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INTRODUCTION

This volume, third in a set of four, contains three major sections which serve as appendices to the basic report (Volume 1). The sections are as follows:

I. Vehicle Instrumentation and Data Collection

II. Supplemental Descriptive Data and Roadway and Informational Characteristics

III. Situational Task Analyses

Section I, "Vehicle Instrumentaiton and Data Collection" contains a brief description of the vehicle mounted, microcomputer-based system used for the collection of driver performance and roadway characteristics data. The procedural sequence is flow-charted and all requisite field coding information is included.

Section II presents detailed breakdown of the characteristics of the nearly 5,000 miles of roadway related data collected as part of the study. Tables summarize a variety of physical roadway characteristics by terrain type, traffic control device data by terrain type, etc.

Section III presents the detailed task analyses prepared for six different specific roadway situations; horizontal curve, vertical crest, narrow bridge, stop controlled intersection, railroad grade crossing, and width reduction. In addition a seventh, general task analysis addresses these situations not covered by the six specific task analyses.

I. VEHICLE INSTRUMENTATION AND DATA COLLECTION

A. VEHICLE INSTRUMENTATION

The instrumentation package used for collection of driver performance, roadway characteristics, and roadway information was developed by project staff. Installed in a mid-size station wagon, it is a hardware-software system configured to collect automatically and manually encoded data. It functions as an on-line multiple-event recorder, collecting measures of vehicle dynamics, as well as geometric, environmental, and driver characteristics, tied to a common time base.

The package is built around a 48K microcomputer. It includes disk drives, monitor, line printer (if necessary), and keyboard. There is a custom designed hardware interface with analog and digital sensors that automatically collect data on vehicle and driver performance. Power is supplied by an inverter wired to the vehicle's alternator.

Data from the sensors includes accelerator position, brake pedal pressure, steering wheel position, and speed derived from distance traveled and time elapsed. These data are sampled at any specified interval and recorded continuously. Observer inputs made at the keyboard, are recorded on disk and displayed on the monitor. Distance traveled is generated by a transmission-mounted DMI (Digital Measuring Instrument) sensor. Steering wheel position is determined with a steering column-mounted digital shaft encoder. Brake pedal pressure and accelerator position are detected by analog devices, the outputs of which are converted to digital signals by the interface. Braking is sensed by a pressure transducer (a diaphragm and strain-gauge) located in the braking hydraulic system.

The analog signal for accelerator position is generated by a linear potentiometer attached to the accelerator pedal. Pedal movement changes the capacitance in the potentiometer; the change is detected and mapped by the analog/digital converter used in the interface.

During automatic data collection the instrumentation package utilizes a program which samples each of the four dynamic measures programmed (accelerator position, distance, braking, steering) on a programmed sampling schedule, and records the values along with the time the sample was taken. During this execution, demand entries can also be made. The keyboard is used for most demand entries, which may be made at any time. These entries are menu-driven to provide the coder with cues if necessary. Other demand entries include a microphone actuation signal, indicating the start of recorded voice comments. Once a demand entry has been made, it is recorded along with the time and distance traveled in order to correlate it with the automatic data.

B. DATA COLLECTION

The instrumented vehicle was stopped at the first available pull-off on a roadway section to be cataloged, and the tasks detailed in figure 1 were begun. The exhibits referred to in figure 1 immediately follow the figure.

The resetting of the Digital Measuring Instrument (DMI) and registers, indicated at the top of the flow chart, means simply the zeroing of all displays that show the automatic data collected during a section. The lane width was measured, and data identifying the roadway and its characteristics was entered into the computer.

In the exposure section of 2 to 10 miles, the expectations the driver was forming about the roadway and the bases for them were recorded on tape; codes describing roadway characteristics and information were entered into the computer; and data from the vehicle sensors were automatically input.

The vehicle was then stopped again at an available pull-off, where the driver's formal expectancy ratings were entered into the computer in response to a menu of questions provided by the software. Changes in any of the roadway characteristics recorded at the section start also were entered.

Data collection then proceeded in the moving phase of the test section as it had in the exposure section. Tape-recorded commentary, however, focused on driving decisions being made. It also identified expectancy changes, sites where the driver felt uneasy or uncertain about his speed or path (problem sites), interfering factors such as slow-moving vehicles ahead, and changes in roadway design. Appropriate codes in these four categories were entered into the computer along with a counter number (TCN) from the tape recorder to fix their locations among the automatic data.

At the end of the section, the vehicle was stopped again. Problems and challenges presented by the roadway were reviewed, and summary comment was recorded on tape. The disk containing data entered into the computer and data automatically collected by the vehicle sensors was removed from the computer and stored.

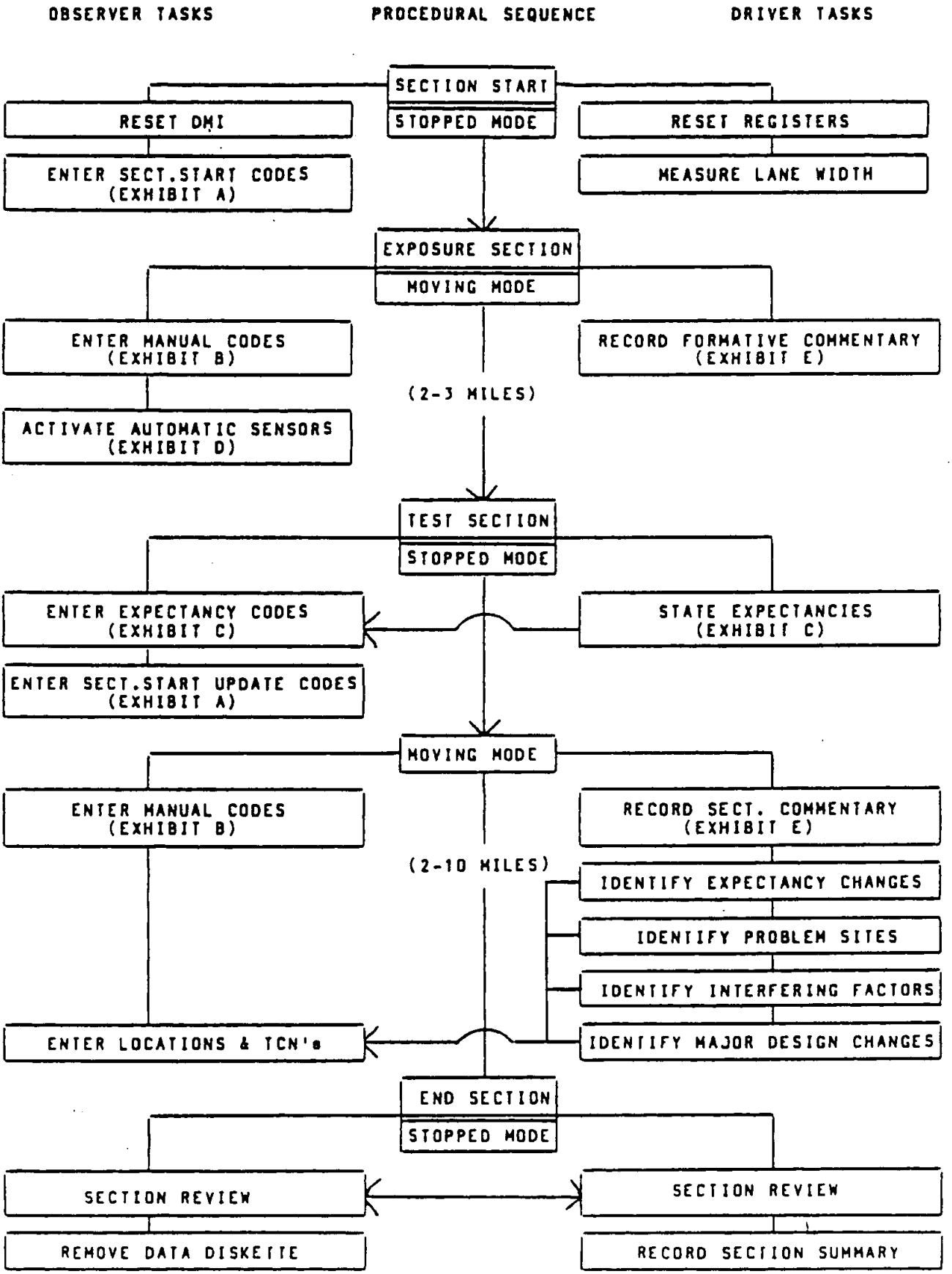

Figure 1. Procedural sequence.

1. Driver
2. Observer
3. Date
4. Section ID
5. Route ID
6. Route Direction
7. Jct Route ID
8. State
9. County
10. Tape Side ID
11. Tape Counter No.
12. Surface Width
13. Surface Type

    1. unpaved
    2. asphalt
    3. concrete

14. Surface Condition

    1. poor
    2. fair
    3. good

15. Centerline

    1. none
    2. faded
    3. bright

16. Edge/Edgeline

    1. no line, unclear edge
    2. no line, clear edge
    3. faded line
    4. bright line

17. Shoulder Width

    1. none
    2. two wheels
    3. four wheels

18. Shoulder Type

    1. none
    2. unpaved
    3. paved

19. Shoulder Condition

    1. not driveable
    2. questionable
    3. driveable

20. Terrain

    1. flat
    2. rolling
    3. mountainous

Exhibit A. Section start entries.

********** PAVEMENT **********

A1 .. UNPAVED	A2 .. ASPHALT	A3 .. CONCRETE
B1 .. POOR	B2 .. FAIR	B3 .. GOOD
C1 .. NARROWER WIDTH	C2 .. WIDER WIDTH	

********** SHOULDER **********

D1 .. NONE	D2 .. UNPAVED	D3 .. PAVED
E1 .. NOT DRIVEABLE	E2 .. QUESTIONABLE	E3 .. DRIVEABLE
E4 .. 2 WHEELS	E5 .. 4 WHEELS	

Exhibit B. Manual Codes Describing Roadway Cross Section

********** INTERSECTION **********

A11 . 3-WAY UNPAVED	A21 . 4-WAY UNPAVED	A31 . OTHER UNPAVED
A12 . 3-WAY ASPHALT	A22 . 4-WAY ASPHALT	A32 . OTHER ASPHALT
A13 . 3-WAY CONCRETE	A23 . 4-WAY CONCRETE	A33 . OTHER CONCRETE

********** BRIDGE **********

B11 . TYPE III/FULL	B21 . OTHER/FULL	B31 . NONE/FULL
B12 . III/SHLDR DEC	B22 . OTHER/SHLDR DEC	B32 . NONE/SHLDR DEC
B13 . III/SHLDR LOSS	B23 . OTHER/SHLDR LOSS	B33 . NONE/SHLDR LOSS
B14 . III/PVMNT DEC	B24 . OTHER/PVMT DEC	B34 . NONE/PVMT DEC

********** RAILROAD CROSSING **********

C1 .. PASSIVE	C2 .. BEACON	C3 .. GATE

********** CREST **********	********** LANE **********
D1 ... CREST	E1 ... ADD E2 ... DROP

Exhibit B. Manual Codes for Roadway Features (continued)

********** CENTERLINE **********

A1 .. NONE A2 .. FADED A3 .. BRIGHT A4 .. START RPM A5 .. END RPM

********** EDGELINE **********

B1 .. NONE B2 .. FADED B3 .. BRIGHT B4 .. START RPM B5 .. END RPM

********** HAZARD MARKERS **********

C1 .. TYPE I OR II C2 .. TYPE III

C3 .. LARGE ARROW C4 .. CHEVRONS C5 .. DELINEATIONS

Exhibit B. Manual Codes for Roadway Features (continued)

