REPORT OF THE
VIRGINIA DEPARTMENT OF TRANSPORTATION

# DESIRABILITY AND FEASIBILITY OF INSTALLING MILE MARKERS ALONG STATE PRIMARY HIGHWAYS

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

## HOUSE DOCUMENT NO. 71

COMMONWEALTH OF VIRGINIA
RICHMOND
2000

# COMMONWEALTH of VIRGINIA

**DEPARTMENT OF TRANSPORTATION**
1401 EAST BROAD STREET
RICHMOND, 23219-2000

**CHARLES D. NOTTINGHAM**
COMMISSIONER

January 4, 2000

The Honorable James S. Gilmore, III
Members, Virginia General Assembly

Dear Governor Gilmore and General Assembly Members:

The 1999 General Assembly, through House Joint Resolution 493, requested the Virginia Department of Transportation to conduct a feasibility study to determine if installing mile markers along the state primary highways would be in the interest of the motoring public.

The conclusions of this study indicate that installing mile markers along all state primary highways is not needed and would be very costly. However, installing mile markers on certain segments of rural primary highways, that are part of the National Highway System (NHS), could be beneficial. Therefore, in the year 2000, VDOT will develop criteria to prioritize rural NHS roads for mile marker installation. Other organizations, such as police and emergency services, will be invited to participate in the development of criteria. VDOT recommends initiating a pilot program based on the criteria developed. In the current VDOT budget, there is no specific allocation for this type of installation. However, once the criteria are developed, VDOT will allocate funds for the pilot program for year 2001 installation within the current budget. VDOT will request the assistance of the Virginia Transportation Research Council to monitor and evaluate the pilot to identify benefits and determine the significance of the costs associated with installation and maintenance.

As always, let me know if you have questions.

Sincerely,

Charles D. Nottingham

Enclosure

## PREFACE

The Virginia Department of Transportation (VDOT) was requested by the 1999 General Assembly, through House Joint Resolution 493 (Appendix A), to conduct a study assessing the desirability and feasibility of the installation of mile markers along state primary highways to determine if installing such devices would be in the interest of the safety and convenience of the motoring public.

The responsibility of completing this study was assigned to the Department's Traffic Engineering Division. This report was prepared by Mr. David Fogg, a Transportation Engineer in the Specifications Section and was reviewed and approved by Ms. I. O. Kastenhofer who is the State Traffic Engineer.

Input for preparing this report was provided by each of the Department's nine districts (District Traffic Engineers and District Maintenance Engineers), the Resident Engineers Committee, VDOT Maintenance Division, the Virginia State Police, the Virginia Trucking Association, and the American Automobile Association along with the transportation agencies from the following states:

- California
- Florida
- Georgia
- Kentucky
- Maryland
- North Carolina
- Tennessee
- Texas
- West Virginia

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## EXECUTIVE SUMMARY

The Virginia Department of Transportation (VDOT) was requested by the 1999 General Assembly, through House Joint Resolution 493 (Appendix A), to conduct a study assessing the desirability and feasibility of the installation of mile markers along state primary highways to determine if installation of these devices would be in the interest of the safety and convenience of the motoring public.

To conduct this study, literary searches were performed along with requests for input from selected states, the Virginia State Police, the Virginia Trucking Association, the American Automobile Association, and VDOT's district and residency personnel.

Literature reviews and contacts with selected states provided input that indicated mile markers have been used on at least some non-interstate highways in other states. Benefits cited by literature and the contacts indicate that mile markers:

- Provide a reference point for the police to record the location of accidents and traffic violations
- Benefit the motoring public by providing milepost information that can be used by businesses
- Help solve problems with lost tourists who cannot find street or house numbers
- Inform motorists of their position relative to each county line (applicable only when county specific and not when continuous mile markers are used)
- Enable department personnel to accurately locate highway features and data recorded in files based upon the mile marker information
- Enable maintenance personnel to easily locate areas needing work
- Allow more expeditious routing of emergency personnel to highway emergency scenes
- Aid motorists in estimating progress and in orienting themselves for decisions that may be needed

Responses to the desirability and feasibility of installing mile markers on primary highways were mixed. While the Virginia State Police support the installation of mile markers on the primary highways, both the Virginia Trucking Association and the American Automobile Association provided responses of no comments to our request concerning the installation of mile markers on the primary highways.

