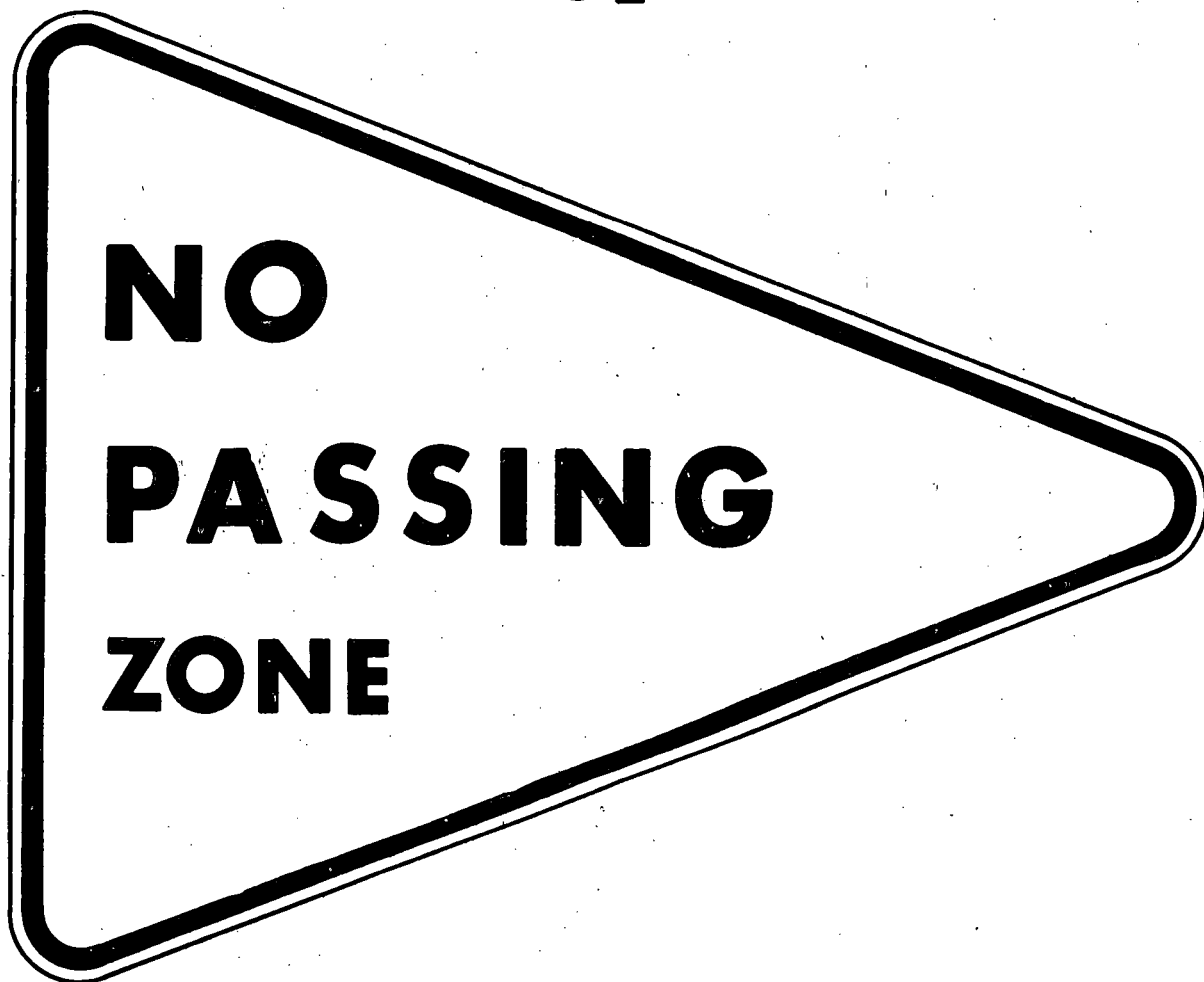


IOWA STUDY

of



SIGNING

AUGUST 1962

IOWA STUDY OF
NO PASSING ZONE
SIGNING

NOVEMBER 1962

Prepared by the
Traffic and Highway Planning Department
Division of Planning
Iowa State Highway Commission

In Cooperation With the
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FOREWARD

This report is compiled from data gathered by interviewing motorists to sample their opinion of Iowa's method of supplementing the yellow barrier line pavement marking of no passing zones on primary highways with yellow pennant shaped "No Passing Zone" signs mounted on the left shoulder of the highway.

The effective designation of no passing zones is one form of control that can contribute to a reduction in the number of fatal high-speed head-on collisions resulting from passing in areas which do not afford sufficient sight distance of approaching traffic.

It is the purpose of this report to present an evaluation of the Iowa "No Passing Zone" sign by individuals from all states who have traveled on Iowa's primary highways and who must obey the no passing zone restrictions and be warned by this sign of the presence of the zones.

The "No Passing Zone" sign was formulated and approved by the Governor's Safety Committee a short time prior to the experimental erection of the signs. The Governor's Safety Committee adopted this sign as they felt that such a sign should be distinctive (not similar to any other type of sign) and easily visible to a driver attempting a passing maneuver.

SUMMARY

Iowa began erecting the "No Passing Zone" signs on an experimental basis in January, 1959. For the trial, U.S. Highway #30 was selected. Pennant-shaped reflectorized yellow signs bearing "No Passing Zone" in black lettering were erected at the beginning of each no passing zone at the foreslope-shoulder break on the driver's left. Sign specifications and erection details are illustrated on Chart #1 and #2 in the appendix.

The Iowa Highway Patrol and the Research and Statistical Division of the Iowa Department of Public Safety conducted a study of the effectiveness of the "No Passing Zone" signs by tabulating the number of summonses and memoranda issued by the Iowa Highway Patrol for violations of the no passing zone restrictions on U.S. 30. The study revealed a reduction of 63 percent in the number of summonses and 25.8 percent in the number of memoranda issued in January, 1959 (the first month the signs were used) over the average number of summonses and memoranda issued during the previous three-month period, October, November, and December of 1958. For the same study period, data on the number of summonses issued on seven other major primary highways, Iowa #3, Iowa #14, U.S. #18, U.S. #20, U.S. #61, Iowa #64 and U.S. #71 were also tabulated for comparison. It was found that of these seven routes not marked with the "No Passing Zone" signs, the number of summonses issued in January, 1959 was the same as the average of the previous three months on four of the routes, and there was a 20 percent increase in summonses

issued on U.S. #18, 7.7 percent on U.S. 20, and 100 percent on U.S. 61.

A summary of the study data can be found on Chart #3 in the appendix.

Following the experiment of these signs on U.S. #30, approval for additional use of the sign was obtained and they are now installed on all primary highways in Iowa.

Points unique about the Iowa method of signing no passing zones are the sign's color, shape, message, and left shoulder placement.