********** WARNING **********

A11 .. CURVE (AV)	A21 .. INTERSECTION (AV)	A31 .. NARROW BRIDGE (AV)
A12 .. TURN (AV)	A22 .. STOP AHEAD (AV)	A32 .. ONE-LANE BRIDGE (AV)
A13 .. REVERSE CURVE (AV)	A23 .. YIELD AHEAD (AV)	
A14 .. REVERSE TURN (AV)	A24 .. SIGNAL AHEAD (AV)	
A15 .. WINDING (AV)		

A4 .... RR (AV)

A5 .... OTHER (AV)

********** REGULATORY **********

B1 .. SPEED LIMIT (VALUE)		B2 .. REDUCED SPEED AHEAD (VALUE)

ENTER ACUTAL VALUE AFTER SELECTION

C1 .. STOP	C2 .. YIELD	C3 .. SIGNAL

Exhibit B. Manual Codes for Roadway Features (continued)

********** EXPECTANCY CHANGE **********

A1 .. SECTIONAL (TCN)

A2 .. SITE (TCN)

********** PROBLEMS **********

B1 .. PROBLEM SITE (TCN)

B2 .. OTHER (TCN)

********** INTERFERING FACTORS **********

C1 .. START TOWN (TCN)

C2 .. START SLOW MOVING VEHICLE (TCN)

C3 .. START OTHER (TCN)

C4 .. END

********** DESIGN CHANGE **********

D1 .. LOWER (TCN)

D2 .. HIGHER (TCN)

********** END SECTION **********

E1 .. QUIT (TCN)

Exhibit B. Manual Codes for Roadway Features (continued)

1. Comfort Level

   A. Very Comfortable
   B. Comfortable
   C. Moderate
   D. Uncomfortable
   E. Very Comfortable

2. Attention to Speed

   A. Very Casual
   B. Casual
   C. Moderate
   D. Watchful
   E. Very Watchful

3. Attention to Steering

   A. Very Casual
   B. Casual
   C. Moderate
   D. Watchful
   E. Very Watchful

4. View of the Road Ahead

   A. Almost Never Limited
   B. Seldom Limited
   C. Moderately Limited
   D. Usually Limited
   E. Almost Always Limited

5. Traffic Signs

   A. Almost Always Provided
   B. Usually Provided
   C. Provided a Moderate Number of Times
   D. Seldom Provided
   E. ALmost Never Provided

6. Speed Decreases

   A. Very Few
   B. Few
   C. Moderate
   D. Many
   E. Very Few

7. Safe Speed Information

   A. Almost Always Provided
   B. Usually Provided
   C. Provided a Moderate Number of Times
   D. Seldom Provided
   E. Almost Never Provided

8. Oncoming Traffic

   A. Very Small Effect
   B. Small Effect
   C. Moderate Effect
   D. Large Effect
   E. Very Large Effect

9. Overall Attention

   A. Very Casual
   B. Casual
   C. Moderate
   D. Watchful
   E. Very Watchful

Exhibit C. Sectional expectancies.

1. Distance:

   Unit of measure = feet
   Readout rate = 1 per sec.

2. Speed:

   Unit of measure = ft/sec (output = mi/hr)
   Readout rate = 1 per sec.

3. Steering wheel position

4. Accelerator pedal position

5. Brake pedal pressure

6. Microphone actuations

Exhibit D. Automatic Encoded Data

II. SUPPLEMENTAL DESCRIPTIVE DATA-ROADWAY AND INFORMATIONAL CHARACTERISTICS

This section presents a variety of tables which summarize the observed relationships in the data base for a variety of useful elements such as terrain type, pavement width, shoulder type, pavement markings, etc. Only the paved data information is presented in the tables. This is appropriate in that only 189 miles of unpaved road information was collected; 29 miles in flat terrain, 103 miles in rolling terrain, and 57 miles in mountainous terrain. The unpaved road sample was judged too small to be of any use in terms of examining relationships such as terrain type by pavement by, say, presence of warning signs or presence of crests, horizontal curves, narrow bridges, etc.

Table 1. Shoulder width by terrain type.

(Paved Only)

TERRAIN TYPE	MI/%	NO SHOULDER	2-WHEEL SHOULDER	4-WHEEL SHOULDER	TOTALS
ROLLING	MI	944.6	1478.6	719.1	3142.4
	(%)	30	47	23	100
MOUNTAINOUS	MI	566.8	447.0	113.8	1127.7
	(%)	50	40	10	100
FLAT	MI	131.6	216.2	119.9	467.6
	(%)	28	46	26	100
TOTALS	MI	1643.0	2141.8	952.8	4737.7
	(%)	35	45	20	100

Table 2. Shoulder width by pavement width.

(Flat•Paved)

PAVEMENT WIDTH		NO SHOULDER	2-WHEEL SHOULDER	4-WHEEL SHOULDER	TOTALS
< 15	MI	----	----	----	----
	(%)				
15 - 16	MI	----	16.8	----	16.8
	(%)		(100)		
17 - 18	MI	39.1	38.5	10.1	87.7
	(%)	(44)	(44)	(12)	
19 - 20	MI	33.3	43.5	21.1	97.9
	(%)	(34)	(44)	(22)	
21 - 22	MI	24.9	45.1	21.5	91.5
	(%)	(27)	(49)	(24)	
23 - 24	MI	29.7	58.9	47.5	136.1
	(%)	(22)	(43)	(35)	
> 24	MI	4.6	13.3	19.6	37.6
	(%)	(12)	(36)	(52)	
LS	MI	131.6	216.2	119.9	467.6
	(%)	(28)	(46)	(26)	

Table 3. Shoulder Width by pavement width.

(Rolling - Paved)

PAVEMENT WIDTH		NO SHOULDER	2-WHEEL SHOULDER	4-WHEEL SHOULDER	TOTALS
< 15	MI	34.6	15.3	----	49.9
	(%)	(69)	(31)		
15 - 16	MI	101.2	74.3	----	175.5
	(%)	(58)	(42)		
17 - 18	MI	217.6	200.3	28.4	446.3
	(%)	(49)	(45)	(6)	
19 - 20	MI	349.4	415.9	136.8	902.1
	(%)	(39)	(46)	(15)	
21 - 22	MI	168.2	408.9	155.8	732.8
	(%)	(23)	(56)	(21)	
23 - 24	MI	35.7	287.1	238.7	561.5
	(%)	(6)	(51)	(43)	
> 24	MI	37.9	76.9	159.4	274.2
	(%)	(14)	(28)	(58)	
TOTALS	MI	944.6	1478.6	719.1	3142.4
	(%)	(30)	(47)	(23)	

Table 4. Shoulder width by pavement width.

(Mountainous - Paved)

PAVEMENT WIDTH		NO SHOULDER	2-WHEEL SHOULDER	4-WHEEL SHOULDER	TOTALS
< 15	MI	13.2	----	----	13.2
	(%)	(100)			
15 - 16	MI	24.4	----	----	24.4
	(%)	(100)			
17 - 18	MI	55.2	9.7	----	64.9
	(%)	(85)	(15)		
19 - 20	MI	225.8	63.9	----	289.7
	(%)	(78)	(22)		
21 - 22	MI	171.8	102.8	----	274.6
	(%)	(63)	(37)		
23 - 24	MI	59.8	147.5	34.5	241.7
	(%)	(25)	(61)	(14)	
> 24	MI	16.6	123.1	79.3	219.1
	(%)	(8)	(56)	(36)	
TOTALS	MI	566.8	447.0	113.8	1127.7
	(%)	(50)	(40)	(10)	

Table 5. Striping by pavement width.

(All Terrain-Paved)

PAVEMENT WIDTH		NO LINES	CL ONLY	CL + EL	TOTAL S
< 15	MI	63.2	0	0	63.2
	(%)	(100)	(0)	(0)	
15 - 16	MI	138.9	30.8	46.9	216.6
	(%)	(64)	(14)	(22)	
17 - 18	MI	221.4	206.9	170.7	598.9
	(%)	(37)	(35)	(28)	
19 - 20	MI	245.1	616.9	427.8	1289.8
	(%)	(19)	(48)	(33)	
21 - 22	MI	92.1	318.9	687.8	1098.9
	(%)	(8)	(29)	(63)	
23 - 24	MI	33.8	202.0	703.6	939.4
	(%)	(4)	(21)	(75)	
> 24	MI	10.2	103.3	417.3	530.9
	(%)	(2)	(19)	(79)	
TOTALS	MI	804.7	1478.8	2454.1	4737.7
	(%)	(17)	(31)	(52)	

Table 6. Striping by pavement width.

(Flat)

PAVEMENT WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
15 - 16	MI	0	0	16.8	16.8
	(%)	(0)	(0)	(100)	
17 - 18	MI	10.9	33.4	43.4	87.7
	(%)	(12)	(38)	(49)	
19 - 20	MI	14.8	53.1	29.9	97.9
	(%)	(15)	(54)	(31)	
21 - 22	MI	11.7	19.9	60.0	91.5
	(%)	(13)	(22)	(66)	
23 - 24	MI	0	55.6	80.5	136.1
	(%)		(41)	(59)	
> 24	MI	0	15.6	22.0	37.6
	(%)		(41)	(59)	
TOTAL MILES		37.4	177.6	252.6	467.6
(%)		(8)	(38)	(54)	

Table 7. Striping by pavement width.

(Rolling)

PAVEMENT WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
< 15	MI	50.0	0	0	50.0
	(%)	(100)			
15 - 16	MI	131.3	23.2	21.0	175.5
	(%)	(75)	(13)	(12)	
17 - 18	MI	193.4	160.9	92.0	446.3
	(%)	(43)	(36)	(21)	
19 - 20	MI	153.9	480.0	268.2	902.1
	(%)	(17)	(53)	(30)	
21 - 22	MI	59.0	201.5	472.3	732.8
	(%)	(8)	(27)	(65)	
23 - 24	MI	9.7	129.2	422.6	561.5
	(%)	(2)	(23)	(75)	
> 24	MI	0	87.8	186.5	274.2
	(%)	(0)	(32)	(68)	
TOTAL MILES		597.2	1082.7	1462.5	3142.4
(%)		(19)	(34)	(47)	

Table 8. Striping by pavement width.

(Mountainous)

PAVEMENT WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
< 15	MI	13.2	0	0	13.2
	(%)	(100)			
15 - 16	MI	7.6	7.6	9.1	24.4
	(%)	(31)	(31)	(37)	
17 - 18	MI	17.0	12.6	35.3	64.9
	(%)	(26)	(19)	(54)	
19 - 20	MI	76.4	83.7	129.6	289.7
	(%)	(26)	(29)	(45)	
21 - 22	MI	21.5	97.5	155.6	274.6
	(%)	(8)	(36)	(57)	
23 - 24	MI	24.1	17.2	200.5	241.7
	(%)	(10)	(7)	(83)	
> 24	MI	10.2	0	208.9	219.1
	(%)	(5)		(95)	
TOTAL MILES		170.0	218.6	739.0	1127.7
(%)		(15)	(19)	(66)	

Table 9. Striping by shoulder width.

(All Terrain-Paved)

SHOULDER WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
NONE	MI	608.2	558.4	476.4	1643.0
	(%)	(37)	(34)	(29)	
2-WHEEL	MI	196.5	535.3	1409.9	2141.8
	(%)	(9)	(25)	(66)	
4-WHEEL	MI	0	385.1	567.7	952.8
	(%)	(0)	(40)	(60)	
TOTALS	MI	804.7	1478.8	2454.0	4737.6
	(%)	(17)	(31)	(52)	

Table 10. Striping by shoulder width.