Feedback from the department's district and residency personnel indicate that the majority of them consider that the benefits gained by both the motorists and the Department from the installation of mile markers on the primary highways will not outweigh the cost and maintenance associated with their installation. Increased maintenance costs would result from mowing, snow removal, drainage work, and repair/replacement of the mile markers and would be exacerbated by the fact that many two lane, rural primary highways have narrow shoulders which require the mile markers to be installed closer to the edge of pavement where they would be more susceptible to damage. In addition, mile markers in urban areas would be ineffective due to the amount of existing signing, development and entrance locations. Street names and

landmarks in urban areas will continue to be used for locating accidents, businesses, etc. even if mile markers were installed.

The conclusions of this study indicate that installing mile markers along all state primary highways is not needed and would be very costly. However, installing mile markers on certain segments of rural primary highways, that are part of the National Highway System (NHS), could be beneficial. Therefore, in the year 2000 VDOT will develop criteria to prioritize rural NHS roads for mile marker installation. Other organizations, such as police and emergency services, will be invited to participate in the development of criteria. VDOT recommends initiating a pilot program based on the criteria developed. The development of criteria will be accomplished within current budget. In the current VDOT budget there is no specific allocation for this type of installation. However, once the criteria are developed, VDOT will allocate funds for the pilot program for year 2001 installation. VDOT will request the assistance of the Virginia Transportation Research Council to monitor and evaluate the pilot to identify benefits and determine the significance of the costs associated with installation and maintenance.

## PURPOSE AND SCOPE

The Virginia Department of Transportation (VDOT) was requested by the 1999 General Assembly, through House Joint Resolution 493 (Appendix A), to conduct a study assessing the desirability and feasibility of the installation of mile markers along state primary highways to determine if it would be in the interest of the safety and convenience of the motoring public.

## METHODOLOGY

### Literature Review

The Virginia Research Council was requested to perform a literary search for any pertinent reports concerning the installation of mile markers on non-interstate highways. This review was performed to determine whether others had documented the benefits and disadvantages of their use on non-interstate highways.

### Information Requests

A survey questionnaire (Appendix B) was developed to obtain information from other states' transportation agencies concerning the installation of mile markers on non-interstate highways. The questionnaire contained five groups of questions that were developed to specifically obtain the following information related to the mile marker installations:

- Whether other states installed mile markers on non-interstate highways
- Whether other states had conducted a study concerning the installation of mile markers on non-interstate highways to identify the benefits and disadvantages relative to motorists and their maintenance personnel
- Information related to benefits and disadvantages regarding mile marker installations if they are installed on non-interstate highways
- Design and installation details of mile markers
- Any other information that would be helpful in determining whether to install mile markers on Virginia's primary highways

Letters, soliciting input on the installation of mile markers on our primary highways, were also sent to the Virginia State Police, the Virginia Trucking Association and the American Automobile Association. Input from both the Virginia Trucking Association and the American Automobile Association were deemed necessary in order to have the motorists' perspective on this issue.

E-mails were sent to various VDOT personnel including, but not limited to, District Maintenance Engineers, District Traffic Engineers and the Resident Engineers Committee to seek their input regarding the benefits and disadvantages of installing mile markers on our primary highways.

## RESULTS

### Summary of Literature Review

The literature review identified two reports related to mile markers. The first report was completed in 1990 and was entitled *New Markers "Key to the Highway" in Texas*. These markers were installed for maintenance purposes to identify a specific location along a highway and were not for use by the general public. Additional information regarding this is provided in Appendix C under the response to the survey questionnaire from the State of Texas. The second report was completed in 1967 and was entitled *A Summarized Review of Mileposting on State Maintained Highways in the United States*. This report described the installation of mileposts on non-interstate highways. It pointed out that the advantage to such a system is to provide a uniform and simple location referencing system that can provide the following benefits:

- Accurate traffic accident logging for statistical use
- Aid to more expeditious routing of emergency personnel to highway emergency scenes
- Aid to motorists in estimating progress and in orienting themselves for decisions that may be needed
- Aid in locating maintenance and construction activities

While the report indicated the advantages to such a system, it did not indicate any problems such as maintenance issues created by the installation of the mileposts on the non-interstate highways.

