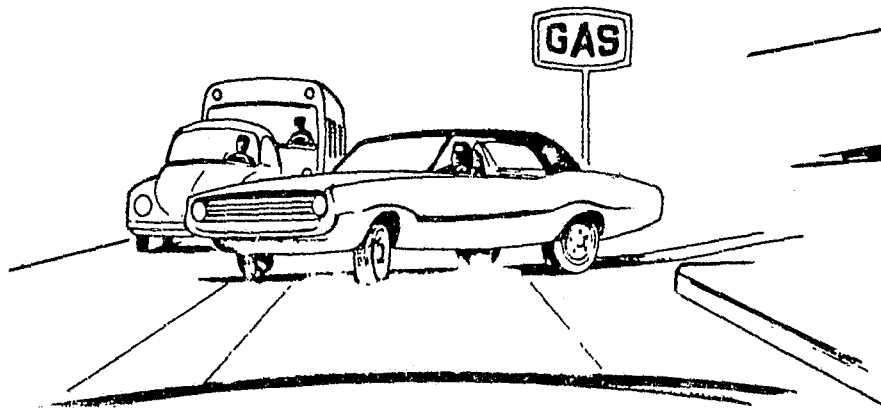
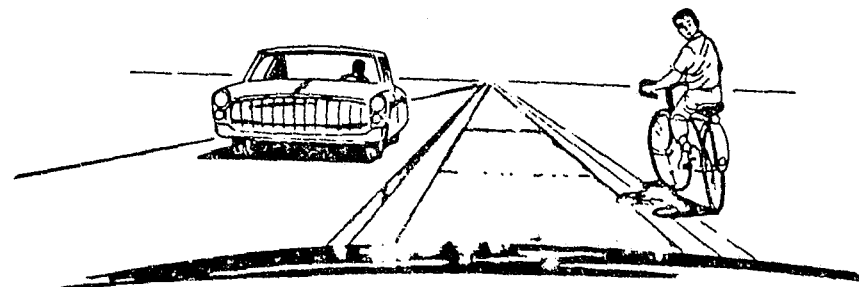
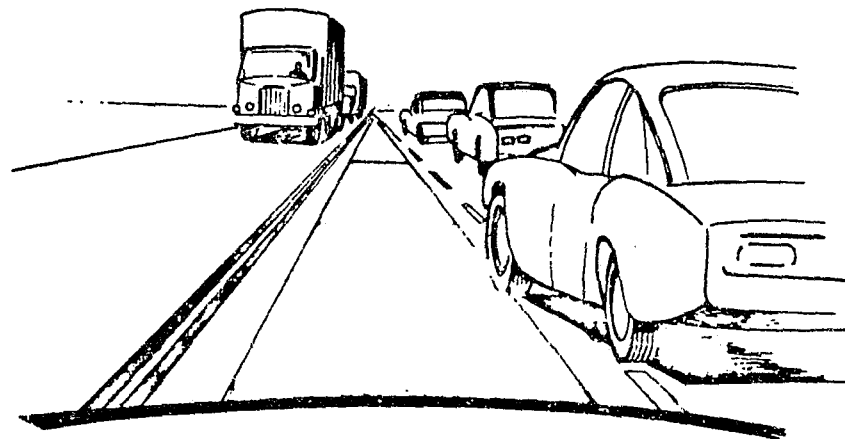
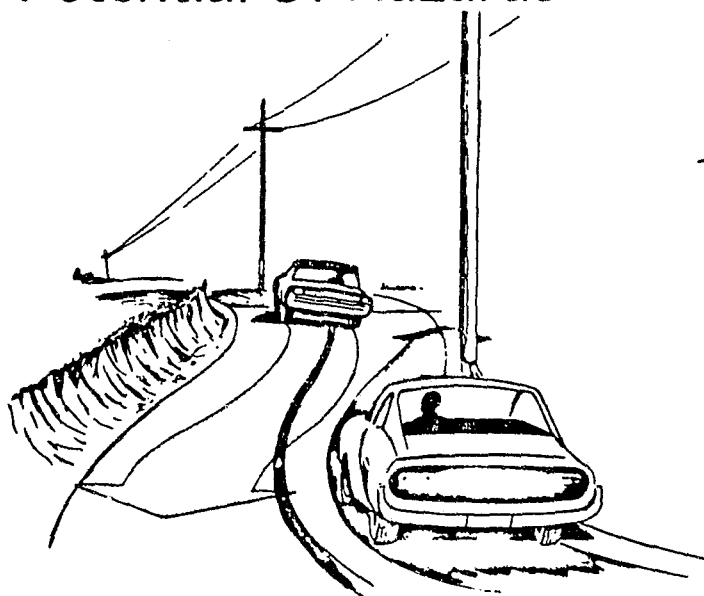
### C. Closing Potential of Hazards