(Flat Terrain)

SHOULDER WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
NONE	MI	37.4	70.1	24.1	131.6
	(%)	(28)	(53)	(18)	
2 WHEEL	MI	0	40.2	176.0	216.2
	(%)	(0)	(19)	(81)	
4 WHEEL	MI	0	67.3	52.5	119.9
	(%)	(0)	(56)	(44)	
TOTAL MILES		37.4	177.6	252.6	467.6
(%)		(8)	(38)	(54)	

Table 11. Striping by shoulder width.

(Rolling Terrain)

SHOULDER WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
NONE	MI	400.7	299.4	244.5	944.6
	(%)	(42)	(32)	(26)	
2 WHEEL	MI	196.5	465.5	816.6	1478.6
	(%)	(13)	(31)	(55)	
4 WHEEL	MI	0	317.8	401.4	719.1
	(%)	(0)	(44)	(56)	
TOTAL MILES		597.2	1082.7	1462.5	3142.4
(%)		(19)	(34)	(47)	

Table 12. Striping by shoulder width.

(Mountainous Terrain)

SHOULDER WIDTH		NO LINES	CL ONLY	CL + EL	TOTALS
NONE	MI	170.0	189.0	207.8	566.8
	(%)	(30)	(33)	(37)	
2 WHEEL	MI	0	29.6	417.4	447.0
	(%)	(0)	(7)	(93)	
4 WHEEL	MI	0	0	113.8	113.8
	(%)	(0)	(0)	(100)	
TOTAL MILES		170.0	218.6	739.0	1127.7
(%)		(15)	(19)	(66)	

Table 13. Sign summary by terrain type.

(Paved)

TERRAIN	# SEC	# MILES	ALL WS /MI.	SP.SGN /MI.	SP.RED. SGN /MI.	STOP & YIELD /MI.	SIGNALS /MI.	TOTAL /MI.
FLAT	55	483.7	.72	.29	.04	.10	.01	1.12
ROLLING	360	3145.7	1.05	.32	.03	.07	.01	1.49
MOUNTAINOUS	111	1127.7	1.22	.34	.04	.02	.01	1.63
ALL TERRAIN	526	4757.0	1.06	.32	.03	.07	.01	1.49

Table 14. Signs/mile by pavement width

(All Terrain - Paved)

PAVEMENT WIDTH	# SEC	# MILES	ALL WS /MI.	SP.SGN /MI.	SP.RED. SGN /MI.	STOP & YIELD /MI.	SIGNALS /MI.	TOTAL /MI.
<15	8	63.2	.90	.55	.00	.17	.00	1.63
15-16	29	216.6	1.05	.43	.03	.17	.00	1.68
17-18	80	598.9	1.21	.35	.02	.15	.00	1.74
19-20	147	1289.8	1.11	.24	.04	.08	.01	1.47
21-22	114	1109.2	1.00	.32	.04	.03	.02	1.40
23-24	99	948.5	0.99	.35	.04	.02	.01	1.42
>24	49	530.9	1.01	.35	.02	.02	.04	1.44
TOTALS	526	4757.0	1.06	.32	.03	.07	.01	1.49

Table 15. Signs/mile by pavement width.

(Flat Terrain - Paved)

WIDTH	# SECT	MILES	WRN SGN /MI.	SPDSGN /MI.	SP.RED SNS/MI.	STOP & YLD/MI.	SIG /MI.	TOTAL /MI.
15 - 16	2	16.8	.48	.18	.00	.18	.00	0.83
17 - 18	13	87.7	.97	.17	.05	.26	.00	1.45
19 - 20	12	97.9	.77	.21	.05	.12	.00	1.15
21 - 22	9	91.5	.80	.50	.07	.07	.02	1.45
23 - 24	13	136.1	.53	.22	.01	.02	.01	0.80
> 24	6	53.6	.62	.11	.04	.04	.02	0.82
ALL FLAT	55	483.7	.72	.25	.04	.10	.01	1.12

Table 16. Signs/mile by pavement width.

(Rolling Terrain - Paved)

WIDTH	#SECT	MILES	WRN SGN /MI.	SP.SGN /MI.	SP.RED. /MI.	STOP YLD/MI.	SIG /MI.	TOTAL /MI.
< 15	7	49.9	1.12	.68	.00	.20	.00	2.00
15 - 16	25	181.7	1.06	.49	.04	.18	.01	1.78
17 - 18	58	437.6	1.25	.42	.01	.15	.00	1.83
19 - 20	107	928.2	1.86	.23	.04	.08	.01	1.44
21 - 22	79	766.6	0.98	.30	.02	.03	.02	1.35
23 - 24	65	597.5	0.90	.90	.34	.03	.02	1.33
> 24	24	258.1	0.91	.28	.03	.04	.03	1.29
ALL ROLLING	365	3219.7	1.03	.32	.03	.07	.01	1.46

Table 17. Signs/mile by pavement width.

(Mountainous Terrain - Paved)

WIDTH	#SECT	MILES	WRN SGN /MI.	SP.SGN /MI.	SP.RED. /MI.	STOP & YLD/MI.	SIG /MI.	TOTAL /MI.
< 15	1	13.2	0.08	.08	.00	.08	.00	0.23
15 - 16	3	24.4	1.15	.37	.04	.08	.00	1.64
17 - 18	8	64.9	1.37	.20	.05	.03	.00	1.65
19 - 20	28	289.7	1.21	.23	.02	.04	.00	1.50
21 - 22	29	274.6	1.08	.31	.06	.03	.00	1.48
23 - 24	23	241.7	1.41	.41	.05	.01	.00	1.80
> 24	19	219.1	1.23	.49	.00	.00	.05	1.78
ALL MOUNTAINOUS	111	1127.7	1.22	.34	.04	.02	.01	1.63

Table 18. Summary characteristics by terrain type.

(Paved Only)

TERRAIN	# SEC	# MILES	CUR /MI.	CURWS /MI.	CRESTS /MI.	NARBR /MI.	NBWS /MI.	INT /MI.	INTWS /MI.
FLAT	54	467.6	1.37	0.24	0.69	0.15	0.02	1.10	0.19
ROLLING	361	3161.8	2.10	0.54	1.13	0.16	0.03	1.24	0.21
MOUNTAINOUS	111	1127.7	4.30	0.71	0.64	0.11	0.02	0.99	0.12

Table 19. Feature and warning sign summary.

(All Terrain - Paved)

PAVEMENT WIDTH	#SECT	MILES	CURV /MI.	CURWS /MI.	CWS(A) /MI.	CREST /MI.	NAR. BR. /MI.	NBWS /MI.	INT /MI.	IWS /MI.
<15	8	63.2	4.38	.55	.43	1.76	0.09	0.06	1.25	.13
15-16	29	216.6	4.66	.63	.21	2.07	0.18	0.08	1.13	.11
17-18	80	598.9	3.19	.72	.29	1.47	0.14	0.05	1.13	.18
19-20	147	1289.8	3.03	.64	.36	1.08	0.16	0.03	1.12	.17
21-22	114	1109.2	2.23	.47	.24	.75	0.13	0.01	1.08	.21
23-24	99	948.5	1.66	.46	.19	.67	0.16	0.01	1.35	.24
>24	49	530.9	1.81	.43	.18	.61	0.09	0.02	1.19	.18
TOTALS	526	4757.0	2.55	.55	.26	0.97	0.14	0.02	1.17	.19

Table 20. Feature and warning sign summary.

(Flat Terrain - Paved)

PAVEMENT WIDTH	#SECT	MILES	CURV /MI.	CWS /MI.	CWS(A) /MI.	CREST /MI.	NAR. BR. /MI.	NBWS /MI.	INT /MI.	IWS /MI.
15-16	2	16.8	3.22	0.18	0.12	0.00	0.24	0.06	1.07	0.00
17-18	13	87.7	1.56	0.33	0.23	0.80	0.05	0.01	0.93	0.25
19-20	12	97.9	2.23	0.36	0.20	1.15	0.20	0.03	1.17	0.12
21-22	9	91.5	1.18	0.24	0.12	0.46	0.15	0.03	1.23	0.24
23-24	13	136.1	0.57	0.15	0.04	0.52	0.15	0.02	1.03	0.14
>24	5	37.6	1.28	0.13	0.11	0.67	0.13	0.00	1.28	0.40
ALL FLAT	54	467.6	1.37	0.24	0.13	0.69	0.15	0.02	1.10	0.19

Table 21. Feature and warning sign summary.

(Rolling Terrain - Paved)

PAVEMENT WIDTH	#SECT	MILES	CURV /MI.	CURWS /MI.	CWS(A) /MI.	CREST /MI.	NAR. BR. /MI.	NBWS /MI.	INT /MI.	IWS /MI.
<15	7	50.0	3.72	.68	.54	1.92	.08	.08	1.38	.16
15-16	24	175.5	4.15	.67	.22	2.43	.18	.09	1.12	.13
17-18	59	446.3	3.09	.76	.32	1.68	.16	.05	1.23	.16
19-20	107	902.1	2.31	.65	.37	1.15	.17	.02	1.23	.20
21-22	76	743.1	1.71	.46	.20	.87	.14	.01	1.13	.23
23-24	63	570.6	1.27	.37	.13	.81	.18	.01	1.45	.30
>24	25	274.2	0.92	.28	.11	.58	.09	.01	1.24	.18
ALL ROLLING	361	3161.8	2.10	.54	.25	1.13	.16	.03	1.24	.21

Table 22. Feature and warning sign summary.

(Mountainous Terrain - Paved)

PAVEMENT WIDTH	#SECT	MILES	CURV /MI.	CWS /MI.	CWS(A) /MI.	CREST /MI.	NAR. BR. /MI.	NBWS /MI.	INT /MI.	IWS /MI.
<15	1	13.2	6.88	.08	.00	1.13	.15	.00	.76	.00
15-16	3	24.4	9.32	.66	.25	.94	.08	.04	1.19	.04
17-18	8	64.9	6.08	1.00	.15	.99	.14	.03	.69	.15
19-20	28	289.7	5.55	.71	.37	.82	.12	.04	.78	.07
21-22	29	274.6	3.99	.58	.37	.51	.08	.01	.90	.15
23-24	23	241.7	3.20	.84	.41	.43	.12	.00	1.32	.15
>24	19	219.1	3.02	.66	.29	.65	.09	.02	1.13	.13
ALL MOUNTAINOUS	111	1127.7	4.30	.71	.34	.64	.11	.02	.99	.12

Table 23. Encountered problems by terrain type.

(Paved Only)

TERRAIN TYPE	# SEC	# MI.	PROB SITES	OTHER PROB	TOTAL PROB	MI.PER PROB	% MI.	% PROB
ROLLING	361	3161.8	15	136	151	21	66	75
MOUNTAINOUS	111	1127.7	7	26	33	34	24	16
FLAT	54	467.6	4	13	17	28	10	9

Table 24. Encountered problems by pavement width.

(Paved Only)

PAVEMENT WIDTH	# SEC	# MI.	PROB. SITES	OTHER PROB.	TOTAL PROB.	MI PER PROB.	% MI.	% PROB.	CUM % /MI.	CUM% PROB.
< 15	8	63.2	0	2	2	32	1	1	1	1
15 - 16	29	216.6	5	23	28	8	5	14	6	15
17 - 18	80	598.9	4	40	44	14	13	22	18	37
19 - 20	147	1289.8	10	67	77	17	27	38	46	75
21 - 22	114	1109.2	3	28	31	36	23	15	69	91
23 - 24	99	948.5	3	12	15	63	20	7	89	98
> 24	49	530.9	1	3	4	133	11	2	100	100
TOTAL	526	4757.0	26	175	201	24				

III. SITUATIONAL TASK ANALYSES

This section contains the detailed task analyses developed for six different specific roadway situations; horizontal curve, vertical crest, narrow bridge, stop controlled intersection, railroad grade crossing and lane width reduction. In addition, a seventh, general analysis was developed to address those roadway situations not addressed by any of the six specific task analyses.