### Summary of Survey Questionnaire Responses from State Transportation Agencies

The survey questionnaire was sent to ten state transportation agencies. Responses were received (Appendix C) from all except one.

With the exception of one of the states that responded, all of the states contacted use some form of mile markers on at least some of their non-interstate highways. Respondents indicated that mile markers:

- Provide a reference point for the police to record the location of accidents and traffic violations
- Benefit the motoring public by providing milepost information that can be used by businesses
- Help solve problems with lost tourists who cannot find street or house numbers
- Inform the motorists of their position relative to each county line (applicable only when county specific and not continuous mile markers are used)
- Enable department personnel to accurately locate highway features and data recorded in files based upon the mile marker information
- Enable maintenance personnel to easily locate areas needing work

Of these responses, the only negative comment (provided by one state), regarding mile markers on non-interstate highways, was that they required ongoing maintenance.

## Summary of Responses from the Virginia State Police, Virginia Trucking Association and the American Automobile Association Responses

The Virginia State Police support the installation of mile markers on primary highways, based upon a consensus among their field personnel that mile markers would be beneficial to public safety.

Both the Virginia Trucking Association and the American Automobile Association indicated they had no comments regarding the installation of mile markers on primary highways.

## Summary of VDOT Responses

Of the responses received from the various VDOT personnel concerning the installation of mile markers on primary highways, three of the districts agree with their installation while six disagree. The main concern, of those who disagree with mile marker installations, is related to their installation cost and maintenance. In many instances, there are insufficient shoulder widths along some of the more rural primary highways to provide an adequate setback from the edge of the pavement. Knockdowns, due to the close proximity of the mile markers to the edge of pavement, may be a regular occurrence. In addition, there may be instances where shoulder widths are insufficient to install the mile markers. Mowing operations could also knock down mile markers and/or additional grass trimming (weed eating) would be required increasing maintenance costs. Mile markers alone (without additional documentation indicating where along a highway a specific mile marker number is located) will do very little to pinpoint a location. The use of mile markers as survey benchmarks brings additional work in that it would require surveying and installing the markers at exact locations. However, placing the mile markers at those exact locations in the field cannot always occur due to the existence of entrances, intersections and other natural obstacles. Finally, it was indicated by one district that the Federal Communications Commission (FCC) has mandated that the cellular industry develop a locator system to track user location when dialing 911. It was also recommended that we rely on the communications industry to develop their system rather than VDOT embarking on an expensive initiative to install mile markers on the primary highways.

A response was also received from the Resident Engineer's Committee indicating that they did not feel that installing mile markers on the primary roadways would be cost beneficial. Generally, their concerns were with maintenance issues such as mowing, snow removal, drainage work (ditching and pipe replacement), and repair/replacement of the mile markers. In developed/urban areas, the mile markers could be ineffective due to the amount of existing signing, development, and entrance locations. It was also indicated that on two lane primary roadways with narrow shoulders, the mile markers would have to be undesirably close to the roadway. Based on the above concerns, if a decision is made to install mile markers, they feel they would be more effective on the National Highway System and arterial system roadways that have at least four lanes with adequate shoulders.

Of the districts that favor the installation of the mile markers, the benefits noted include the ability of the motoring public to use the markers to identify accident locations. This benefit would be more recognizable in rural locations with very little roadside development and on limited access highways. In more developed (urbanized) areas, they believe the use of street names and landmarks will still continue to be the tool used by motorists to pinpoint their location. The most notable benefit of mile markers to VDOT is that they could be used to help maintenance crews locate problems, determine road sections to track labor costs, and note specific locations when requesting review by Traffic Engineering, Environmental or other sections. They also believe benefits would be realized by the Inventory Condition Assessment System (ICAS) and when setting distance-measuring instruments while locating specific sites and setting reference points. It should also be noted that those that favor their installation also realize there will be installation and maintenance problems associated with their use and that installation criteria will need to consider those problems when being developed.

Mile markers do exist on a few selected primary highways in the Commonwealth of Virginia. One example is Rte. 207 and Rte. 301 (from Rte. 207 to the Maryland State line) where mile markers were installed for incident management purposes due to the Springfield Interchange construction project and the anticipated increased traffic along this alternate route. Mile markers have also been installed in a few locations for maintenance purposes (not for motorists' use) and therefore are installed based on the beginning and ending points of the county. While these markers have been installed for maintenance personnel's benefit, the Resident Engineers Committee does not see installing mile markers on primary roads as cost-effective overall and therefore does not support their installation.