Another characteristic of hazardous elements within the Highway Traffic System is closing potential. This closing potential should be estimated both in terms of rate, or how fast it can close, and how much it can close, the difference between a car door opening and a car pulling out from a side road. Look at the four examples illustrated in Figure 35-2 (the same four examples illustrated in Figure 35-1). The situation top right illustrates a vehicle closing the distance, edging into your immediate path of travel. Without proper adjustment on your part, the driver's action could force you across the center line into the path of the oncoming truck. All the vehicles in this illustration have some degree of closing potential, i. e., closing the distance.

The situation bottom right shows a bike rider who intends to enter your immediate path of travel. Again, in this situation any movement to the left on your part places you in the path of the oncoming car which has a high degree of closing potential.

The situation bottom left shows another vehicle that has entered your immediate path of travel and is closing the distance toward you. In addition, the Volkswagen and the bus have closing potential that must be considered when responding to this situation. In each of these situations, there is another closing potential that must be considered. The situation top left best illustrates this closing potential. This closing potential is that potential generated by movement of your own vehicle, in

# You Must IDENTIFY The Collision And Closing Potential Of Hazards



this case, relative to the pole. Here you are confronted with a choice between the closing potential of an oncoming car in combination with your own speed, or accepting the closing potential generated by your own speed in relation to the pole.

In identifying hazards, one must always consider closing and collision potentials in combination. A final aspect in defining and rating hazards will be presented in Figure 36-1 (predict).

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet, circle the letter of the item which most correctly completes the following statements.

5. The key factor in understanding the collision potential of hazards is to determine:
  - a. the consequences of the collision
  - b. the ability to avoid the collision
  - c. both of the above
  - d. neither of the above
  
6. The closing potential of hazards can be defined:
  - a. in terms of rate, or how fast and how much it can close
  - b. as that potential generated by movement of your own vehicle in relation to a hazardous object
  - c. both of the above
  - d. neither of the above

Please check your responses with the Key on page 25 and review those items you missed before proceeding.



## 1. Factors Which Help To Identify Hazards

Every driver should be aware of those factors that can help in identifying hazards. Figure 35-3 illustrates three broad groups of factors that can help the driver.

