

/s/ ELECTRONIC EMAIL /s/

INFORMATION: MUTCD – Interim Approval for Use
of Clearview Font for Positive Contrast Legends
on Guide Signs

September 2, 2004

Regina S. McElroy **for /s/ Vince P. Pearce**
Director, Office of Transportation
Operations

HOTO-1

Division Administrators
Resource Center Directors
Federal Lands Highway Division Offices

Purpose: The purpose of this memorandum is to issue an Interim Approval for the optional use of the Clearview font for positive contrast legends on guide signs

Research on the Clearview font: The Clearview font was developed through a decade of research starting in the early 1990s. The goal of the Clearview font was to increase legibility and reduce halation of highway sign legends in comparison to that of Standard Highway Signs (SHS) Alphabets (Highway Gothic font). This research development effort resulted in final design of Clearview font letters in 2003.

Clearview font letters were developed specifically to address four issues with the legibility of SHS alphabets. They are:

- Upgrade highway signing word messages to accommodate the needs of older drivers without increasing the capital letter height and the overall length and height of word messages and the signs themselves,
- Improve word pattern recognition by using mixed case words of the same size composed of lower case letters designed for highway sign applications,
- Improve the speed and accuracy of destination recognition and the legibility distance of word messages, and
- Control or minimize the halation of words displayed on high brightness retroreflective materials for drivers with reduced contrast sensitivity.

The legibility of positive contrast Clearview legends for guide signs has been researched by the Pennsylvania Transportation Institute (PTI) and the Texas Transportation Institute (TTI). This research information can be accessed via the MUTCD website (<http://mutcd.fhwa.dot.gov>)

Key conclusions of the research are:

- 16 percent improvement in recognition by older drivers for equal size footprint for SHS Alphabet Series D letters and Clearview-Condensed with little change in overall sign size – two PTI studies (Garvey, P.M., M.T. Pietrucha, and D. Meeker. Effects of Font and Capitalization on Legibility of Guide Signs. In *Transportation Research Record 1605*, TRB, National Research Council, Washington, DC, 1997, pp. 73-79).
- 12 percent increase in legibility for overhead and shoulder-mounted guide signs using ASTM D4956 microprismatic sheeting Types VII, VIII, or IX – TTI study. (Gene Hawkins and Paul Carlson FHWA/TX-02/4049-1 Evaluation of Clearview Alphabet with Microprismatic Retroreflective Sheetings, 2001).

The initial research on Clearview was conducted at the Pennsylvania Transportation Institute. In two PTI studies intended for conventional road guide signs, use of an early version of the Clearview Bold improved nighttime sign reading distance by up to 16 percent when compared with the E-modified road sign typeface. For drivers traveling at 45 mph, that legibility enhancement could easily translate into 80 extra feet of reading distance, or a substantial 1.2 seconds of additional reading time. On a road with a posted speed of 45 mph, a driver is traveling at 66 feet per second. With Clearview-Bold, the desired destination legend is recognized 1.3 seconds earlier (84 feet) and with greater accuracy, giving the driver significantly more time to react to the information displayed.

By allowing a viewer to read the unique footprint of the word when displayed in upper/lowercase letters, there is an increase in accuracy, viewing distance, and reaction time. The research revealed that when the upper/lowercase Clearview-Condensed (condensed) is compared to the most commonly used all-capital-letter typeface (FHWA Series D), there was a 14 percent increase in recognition when viewed by older drivers at night, with no loss of legibility. When the size of Clearview-Condensed was increased by 12 percent to equal the overall footprint of the uppercase display, the recognition gain doubled to 29 percent with little change in overall sign size.

The first Texas Transportation Institute (TTI) research study compared full-scale freeway guide signs using Clearview-Bold and E-modified alphabets. Pilot testing at TTI indicated that there were significant differences in the legibility of full-scale signs as compared to the smaller signs tested at PTI, when viewed at design legibility distances (40 feet per inch). The first upgrade to Clearview involved refinement of the font prior to the testing at TTI. The testing of Clearview by TTI compared the revised typeface to Series E-modified.