## Issues Considered

Listed below are issues that were considered while making a determination on whether to implement a mile marker program on primary highways in the Commonwealth of Virginia:

- Whether to install mile markers on all primary routes or some other methodology such as on National Highway System (NHS) primary highways, etc.
- Whether to install mile markers on all sections of a primary highway or only in rural areas.
- Concern if it is decided to install them in urban areas where those sections of primary routes are operated and maintained by others (cities, towns, etc.)
- Whether to number the mile markers based on the beginning and end of each county or based on the Manual on Uniform Traffic Controls for Streets and Highways (MUTCD) methodology which is the beginning and end of each primary route. The MUTCD method is beneficial to the motoring public and would be the logical choice if mile markers are being installed for the benefit of the motorists.
- Whether to include additional signing at the ½ mile or less interval
- Correction of mileage display where the mileage is changed due to an increase or decrease in the length of the highway resulting from a realignment created by construction projects.

- In many instances, accidents will be reported using cellular phones. The FCC adopted in their *E911 First Report and Order* that wireless carriers deploy Automatic Location Identification (ALI) as part of Enhanced 911 service beginning October 1, 2001, provided certain conditions are met. Those certain conditions are that an emergency response agency requests ALI and has the capability of using that information. Pursuant to Section 20.18(e) of the Federal Communication Commission's Rules, subject carriers are required to provide the location of a call by longitude and latitude, such that the accuracy for all calls is 125 meters or less using Root Mean Square (RMS) methodology.

## Costs

Estimated installation costs for the installation of markers for various scenarios are shown in the below table. While HJR 493 specifically addressed mile markers, it was felt that reduced spacing would be more beneficial. Therefore, the cost estimates were also prepared based on assuming two-tenths mile spacing.

| MARKER COSTS | | |
|---|---|---|
| **Roadway Type** | **Marker Spacing** | |
| | **1 Mile** | **2 Tenths Mile** |
| Rural Primary Highways | $1,490,000.00 | $7,450,000.00 |
| Rural NHS Primary Highways | $335,000.00 | $1,675,000.00 |

This cost estimate is based on the following:

- Fabrication of each marker panel - $50 each
- Locating and installing markers - $65 each
- There are approximately 5,400 miles (including 135 miles on the NHS) of two lane rural primary roadways. It was assumed that markers for both directions would be mounted on the same side of the road on a single post.
- There are approximately 2,600 miles (includes 1360 miles on the NHS) of three lanes or greater rural primary roadways. It was assumed that markers would be mounted on both sides of the road.

The above costs are approximate for the purpose of a general concept. They do not include site specific costs, such as trimming or removing vegetation needed to allow the mile markers to be seen, or any traffic control that may be needed. Specific cost estimates will need to be prepared on a project by project basis.

Using a conservative ten percent replacement estimation needed each year due to damage and/or vandalism to the mile markers, additional funds ranging from $33,000 to $750,000 (depending on the methodology of installation) would be needed in the maintenance budget, annually.

## CONCLUSIONS

The conclusions of this study indicate that installing mile markers along all state primary highways is not needed and would be very costly. However, installing mile markers on certain segments of rural primary highways, that are part of the National Highway System (NHS), could be beneficial. Therefore, in the year 2000 VDOT will develop criteria to prioritize rural NHS roads for mile marker installation. Other organizations, such as police and emergency services, will be invited to participate in the development of criteria. VDOT recommends initiating a pilot program based on the criteria developed. The development of criteria will be accomplished within current budget. In the current VDOT budget there is no specific allocation for this type of installation. However, once the criteria are developed, VDOT will allocate funds for the pilot program for year 2001 installation. VDOT will request the assistance of the Virginia Transportation Research Council to monitor and evaluate the pilot to identify benefits and determine the significance of the costs associated with installation and maintenance.

