

January 24, 2017

Mr. Gregory G, Nadeau  
Administrator, Federal Highway Administration  
U.S. Department of Transportation  
1200 New Jersey Avenue, SE  
Washington, DC 20590

RE: FHWA Docket No. FHWA-2016-0036

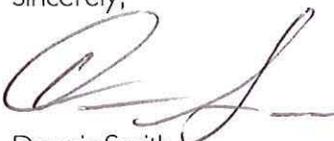
Dear Mr. Nadeau:

On December 16, 2016, the Federal Highway Administration issued a Request for Information on the use and related research findings for the Clearview Font style on road signs. This letter includes the comments by the Maricopa Association of Governments (MAG), references a research study sponsored by MAG on driving performance related to the Clearview font, and highlights some of the impacts of the rescission of the 2004 Interim Approval provided for Clearview font for Positive Contrast Legends on Guide Signs. We strongly encourage the Federal Highway Administration to support the use of Clearview font.

MAG is the Metropolitan Planning Organization for the Phoenix, Arizona, metropolitan region. Our region has a population of 4.5 million, and consists of 27 cities and towns, three Native American Indian Communities, Maricopa County and portions of Pinal County. Residents aged 65 years or more make up 12 percent of our population. The shift in demographics observed nationally is more pronounced in our region as we are a popular retirement destination.

It is well documented that many older residents, both in our region and across the country, desire to keep driving longer than in past generations. A MAG survey indicates that 89 percent of older adults choose to drive as their primary mode of transportation. For most of us, the basic human function of eyesight, particularly to support nighttime driving, will continue to degrade with advancing age. Having identified the inevitability that the convergence of these trends could lead to road safety concerns for our older residents, we were encouraged when we first learned about the Clearview font in 2005. Since then, MAG has both approved and promoted the use of Clearview font as a basic road safety improvement. We feel that the elimination of the use of the Clearview font for street name signs at urban intersections and for advance street name signs may eliminate some safety benefits. Please contact me or Sarath Joshua at the MAG Office at 602-254-6300 if you have questions.

Sincerely,



Dennis Smith  
Executive Director

50 Years of Serving the Region

Agency Name: Maricopa Association of Governments (MAG)

FHWA Docket Number: FHWA–2016–0036

MAG Response to FHWA Request for Information related to the use of Clearview Font style on road signs and the impact of the rescission of FHWA's interim approval of Clearview Font

## Background

The interim approval for Clearview Font in 2004 by the Federal Highway Administration (FHWA) was both preceded and followed by a number of technical papers by prominent professionals on the benefits of Clearview Font. This includes the *Operations and Maintenance Maximizing Legibility of Unlit Freeway Guide Signs with Clearview Font and Combinations of Retroreflective Sheeting Materials*, which received the D. Grant Mickle Award for Outstanding Paper at the 2005 Transportation Research Board (TRB) Annual Meeting. This paper was later published in Transportation Research Record (TRR) 1918.

In 2006, the Texas Transportation Institute stated in a research report that: "The benefits of the positive contrast version of Clearview were thoroughly documented through a series of research projects spanning approximately a decade." - Evaluation of the Clearview Font for Negative Contrast Traffic Signs, 2006 - <http://tti.tamu.edu/documents/0-4984-1.pdf>

## Support for Clearview Font Usage as a Road Safety Measure

A number of studies prior to 2005 referred to improved nighttime road sign legibility and suggested the use of the Clearview font for road signs to help older drivers. In 2005, a discussion at MAG that explored solutions related to mobility and older residents in the region identified the use of Clearview font for street name signs as a potential road safety project. In 2007, the MAG Transportation Safety Committee and the MAG Elder Mobility Stakeholders Group formally recommended that MAG initiate a project to implement Clearview font on street name signs. The project would be a regional road safety initiative to improve the road environment for all road users and particularly older drivers. This project received enthusiastic support from all local communities.

## MAG Project to Implement Clearview Font

A safety project funded by MAG distributed a total of \$300,000 in non-federal funds to local agencies for installing new street name signs at intersections, as well as advance street name signs. The project installed street name signs designed for better legibility, based on the *FHWA Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians*. The types of signs installed by the project included: street name signs at intersections (including internally illuminated signs) and advance street name signs, with most of them using larger Clearview font. The project also provided participating local agencies that had sign fabrication shops with the required software for producing

signs with Clearview font. A total of 15 local jurisdictions in the MAG region participated in the project. Project funds were distributed based on the percentage of older residents in each jurisdiction. Approximately 2,700 signs were installed by the project across the entire region. Since this project was completed in the 2007/2008 timeframe, nearly all local agencies gradually moved toward using Clearview font for street name signs, as an adoption of a best practice.

## Research Study to Quantify Mobility and Safety Impacts of Clearview Font

In 2009, MAG hired researchers at Arizona State University (ASU) to conduct a study to evaluate potential safety benefits to road users from new Clearview font signs. The study was carried out by a research team led by Dr. Robert Gray, Professor of Human Systems Engineering at Arizona State University. The primary goal of this study was to investigate the effect of Clearview font signs on safety and mobility in a simulated driving and navigation environment.