The reflectorized yellow color was chosen because it is distinctive against any common background and more easily visible at night and during adverse weather conditions such as snow and fog. Yellow is also used for the barrier line pavement marking, producing an effect of unity between the two types of control. Yellow is also the standard color for all warning-type traffic control signs; the sign by its supplemental usage to the regulating yellow line is classified as a warning sign rather than a regulatory sign.

The pennant shape was chosen because it is distinctive from the standard sign shapes used in highway signing. It also suggests direction of attention to the yellow barrier line by its "arrow head" appearance.

The message "No Passing Zone" is used for two reasons. As the sign is used to supplement the yellow barrier line system, and not intended to serve as an alternate system, the shape and message both convey that there is a zone present and direct the initial observance of the sign to the barrier line which will keep the restriction in the driver's mind by virtue

of the continuity of the line. The sign is noticeable sooner to the approaching driver, and more easily seen when following heavy traffic, but once the sign is passed, its work is done and the control within the zone is accomplished by the barrier line. For this reason the sign and the line must be correlated as closely as possible. The "No Passing Zone" message also does not suggest the necessity for another sign marking the end of the zone as does the directive "Do Not Pass" message. From an economic viewpoint, this would enable an agency to sign a unit of no passing zones for one-half the cost of the method which signs both the beginning and end of each zone.

The left shoulder mounting is used primarily for advanced visibility. As illustrated in chart #4 in the appendix, left shoulder mounting affords almost unlimited visibility to the driver desiring to pass another vehicle. If the driver is close enough behind the vehicle he desires to pass, the vehicle in front may completely obscure his vision along the right shoulder. Any movement to the left in an effort to see an oncoming car decreases driver vision to the right, but increases visibility of the left shoulder. Also, in contemplating a passing maneuver, driver attention is focused upon the oncoming traffic lane and to observe signs on the right shoulder during this "critical" period could in some cases be distracting and possibly hazardous.

As Iowa is the only state using the pennant shaped sign exclusively (Kansas, Pennsylvania, Nebraska and Michigan are trying experimental programs using the sign), this interview study

was undertaken to present the opinion the motoring public has of the value of these signs.

In planning this survey, six locations on major primary roads were chosen as interview stations. The stations were located so that by interviewing traffic in one direction only, motorists from other states would have had opportunity to travel the particular route approximately two-thirds of its total length in Iowa. On August 27, 1962, eastbound vehicles were interviewed from 8 AM to 4 PM on U.S. 30, west of the Junction of Ia 279 and U.S. 30 in Benton County. On August 28, interviews were taken of eastbound vehicles from 9 AM to 5 PM on U.S. 20 east of Jesup in Buchanan County and northbound vehicles from 8 AM to 4 PM on U.S. 69 north of the north Junction of Iowa 3 and U.S. 69 in Wright County. On August 29, interviews were taken of eastbound vehicles on U.S. 20 east of Jesup from 5 PM to 2 AM and northbound vehicles on U.S. 20 and U.S. 71 between the north and south Junctions in Sac County from 8 AM to 4 PM.

On August 30, interviews were taken of westbound vehicles on U.S. 30 and Ia 169 west of Ogden in Boone County from 5 PM to 2 AM and on U.S. 34 and Iowa 169 between the east and west Junction in Union County from 8 AM to 4 PM.

On August 31, vehicles westbound on U.S. 30 and Ia 169 west of Ogden were interviewed from 9 AM to 5 PM.

Each interview began by showing the motorist a replica of the "No Passing Zone" sign without lettering to determine if the motorist had noticed and was familiar with the sign.

Next, all motorists were asked the purpose of their trip, the approximate length of their trip, and if they thought the location of the sign on the left side of the highway provided easier recognition of the no passing zone.

Motorists were also asked if they preferred Iowa's method of identifying no passing zones to those used by other states, and if the presence of the signs had prevented them from passing in a no passing zone. In addition, motorists from all states except Iowa were asked if Iowa's "No Passing Zone" sign helped to locate the start of a no passing zone better than the method used in their own state. They were also asked if they felt the shape and color of the sign made the sign more readily distinguishable than the method used in their own state and if they would recommend their state use Iowa's type of signing.

The direction of travel, type of vehicle, state registration and county registration of Iowa vehicles and number of occupants were also noted by the interviewer.

The first question asked each driver pertaining to the sign was "Do you know what the presence of this sign means when you have encountered it while driving?" The driver was shown a colored replica of the sign, identical except without the message "No Passing Zone."

As to be expected, Iowa drivers were more familiar with the sign. 88.6 percent of the passenger car and pickup truck drivers and 91.1 percent of the commercial vehicle drivers knew the meaning of the sign. Of the drivers from all other

states, 84.9 percent of the passenger car and pickup truck drivers and 87.8 percent of the commercial vehicle drivers knew the meaning of the sign.

Of all the vehicle drivers interviewed, 87.6 percent recognized the sign and knew its meaning by shape and color only.

The second question asked in each interview was "Does the location of the sign on the left side of the highway provide easier recognition of the no passing zone?"

90.1 percent of the Iowa passenger car and pickup truck and 94.4 percent of the Iowa commercial vehicle drivers felt the left side location provides easier recognition. Of drivers from all other states, 80.5 percent of the passenger car and pickup truck drivers and 88.9 percent of the commercial vehicle drivers felt the left side location provides easier recognition.

It is interesting to note that the commercial vehicle drivers, both from Iowa and from other states, favor the location by a higher percentage than the respective passenger car and pickup truck drivers.

Of all the drivers interviewed, 87.4 percent felt the left side location provides easier recognition of the no passing zone sign.

The third question asked each driver was "Do you prefer Iowa's method of identifying no passing zones to those used by other states?"

Of the Iowa drivers, 80.9 percent of the passenger car and pickup truck drivers and 86.9 percent of the commercial truck drivers preferred Iowa's method of identifying the no passing

zones. Of the drivers from all other states, 74.4 percent of the passenger car and pickup truck drivers and 84.2 percent of the commercial vehicle drivers preferred Iowa's method.

Of all vehicle drivers interviewed 79.5 percent preferred Iowa's method of identifying the zones.

It can be noted that 10.3 percent of all vehicle drivers interviewed had no opinion. Of these vehicles, some had no preference, but many stated they felt unqualified to express an opinion because of their lack of familiarity with methods used by other states. This is particularly true of the Iowa passenger car and pickup drivers, as reflected in the table.

The fourth question asked of all vehicle drivers was "Do you believe that Iowa's method of identifying no passing zones has alerted you to refrain from making a passing maneuver that you otherwise might have attempted?"

Of the Iowa vehicle drivers interviewed, 90.5 percent of the passenger cars and 92.1 percent of the commercial vehicle drivers indicated they had been alerted by the signs to refrain from a passing maneuver they would otherwise have attempted. 80.6 percent of the passenger cars and pickups and 90.7 percent of the commercial vehicles from all other states also indicated they had been alerted by the signs.

Of all the vehicle drivers interviewed, 87.6 percent had been alerted by the sign to refrain from making a passing maneuver that they otherwise might have attempted.