The several situational task analyses were prepared to assist in identifying the driver decision universe. Once necessary decisions are ascertained, information needs and the alternative means of meeting those needs can be identified.

The approach used the Information-Decision-Action (IDA) task analysis procedure supplemented by elements of the Positive Guidance procedure.

SITUATION: HORIZONTAL CURVE

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (1) The driver must recognize that there is a horizontal curve in the road ahead that he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
1. [NON-OBS] The driver establishes a set for the curve or a state of readiness for negotiating the curve; that is, he expects to make a series of decisions and appropriate reactions in order to successfully negotiate the curve. Specifically, he becomes ready to: A. make a continuous series real-time decisions concerning both his speed and lateral track; B. sample and attend to visual input relevant to these decisions; C. attend to kinesthetic and/or auditory input relevant to these decisions;	1. Advance warning of the presence of a curve in the road ahead.	A. Roadway characteristics: 1. pavement path 2. pavement superelevation 3. centerline/edgeline path 4. path of objects adjacent to roadway a. guardrail b. terrain cut c. bush and/or treeline (trunks and/or tops) d. telephone poles e. telephone lines B. Traffic control devices 1. advance warning sign (with speed advisory) 2. series of RPMs 3. series of post-mounted delineators 4. series of chevrons 5. large horizontal arrow	1 1

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (1) The driver must recognize that there is a horizontal curve in the road ahead that he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
D. make overt control actions in order to maintain a safe and comfortable speed and path. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of info relevant to Decisions 2 and 3.			

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (2) The driver must decide on a safe and comfortable speed for entering the curve.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I-A.[OBS] If the driver decides to reduce speed prior to entry, he makes the appropriate accelerator/brake-pedal adjustments. or I-B.[NON-OBS] If the driver decides to maintain original cruising speed, his response is not to adjust either accelerator or brake pedal position.	1. Estimation of sharpness of the curve and the extent to which the road is banked. 2. Estimation of pavement condition. 3. Estimation of cruising speed during the approach (with regard to whether curve can be negotiated safely and comfortably). 4. Criteria for determining whether approach cruising speed is safe for entry into the curve.	A. Roadway characteristics (listed under "A" for Decision # (1)). B. Traffic control devices (listed under "B" for Decision # (1)). C. Previous experience with curves just prior to the one in question. D. Sight distance (relative to stopping distance). E. Visual cues re: pavement condition. F. Kinesthetic cues re: pavement condition. G. Visual cues: 1. speedometer readout 2. rate of apparent movement of fixed roadway objects and rate of closure on focus of expansion. H. Kinesthetic cues. I. Recognition/recall of speed limit/ advisory (and comparison w/cruise speed).	1 1 1 1 2 2 3 3 4

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (2) The driver must decide on a safe and comfortable speed for entering the curve.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		J. Memory of previous curve sharpness-entry speed relationships, with greater weight on more recent experiences.	4
		K. Sectional expectancies relevant to curve sharpness.	4

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (3) The driver must decide on a specific lateral position for entering the curve (i.e., whether to stay within lane vs. encroach onto shoulder vs. encroach into opposite lane.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver makes the appropriate steering wheel adjustments to align his vehicle with the selected lateral position. [Assume driver will maintain position within lane.]	1. Estimation of "cost" of staying in lane: i.e., a. estimate of the work load imposed by staying in lane b. estimate of vehicle wear and passenger discomfort generated by in-lane path 2. Estimation of "cost" of travelling on the road shoulder: i.e., estimate of driveability of shoulder in terms of vehicle control, vehicle wear, and passenger comfort.	A. Roadway characteristics (listed under "A" for Decision # (1)) with regard to sharpness and grade. B. Apparent condition of pavement surface. C. Kinesthetic cues re: "bumpiness" of right edge of the road. D. Apparent condition of shoulder surface. E. Rate of opposing traffic on immediately adjacent section of the road (i.e., sectional expectancies re: opposing traffic). F. Sight distance for oncoming vehicles. G. Memory of previous curve-lane placement relationships, w/greater weight on more relevant experiences. H. Sectional expectancies relevant to "best" lateral position for curve entry.	1A 1B 1B 2 3 3 4 4

Situation: Horizontal Curve
Road Section: Approach to Curve
Decision: (3) The driver must decide on a specific lateral position for entering the curve (i.e., whether to stay within lane vs. encroach onto shoulder vs. encroach into opposite lane.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
	3. Estimation of "cost" of travelling in opposite lane; i.e., estimate of the probability of being able to respond safely to on-coming vehicles. 4. Criteria for selecting one of the above three options. 5. Road path and lane boundaries.	1. Pavement edge, edgeline, centerline, centerline, pavement seam(s) overall pavement width, series of post-mounted delineators.	5

Situation: Horizontal Curve
Road Section: Actual Curve
Decision: (1) The driver must decide to maintain the position of his vehicle within the lane boundaries throughout the curve (continuous series of real-time decisions).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver continues to make the appropriate steering wheel adjustments. II.[OBS] The driver continues to visually sample those info sources that provide him with a near preview of the road path and lane boundaries.	1. Near preview of the road path and lane boundaries.	A. Pavement edge, edgeline, centerline, pavement seam(s), overall pavement width, series of post-mounted delineators.	

Situation: Horizontal Curve
Road Section: Actual Curve
Decision: (2) The driver must decide to maintain the maximum safe and comfortable speed throughout the curve (continuous series of real-time decisions).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver continues to make the appropriate accelerator and/or brake pedal adjustments. II.[OBS] The driver continues to visually sample those info sources that provide him with a moderate preview of road sharpness and super-elevation as well as a near preview of pavement condition. III.[NON-OBS] The driver continues to attend to kinesthetic cues providing feedback about the adequacy of current curve speed.	1. Moderate preview of upcoming changes in degree of curvature and superelevation of the road. 2. Near preview of pave-ment condition. 3. Assessment of current curve speed, relative to current degree of sharpness and superelevation, with re: to safety and comfort.	A. Roadway characteristics (listed under "A" for Decision # (1) for the approach) with re: to sharpness and superelevation. B. Traffic control devices (listed under "B" for Decision # (1) for the approach), with emphasis on RPMs, delineators, and chevrons. C. Sight distance (relative to stopping distance. D. Visual cues re: pavement condition. E. Kinesthetic cues re: pavement condition. F. Kinesthetic cues re: lateral acceleration	1 1 1 2 2 3

Situation: Horizontal Curve
Road Section: Exit from Curve
Decision: (1) The driver must decide to accelerate to original cruise speed.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver continues to visually sample those info sources that provide him with a moderate preview of the road path, attending to end of curve, hazards, and nature of next section of road. II.[OBS] The driver makes the appropriate accelerator/brake pedal adjustments to slowly accelerate to cruise speed as he exits the curve.	1. Identification of location of end of curve. 2. Near preview of pavement condition. 3. Moderate preview of next section of road. 4. Assessment of current speed with re: to whether next section can be negotiated safely and comfortably at original cruise speed. 5. Criteria for resuming original cruise speed.	A. Roadway characteristics (listed under "A" for Decision # (1) on the Approach) with re: to point of tangency: emphasis is on road path. B. Traffic control devices (listed under "B" for Decision # (1) on the Approach) with regard to end of series of chevrons or post-mounted delineators. C. Sight distance (relative to stopping distance). D. Visual cues re: pavement condition. E. Kinesthetic cues re: pavement condition. F. Visual cues re: fixed or moving hazards as well as general nature of next section of road (warning signs, intersections, slow vehicles ahead, etc.)	1 1 1 2 2 3

Situation: Horizontal Curve
Road Section: Exit from Curve
Decision: (1) The driver must decide to accelerate to original cruise speed.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		G. Visual cues: 1. speedometer readout 2. rate of apparent movement of fixed roadway objects and rate of closure on focus of expansion	4
		H. Kinesthetic cues.	4
		I. Recognition of speed limit sign/ recall of speed limit.	5
		J. Memory of speed relationships on similar road sections, with greater weight on more recent experiences.	5

Situation: Horizontal Curve
Road Section: Exit from Curve
Decision: (2) The driver must decide on a specific lateral track for the next section of the roadway.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I. [OBS] The driver continues to sample those info sources that provide him with a near preview of the road path and lane boundaries. II. [OBS] The driver continues to make the appropriate steering wheel adjustments.	1. Near preview of road path and lane boundaries.	A. Pavement edge, edgeline, centerline, pavement seam(s), overall pavement width.	

SITUATION: VERTICAL CREST

Situation: Vertical Crest
Road Section: Approach to Crest
Decision: (1) The driver must recognize that there is a vertical crest in the road ahead which he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
1. [NON-OBS] The driver establishes a set for the crest or a state of readiness for negotiating the crest; that is, he expects to make a series of decisions and appropriate reactions in order to successfully negotiate the crest. Specifically, he becomes ready to: A. Make a continuous series real-time decision concerning both his speed and path; B. Sample and attend to visual input relevant to these decisions; C. Attend to kines-thetic imput relevant to these decisions;	1. Advance warning of the presence of a vertical crest in the road ahead.	A. Apparent end of pavement path. B. Apparent end of centerline. C. Apparent end of edgeline.	1 1 1

Situation: Vertical Crest
Road Section: Approach to Crest
Decision: (1) The driver must recognize that there is a vertical crest in the road ahead which he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
D. Make overt control actions in order to maintain a safe and comfortable speed and path. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of info relevant to Decision II.			

Situation: Vertical Crest
Road Section: Approach to Crest
Decision: (2) The driver must decide on a safe and comfortable speed for cresting the vertical curve.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I-A. If the driver decides to reduce speed prior to crest, he makes the appropriate accelerator/brake-pedal adjustments. or I-B. [NON-OBS] If the driver decides to maintain original cruising speed, his response is not to adjust accelerator position.	1. Estimation of road grade just beyond the crest. 2. Estimation of horizontal curvature in the roadway just beyond the crest. 3. Estimation of pavement conditon. 4. Estimation of cruising speed during the approach (with regard to whether crest can be negotiated safely and comfortably.) 5. Criteria for determining whether approach speed is safe for traversing the crest.	A. Longitudinal slope of objects adjacent to the roadway just before and beyond the crest: 1. guardrail 2. terrain cut 3. brush and/or treeline a. trunks b. (emphasis on) tops 4. telephone poles 5. telephone lines B. Whether or not 3D objects (e.g., cars, traffic signs) are visible beyond the crest. C. Grade of road approaching the crest. D. Previous experience with vertical crests just prior to the one in question. E. Path of roadway characteristics just before the vertical crest: 1. pavement 2. centerline/edgeline	1 1 1 1 2

Situation: Vertical Crest
Road Section: Approach to Crest
Decision: (2) The driver must decide on a safe and comfortable speed for cresting the vertical curve.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		F. Path of three dimensional objects adjacent to the road just before and after the vertical crest: 1. guardrail 2. terrain cut 3. bush and/or treeline a. trunks b. (emphasis on) tops 4. telephone poles 5. telephone lines	2
		G. Presence (vs. absence) of advance curve warning sign and whether or not it has a speed advisory associated with it.	2
		H. Visual cues re: pavement condition.	3
		I. Kinesthetic cues re: pavement condition.	3
		J. Visual cues: 1. Speedometer readout 2. Rate of apparent movement of fixed roadway objects and rate of closure on focus of expansion i.e., the crest.	4 4

Situation: Vertical Crest
Road Section: Approach to Crest
Decision: (2) The driver must decide on a safe and comfortable speed for cresting the vertical curve.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		K. Kinesthetic cues.	4
		L. Recognition of speed limit sign and/or recall of speed limit (and comparison with approach cruise speed).	5
		M. Memory of previous crest-speed relationships, with greater weight on more recent experiences.	5
		N. Sectional expectancies relevant to slope and horizontal curvature of road beyond crest.	5