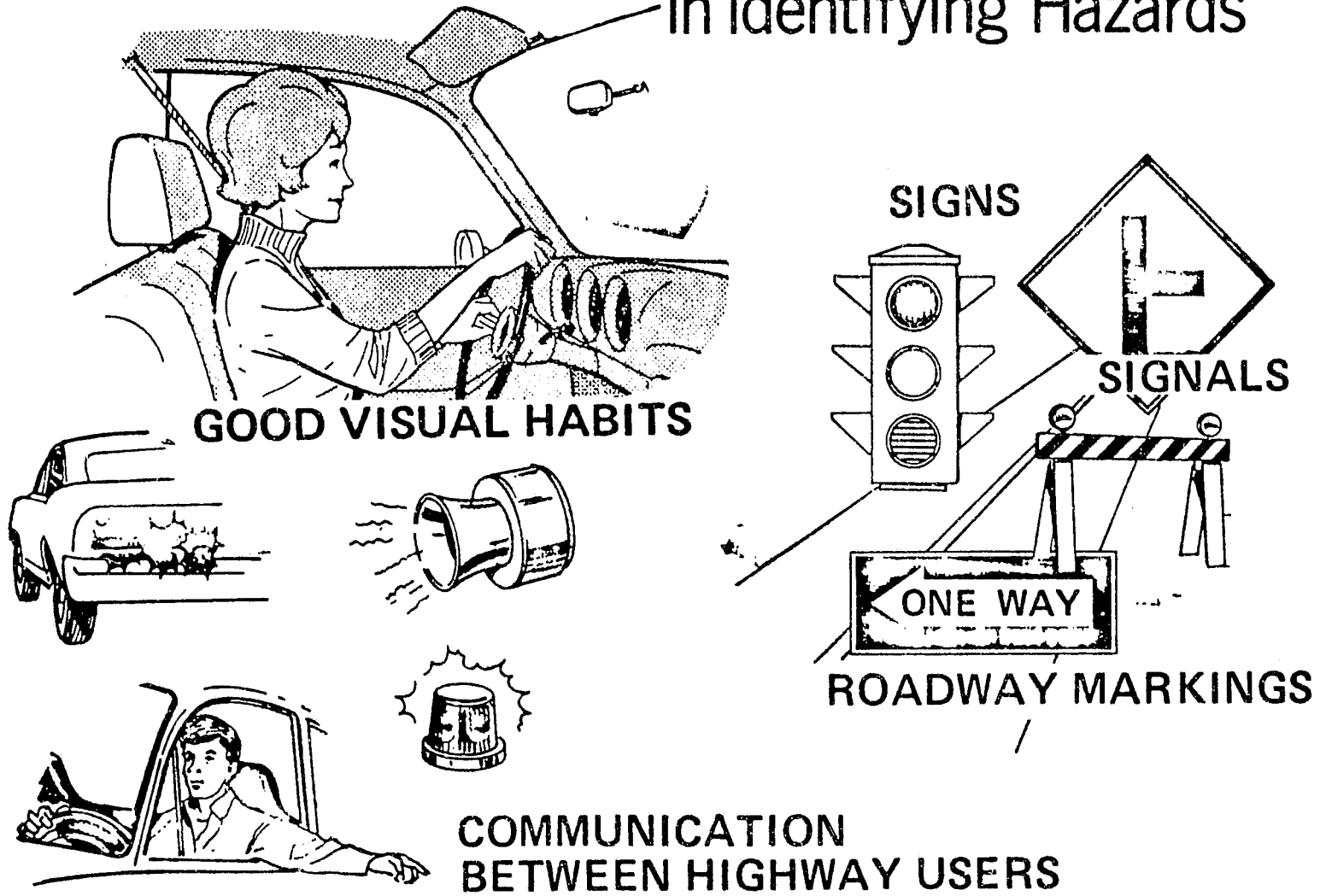
Good visual habits refers to those aggressive visual abilities that a driver can develop to help in identifying hazards. One of these habits is sometimes referred to as "aim high" (see above). In this program of instruction, the 12-second anticipated path of travel serves as a reference point for this habit. Listed below are other visual habits that help in the identification process:

- a. MOVING EYES ON A CONTINUING BASIS.
- b USING TIMELY, QUICK "HEAD CHECKS" WHEN CHANGING LANES.
- c CHECKING TRAFFIC THROUGH MIRRORS.
- d. MONITORING DASH INSTRUMENTS.

The I.P.D.E. System, in and of itself, will not train you in these vital visual habits. However, continued practice during actual situations can establish and reinforce these visual habits.

Controls typify another group of factors that help the driver identify hazards. Controls can be represented by signs, traffic signals, roadway markings, or medians that divide a highway. As with most points within the I.P.D.E. System, controls must be closely correlated to traffic controls encountered in on-street instruction.

# There Are Factors That Give You An Advantage In Identifying Hazards



STATE OF MARYLAND--AUTO SAFETY  
FIGURE 35-3  
XXXV-18

Those devices or activities that aid in communication between highway users can be considered as another group of factors that help the driver to identify hazards. An approaching police car might not be noticed until it was too late were it not for its special means of communicating.

When an individual has the ability to relegate some operator competencies to habit, greater attention may be directed toward the more complex parts of driving.

In addition, vehicle capabilities and the driver's ability to estimate vehicular capabilities should be considered here and related to the immediate path of travel (Figure 34-3). Driver ability (or lack of) to project an immediate path of travel relative to hazards is vital in defining hazards.