The fifth and sixth questions pertaining to the sign were asked of drivers from all other states to obtain comparative

preferences between the Iowa method of signing and the method used in their own state.

The fifth question was "Does Iowa's No Passing Zone sign help locate the start of a no passing zone better than the method used in your state?" The sixth question was "Does the shape and color of the sign make it more readily distinguishable than the method used to designate the no passing zones in your state?"

It was felt that by asking each driver to compare Iowa's "No Passing Zone" sign in the areas of efficiency and distinguishability to the method used in their own state, any method consistently considered superior by residents of the state using it could be noted.

The replies are tabulated by state in the following tables #5 and #6. Information obtained by questionnaires sent to state highway agencies concerning the marking method used in each state is summarized on Chart #5 in the appendix.

It should be noted that 73 percent of all vehicle drivers from all states felt Iowa's sign helped locate the start of a no passing zone better than the method used in their own state. 23 percent felt their own state's method was better and 4 percent expressed no opinion.

Of all drivers from all other states interviewed, 77.7 percent felt the shape and color make it more readily distinguishable than the method used in their own state. 14.2 percent felt their own state's method was more readily distinguishable and 8.1 percent had no opinion.

The seventh and last question asked of drivers from all other states except Iowa was "Would you recommend that your state use Iowa's type of signing for no passing zones?"

From this question it was determined that 74.5 percent of the 2,392 out-of-state drivers interviewed would recommend that their state use Iowa's type of signing for no passing zones. 19.4 percent felt they would not recommend their state adopt Iowa's method, and 6.1 percent expressed no opinion.

Commercial vehicles again appear to be more unanimous in their endorsement of the sign than the passenger cars and pickup trucks, with 82.4 percent favoring their own state's adoption of the sign, compared with 73.4 percent for the passenger cars and pickups. It is felt that the commercial vehicle driver, earning a living by driving, perhaps places a higher value on traffic aids which can reduce the hazard involved in the performance of the occupation.

TABLE I

"Do you know what the presence of this sign means when you have encountered it while driving?"

Vehicle Registration	Understands Sign's Meaning		Does Not Understand Sign's Meaning		Uncertain	
	No.	Percent	No.	Percent	No.	Percent
Out-state PC & PU	1795	84.9	317	15.0	1	0.1
Out-State Commercial	245	87.8	34	12.2	-	-
Iowa PC & PU	3383	88.6	432	11.3	5	0.1
Iowa Commercial	535	91.1	52	8.9	-	-
Total	5958	87.6	835	12.3	6	0.1

TABLE 2

"Does the location of the sign on the left side of the highway provide easier recognition of the no passing zone?"

Vehicle Registration	Feel Location is Good		Feel Location is not Good		No Opinion	
	No.	Percent	No.	Percent	No.	Percent
Out-State PC & PU	1700	80.5	357	16.9	56	2.6
Out-State Commercial	248	88.9	26	9.3	5	1.8
Iowa PC & PU	3443	90.1	342	9.0	35	0.9
Iowa Commercial	554	94.4	30	5.1	3	0.5
Total	5945	87.4	755	11.1	99	1.5

TABLE 3

"Do you prefer Iowa's method of identifying no passing zones to those used by other states?"

Vehicle Registration	Prefer Iowa's Method		Do Not Prefer Iowa's Method		No Opinion	
	No.	Percent	No.	Percent	No.	Percent
Out-State PC & PU	1571	74.4	383	18.1	159	7.5
Out-of-State Commercial	235	84.2	29	10.4	15	5.4
Iowa PC & PU	3089	80.9	253	6.6	478	12.5
Iowa Commercial	510	86.9	30	5.1	47	8.0
Total	5405	79.5	695	10.2	699	10.3

TABLE 4

"Do you believe that Iowa's method of identifying no passing zones has alerted you to refrain from making a passing maneuver that you otherwise might have attempted?"

Vehicle Registration	Has Alerted Driver		Has Not Alerted Driver		No Opinion	
	No.	Percent	No.	Percent	No.	Percent
Out-State PC & PU	1704	80.6	351	16.6	58	2.8
Out-State Commercial	253	90.7	24	8.6	2	0.7
Iowa PC & PU	3458	90.5	312	8.2	50	1.3
Iowa Commercial	541	92.1	38	6.5	8	1.4
Total	5956	87.6	725	10.7	118	1.7

TABLE 5
 "Does Iowa's "No Passing Zone" sign help locate the start
 of a no passing zone better than the method used in your
 state?"

State	Iowa's Method Better				Own State's Better				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
Alabama	3	--	37.5	--	--	--	--	--	5	--	62.5	--
Arizona	12	--	63.2	--	6	--	31.6	--	1	--	5.2	--
Arkansas	7	5	70.0	83.3	2	--	20.0	--	1	1	10.0	16.7
California	156	7	70.3	63.6	48	4	21.6	36.4	18	--	8.1	--
Colorado	38	18	82.6	85.7	7	3	15.2	14.3	1	--	2.2	--
Connecticut	6	--	54.5	--	4	--	36.4	--	1	--	9.1	--
Washington, D.C.	2	--	100.0	--	--	--	--	--	--	--	--	--
Florida	15	1	55.6	50.0	11	--	40.7	--	1	1	3.7	50.0
Georgia	6	--	85.7	--	1	--	14.3	--	--	--	--	--
Idaho	10	--	83.3	--	--	--	--	--	2	--	16.7	--
Illinois	311	35	71.8	87.5	101	3	23.3	7.5	21	2	4.9	5.0
Indiana	40	7	71.4	63.6	11	2	19.7	18.2	5	2	8.9	18.2
Kansas	36	15	76.6	88.2	7	1	14.9	5.9	4	1	8.5	5.9
Kentucky	3	1	60.0	100.0	1	--	20.0	--	1	--	20.0	--
Louisiana	7	--	87.5	--	1	--	12.5	--	--	--	--	--
Maine	1	--	50.0	--	1	--	50.0	--	--	--	--	--
Maryland	14	--	58.3	--	7	--	29.2	--	3	--	12.5	--
Massachusetts	12	--	75.0	--	4	--	25.0	--	--	--	--	--
Michigan	87	5	66.4	62.5	37	3	28.3	37.5	7	--	5.3	--
Minnesota	128	30	66.7	75.0	50	8	26.0	20.0	14	2	7.3	5.0
Mississippi	4	3	80.0	100.0	1	--	20.0	--	--	--	--	--
Missouri	62	17	76.5	89.5	13	--	16.1	--	6	2	7.4	10.5
Montana	7	1	77.8	50.0	2	--	22.2	--	--	1	--	50.0
Nebraska	115	26	81.0	83.9	16	1	11.3	3.2	11	4	7.7	12.9
Nevada	5	4	55.6	100.0	3	--	33.3	--	1	--	11.1	--
New Hampshire	2	--	50.0	--	1	--	25.0	--	1	--	25.0	--