Situation: Vertical Crest
Road Section: At Vertical Crest
Decision: (2) The driver must decide to maintain the maximum safe and comfortable speed for the section of road just beyond the crest (continuous series of real-time decisions just before and after crest).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver continues to sample and attend to those sources of information that provide him with the input required for Decision I. II.[OBS] The driver makes the appropriate accelerator/brake pedal adjustments to bring his vehicle speed to the selected rate.	1. Moderate preview of the grade of the road just beyond the crest. 2. Moderate preview of changes in horizontal curvature in road just beyond the cret. 3. Near preview of pavement condition. 4. Moderate preview of next section of road. 5. Assessment of current speed (with regard to whether next section can be negotiated safely and comfortably at approach cruise speed). 6. Criteria for determining appropriate cruise speed.	A. Apparent longitudinal slope of roadway on basis of: (attn to steepness and length of grade): 1. pavement path 2. centerline/edgeline 3. objects adjacent to roadway: a. guardrail b. terrain cut c. brush and/or tree line 1) (emphasis on) trunks 2) tops d. telephone poles e. telephone lines B. Kinesthetic cues re: 1. vertical orientation 2. vehicle "road hugging" 3. accelerative effects of gravity C. Roadway characteristics: 1. pavement path 2. pavement super-elevation 3. centerline/edgeline path	1 1 2

Situation: Vertical Crest
Road Section: At Vertical Crest
Decision: (2) The driver must decide to maintain the maximum safe and comfortable speed for the section of road just beyond the crest (continuous series of real-time decisions just before and after crest).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		4. objects adjacent to roadway a. guardrail b. terrain cut c. bush and/or tree line (trunks and/or tops) d. telephone poles e. telephone lines	
		D. Traffic control devices: 1. advance warning sign 2. series of RPMs 3. series of post-mounted delineators 4. series of chevrons 5. large horizontal arrow	2
		E. Sight distance (relative to stopping distance).	2
		F. Visual cues re: pavement condition.	3
		G. Kinesthetic cues re: pavement condition.	3

Situation: Vertical Crest
Road Section: At Vertical Crest
Decision: (2) The driver must decide to maintain the maximum safe and comfortable speed for the section of road just beyond the crest (continuoius series of real-time decisions just before and after crest).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		H. Visual cues re: fixed or moving hazards as well as general nature of next section of road: warning signs, intersections, slow vehicles ahead, etc.	4
		I. Visual cues: 1. speedometer readout 2. rate of apparent movement of fixed roadway objects and rate of closure on focus of expansion.	5
		J. Kinesthetic cues.	5
		K. Recognition of speed limit sign and/or recall of speed limit (and comparison with current speed).	6
		L. Memory of speed relationships with similar sections of road, with greater weight on more recent experiences.	6

Situation: Vertical Crest
Road Section: At Vertical Crest
Decision: (2) The driver must decide on a specific lateral track for the next section of roadway.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I. The driver continues to sample those information sources that provide him with a near preview of the road path and lane boundaries. II. The driver makes the appropriate steering wheel adjustments.	1. Near preview of road path and lane boundaries.	A. Pavement edge, edgeline, centerline, pavement seam(s), overall pavement width, series of post-mounted delineators.	

SITUATION: NARROW BRIDGE

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (1) The driver must decide there is a narrow bridge on the road ahead which he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
1.[NON-OBS] The driver establishes a set for the narrow bridge or a state of readiness for negotiating the bridge; that is, he expects to make a series of decisions and appropriate actions in order to successfully negotiate the bridge. Specifically, he becomes ready to: A. make a continuous series of real-time decisions concerning his speed and lateral placement; B. sample and attend to visual input relevant to these decisions;	1. Advance warning of the presence of a narrow bridge on the road ahead.	A. Traffic control devices: 1. Advance warning sign (with speed and/or distance advisory) 2. Hazard panels B. Roadway Characteristics: 1. bridge abutments 2. guardrail funneling into bridge 3. loss of shoulder or reduction in shoulder width 4. road edge and/or edgeline funneling into bridge	1 1

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (1) The driver must decide there is a narrow bridge on the road ahead which he will have to negotiate.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
C. attend to kinesthetic input relevant to these decisions; D. make overt control actions in order to maintain a safe and comfortable speed and path. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to Decisions I and II.			

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (1) The driver must decide on a safe and comfortable speed for entering the narrow bridge.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I-A. If the driver decides to reduce speed prior to the bridge, he makes the appropriate accelerator/brake pedal adjustments. or I-B. [NON-OBS] If the driver decides to maintain cruising speed, his response is not to adjust accellerator position.	1. Estimation of width of travelway on bridge (relative to adequacy of oclearance for two opposing vehicles). 2. Estimation of probability of encountering an opposing vehicle on the bridge. 3. Estimation of the maximum safe and comfortable speed if the driver should meet an opposing vehicles on the bridge (and availability of DSD for decelerating to this speed). 4. Moderate preview of pavement condition (relative to the effect of sudden deceleration).	A. Visual cues regarding distance between hazard panels, bridge abutments, guardrails, road edges, edgelines, centerline - edgeline/road edge. B. Rate of opposing traffic on immediately adjacent section of the road. C. Sectional expectations re: rate of opposing traffic. D. Sight distance for oncoming vehicles. E. Memory of previous narrow bridge - opposing vehicle - speed relationships, with greater weight on more recent experiences. F. Visual cues re: pavement condition. H. Visual cues: 1. speedometer readout	1 2 2 2 3 4 5

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (1) The driver must on a safe and comfortable speed for entering the narrow bridge.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
	5. Estimation of cruising speed during the approach (with regard to safe and comfortable entry speed). 6. Criteria for determining entry speed for entering the bridge.	2. Rate of apparent movement of fixed roadway objects and rate of closure on bridge entrance. I. Kinesthetic cues re: curent speed. J. Recognition and/or recall of speed limit sign or advisory speed for the narrow bridge (and comparison with cruise speed). K. Memory of previous narrow bridge - entry speed relationships, with greater weight on more recent experiences.	 5 6 6

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (3) The driver must decide on a specific lateral position for entering the bridge (i.e., whether to stay within his lane vs. encroach into the opposite lane).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to align his vehicle with the selected lateral position (assume driver will maintain position within lane).	1. Estimation of "cost" of staying within his lane: a. estimate of the work-load imposed by tracking a narrow lane b. estimate of the probability of side-swiping the bridge abutment/ guardrail 2. Estimation of "cost" of traveling in opposite lane; i.e. estimate of the probability of being able to respond safely to oncoming vehicles. 3. Criteria for selecting either within-land position vs. encroachment into opposite lane. 4. Road path and lane boundaries.	A. Visual cues re: apparent width of the driver's lane of travel; i.e. distance between hazard panels, bridge abutments, guardrails, road edges, edgelines, centerline - edgeline/road edge. B. Visual cues re: apparent width of the driver's vehicle. C. Memory of driver's relative skill in previous high-demand laterial tracking situations, with greater weight on more recent experiences. D. Rate of opposing traffic on immediately adjacent section of the road. E. Sectional expectancies re: rate of oncoming traffic. F. Sight distance for oncoming vehicles. G. Memory of previous narrow bridge - lane placement relationships, with greater weight on more recent experiences.	1A 1B 1B 2 2 2 3

Situation: Narrow Bridge
Road Section: Approach to Bridge
Decision: (3) The driver must decide on a specific lateral position for entering the bridge (i.e., whether to stay within his lane vs. encroach into the opposite lane).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
		H. Sectional expectancies relative to "best" lateral position for bridge entry.	3
		I. Road edges, edgelines, centerlines, pavement seam(s), hazard panels, bridge abutments, guardrails.	4

Situation: Narrow Bridge
Road Section: Actual Bridge
Decision: (1) The driver must decide to maintain the position of his vehicle within the lane boundaries until the bridge has been crossed (continuous series of real-time decisions).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	RATING
I. [NON-OBS] The driver deliberately and consciously maintains that steering wheel position which keeps his vehicle aligned within the lane of travel. II. The driver continues to visually sample and attend to those info sources that provide him with a near preview of the lane boundaries.	1. Near preview of the lane boundaries.	A. Road edges, edgelines, centerlines, pavement seams, bridge abutments, guardrails.	1

Situation: Narrow Bridge
Road Section: Actual Bridge
Decision: (1) The driver must decide to maintain the maximum safe and comfortable speed until the bridge has been crossed (continuous series of real-time decisions).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I. The driver continues to make the appropriate accelerator oand/or brake pedal adjustments. II. The driver continues to visually sample and attend to those info sources that provide him with the input required to maintain a safe and comfortable bridge speed.	1. Near preview of width of travelway on bridge (relative to adequacy of clearance for two opposing vehicles). 2. Re-evaluation of probability of encountering oncoming vehicle on the bridge. 3. Re-evaluation of the maximum safe and comfortable speed, should the driver encounter an oncoming vehicle. 4. Assessment of adequacy of sight distance relative to DSD for decelerating to above speed. 5. Near preview of pavement condition (relative to the effect of sudden deceleration.	A. Visual cues re: distance between bridge abutments, guardrails, road edges, edgelines, centerline-edgeline/road edge. B. Visual cues re: width of vehicle (relative to width of travelway on bridge). C. Sight distance for oncoming vehicles. D. Memory of previous pavement width - opposing vehicle - speed relationships, with greater weight on more recent experiences. E. Sight distance relative to DSD for possible deceleration. F. Visual cues re: pavement condition. G. Kinesthetic cues re: pavement condition. H. Memory of previous relationships between speed and comparable experiences, with greater weight on more recent experiences.	1 1 2 3 4 5 5 6

Situation: Narrow Bridge
Road Section: Actual Bridge
Decision: (1) The driver must decide to maintain the maximum safe and comfortable speed until the bridge has been crossed (continuous series of real-time decisions).

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
	6. Assessment of adequacy of current bridge speeds relative to conditions.		

Situation: Narrow Bridge
Road Section: Exit from Bridge
Decision: (1) The driver must decide select a cruise speed that is appropriate for the next section of road.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I. The driver continues to visually sample those info sources that provide him with a near preview of the end bridge and pavement condition just beyond, and a moderate preview of the nature of the next section of road. II. The driver makes the appropriate accelerator and/or brake pedal adjustments to slowly accelerate to the selected cruise speed as he exits the bridge.	1. Identification of end of bridge and/or resumption of original, wide pavement width. 2. Near preview of pavement condition just beyond bridge. 3. Moderate preview of next section of road. 4. Assessment of current speed relative to the maximum cruise speed at which the next section can be negotiated safely and comfortably. 5. Criteria for determining appropriate cruise speed.	A. Visual cues re: end of bridge abutments, guardrail flaring out, increase in shoulder width, road edge and/or edgeline flaring. B. Visual cues re: pavement condition. C. Visual cues re: fixed or moving hazards as well as general nature of next section of road: warning signs, intersections, etc. D. Visual cues: 1. Speedometer readout 2. Rate of apparent movement of fixed roadway objects and rate of closure on focus of expansion. E. Kinesthetic cues. F. Recognition of speed limit (and comparison with current speed). G. Memory of speed relationships with similar sections of road, with greater weight on more recent experiences.	1 2 3 4 4 5 5

Situation: Narrow Bridge
Road Section: Exit from Bridge
Decision: (2) The driver must decide on a specific lateral track for the next section of the roadway.