The researchers evaluated shoulder and overhead mounted highway guide signs on Type III retroreflective sheeting. In this study, Clearview performed no worse than, and in some cases outperformed, Series E-modified. TTI then performed a second study of the two fonts, this time using microprismatic retroreflective sheeting. The results, as presented above, demonstrated an 11 to 12 percent increase in the legibility distance for guide signs using Clearview.

Both the Pennsylvania and Texas Departments of Transportation have reviewed the research on the use of Clearview font for guide signs and have requested that Clearview font be allowed to be used for positive contrast guide signs.

Meeker & Associates Inc., have filed a disclaimer with the US Patent and Trademark Office disclaiming exclusive rights in the term "Clearview." The effect of this disclaimer will be to allow any jurisdiction to use the term "Clearview" by itself in connection with a typeface or font.

Conditions of Interim Approval: Spacing of Clearview font shall follow the spacing tables for Clearview, and not SHS E-modified. This includes the use of the Clearview 5-W(R) spacing tables for overhead conditions that may not accommodate a Clearview 5-W legend in replacement of existing E-modified legends. Action word messages and cardinal directions shall remain in all upper case letters and the first upper case letter of a cardinal direction shall be 10 percent greater in height for conventional road guide signs as per Table 2E.1 through Table 2E.4 of the 2003 MUTCD for expressway/freeway guide signs. The Clearview font should not be used on negative contrast signs until research demonstrates the effectiveness.

Interim Approval for the use of Clearview font for positive contrast legend on guide signs will be granted to any jurisdiction that submits a written request to the Director of the FHWA Office of Transportation Operations. The request must state the location(s) where the devices will be used and the jurisdiction's agreement to comply with item F at the bottom of page 1A-10 of the 2003 MUTCD, part of Section 1A.10. A State may request Interim Approval for all jurisdictions in that State.

A general comparison guide for application to SHS Standard Alphabet letters is as follows:

SHS Standard Alphabet	Clearview "W" series
Series B	Clearview 1-W
Series C	Clearview 2-W
Series D	Clearview 3-W
Series E	Clearview 4-W
Series E-Modified	Clearview 5-W and Clearview 5-W-R*
Series F	Clearview 6-W

* Clearview 5-W-R has tighter letterspace than 5-W and is designed for replacement of overhead guide signs in which the 5-W is too wide for the specific application. The use of Clearview font for positive contrast guide signs provides increased legibility of highway sign word messages at the same cost of SHS Standard Alphabet letters. A research study by FHWA published in 1994 recommended a 20 percent increase in letter height of SHS Alphabets for highway signs in order to accommodate the viewing distance and reaction time requirements of older drivers. The use of the Clearview font will help in achieving this increase in sign visibility. Therefore, the FHWA is issuing Interim Approval for Clearview so that this application may be used by jurisdictions that wish to do so pending the rulemaking.

Any questions concerning this Interim Approval should be directed to Mr. Fred Ranck at fred.ranck@fhwa.dot.gov or by telephone at 708-283-3545.

FHWA:HOTO-1:FRanck/EHuckaby:69064:8-31-04

cc: HOTO-1 HOTO-1(EHuckaby/FRanck/LLBrown)

Mr. Martin Knopp, HRC Mr. Bob Garrett, NCUTCD

Mr. Roger Wentz, ATSSA Mr. James Barron, ATSSA

Robin Fields, HCC-40 Mr. Ken Kobetsky, AASHTO

Mr. Art Breneman, PennDOT Mr. Dan Van Gilder, HFTS-15

Chron 3408 Reader 3408

DF(Interim Approvals)

M:\MUTCD\INTERIM APPROVALS\IA-5 Clearview font\083004Interim Appr#8E1-3.doc