Table 5, Continued

State	Iowa's Method Better				Own State's Better				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
New Jersey	16	2	57.1	100.0	10	--	35.7	--	2	--	7.2	--
New Mexico	3	--	100.0	--	--	--	--	--	--	--	--	--
New York	69	2	74.2	100.0	16	--	17.2	--	8	--	8.6	--
N. Carolina	5	--	83.3	--	1	--	16.7	--	--	--	--	--
N. Dakota	7	1	100.0	100.0	--	--	--	--	--	--	--	--
Ohio	53	3	73.6	75.0	15	1	20.8	25.0	4	--	5.6	--
Oklahoma	8	1	80.0	33.3	--	1	--	33.3	2	1	20.0	33.3
Oregon	15	2	75.0	66.7	4	1	20.0	33.3	1	--	5.0	--
Pennsylvania	52	1	80.0	100.0	10	--	15.4	--	3	--	4.6	--
Rhode Island	1	--	50.0	--	1	--	50.0	--	--	--	--	--
S. Carolina	3	--	100.0	--	--	--	--	--	--	--	--	--
S. Dakota	28	6	73.7	85.7	6	--	15.8	--	4	1	10.5	14.3
Tennessee	5	--	83.3	--	1	--	16.7	--	--	--	--	--
Texas	17	3	77.3	42.9	3	3	13.6	42.9	2	1	9.1	14.2
Utah	12	2	80.0	100.0	--	--	--	--	3	--	20.0	--
Vermont	--	--	--	--	1	--	100.0	--	--	--	--	--
Virginia	23	1	92.0	50.0	2	1	8.0	50.0	--	--	--	--
Washington	17	--	77.3	--	5	--	22.7	--	--	--	--	--
West Virginia	2	1	66.7	100.0	1	--	33.3	--	--	--	--	--
Wisconsin	79	14	69.9	58.3	31	6	27.4	25.0	3	4	2.7	16.7
Wyoming	6	2	100.0	66.7	--	1	--	33.3	--	--	--	--
Hawaii	3	--	100.0	--	--	--	--	--	--	--	--	--
Canada	17	--	77.3	--	4	--	18.2	--	1	1	4.5	100.0
Subtotal	1530	216	72.4	77.4	446	39	21.1	14.0	137	24	6.5	8.6
Total	1746		73.0		485		20.3		161		6.7	

TABLE 6

"Does the shape and color of the sign make it more readily distinguishable than the method used to designate the no passing zones in your state?"

State	Shape and Color of Iowa's Sign is More Distinguishable				Shape and Color of Own State's Sign is More Distinguishable				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
Alabama	3	--	37.5	--	--	--	--	--	5	--	62.5	--
Arizona	16	--	84.2	--	2	--	10.5	--	1	--	5.3	--
Arkansas	6	5	60.0	83.3	2	--	20.0	--	2	1	20.0	16.7
California	162	10	73.0	90.9	35	1	15.8	9.1	25	--	11.2	--
Colorado	38	19	82.6	90.4	3	1	6.5	4.8	5	1	10.9	4.8
Connecticut	7	--	63.6	--	4	--	36.4	--	--	--	--	--
Washington, DC	1	--	50.0	--	--	--	--	--	1	--	50.0	--
Florida	16	1	59.3	50.0	9	1	33.3	50.0	2	--	7.4	--
Georgia	5	--	71.4	--	2	--	28.6	--	--	--	--	--
Idaho	12	--	100.0	--	--	--	--	--	--	--	--	--
Illinois	332	39	76.7	97.5	76	--	17.5	--	25	1	5.8	2.5
Indiana	36	9	64.2	81.8	10	1	17.9	9.1	10	1	17.9	9.1
Kansas	34	16	72.3	94.1	7	1	14.9	5.9	6	--	12.8	--
Kentucky	4	--	80.0	--	--	1	--	100.0	1	--	20.0	--
Louisiana	7	--	87.5	--	1	--	12.5	--	--	--	--	--
Maine	1	--	50.0	--	--	--	--	--	1	--	50.0	--
Maryland	14	--	58.4	--	5	--	20.8	--	5	--	20.8	--
Massachusetts	11	--	68.8	--	5	--	31.2	--	--	--	--	--
Michigan	106	7	80.9	87.5	22	1	16.8	12.5	3	--	2.3	--
Minnesota	155	36	80.7	90.0	23	3	12.0	7.5	14	1	7.3	2.5
Mississippi	4	3	80.0	100.0	--	--	--	--	1	--	20.0	--
Missouri	65	15	80.2	78.9	10	--	12.3	--	6	4	7.5	21.1
Montana	6	1	66.7	50.0	2	--	22.2	--	1	1	11.1	50.0
Nebraska	115	27	81.0	87.1	11	--	7.7	--	16	4	11.3	12.9
Nevada	6	2	66.7	50.0	3	2	33.3	50.0	--	--	--	--
New Hampshire	2	--	50.0	--	1	--	25.0	--	1	--	25.0	--

TABLE 6, Continued

State	Shape and Color of Iowa's Sign is More Distinguishable				Shape and Color of Onw State's Sign is More Distinguishable				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
New Jersey	20	2	71.4	100.0	7	--	25.0	--	1	--	3.6	--
New Mexico	3	--	100.0	--	--	--	--	--	--	--	--	--
New York	65	2	69.9	100.0	17	--	18.3	--	11	--	11.8	--
N. Carolina	5	--	83.3	--	1	--	16.7	--	--	--	--	--
N. Dakota	7	1	100.0	100.0	--	--	--	--	--	--	--	--
Ohio	51	3	70.8	75.0	17	1	23.6	25.0	4	--	5.6	--
Oklahoma	8	1	80.0	33.3	--	--	--	--	2	2	20.0	66.7
Oregon	15	2	75.0	66.7	3	1	15.0	33.3	2	--	10.0	--
Pennsylvania	54	1	83.1	100.0	7	--	10.8	--	4	--	6.1	--
Rhode Island	1	--	50.0	--	1	--	50.0	--	--	--	--	--
S. Carolina	2	--	66.7	--	--	--	--	--	1	--	33.3	--
S. Dakota	30	7	78.9	100.0	2	--	5.3	--	6	--	15.8	--
Tennessee	6	--	100.0	--	--	--	--	--	--	--	--	--
Texas	18	5	81.8	71.4	2	--	9.1	--	2	2	9.1	28.6
Utah	14	2	93.3	100.0	--	--	--	--	1	--	6.7	--
Vermont	--	--	--	--	1	--	100.0	--	--	--	--	--
Virginia	22	1	88.0	50.0	3	1	12.0	50.0	--	--	--	--
Washington	18	--	81.8	--	3	--	13.6	--	1	--	4.6	--
West Virginia	3	1	100.0	100.0	--	--	--	--	--	--	--	--
Wisconsin	86	18	76.1	75.0	19	5	16.8	20.8	8	1	7.1	4.2
Wyoming	6	2	100.0	66.7	--	1	--	33.3	--	--	--	--
Hawaii	3	--	100.0	--	--	--	--	--	--	--	--	--
Canada	18	1	81.8	100.0	2	--	9.1	--	2	--	9.1	--
Sub Total	1619	239	76.6	85.7	318	21	15.1	7.5	176	19	8.3	6.8
Total	1858		77.7		339		14.2		195		8.1	

TABLE 7

"Would you recommend that your state use Iowa's type of signing for no passing zones?"