# APPENDIX A

# HOUSE JOINT RESOLUTION NO. 493

## GENERAL ASSEMBLY OF VIRGINIA – 1999 SESSION

## HOUSE JOINT RESOLUTION NO. 493

*Requesting the Department of Transportation to study the desirability and feasibility of installation of mile markers along state primary highways.*

Agreed to by the House of Delegates, February 7, 1999
Agreed to by the Senate, February 18, 1999

WHEREAS, installation of mile markers along state primary highways would be in the interest of the safety and convenience of the motoring public; and

WHEREAS, such mile markers would enable ready identification, even to those unfamiliar with the area, of the location of accidents, breakdowns, or other highway incidents; and

WHEREAS, quick identification of highway incident locations would shorten the response time of fire, emergency medical, law-enforcement, towing, and repair personnel, thus saving lives, reducing the severity of injuries, reducing traffic congestion, facilitating the quick removal of disabled vehicles from roadways and shoulders, and minimizing delays and frustrations experienced by travelers because of minor vehicle problems such as flat tires, broken belts, or lack of fuel; and

WHEREAS, depending upon their method of installation, highway mile markers could also provide motorists with location data and serve as survey benchmarks within and along highway rights-of-way in those areas of the Commonwealth experiencing a lack or insufficiency of such benchmarks; and

WHEREAS, highway mile markers have already been installed on interstate highways in Virginia; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Department of Transportation be requested to study the desirability and feasibility of installation of mile markers along state primary highways.

The Department shall complete its work in time to submit its findings and recommendations to the Governor and the 2000 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

# APPENDIX B

# SURVEY QUESTIONNAIRE

**VIRGINIA DEPARTMENT OF TRANSPORTATION**
**MILEPOST SIGN SURVEY**
**(May 26, 1999)**

Name of person completing survey:

Telephone Number:

Email Address:

State:

1. Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

   ☐ Yes ☐ No

2. Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

   ☐ Yes ☐ No

3. If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

4. If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs. If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9 inch mileposts without the legend MILE on any of your highways. If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also. If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

   Section 2D-46 ☐ Yes ☐ No

   6 x 9 inch mileposts ☐ Yes ☐ No

   Type of highways 6 x 9 inch mileposts are used on if not all:

   Increments ☐ 1 Mile ☐ ½ Mile ☐ $^1/_{10}$ Mile

5. Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

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Traffic Engineering Division
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**RESPONSE REQUESTED BY: JUNE 25, 1999**

# APPENDIX C

# RESPONSES FROM

# STATE TRANSPORTATION AGENCIES

## STATE OF CALIFORNIA
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. California uses a county-specific postmile system (as opposed to the federally recommended system) on all state highways. The postmile signs are black lettering on white background and include the county, route and postmile reference point. Generally, these markers are reference points and are not of any value to motorists.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*Postmile markers provide a reference point for the California Highway Patrol to record the location of accidents and traffic violations. Also, they provide reference points for the planning, design, construction, maintenance and operation of highways.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also. If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) No. (2) No.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*California is currently investigating the cost and feasibility of converting to a statewide postmile system (i.e. the federally recommended system) on interstate and possibly non-interstate highways (cost dependent). The statewide postmile system provides an added benefit to tourists, non-recurrent drivers and emergency response personnel.*

## STATE OF FLORIDA
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. We use them on US 1 out to the Keys, but we are developing a standard for use along other tourist corridors where many cities and city limits are encountered.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No. We have not done studies, but we are looking for a benefit to the motoring public by providing milepost info that can be used by businesses in the area. We hope that this will solve part of the problem with lost tourists who cannot find street-house numbers.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*See above answer.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also (3). If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) Yes. We plan to use this section. (2) No. (3) ½ mile intervals.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*Cannot, except that the mileposts used along US 1 are very successful and very needed.*

## STATE OF GEORGIA
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. Milepost signs are used on all numbered State Routes.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*Milepost signs can inform the motoring public of their position relative to each county line. Milepost numbering begins and ends at each county line from south to north and from west to east.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9-inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on (3). If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also (4). If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) Yes. (2) No. (3) N/A. (4) 1 Mile.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*No response.*

## STATE OF KENTUCKY
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. Written guidelines were provided with their response.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*Advantage – allows ease in crash location identification.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9-inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on (3). If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also (4). If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) Yes. (2) Yes. (3) All. (4) 1 Mile.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*No response.*