## 2. Factors Which Put The Driver At A Disadvantage

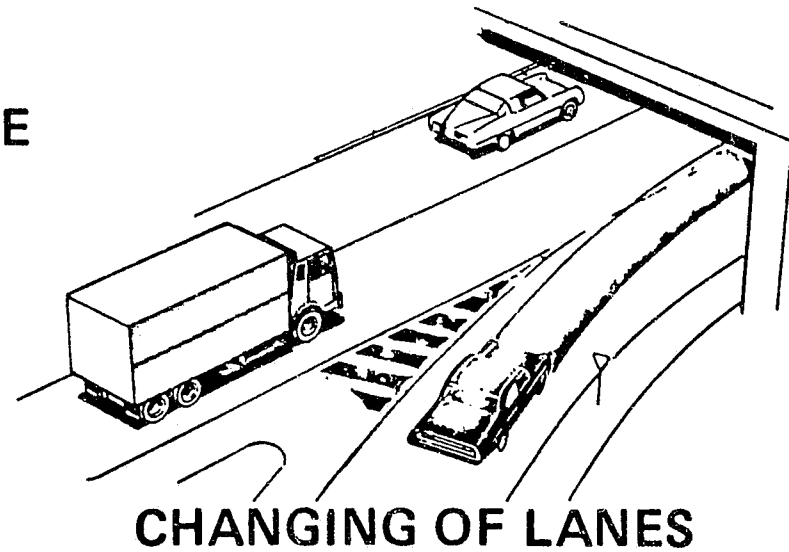
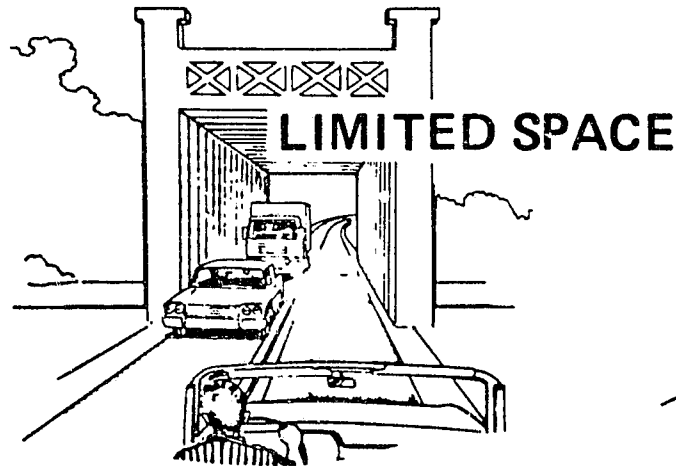
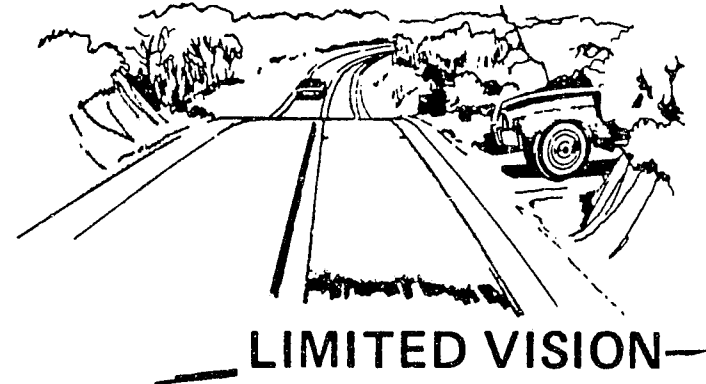
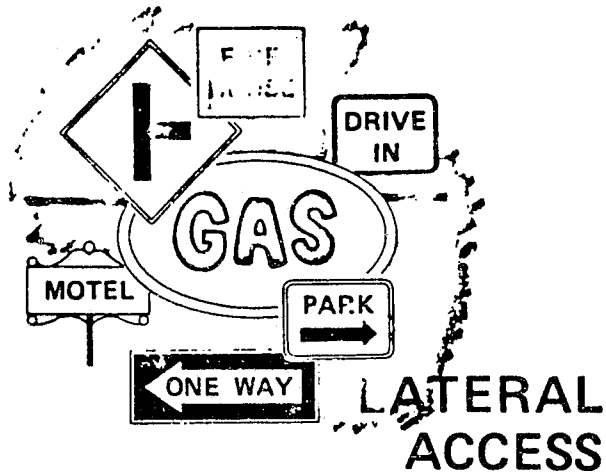
Factors that put a driver at a disadvantage are very important considerations. The disadvantages illustrated in Figure 35-4 are among the most common on-road disadvantages that the driver will encounter.