State	Would recommend own state use Iowa's Method				Would not recommend own state use Iowa's Method				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
Alabama	3	--	37.5	--	--	--	--	--	5	--	62.5	--
Arizona	12	--	63.1	--	6	--	31.6	--	1	--	5.3	--
Arkansas	7	6	70.0	100.0	2	--	20.0	--	1	--	10.0	--
California	155	9	69.8	81.8	50	1	22.5	9.1	17	1	7.7	9.1
Colorado	37	19	80.4	90.5	8	2	17.4	9.5	1	--	2.2	--
Connecticut	5	--	45.5	--	5	--	45.5	--	1	--	9.0	--
Dist. of Co- lumbia	2	--	100.0	--	--	--	--	--	--	--	--	--
Florida	15	2	55.6	100.0	11	--	40.7	--	1	--	3.7	--
Georgia	6	--	85.7	--	1	--	14.3	--	--	--	--	--
Idaho	11	--	91.7	--	--	--	--	--	1	--	8.3	--
Illinois	308	37	71.1	92.5	101	2	23.3	5.0	24	1	5.6	2.5
Indiana	40	9	71.4	81.8	12	1	21.4	9.1	4	1	7.2	9.1
Kansas	38	16	80.9	94.1	4	1	8.5	5.9	5	--	10.6	--
Kentucky	3	--	60.0	--	1	1	20.0	100.0	1	--	20.0	--
Louisiana	7	--	87.5	--	1	--	12.5	--	--	--	--	--
Maine	1	--	50.0	--	--	--	--	--	1	--	50.0	--
Maryland	13	--	54.2	--	9	--	37.5	--	2	--	8.3	--
Massachusetts	12	--	75.0	--	4	--	25.0	--	--	--	--	--
Michigan	91	5	69.5	62.5	36	3	27.5	37.5	4	--	3.0	--
Minnesota	133	30	69.3	75.0	39	8	20.3	20.0	20	2	10.4	5.0
Mississippi	4	3	80.0	100.0	1	--	20.0	--	--	--	--	--
Missouri	62	16	76.5	84.2	15	2	18.5	10.5	4	1	5.0	5.3
Montana	7	2	77.8	100.0	2	--	22.2	--	--	--	--	--
Nebraska	120	25	84.5	80.6	13	2	9.2	6.5	9	4	6.3	12.9
Nevada	6	2	66.7	50.0	2	2	22.2	50.0	1	--	11.1	--
New Hampshire	1	--	25.0	--	2	--	50.0	--	1	--	25.0	--