DRIVER REACTION	REQUIRED INPUT	SOURCES OF INFORMATION	NOTES
I.[OBS] The driver continues to visually sample and attend to those info sources that provide him with a near preview of the road path and boundaries. II.[OBS] The driver makes the appropriate steering wheel adjustments.	1. Near preview of road path and lane boundaries.	A. Pavement edge, edgeline, centerline, pavement seam(s), overall pavement width, series of post-mounted delineators.	1

SITUATION: STOP SIGN CONTROLLED INTERSECTION

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (1) The driver must recognize that there is an intersection controlled by a stop sign on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. [NON-OBS] The driver establishes a set or state of readiness for neg-otiating the intersection ahead. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to deceleration and path decisions on the approach to the intersection ahead.	1. advance warning of the presence of a STOP sign on the road ahead	A. warning signs: 1. Stop Ahead sign 2. Large/Double Arrow sign 3. NO PASSING ZONE sign 4. Crossroads sign B. regulatory signs: 1. STOP sign 2. specific Turn Prohibition signs 3. specific Lane-Use Control signs 4. ONE WAY sign 5. Divided Highway Crossing sign 6. DO NOT PASS sign 7. REDUCED SPEED AHEAD sign 8. series of decreasing Speed Limit signs C. guide signs: 1. Junction Assembly 2. Combination Junction sign 3. Advance Route Turn Assembly 4. Destination sign 5. Directional Assembly 6. Advance Street Name sign 7. Street Name sign	1, 2, 3

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (1) The driver must recognize that there is an intersection controlled by a stop sign on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		D. pavement markings: 1. STOP AHEAD 2. specific Lane-Use Control Word and Symbol markings 3. STOP 4. Stop Line 5. Crosswalk Lines 6. start of no-passing centerline E. traffic control devices relevant to islands: 1. traffic channelizing island 2. traffic divisional island 3. Keep Right sign 4. Double Arrow sign 5. object marker(s) 6. flexible stanchions 7. post-mounted delineators 8. painted curb 9. painted raised bars 10. painted raised buttons 11. specific pavement markings 12. rumble section (gore) F. traffic control devices relevant to turn bays: 1. start of lane line RPMs	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (1) The driver must recognize that there is an intersection controlled by a stop sign on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. start of lane lines 3. flared alignment of centerline 4. flared alignment of edgeline G. roadway characteristics relevant to turn bays: 1. increase in the width of the pavement H. other traffic control devices: 1. rumble strips I. intersecting alignment of traffic control devices: 1. series of post-mounted delineators 2. edgelines J. intersecting alignment of roadway characteristics: 1. road surface path 2. road surface edges 3. shoulders 4. wheel tracks	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (1) The driver must recognize that there is an intersection controlled by a stop sign on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		K. intersecting alignments of objects and parallel to to the roadway: 1. guardrails 2. two series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. two series of advertising signs 8. two series of buildings L. break in the longitudinal path of traffic control devices: 1. series of post-mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. lane lane RPMs 5. centerline 6. edgelines 7. lane lines 8. traffic channelizing island 9. traffic divisional island M. break in the longitudinal path of roadway characteristics: 1. road surface	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (1) The driver must recognize that there is an intersection controlled by a stop sign on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks N. break in the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.[4]

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to initiate, establish, and adjust his deceleration to the intersection. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to Decision # (4).	1. identification of the approximate location of the intersection	A. warning signs: 1. Large/Double Arrow sign B. regulatory signs: 1. STOP sign 2. specific Turn Prohibition signs 3. specific Lane-Use Control signs 4. ONE WAY sign 5. Divided Highway Crossing sign C. guide signs: 1. Directional Assembly 2. Street Name sign D. pavement markings: 1. specific Lane-Use Control Word and Symbol markings 2. STOP 3. STOP Line 4. Crosswalk Lines E. traffic control devices relevant to islands: 1. traffic channelizing island 2. traffic divisional island	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		3. Keep Right sign 4. Double Arrow sign 5. object markers 6. flexible stanchions 7. post-mounted delineators 8. painted curb 9. painted raised bars 10. painted raised buttons 11. specific pavement markings 12. rumble section (gore) F. traffic control devices relevant to turn bays: 1. start of lane line RPMs 2. start of lane lines 3. flared alignment of centerline 4. flared alignment of edgeline G. roadway characteristics relevant to turn bays: 1. increase in the width of the pavement H. other traffic control devices: 1. rumble strips	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		I. intersecting alignment of traffic control devices: 1. series of post-mounted delineators 2. edgelines J. intersecting alignment of roadway characteristics: 1. road surface paths 2. road surface edges 3. shoulders 4. wheel tracks K. intersecting alignment of objects adjacent and parallel to the roadway: 1. guardrails 2. two series of luminaries 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. two series of advertising signs 8. two series of buildings	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		L. break in the longitudinal path of traffic control devices: 1. series of post-mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. lane line RPMs 5. centerline 6. edgelines 7. lane lines 8. traffic channelizing island 9. traffic divisional island M. break in the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks N. break in the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaries 3. terrain cuts	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings	
	2. estimation of the distance between the driver and the intersection	A. visual angle subtended by familiar referents situated at the intersection; e.g. car stopped at the intersection, road surface width at the intersection, height of STOP sign, etc. B. resolution of detail in familiar referents situated at the intersection; e.g. legend(s) of sign(s) at the intersection, discernible detail in cars stopped at the intersection, etc. C. magnitude of displacement or apparent movement between stationary referents situated at the intersection and their respective backgrounds D. location of objects at the intersection on perspective lines to the vanishing point	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		E. stereoscopic cues	
	See Decision #(1) for the following additional Required Inputs and associated Sources of Information. Required Inputs: #1 - horizontal alignment #2 - vertical alignment #3 - general nature #4 - road surface #5 current speed		
	5A. criteria for selecting the location for the onset of deceleration	A. memory of prior experience with stopping-to-distance relationships on similar sections of road	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (2) The driver must select the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	5B. criteria for selecting and adjusting the rate of deceleration	A. traffic control devices: 1. REDUCED SPEED AHEAD sign 2. sequence of decreasing Speed Limit signs B. memory of prior experience with deceleration rates on similar sections of road	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (3) The driver must select a specific lateral path for approaching the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to guide his vehicle over the selected path.	See Decision #(2) for the following Required Input and associated Sources of Information. Required Input: #1 - horizontal alignment 1A. determination of the boundaries of the driver's lane of travel	A. traffic control devices: 1. traffic divisional island 2. centerline RPMs 3. centerline 4. traffic channelization island 5. edgeline RPMs 6. edgelines 7. lane line RPMs 8. lane lines B. roadway characteristics: 1. road surface edges 2. pavement seam 3. shoulders 4. wheel tracks 5. visual angle subtended by the visible width of the road surface	5

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (3) The driver must select a specific lateral path for approaching the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		6. visual angle subtended by the visible width of the lane of travel	
	See Decision #(2) for the following additional Required Inputs and associated Sources of Information. Required Inputs: #3 - shoulder width #4 - shoulder drive-ability #5 - rate of oppo-sing vehicles #6 - response to op-posing vehicles #7 - selection cri-teria		

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (4) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to stop his vehicle at the selected location.	1. identification of the specific location where the driver's travelway intersects with the near edge of the cross road and/or pedestrian crosswalk	A. specific location of regulatory signs: 1. STOP sign 2. specific Turn Prohibition signs 3. specific Lane-Use Control signs 4. ONE WAY sign 5. Divided Highway Crossing sign B. specific location of guide signs: 1. Directional Assembly 2. Street Name sign C. specific location of pavement markings: 1. STOP 2. STOP Line 3. Crosswalk Lines D. specific location of the intersection of traffic control devices: 1. series of post-mounted delineators 2. edgelines	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (4) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		E. specific location of the intersection of roadway characteristics: 1. road surface paths 2. road surface edges 3. shoulders 4. wheel tracks F. specific location of the intersection of objects adjacent and parallel to the roadway: 1. guardrails 2. two series of luminaires and/or corner luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines and/or corner poles 6. fence lines 7. two series of advertising signs and/or corner signs 8. two series of buildings and/or corner buildings G. specific location of the break in the longitudinal path of traffic control devices: 1. post-mounted delineators	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (4) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. centerline RPMs 3. edgeline RPMs 4. lane line RPMs 5. centerline 6. edgeline 7. lane lines 8. traffic channelizing island 9. traffic divisional island H. specific location of the break in the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks I. specific location of the break in the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines	

Situation: Stop Sign Controlled Intersection
Road Section: Approach to Intersection
Decision: (4) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		7. series of advertising signs 8. series of buildings	
	2. identification of a safe and comfortable position just prior to the above location that allows for maximum unobstructed sight distance for cross traffic in both directions	A. specific location of pavement markings: 1. Stop Line B. available sight distance for cross traffic in both directions	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (1) The driver must decide when to proceed through the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. At the selected point in time, the driver makes the appropriate accelerator pedal adjustments to accelerate safey and comfortably through the intersection.	1. determination that there are no vehicles occupying or approaching the intersection	A. visual and auditory cues indicating that there are no vehicles occupying or approaching the intersection B. available sight distance for approaching vehicles on each approach leg to the intersection	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (2) The driver must select a specific lateral path for traversing the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to guide his vehhicle over the selected path.	1. determination of the boundaries of the driver's lane of travel on the down-stream side of the intersection	A. traffic control devices on the down-stream side of the intersection: 1. traffic divisional island 2. centerline RPMs 3. centerline 4. edgeline RPMs 5. edgelines B. roadway characteristics: 1. road surface edges 2. pavement seam 3. shoulders 4. wheel tracks 5. visual angle subtended by the visible width of the road surface 6. visual angle subtended by the visible width of the lane of travel	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (3) The driver must recognize the end of the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
1. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to speed and path selection for the section of the road just downstream from the intersection.	1. identification of the beginning of the next section of the road	A. specific location of regulatory signs: 1. Keep Right sign on a traffic divisional island 2. object marker on a traffic divisional island 3. specific Turn Prohibition signs 4. specific Lane-Use Control signs 5. ONE WAY sign B. specific location of guide signs: 1. Directional Assembly 2. Street Name sign C. specific location of the rear of traffic signs facing the opposite direction D. specific location of pavement markings: 1. Crosswalk Lines E. specific location of the intersection of traffic control devices: 1. series of post-mounted delineators	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (3) The driver must recognize the end of the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. edgelines F. specific location of the intersection of roadway characteristics: 1. road surface paths 2. road surface edges 3. shoulders 4. wheel tracks G. specific location of the intersection of objects adjacent and parallel to the roadway: 1. guardrails 2. two series of luminaires and/or corner luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines and/or corner poles 6. fence lines 7. two series of advertising signs and/or corner signs 8. two series of buildings and/or corner buildings	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (3) The driver must recognize the end of the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		H. specific location of the beginning of the longitudinal path of traffic control devices: 1. series of post-mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. centerline 5. edgelines 6. traffic channelizing island 7. traffic divisional island I. specific location of the beginning of the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks J. specific location of the beginning of the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires	

Situation: Stop Sign Controlled Intersection
Road Section: At Intersection
Decision: (3) The driver must recognize the end of the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings	

Situation: Stop Sign Controlled Intersection
Road Section: Exit from Intersection
Decision: (1) The driver must select a safe and comfortable speed for the section of the road just downstream from the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision #(10) for the following Required Inputs, associated Sources of Information, and Driver Reaction. Required Inputs: #1 - horizontal alignment #2 - vertical alignment #3 - general nature #4 - road surface #5 - current speed #6 - selection criteria		

Situation: Stop Sign Controlled Intersection
Road Section: Exit from Intersection
Decision: (2) The driver must select a specific lateral path for the section of road just downstream from the intersection.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision #(2) for the following Required Inputs, associated Sources of Information, and Driver Reaction. Required Inputs: #1 - horizontal alignment #2 - lane boundaries #3 - shoulder width #4 - shoulder driveability #5 - rate of opposing vehicles #6 - response to opposing vehicles #7 - selection criteria		