In addition to those illustrated in Figure 35-4, it is helpful to expand these four factors to include areas of limited vision, areas of lateral access, areas of limited space, and areas (merging) or situations that encourage the changing of lanes. The reason for adding the term "areas of" is that most of these factors are not found in isolation, but as events or conditions that exist on a section of roadway. It should be noted also that these factors usually occur in combination.

### a. Areas of Limited Vision

In the illustration of limited vision, three areas (conditions) of limited vision are presented: the blind intersection with the car ready to enter your immediate path of travel, the crest of the hill, and the curve in the distance. Limited vision need not be restricted to roadway configurations. A truck waiting to make a left turn may create an area of limited vision, as might a parked car, or a driver who tailgates so closely that vision is restricted to the front.

# Some Factors Put You At A Disadvantage



b. Areas of Limited Space

Any time, as a driver, you have less than one vehicle width of "safe driving surface" next to your projected path of travel, you are driving into an area of limited space. Typically, limited space is created by such things as bridges, a series of objects or obstructions (poles), sides of hills, or a line of parked cars in combination with oncoming traffic. In reality, one seldom finds an area of limited space that does not also qualify as an area of limited vision.

c. Areas of Lateral Access

Areas of lateral access represent one of the most important factors that drivers must cope with. Gas station driveways, shopping center drives, and intersections illustrate areas of lateral access. The reason that an area of lateral access is so important is that this roadway configuration allows another hazard (vehicle) to enter your projected path of travel at right angles, which in turn creates a stationary or near stationary hazard in relation to the movement of your vehicle.

c. Areas or Situations That Encourage the Changing of Lanes

This group of factors relates to a condition or situation that encourages or requires a change of lanes: The four-lane road that narrows to two lanes, entrance and exit ramps on expressways, a long line of traffic in one lane that encourages

a driver to change lanes into your projected path of travel, or  
a simple change of lanes on an expressway.

These four groups of factors (vision, space, lateral access, changing of lanes) are the most frequent on-road disadvantages encountered by the driver. From this starting point, you may add other factors of your own that put a driver at a disadvantage in identifying hazards: alcohol, visual obstructions in the car (rearview mirrors block part of the scene to the front, etc.), fatigue, emotions, bad weather, and nighttime visual restrictions. You should be aware of these disadvantage factors and attempt to limit them whenever possible.

TO CHECK YOUR PROGRESS PLEASE ANSWER THE FOLLOWING QUESTIONS.

Directions: Using your response sheet, circle the letter of the item which most correctly completes the following statement.

7. Controls, a group of factors that help the driver identify hazards, are represented by:
- a. signs
  - b. traffic signals
  - c. medians
  - d. all of the above
  - e. a and b only
  - f. b and c only

Directions: Using your response sheet, circle the letter of the potential hazard listed in Column II which best corresponds to the factor which puts the driver at a disadvantage listed in Column I. Use each letter only once.

Column I	Column II
8. Areas of Limited Vision	a. Bridges
9. Areas of Limited Space	b. Four-lane road which narrows to two
10. Areas of Lateral Access	c. Crest of hill
	d. Gas station driveway

Please check your responses with the Key on page 25 and review those items you missed before proceeding.



Unit XXXV

KEY TO EMBEDDED QUESTIONS

		Refer to Page XXXV-
1.	d	2-9
2.	e	2-9
3.	a	2-9
4.	b	2-9
5.	a	11
6.	c	13-15
7.	d	17
8.	c	20-23
9.	a	20-23
10.	d	20-23

UNIT 35

Pretest/Posttest

Use your response sheet for all answers

Directions: Before each number in Column I place the letter of the definition in Column II which best corresponds to the rule for identifying potential hazards. Each letter may be used once.