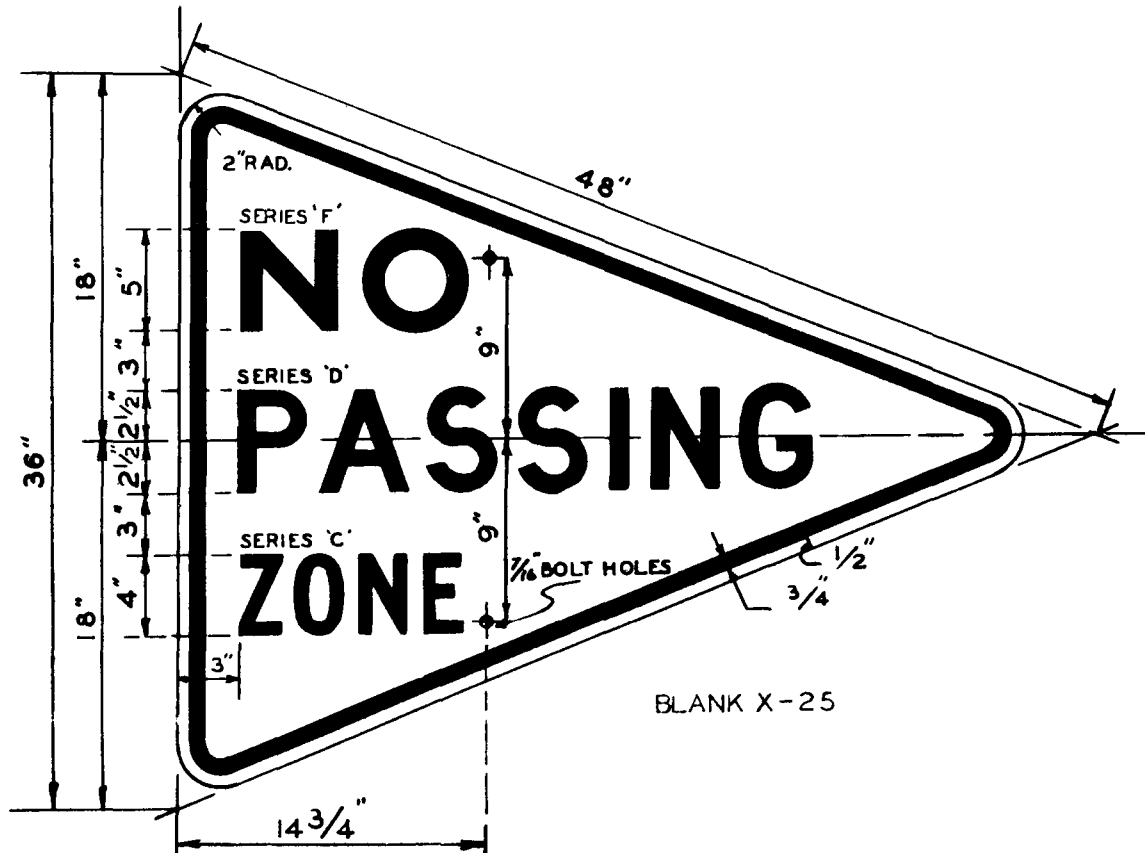
Table 7, Continued

State	Would recommend own state use Iowa's Method				Would not recommend own state use Iowa's Method				No Opinion			
	No.		Percent		No.		Percent		No.		Percent	
	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm	PC PU	Comm
New Jersey	22	2	78.6	100.0	5	--	17.9	--	1	--	3.5	--
New Mexico	3	--	100.0	--	--	--	--	--	--	--	--	--
New York	72	2	77.4	100.0	16	--	17.2	--	5	--	5.4	--
N. Carolina	6	--	100.0	--	--	--	--	--	--	--	--	--
N. Dakota	7	1	100.0	100.0	--	--	--	--	--	--	--	--
Ohio	54	3	75.0	75.0	15	1	20.8	25.0	3	--	4.2	--
Oklahoma	9	3	90.0	100.0	--	--	--	--	1	--	10.0	--
Oregon	15	2	75.0	66.7	4	1	20.0	33.3	1	--	5.0	--
Pennsylvania	50	1	76.9	100.0	11	--	16.9	--	4	--	6.2	--
Rhode Island	1	--	50.0	--	1	--	50.0	--	--	--	--	--
S. Carolina	3	--	100.0	--	--	--	--	--	--	--	--	--
S. Dakota	29	7	76.3	100.0	4	--	10.5	--	5	--	13.2	--
Tennessee	3	--	50.0	--	3	--	50.0	--	--	--	--	--
Texas	18	5	81.8	71.4	1	1	4.6	14.3	3	1	13.6	14.3
Utah	15	2	100.0	100.0	--	--	--	--	--	--	--	--
Vermont	--	--	--	--	1	--	100.0	--	--	--	--	--
Virginia	22	1	88.0	50.0	3	1	12.0	50.0	--	--	--	--
Washington	18	--	81.8	--	4	--	18.2	--	--	--	--	--
West Virginia	2	1	66.7	100.0	1	--	33.3	--	--	--	--	--
Wisconsin	77	17	68.1	70.8	30	5	26.6	20.8	6	2	5.3	8.4
Wyoming	6	2	100.0	66.7	--	1	--	33.3	--	--	--	--
Hawaii	3	--	100.0	--	--	--	--	--	--	--	--	--
Canada	18	--	81.8	--	4	--	18.2	--	--	1	--	100.0
Subtotal	1552	230	73.4	82.4	428	35	20.3	12.6	133	14	6.3	5.0
Total	1782		74.5		463		19.4		147		6.1	

APPENDIX

CHART 1

NO PASSING ZONE SIGN IOWA STATE HIGHWAY COMMISSION



N	1.41	O
4.61		5.16

P	0.62	A	0.94	S	0.94	S	1.18	I	1.18	N	1.18	G
3.36		4.19		3.36		3.36		0.78		3.36		3.36

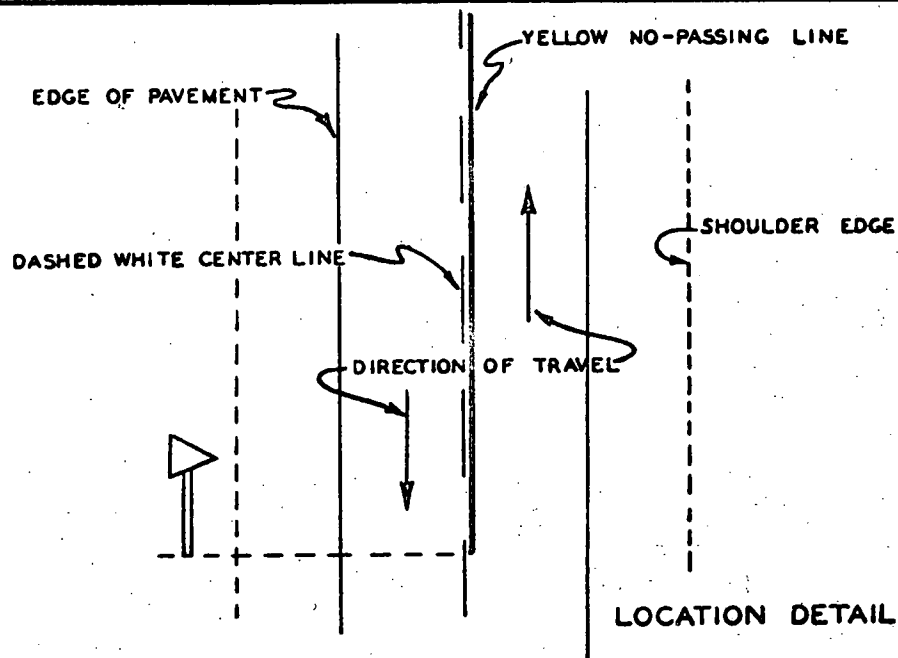
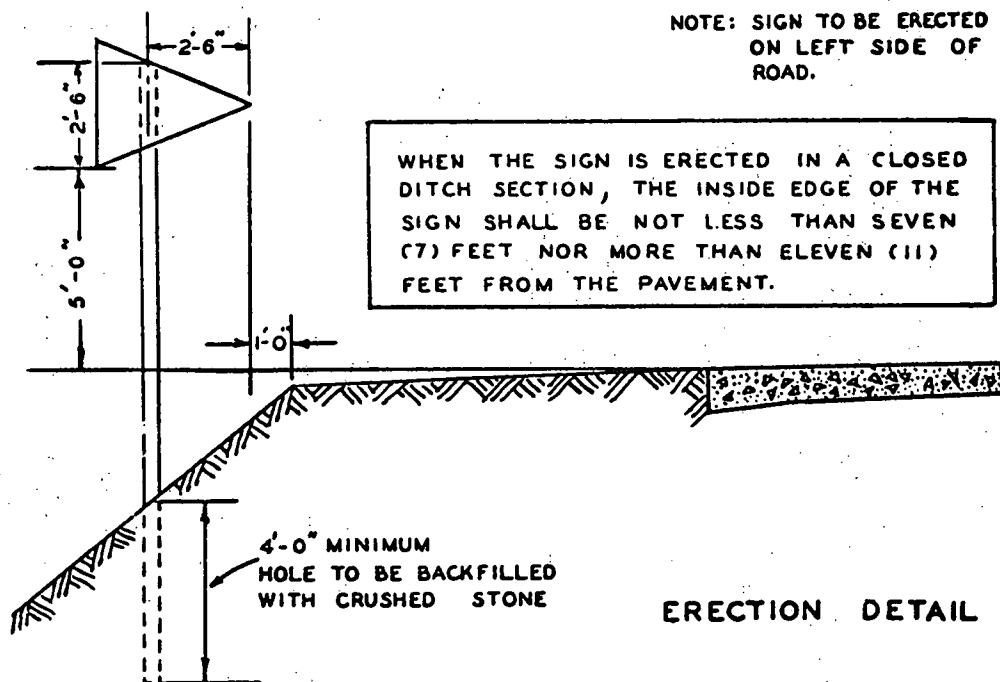
Z	0.68	O	0.84	N	0.84	E
2.19		2.31		2.19		2.00

DESIGN SHOWS FINISHED WORK
LETTERS AND BORDER- SOLID BLACK
BACKGROUND- SMOOTH YELLOW REFLECTIVE SHEETING
SCALE- 1/8 INCH = 1 INCH
LETTER WIDTHS AND INTERLETTER SPACES SHOWN IN CHART
DIMENSIONS ARE IN INCHES

CHART 2

ERECTION AND LOCATION DETAILS FOR NO PASSING ZONE SIGNS

IOWA STATE HIGHWAY COMMISSION



REVISED JUNE 1, 1960

CHART 3

Summonses issued by the Iowa Highway Patrol on Iowa primary roads in study during October, November and December, 1958, and January, 1959 for violating a no passing zone.