## STATE OF MARYLAND
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. It is not standard practice to install milepost signs along non-interstate routes. However, where placed along State Highway maintained routes (i.e., MD, US) they are installed every 2/10 mile County Line to County Line along a route and are usually installed at the discretion of the District Engineer for maintenance and incident management purposes.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*No documented information, however, we can provide names and phone numbers of persons familiar.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also (3). If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) Yes. (2) Yes. (3) 2/10 mile.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*No response.*

## STATE OF NORTH CAROLINA
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*No.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*No response.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways. If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also. If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*No response.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*No response.*

**STATE OF TENNESSEE**
**RESPONSE TO MILEPOST SIGN SURVEY**

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. On all state routes (Primary & Secondary Routes).*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*Used as reference for most all highway features. Used to reference accidents by Department of Safety. Requires ongoing maintenance.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs (1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways (2). If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on (3). If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also. If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) No. (Non-interstate). (2) No. (3) Do not use 6 x 9.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*They are the primary reference system for highway features, data, accidents, etc & will be integrated into our GIS plan.*

## STATE OF TEXAS
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*Yes. We do not use the type of signs or a marker for every mile, as is done on interstate routes; however, we have a statewide system of markers on non-interstate routes. The signs are generally at two-mile intervals but can be less. The sign does not mark the location of a specific mile point, but it indicates the location of the sign, to the nearest mile, from the origin of the route. The signs were developed to allow TxDOT personnel to locate roadway data in the data files. A handout entitled "Texas Reference Marker Official Highway Key" was provided with their response.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No. No studies have been conducted on the use of the milepost signs on non-interstate highways. Since motorists were not the focus of the effort to establish a reference marker system, no public meetings were held. A number of workshops with District personnel were held to solicit their input into the creation of the system.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*The benefit of the system (and the reason for its creation) is the ability to accurately locate information in the field and in the data files.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways. If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also. If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs (1).

*(1) The reference marker signs are approximately four inches by ten inches, and they are erected vertically on the post of existing route guide signs. They generally are not independently mounted. They are generally two miles apart but can be closer when needed in congested areas.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*No specific recommendations. If it is done, it should, at a minimum, benefit the department and possibly the travelling public.*

## STATE OF WEST VIRGINIA
## RESPONSE TO MILEPOST SIGN SURVEY

Does your state use milepost signs on any of your non-interstate highways? If yes, when (i.e., for what highways, or under what conditions) does your state use milepost signs on non-interstate highways? If you have written guidelines or a policy on this, please provide a copy.

*No. We do, however, use reference markers at one mile intervals on all US and WV numbered routes as well as many of our local service routes.*

Have you ever conducted a study on the installation of milepost signs on non-interstate highways to determine the benefits and disadvantages relative to the motorists and your maintenance personnel? If you have, please provide a copy of your studies if possible. If copies of your studies are not available, please indicate your findings below.

*No.*

If you use milepost signs on your non-interstate highways and studies were not accomplished, please provide any information related to benefits and disadvantages regarding their installation.

*Depending on the direction the highway travels, we begin with 0 reference marker on the eastern or southern boundary of all US or WV highways entering every county. Reference markers are posted in ascending order in one mile increments until the next county boundary is reached. The final reference marker at the county line will have 0 on top to begin the next county and the end point for the county you are about to leave, i.e. 29+75, meaning the county you just transversed was 29¾ miles from point of entry to point of exit. Reference markers are installed primarily for the benefit of our maintenance employees.*

If you use milepost signs on your non-interstate highways, do you follow Section 2D-46 for design and installation of the milepost signs(1)? If you follow Section 2D-46, please indicate whether you use the smaller 6 x 9-inch mileposts without the legend MILE on any of your highways(2). If you use 6 x 9 inch milepost markers and they are not used on all highways indicated in your response to Question #1, please indicate which of those type highways they are used on. If you use markers to identify other than mile increments (e.g. tenth or half miles), please indicate that also(3). If you do not follow Section 2D-46, please provide us with information related to the design and installation of the signs.

*(1) No. Our reference markers consist of a 6" black numeral on a 4" x 8" white reflective plate. For 2 digit numerals, one plate is stacked above the other on a U-Channel post. (2) No. (3) 1 Mile.*

Please provide any other information you feel would be helpful in us determining whether to install milepost signs on our non-interstate highways.

*Our maintenance personnel consider mile posts on Interstates and reference markers on other routes invaluable. All construction and maintenance projects are located by county, route and milepost or reference marker.*