SITUATION: RAILROAD GRADE CROSSING

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (1) The driver must recognize that there is a railroad grade crossing on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. [NON-OBS] The driver establishes a set or state of readiness for negotiating the crossing ahead. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to speed and path decisions for traversing the railroad crossing ahead.	1. advance warning of the presence of a railroad grade crossing on the road ahead	A. warning signs: 1. Railroad Crossing Advance Warning sign 2. NO PASSING ZONE sign B. grade crossing devices: 1. Railroad Crossing (Crossbuck) sign 2. Flashing Light Signal (post-mounted) 3. Flashing Light Signal (cantilever-mounted) 4. Automatic Gates 5. DO NOT STOP ON TRACKS sign C. regulatory signs: 1. DO NOT PASS sign D. pavement markings: 1. Railroad Crossing Advance Warning markings 2. Stop Line 3. start of no-passing centerline	1, 2, 3

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (1) The driver must recognize that there is a railroad grade crossing on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		E. roadway characteristics: 1. path of the railroad tracks intersecting with the driver's lane of travel F. intersecting alignment of objects adjacent and parallel to the roadway and the railroad tracks: 1. terrain cuts 2. brush/tree lines 3. fence lines G. break in the longitudinal path of traffic control devices: 1. series of post-mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. centerline 5. edgelines H. break in the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (1) The driver must recognize that there is a railroad grade crossing on the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		4. shoulders 5. wheel tracks I. break in the longitundinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (2) The driver must select a specific lateral path for approaching the crossing.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision #(2) for the following Required Inputs, associated Sources of Information, and Driver Reaction. Required Inputs: #1 - horizontal alignment #2 - lane boundaries #3 - shoulder width #4 - shoulder drive-ability #5 - rate of oppo-sing vehicles #6 - response to op-posing vehicles #7 - selection cri-teria		5

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3) The driver must decide whether to: (A) bring his vehicle to a full stop just prior to the crossing, (B) proceed through the crossing at a safe and comfortable speed - adjusted as required by roadway conditions, or (C) accelerate to the maximum safe speed to beat an approaching train.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. Regardless of the option selected by the driver, he increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to speed and path decisions on the approach to the crossing. II. Depending on the option selected by the driver, he begins to execute Decision #(3Ai, ii, and iii), Decision #(3B), or Decision #(3C).	1. identification of the approximate location of the railroad crossing	A. grade crossing devices: 1. Railroad Crossing (Crossbuck) sign 2. Flashing Light Signal (post-mounted) 3. Flashing Light Signal (cantilever-mounted) 4. Automotic Gates 5. DO NOT STOP ON TRACKS sign B. pavement markings: 1. Stop Line C. roadway characteristics: 1. path of the railroad tracks intersecting with the driver's lane of travel D. intersecting alignment of objects adjacent and parallel to the roadway and the railroad tracks: 1. terrain cuts 2. brush/tree lines 3. fence lines	4

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3) The driver must decide whether to: (A) bring his vehicle to a full stop just prior to the crossing, (B) proceed through the crossing at a safe and comfortable speed - adjusted as required by roadway conditions, or (C) accelerate to the maximum safe speed to beat an approaching train.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		E. break in the longitudinal path of traffic control devices: 1. series of post-mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. centerline 5. edgelines F. break in the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks G. break in the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3) The driver must decide whether to: (A) bring his vehicle to a full stop just prior to the crossing, (B) proceed through the crossing at a safe and comfortable speed - adjusted as required by roadway conditions, or (C) accelerate to the maximum safe speed to beat an approaching train.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		6. fence lines 7. series of advertising signs 8. series of buildings	
	2. determination of whether the crossing is protected by an active, automatic device or a passive device	A. grade crossing devices: 1. Railroad Crossing (Crossbuck) sign [passive] 2. Flashing Light Signal (post-mounted) [active] 3. Flashing Light Signal (cantilever-mounted) [active] 4. Automatic Gates [active]	
	If the crossing is protected by an automatic device, then go to Required Input #6. If not, Required Inputs #3, #4, and #5 apply.		
	3. determination of whether there is a train occupying the crossing	A. visual, auditory, and vibratory cues indicating the presence of a train in the driver's path of travel	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3) The driver must decide whether to: (A) bring his vehicle to a full stop just prior to the crossing, (B) proceed through the crossing at a safe and comfortable speed - adjusted as required by roadway conditions, or (C) accelerate to the maximum safe speed to beat an approaching train.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	4. determination of whether there is a train approaching the crossing	A. available sight distance for trains approaching from both directions B. visual, auditory, and vibratory cues indicating an approaching train	
	5. assessment of the adequacy of the available sight triangle for approaching trains If the crossing is protected by an active device, then Required Input #6 applies.	A. visual cues indicating the maximum available sight distance for trains approaching from both directions B. memory of prior experience with vehicle speed and similar crossing sight triangles	
	6. determination of the phase of the automatic signal provided by active crossing devices	A. visual cues indicating the phase of the automatic signal on the following grade crossing devices: 1. Flashing Light Signal (post-mounted) 2. Flashing Light Signal (cantilever-mounted)	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3) The driver must decide whether to: (A) bring his vehicle to a full stop just prior to the crossing, (B) proceed through the crossing at a safe and comfortable speed - adjusted as required by roadway conditions, or (C) accelerate to the maximum safe speed to beat an approaching train.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		3. Automatic Gates B. auditory cues indicating the phase of the automatic signal on active devices equipped with bills	
	Regardless of whether the crossing is protected by an active or passive device, Required Input #7 applies. 7. assessment of the pavement condition on the approach to and at the crossing	A. visual cues regarding pavement condition on the approach to the crossing B. kinesthetic cues regarding pavement condition C. visual cues regarding "bumpiness" due to the railroad tracks at the crossing	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Ai) The driver selects the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to initiate, establish, and adjust his deceleration to the crossing. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to Decision #(3Aii)).	1. estimation of the distance between the driver and the crossing See Decision #(1) for the following additional Required Inputs and associated Sources of Information.	A. visual angle subtended by familiar referents situated at the crossing; e.g. height of traffic control device(s) at the crossing, road surface width at the crossing, etc. B. resolution of detail in familiar referents situated at the crossing; legend(s) of sign(s) at the crossing, discernible detail in cars stopped at the crossing, etc. C. magnitude of displacement or apparent movement between stationary referents situated at the crossing and their respective backgrounds D. location of objects at the crossing on perspective lines to the vanishing point E. stereoscopic cues	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Ai) The driver selects the location and the rate at which he will begin to decelerate to a full stop and make adjustments to the selected rate as needed.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	Required Inputs: #1 - horizontal alignment #2 - vertical alignment #3 - general nature #4 - road surface #6 - current speed 5A. criteria for selecting the location for the onset of deceleration 5B. criteria for selecting and adjusting the rate of deceleration	A. memory of prior experience with stopping-to-distance relationships on similar sections of road B. memory of prior experience with deceleration rates on similar sections of road	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Aii) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to stop his vehicle at the selected location.	1. identification of the specific location where the driver's travelway intersects with the near edge of the railroad crossing	A. specific location of grade crossing devices: 1. Railroad Crossing (Crossbuck) sign 2. Flashing Light Signal (post-mounted) 3. Flashing Light Signal (cantilever-mounted) 4. Automatic Gates 5. DO NOT STOP ON TRACKS sign B. specific location of pavement markings: 1. Stop Line C. specific location of roadway characteristics: 1. path of the near side of the railroad tracks intersecting with the driver's lane of travel D. specific location of the intersection of objects adjacent and parallel to the roadway and the railroad tracks: 1. terrain cuts	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Aii) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. brush/tree lines 3. fence lines E. specific location of the break in the longitudinal path of traffic control devices: 1. series of post mounted delineators 2. centerline RPMs 3. edgeline RPMs 4. centerline 5. edgelines F. specific location of the break in the longitudinal path of roadway characteristics: 1. road surface 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks G. specific location of the break in the longitudinal path of objects adjacent and parallel to the roadway: 1. guardrails	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Aii) The driver must select the specific location at which he will bring his vehicle to a full stop.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings	
	2. identification of a safe and comfortable position just prior to the above location that allows for maximum unobstructed sight distance for approaching trains in both directions	A. specific location of pavement markings: 1. Stop Line B. available sight distance for approaching trains in both directions	

Situation: Railroad Grade Crossing
Road Section: Approach to Crossing
Decision: (3Aiii) The driver must decide when to proceed through the crossing.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. At the selected point in time, the driver makes the appropriate accelerator pedal adjustments to accelerate safely and comfortably through the crossing.	1. determination that there are no trains occupying or approaching the crossing	A. visual cues indicating the cessation of the on-phase of the automatic signal provided by the following active crossing devices: 1. Flashing Light Signal (post-mounted) 2. Flashing Light Signal (cantilever-mounted) 3. Automatic Gates B. auditory cues indicating the cessation of the on-phase of the automatic signal on active devices equipped with bills C. visual, auditory, and vibratory cues indicating that there are no trains occupying or approaching the crossing D. visual cues indicating the number of train tracks crossing the roadway E. auxiliary Number of Tracks sign F. available sight distance for approaching trains in both directions	

SITUATION: LANE WIDTH REDUCTION

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (1) The driver must recognize that there is a reduction in the width of the lane of travel in the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. [NON-OBS] The driver establishes a set or state of readiness for negotiating the reduction in lane width. II. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to speed and path selection for entering the reduced lane width section ahead.	1. advance warning of the presence of a lane width reduction in the road ahead	A. traffic control devices: 1. ROAD NARROWS warning sign 2. hazard panels 3. rumble strips 4. DO NOT PASS sign 5. NO PASSING ZONE sign 6. start of no-passing centerline B. tapered alignment of traffic control devices: 1. series of post-mounted delineators 2. edgeline RPMs 3. edgelines 4. sequence of shoulder-mounted traffic signs C. tapered alignment of roadway characteristics: 1. road surface edges 2. shoulder edges 3. wheel tracks D. tapered alignment of objects adjacent and parallel to the roadway: 1. guardrails	1, 2, 3

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (1) The driver must recognize that there is a reduction in the width of the lane of travel in the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings E. decrease in the lateral distance between traffic control devices: 1. two series of post-mounted delineators 2. edgeline RPMs 3. centerline RPMs - edgeline RPMs 4. centerline RPMs - edgeline 5. centerline RPMs - pavement edge 6. edgelines 7. centerline - edgeline 8. centerline - pavement edge F. decrease in the lateral distance between roadway characteristics: 1. guardrails 2. road surface edges 3. pavement seam - pavement edge 4. shoulder edges 5. wheel tracks	

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (1) The driver must recognize that there is a reduction in the width of the lane of travel in the road ahead.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		G. decrease in the lateral distance between objects adjacent and parallel to the roadway: 1. guardrails 2. two series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. two series of advertising signs 8. two series of buildings	

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (2) The driver must select a safe and comfortable speed for entering the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to establish the selected speed.	1. estimation of the of width of the travelway on the reduced width section, relative to clearance for two opposing vehicles	A. lateral distance between traffic control devices: 1. hazard panels 2. two series of post-mounted delineators 3. edgeline RPMs 4. centerline RPMs - edgeline RPMs 5. centerline RPMs - edgeline 6. centerline RPMs - pavement edge 7. edgelines 8. centerline - edgeline 9. centerline - pavement edge B. lateral distance between roadway characteristics: 1. guardrails 2. road surface edges 3. pavement seam - pavement edge 4. wheel tracks	4
	2. estimation of the probability of encountering an opposing vehicle on the next section of the road	A. available sight distance for opposing vehicles	