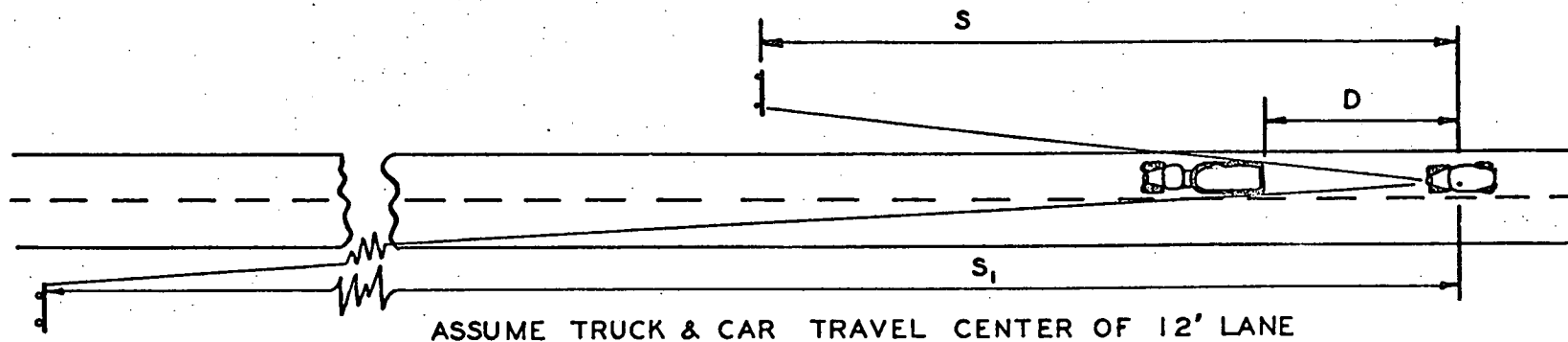
Highway	1958		Dec.	Total	Avg.	1959 Jan.	Jan. 1959-Avg.	
	Oct.	Nov.					Number	Percent
3 (EW)	9	3	4	16	5	5	0	0.0
14 (NS)	4	0	0	4	1	1	0	0.0
18 (EW)	8	3	4	16	5	6	+1	+ 20.0
20 (EW)	22	14	4	40	13	14	+1	+ 7.7
61 (NS)	5	2	2	9	3	6	+3	+100.0
64 (EW)	6	7	6	19	6	6	0	0.0
71 (EW)	13	11	7	31	10	10	0	0.0
30 (EW)	51	49	38	138	46	17	-29	- 63.0

Memoranda issued by the Iowa Highway Patrol on U.S. 30 during October, November, and December, 1958, and January, 1959 for violating a no passing zone:

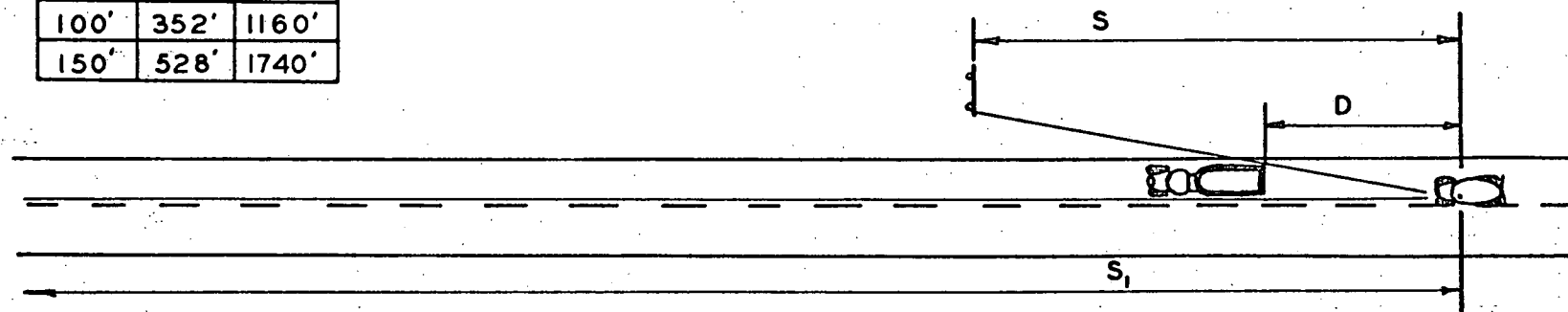
30 (EW)	105	57	115	277	93	69	-24	- 25.8
---------	-----	----	-----	-----	----	----	-----	--------

Information courtesy of Research and Statistics Division, Iowa Department of Public Safety.

TRUCK WIDTH 8'
 CAR WIDTH 6'-6"
 STEERING COLUMN 1'-6" IN
 SIGNS 10' FROM PAVEMENT EDGE



D	S	S ₁
50'	176'	580'
100'	352'	1160'
150'	528'	1740'



D	S	S ₁
50'	125'	INFINITE
100'	250'	INFINITE
150'	375'	INFINITE

System of Marking Currently in Use in Designating
No Passing Zones on Permanent Surfaced Roads

State	Pavement Mark- ing (Barrier Line)	Percent of Zones Marked By Pavement Marking	Supplement pavement Mark With Signs	Percent of Zones Supplemented With Signs	Message Used on Signs	Sign Location			"Pass With Care" Sign used at End Of Signed Zones	Use Pennant Shaped "No Pas- sing Zone" Sign
						% Right Shoulder	% Left Shoulder	% Both Shoulders		
Alabama	Yes	98	No	--	--	--	--	--	--	--
Arizona	Yes	100	Yes	100	Do Not Pass	100	--	--	No	No
Arkansas	Yes	100	No	--	--	--	--	--	--	--
California	Yes	96.5	No	--	--	--	--	--	--	--
Colorado	Yes	100	No	--	--	--	--	--	--	--
Connecticut	Yes	100	Yes	100	Do Not Pass	100	--	--	No	No
Delaware	Yes	100	Yes	5	Do Not Pass	100	--	--	Yes	No
Dist. of Columbia	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--
Florida	Yes	100	No	--	--	--	--	--	--	--
Georgia	Yes	100	Yes	2	Do Not Pass	100	--	--	No	No
Idaho	Yes	Vert. Curve Res- triction 100%	No	--	--	--	--	--	--	--
Illinois	Yes	100	Yes	100	Do Not Pass	100	--	--	Yes	No
Indiana	Yes	100	Yes	100	Do Not Pass	97	--	3	Yes	No
Kansas	Yes	100	Yes	40	Do Not Pass	97	--	3	Yes	Used ex- perimen- tally for 300 Mi. as left shoulder supple- ment
Kentucky	Yes	100	Yes	65	Do Not Pass	--	--	100	Yes	No
Louisiana	Yes	100	Yes	2	Do Not Pass	100	--	--	Yes	No