The objective of the study was to develop a sound analytical approach to quantify the mobility and safety impacts of the new signs with Clearview font installed at various intersections across the MAG region. Although Clearview font had been shown to improve simple detection and legibility, no studies had been conducted at the time to directly measure the effect of Clearview font on driving performance. Improved legibility is not always predictive of performance in more complex driving tasks and of driving safety in general (Wood & Owens, 2005).



In this study, 36 drivers ranging in age from 56-70 years were asked to navigate through a virtual city in a driving simulator. Their driving performance was compared for signs with Clearview and Standard fonts, and for overhead and advance intersection signs under simulated daytime and nighttime driving conditions. Consistent with similar previous research, the study found that the distance at which drivers could accurately recognize street names was consistently and significantly greater for Clearview font signs. The increase in sign recognition distance associated with Clearview font ranged between eight to 34 feet across all drivers in this study with an average increase of 14 feet over Standard font.

Expanding on previous research in this area, the ASU study team also found that the usage of the Clearview font was associated with consistent and statistically significant improvements in several measures of driving safety. *With Clearview signs, drivers in the study's simulation made 52 percent fewer turn errors, changed lanes for an upcoming left turn at a significantly greater distance (by 5.2 feet on average) from the intersection (indicative of better anticipation and planning) and drove at a speed closer to the designated speed limit (change in speed of 3.2 mph on average). The study also observed fewer collisions with other vehicles when Clearview signs were used. All of these variables are indicators of improved safety and mobility for older adult drivers.*

Interestingly, drivers' subjective evaluations of the effectiveness of Clearview signs did not match perfectly with the results for driving performance. Clearview signs were rated as significantly easier to read (ratings were five percent higher on average) but the magnitude of the effect was much smaller than the effect sizes for the driving performance variables and for sign recognition distance.

Furthermore, when asked to make a forced choice between the two signs, 33 percent of the drivers in the study indicated that the signs with Standard font were easier to read than signs with Clearview font. *This occurred even though 100 percent of the participants in the MAG study actually drove more safely in the simulated environment with Clearview signs. Therefore, the measured improvements observed in driving safety are much greater than one might predict from making a subjective judgment about the signs.* This study indicated that this will be an important point to emphasize when local agencies need to justify funding to support Clearview sign adoption.

*Based on the significant improvements in driving safety and mobility identified, the study recommended that the Maricopa Association of Governments continue to encourage local agencies to adopt the Clearview font for street name signs.* As a direct result of the MAG funded project that helped install 2,700 new signs, a number of local agencies have adopted the use Clearview font on all new street name signs.

A copy of the final report on this study is available at:

[http://azmag.gov/Documents/EoS\\_2011-08-18\\_Evaluation-of-the-MAG-Safety-and-Elderly-Mobility-Sign-Project\\_Final-Report-Sept-2010.pdf](http://azmag.gov/Documents/EoS_2011-08-18_Evaluation-of-the-MAG-Safety-and-Elderly-Mobility-Sign-Project_Final-Report-Sept-2010.pdf)

Prior to the FHWA announcement in January 2016, nearly all local agencies in the MAG region had moved toward the use of Clearview font, particularly for their street name signs. Local agencies were initially puzzled by this FHWA announcement to eliminate a practice that provides safety benefits in favor of what appears to be a desire for uniformity in font type.

### Feedback from Local Agencies on Clearview Font Usage

MAG recently asked its member agencies for their feedback and comments on the rescission of Clearview font signs. It appears that local agencies do not see any impact on their agency budget or processes due to this FHWA action. A number of agencies stated that they do not see any significant benefit nor additional costs to the agency due to this change. MAG did receive a few comments that questioned the wisdom of this change. Here are those comments:

*"Our agency installed Clearview font street name signs in Sun City (the original 55+ Active Adult Community in the nation) a few years ago as part of the MAG funded project. This was very well received and we are not sure why there is a decision to move away from that use. It provides for easier reading as compared to other fonts.*

*"It was always our understanding that Clearview Font was intended for use on street name signs and customized text-only guide and informational signs. How a minority of agencies got into trouble was when they started trying to use Clearview on standard signs, e.g. Stop signs, or One-Way signs, where studies have shown they*

*have poor legibility. FHWA threw the baby out with the bath water by rescinding all use of Clearview fonts.*

*“Clearview has always been shown to have greater legibility when used with light colored characters on a dark background or positive contrast. FHWA should have warned against the use of Clearview on signs with dark colored characters on light background or negative contrast signs. Because most drivers cannot (at least consciously) distinguish between Helvetica, Highway Gothic, and Clearview fonts, FHWA should not be mandating one particular font for 100 percent of all signs in the US.”*

## Conclusion

The research study conducted for MAG by Arizona State University researchers has clearly validated the use of Clearview font, as approved originally, as a road safety improvement for street name signs in an urban environment with an increasing population of older drivers. However, MAG agrees that this may not be applicable to all highway signs or rural roads, which appear to be the focus of past research cited by FHWA.

MAG is requesting that FHWA review all relevant past studies and, if necessary, perform a new study to specifically establish if any significant safety benefit could be derived from using Clearview font in the narrow but significant urban street application, for street name signs in positive contrast color orientation with a light legend on darker backgrounds.

Thank you for considering our comments and for your past support of the Clearview font.