	Column I	Column II
35.1	Aim high in steering	a. Set overall perspective of roadway hazards
35.2	Keep your eyes moving	
35.3	Get the big picture	b. Leave cushion of space around your vehicle
35.4	Make sure others see you	
35.5	Leave yourself an out	c. Look more than 1/2 mile ahead
		d. Leave doors unlocked
		e. Use communication device
		f. Take selective glances

Directions: Circle the one item which best completes each of the following sentences:

- 35.6 The judgment involved in predicting hazards includes the judging of:
- a. speed
  - b. distance between vehicles
  - c. estimates of time
  - d. space on either side of vehicle
  - e. all of the above

- 35.7 The ability to decide the potential danger of hazards is dependent upon:
- a. the mastery of an immutable set of rules
  - b. the consideration of possible alternatives before making a final choice
  - c. both of the above
  - d. neither of the above
- 35.8 In order to execute a decision, the emergency vehicle operator should use three basic actions which are:
- a. think, look, and listen
  - b. increase speed, decrease speed, and stop
  - c. accelerate, brake, steer
  - d. all of the above
  - e. none of the above
- 35.9 The collision potential of hazards are rated primarily:
- a. on the proximity of the hazard
  - b. on the potential of the cost of damage
  - c. on their consequences
  - d. all of the above
  - e. none of the above
- 35.10 The closing potential of hazards refers to:
- a. the closing of distance
  - b. the closeness of a hazard
  - c. the results of a collision
  - d. all of the above
  - e. none of the above

- 35.11 Good visual habits include:
- a. Moving eyes on a continuing basis
  - b. Using timely, quick "head checks" when changing lanes
  - c. Checking traffic through lanes
  - d. Monitoring dash instruments
  - e. All of the above
  - f. a, b, and c only

- 35.12 Traffic controls which help the driver identify potential hazards include:
- a. traffic signals
  - b. road signs
  - c. rear view mirror
  - d. headlights
  - e. a and b only
  - f. c and d only

Directions: Before each number in Column I place the letter of the example given in Column II which best corresponds to the factor which puts the driver at a disadvantage. Each letter may be used only once.

Column I	Column II
35.13 Areas of Limited Vision	a. Shopping Center Driveway
35.14 Areas of Limited Space	b. Expressway exit ramp
35.15 Areas of Lateral Access	c. Crest of hill
35.16 Areas or situations that encourage changing lanes.	d. Four lane road that narrows two lane highway
	e. Budge or tunnel

Unit 35  
Pretest/Posttest Key

		Refer to Page XXXV-
35.1	c	2-4
35.2	f	2-4
35.3	a	2-4
35.4	e	2-4
35.5	b	2-4
35.6	e	5-6
35.7	b	7-8
35.8	c	9
35.9	c	11-12
35.10	a	13-15
35.11	e	17
35.12	e	17
35.13	c	20-23
35.14	e	20-23
35.15	a	20-23
35.16	b	20-23

NAME \_\_\_\_\_

UNIT 35

EMERGENCY DRIVING SKILLS, PART III

PRETEST RESPONSE SHEET

Directions: Circle one correct letter.

1. a b c d e f
2. a b c d e f
3. a b c d e f
4. a b c d e f
5. a b c d e f
6. a b c d e
7. a b c d
8. a b c d e
9. a b c d e
10. a b c d e
11. a b c d e f
12. a b c d e f
13. a b c d e
14. a b c d e
15. a b c d e
16. a b c d e

Score \_\_\_\_\_ / 16

NAME \_\_\_\_\_

UNIT 35

EMERGENCY DRIVING SKILLS, PART III

POSTTEST RESPONSE SHEET

Directions: Circle one correct letter.

1. a b c d e f
2. a b c d e f
3. a b c d e f
4. a b c d e f
5. a b c d e f
6. a b c d e i q
7. a b c d
8. a b c d e
9. a b c d e
10. a b c d e
11. a b c d e f
12. a b c d e f
13. a b c d e
14. a b c d e
15. a b c d e
16. a b c d e

Score \_\_\_\_\_ / 16

Name \_\_\_\_\_

UNIT XXXV

EMERGENCY DRIVING SKILLS, PART III

EMBEDDED QUESTIONS RESPONSE SHEET

1. a b c d e
2. a b c d e
3. a b c d e
4. a b c d e
5. a b c d
6. a b c d
7. a b c d e f
8. a b c d
9. a b c d
10. a b c d



**END**