CHART 5, Continued

State	Pavement Mark- ing (Barrier Line)	Percent of Zones Marked By Pavement Marking	Supplement Pavement Mark With Signs	Percent of Zones Supplemented With Signs	Message Used on Signs	Sign Location			"Pass With Care" Sign used at End Of Signed Zones	Use Pennant Shaped "No Pas- sing Zone" Sign
						% Right Shoulder	% Left Shoulder	% Both Shoulders		
Maine	Yes	100	No	--	--	--	--	--	--	--
Maryland	Yes	100	No	--	--	--	--	--	--	--
Massachusetts	Yes	100	Yes	100	No Passing	100	--	--	No	No
Michigan	Yes	100	Yes	100	Do Not Pass	100	--	--	Yes	Used ex- perimen- tally
Minnesota	Yes	100	Yes	100	Do Not Pass	--	--	100	No	No
Mississippi	Yes	100	No	--	--	--	--	--	--	--
Missouri	Yes	100	No	--	--	--	--	--	--	--
Montana	Yes	100	Yes	2-lane Int. only	Do Not Pass	100	--	--	Yes	No
Nebraska	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--
Nevada	Yes	100	No	--	--	--	--	--	--	--
New Hampshire	Yes	100	Yes	90	Do Not Pass	100	--	--	No	No
New Jersey	Yes	100	Yes	100	Do Not Cross Solid Line Your Side	100	--	--	No	No
New Mexico	Yes	100	Yes	5	Do Not Pass	60	--	40	Yes	No
New York	Yes	100	No	--	--	--	--	--	--	--
No. Carolina	Yes	58	Yes	Not Deter- mined	Do Not Pass	% Not Deter- mined	--	% Not Deter- mined	Yes	No
No. Dakota	Yes	100	Yes	20	Do Not Pass	90	--	10	Yes	No
Ohio	Yes	100	Yes	Accident Prone lo- cations only	Do Not Pass	100	--	--	No	No
Oklahoma	Yes	100	No	--	--	--	--	--	--	--
Oregon	Yes	100	No	--	--	--	--	--	--	--
Pennsylvania	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--
Rhode Island	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--
So. Carolina	Yes	100	No	--	--	--	--	--	--	--
So. Dakota	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--

CHART 5, Continued

State	Pavement Mark- ing (Barrier Line)	Percent of Zones Marked By Pavement Marking	Supplement Pavement Mark With Signs	Percent of Zones Supplemented With Signs	Message Used on Signs	Sign Location			"Pass With Care" Sign used at End Of Signed Zones	Use Pennant Shaped "No Pas- sing Zone" Sign
						% Right Shoulder	% Left Shoulder	% Both Shoulders		
Tennessee	Yes	100	No	--	--	--	--	--	--	--
Texas	Yes	100	Yes	Accident Prone lo- cations only	Do Not Pass	100	--	--	Yes	No
Utah	Yes	100	Yes	2	Do Not Pass	100	--	--	Yes	No
Vermont	Yes	100	No	--	--	--	--	--	--	--
Virginia	Yes	100	No	--	--	--	--	--	--	--
Washington	Yes	100	Yes	30	Do Not Pass	60	--	40	Yes	No
West Virginia	Yes	100	Yes	5	Do Not Pass	100	--	--	Yes	No
Wisconsin	Yes	100	Yes	250 Trial signs	Do Not Pass	--	100	--	Yes	No
Wyoming	Yes	100	Yes	Truck Climbing Lanes Only	Begin No Passing Zone	100	--	--	Use "End No Passing Zone"	No
Alaska	Yes	100	No	--	--	--	--	--	--	--
Hawaii	Yes	100	Yes	80	"Do Not Pass" and "No Cros- sing Solid Line Your Side"	100	--	--	Yes	No
Canada	Not Avail.	Not Avail.	Not Avail.	Not Avail.	--	--	--	--	--	--

Only signs used to supplement the barrier line markings are considered on this chart. Signs used for special purposes such as transitions from 2 to 4 lane construction, etc., are not considered. Percentages are of the total road system normally considered for any manner of marking by the state highway agency.

CHART 6

Trip Purpose of Vehicles Interviewed by Trip Mileage

Mileage of Trip	Work			Recreation			Vacation			Personal Business			Shopping			Other			Total		
	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal	PC- PU	Comm	To- tal
0-100 Miles	970	243	1213	350	1	351	50	1	51	600	2	602	178	-	178	165	5	170	2313	252	2565
100-500 Miles	629	396	1025	286	2	288	417	5	422	314	3	317	10	-	10	65	7	72	1721	413	2134
500- 1000 Miles	93	80	173	46	-	46	359	2	361	64	-	64	-	-	-	16	1	17	578	83	661
1000 Miles & Over	110	108	218	67	-	67	986	7	993	108	-	108	2	-	2	48	3	51	1321	118	1439
All Trips	1802	827	2629	749	3	752	1812	15	1827	1086	5	1091	190	-	190	294	16	310	5933	866	6799

CHART 7

Occupancy of Vehicles
By Trip Purpose and Mileage Group

Trip Purpose	Veh. Type	Trip Mileage									
		0-100 Miles		100-500 Miles		500-1000 Miles		Over 1000 Mi.		All Trips	
		Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle
Work	PC	1474	1.5	877	1.4	121	1.3	202	1.8	2674	1.5
	PU	458	1.9	547	1.4	121	1.5	136	1.3	1262	1.5
	Comm Total	1932	1.6	1424	1.4	242	1.4	338	1.6	3936	1.5
Recreation	PC	884	2.5	782	2.7	122	2.7	163	2.4	1951	2.6
	PU	2	2.0	4	2.0	--	--	--	--	6	2.0
	Comm Total	886	2.5	786	2.7	122	2.7	163	2.4	1957	2.6
Vacation	PC	128	2.6	1249	3.0	1089	3.0	2997	3.0	5463	3.0
	PU	1	1.0	11	2.2	3	1.5	39	5.6	54	3.6
	Comm Total	129	2.5	1260	3.0	1092	3.0	3036	3.1	5517	3.0

Chart 7, Continued

Trip Purpose	Veh. Type	Trip Mileage									
		0-100 Miles		100-500 Miles		500-1000 Miles		Over 1000 Mi.		All Trips	
		Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle	Total Occ.	Avg Per Vehicle
Personal Business	PC	1307	2.2	698	2.2	157	2.5	257	2.4	2419	2.2
	PU	2	1.0	4	1.3	--	--	--	--	6	1.2
	Comm Total	1309	2.2	702	2.2	157	2.5	257	2.4	2425	2.2
Shopping	PC	403	2.3	21	2.1	--	--	4	2.0	428	2.3
	PU	--	--	--	--	--	--	--	--	--	--
	Comm Total	403	2.3	21	2.1	--	--	4	2.0	428	2.3
Other	PC	367	2.2	161	2.5	39	2.4	161	3.4	728	2.5
	PU	80	16.0	142	20.3	1	1.0	44	14.7	267	16.7
	Comm Total	447	2.6	303	4.2	40	2.4	205	4.0	995	3.2
Total	PC	4563	2.0	3788	2.2	1528	2.6	3784	2.9	13663	2.3
	PU	543	2.2	708	1.7	125	1.5	219	1.9	1595	1.8
	Comm Total	5106	2.0	4496	2.1	1653	2.5	4003	2.8	15258	2.2