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (2) The driver must select a safe and comfortable speed for entering the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		B. memory of the rate of opposing vehicles on the previous section of the road	
	3. estimation of the maximum safe and comfortable speed, should the driver encounter an opposing vehicle	A. memory of prior experiences with speed and opposing vehicles on similar-width travelways	
	4. assessment of the adequacy of available sight distance relative to the required Decision Sight Distance for decelerating to the above speed	A. available sight distance for opposing vehicles B. memory of prior experiences with distance requirements for decelerations of a similar magnitude	

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (2) The driver must select a safe and comfortable speed for entering the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision #(1) for the following additional Required Inputs and associated Source of Information. Required Inputs: #1 - horizontal alignment #2 - vertical alignment #3 - general nature #4 - road surface #5 - current speed #6 - selection criteria		

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (3) The driver must select a specific lateral path for entering the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to guide his vehicle over the selected path.	1. estimation of the width of the travelway on the reduced width section, relative to clearance for two opposing vehicles	A. lateral distance between traffic control devices: 1. hazard panels 2. two series of post-mounted delineators 3. edgeline RPMs 4. centerline RPMs - edgeline RPMs 5. centerline RPMs - edgeline 6. centerline RPMs - pavement edge 7. edgelines 8. centerline - edgeline 9. centerline - pavement edge B. lateral distance between roadway characteristics: 1. guardrails 2. road surface edges 3. pavement seam - pavement edge 4. wheel tracks	5

Situation: Lane Width Reduction
Road Section: Approach to Point of Reduction
Decision: (3) The driver must select a specific lateral path for entering the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision #(2) for the following additional Required Inputs and associated Sources of Information. Required Inputs: #1 - horizontal alignment #2 - lane boundaries #3 - shoulder width #4 - shoulder driveability #5 - rate of opposing vehicles #6 - response to opposing vehicles #7 - selection criteria		

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (1) The driver must recognize that he has just entered the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver increases his rate of visual sampling and attention to visual and kinesthetic cues for sources of information relevant to speed and path selection for the section of the road just downstream from the point of lane width reduction.	1. identification of the beginning of the reduced lane width section	A. traffic control devices: 1. PASS WITH CARE sign 2. start of passing-permitted centerline B. end of tapered alignment of traffic control devices: 1. series of post-mounted delineators 2. edgeline RPMs 3. edgelines 4. sequence of shoulder-mounted traffic signs C. end of tapered alignment of roadway characteristics: 1. road surface edges 2. shoulder edges 3. wheel tracks D. end of tapered alignment of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts	

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (1) The driver must recognize that he has just entered the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings E. decrease in lateral distance between traffic control devices: 1. two series of post-mounted delineators 2. edgeline RPMs 3. centerline RPMs - edgeline RPMs 4. centerline RPMs - edgeline 5. centerline RPMs - pavement edge 6. edgelines 7. centerline - edgeline 8. centerline - pavement edge F. decrease in lateral distance between roadway characteristics: 1. road surface edges 2. pavement seam - pavement edge 3. shoulder edges 4. wheel tracks	

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (1) The driver must recognize that he has just entered the reduced lane width section.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		G. decrease in lateral distance between objects adjacent and parallel to the roadway: 1. guardrails 2. two series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. two series of advertising signs 8. two series of buildings H. recognition of the increased load imposed by the lateral tracking task resulting from the decrease in the lane width	

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (2) The driver must select a safe a comfortable speed for the section of the road just downstream from the point of lane width reduction.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	3. estimation of the maximum safe and comfortable speed should the driver encounter an opposing vehicle	A. memory of prior experiences with speed and opposing vehicles on similar-width travelways	
	4. assessment of the adequacy of available sight distance relative to the required Decision Sight Distance for decelerating to the above speed	A. available sight distance for opposing vehicles B. memory of prior experiences with distance requirements for decelerations of a similar magnitude	
	See Decision #(1) for the following additional Required Inputs and associated Sources of Information. Required Inputs: #1 - horizontal alignment #2 - vertical alignment		

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (2) The driver must select a safe a comfortable speed for the section of the road just downstream from the point of lane width reduction.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate accelerator/brake pedal adjustments to establish the selected speed.	1. estimation of the width of the travelway on the reduced width section, relative to clearance for two opposing vehicles	A. lateral distance between traffic control devices: 1. two series of post-mounted delineators 2. edgeline RPMs 3. centerline RPMs - edgeline RPMs 4. centerline RPMs - edgeline 5. centerline RPMs - pavement edge 6. edgelines 7. centerline - edgeline 8. centerline - pavement edge B. lateral distance between roadway characteristics: 1. guardrails 2. road surface edges 3. pavement seam - pavement edge 4. wheel tracks	
	2. estimation of the probability of encountering an opposing vehicle on the next section of the road	A. available sight distance for opposing vehicles B. memory of the rate of opposing vehicles on the previous section of the road	

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (2) The driver must select a safe a comfortable speed for the section of the road just downstream from the point of lane width reduction.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	#3 - general nature #4 - road surface #5 - current speed #6 - selection criteria		

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (3) The driver must select a specific lateral path for the section of the road just downstream from the point of the lane width reduction.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to guide his vehicle over the selected path.	1. estimation of the width of the travelway on the reduced width section relative to clearance for two opposing vehicles	A. lateral distance between traffic control devices: 1. two series of post-mounted delineators 2. edgeline RPMs 3. centerline RPMs - edgeline RPMs 4. centerline RPMs - edgeline 5. centerline RPMs - pavement edge 6. edgelines 7. centerline - edgeline 8. centerline - pavement edge B. lateral distance between roadway characteristics: 1. guardrails 2. road surface edges 3. pavement seam - pavement edge 4. wheel tracks	

Situation: Lane Width Reduction
Road Section: At Point of Reduction
Decision: (3) The driver must select a specific lateral path for the section of the road just downstream from the point of the lane width reduction.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	See Decision # (2) for the following additional Required Inputs and associated Sources of Information. Required Inputs: #1 - horizontal alignment #2 - lane boundaries #3 - shoulder width #4 - shoulder driveability #5 - rate of opposing vehicles #6 - response to opposing vehicles #7 - selection criteria		

SITUATION: ANY GEOMETRIC FEATURE

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
1. The driver makes the appropriate accelerator/brake pedal adjustments to establish the selected speed.	1. moderate preview of the horizontal alignment of the road	A. traffic control devices: 1. specific Curve Warning sign 2. Diagrammatic Map sign 3. Speed Advisory plate 4. Large Arrow sign B. horizontal alignment of traffic control devices: 1. series of Chevron signs 2. series of post-mounted delineators 3. centerline RPMs 4. edgeline RPMs 5. centerline 6. edgelines 7. shoulder-mounted traffic sign(s) C. horizontal alignment of roadway characteristics: 1. road surface path 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks	4

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		D. horizontal alignment of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings E. roadway characteristics: 1. cross-slope of the road surface F. available sight distance of the road ahead G. kinesthetic cues indicating lateral acceleration H. memory of the horizontal alignment characteristics of the previous section of the road	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTITAL SOURCES OF INFORMATION	NOTES
	2. moderate preview of the vertical alignment of the road	A. traffic control devices: 1. Hill sign 2. Grade plate 3. LIMITED SIGHT DISTANCE sign 4. Speed Advisory plate B. geometric features: 1. crest vertical curve 2. sag vertical curve C. vertical alignment of traffic control devices: 1. series of Chevron signs 2. series of post-mounted delineators 3. centerline RPMs 4. edgeline RPMs 5. centerline 6. edgelines 7. shoulder-mounted traffic sign(s) D. vertical alignment of roadway characteristics: 1. road surface path 2. road surface edges 3. pavement seams	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		4. shoulders 5. wheel tracks E. vertical alignment of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings F. kinesthetic cues indicating: 1. vertical orientation 2. accelerative effects of gravity G. memory of the vertical alignment characteristics of the previous section of the road:	
	30. moderate preview of the general nature of the road	A. specific traffic control devices: 1. warning signs 2. regulatory signs 3. object markers	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		B. specific hazards	
	4. near preview of the condition of the road surface	A. traffic control devices: 1. ROUGH ROAD sign 2. PAVEMENT ENDS sign 3. BUMP sign 4. DIP sign 5. LOOSE GRAVEL sign B. visual cues indicating pavement condition C. vibratory cues indicating pavement condition	
	50. estimation of current speed	A. speedometer readout B. rate of apparent movement of fixed roadway objects C. rate of closure on either the focus of expansion or the next geometric feature	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (1) The driver must select a safe and comfortable speed for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	6. criteria for selecting the appropriate speed	A. traffic control devices: 1. Speed Limit sign 2. Speed Advisory plate B. recall of speed limit or speed advisory C. memory of prior experience with speed and similar sections of road	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (2) The driver must select a specific lateral path for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
I. The driver makes the appropriate steering wheel adjustments to guide his vehicle over the selected path.	10. near to moderate preview of the horizontal alignment of the road	A. traffic control devices: 1. specific Curve Warning sign 2. Diagrammatic Map sign 3. Speed Advisory plate 4. Large Arrow sign B. horizontal alignment of traffic control devices: 1. series of Chevron signs 2. series of post-mounted delineators 3. centerline RPMs 4. edgeline RPMs 5. centerline 6. edgelines 7. shoulder-mounted traffic sign(s) C. horizontal alignment of roadway characteristics: 1. road surface path 2. road surface edges 3. pavement seam 4. shoulders 5. wheel tracks	4, 5

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (2) The driver must select a specific lateral path for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		D. horizontal alignment of objects adjacent and parallel to the roadway: 1. guardrails 2. series of luminaires 3. terrain cuts 4. brush/tree lines 5. utility poles and lines 6. fence lines 7. series of advertising signs 8. series of buildings E. roadway characteristics: 1. cross-slope of the road surface F. available sight distance of the road ahead G. kinesthetic cues indicating lateral acceleration H. memory of the horizontal alignment characteristics of the previous section of the road	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (2) The driver must select a specific lateral path for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	2. determination of the boundaries of the driver's lane of travel	A. traffic control devices: 1. traffic divisional island 2. centerline RPMs 3. centerline 4. edgeline RPMs 5. edgelines B. roadway characteristics: 1. road surface edges 2. pavement seam 3. shoulders 4. wheel tracks 5. visual angle subtended by the visible width of the road surface 6. visual angle subtended by the visible width of the lane of travel	
	3. estimation of the width of the shoulder of the road	A. shoulder characteristics: 1. shoulder edge 2. visual angle subtended by the visible width of the shoulder B. memory of the variability in shoulder width on the previous section of the road	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (2) The driver must select a specific lateral path for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
	4. assessment of the driveability of the shoulder of the road	A. traffic control devices: 1. LOW SHOULDER sign 2. SOFT SHOULDER sign 3. object markers B. visual cues indicating the condition of the shoulder surface C. specific hazards situated on the shoulder of the road	
	5. estimation of the probability of encountering an opposing vehicle on the next section of the road	A. available sight distance for opposing vehicles B. memory of the rate of opposing vehihcles on the previous section of the road	
	6. estimation of the probability of being able to respond safely to an opposing vehicle, should the driver encroach into the opposite lane	A. available sight distance for opposing vehicles B. memory of the average and range of opposing vehicle speeds on the previous section of the road	

Situation: Any Geometric Feature
Road Section: Approach to, At, or Exit from Any Geometric Feature
Decision: (2) The driver must select a specific lateral path for the next section of the road.

DRIVER REACTION	REQUIRED INPUT	POTENTIAL SOURCES OF INFORMATION	NOTES
		C. memory of the average and range of opposing vehicle lateral paths on the previous section of the road D. speed selected by the driver for the current section of the road	
	7. criteria for selecting a specific lateral path	A. memory of prior experience with lateral path and similar sections of roadway B. driver's self-evaluation of his tracking skill	