A Study of Color Laws and Guidelines in Traffic and Road Facilities

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ABSTRACT

The traffic safety color is managed and operates under the law due to the safety issues that are directly related to the life in busy urban environment. There are many traffic and road facilities, but they are each and all managed in various departments which is concerned about the lack of coordination among it. Therefore, the purpose of this study is to integrate and verify the integration of color laws and guidelines that apply to traffic and road facilities. Also it comprehends the relationship of colors specified in each element and suggests future findings by analyzing the status and problems.

KEYWORDS: traffic safety color, traffic regulations, color guidelines

INTRODUCTION

The traffic safety color is managed and operates under the law due to the safety issues that are directly related to the life in busy urban environment. Safety color is social commitment to perceive the meaning of a hazardous situation which to induce immediate response. For that it is important to deliver the consistent information through relevant laws and guidelines. Unlike the industrial and daily safety colors, the boundaries and methods of traffic safety colors are broadly applied in overall traffic environment, correlating with it's social and industrial needs and developments. Unlike the industrial and daily safety colors, the boundaries and methods of traffic safety colors are broadly applied in traffic environment, correlating with it's social and industrial needs. These associated guidelines and laws also have increased, but various departments manages each elements which in result, needs an integrated verification.

EXPERIMENTAL

Facilities in the road environment can be mainly categorized as road facilities, road safety facilities, traffic safety facilities, and peripheral facilities. These are categories in depth with facilities with no color guidelines, facilities with color guidelines but not highly utilized and facilities with color guidelines highly utilized. The research is based on the guidelines that includes color and highly utilized.

Table 1. Classifying guidelines on transport safety color

Facility Category	Guideline Act	Department	Content
Pavement	Pavement Installation and Management Guideline, 2011	Ministry of Land, Infrastructure and Transport	The pavement packaging considers aesthetic aspects and examines feasibility, durability, and economics.
Bicycle road	Bicycle Facility Installation and Management	Ministry of Land, Infrastructure	Bicycle path's pavement color is defined as the color of the. The color applied to the conflict zone is indicated by dark red

	Guideline, 2015	and Transport, Ministry of Government Administration and Home Affairs	(Munsell 5/4).
Structure painting and line signage	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Use black and yellow. Yellow has been defined as the same yellow in the chromaticity standards on the road sign.
Attention structure	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Use orange on the body color of the attention structure, however, if necessary, it can be differ to it's environment
Crash barrier	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	For the attention purpose use white or gray. However zinc plating itself is acceptable. If the harmony with it's surrounding environment is need, the natural color of the wood, chestnut, etc is also possible. The color of the handrails and walkway fence can be determined to it's surrounding environment.
Skid proof pavement	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Using the road color itself is the principle. However, if to consider the risk and attention of the condition, red can be used without harming the road environment.
Speed bump	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Use white(37875) and yellow(asphalt 37878, cement 26539) for it's recognition. Also adapt to road marking color of traffic safety facility and Korea industrial standard(KS M 5322, KS M 5333).
Road reflecting mirror	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Orange is the principle color of the road reflecting mirror's body. However, the pillar can be used as coated galvanized iron itself.
Disable safety facility (Braille block)	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Dark yellow is the principle color. However, different colours may be used to contrast with it's surrounding floor color depending on it's circumstances.
Jaywalk prohibit facility	Road Safety Facility Installation and Management Guideline, 2014	Ministry of Land, Infrastructure and Transport	Achromatic color is the principle color for the columns in order not to disturb the driver's attention. Dark yellow is the principle color on the attached reflecting film however, it may be determined to it's surrounding environments.
Road surface marking	Road Traffic Regulation and Enforcement, 2015	Ministry of Government Administration and Home Affairs	Dark yellow, red, blue and blank is the principle color and use Korea industrial standard (KS A 0062, KS M 6080). (Dark red:7.5R 3/10, yellow orange:10YR 7/14, bright blue:10B 6/8, blank:N9.25)

	Traffic Marking Installation and Management Guideline, 2012	National Police Agency	The color of the road markings is classified into blank, yellow, and blue of the Korean Industrial Standards (KS M 6080:2011). The chromaticity coordinates of the dried road markings are defined as the x,y chromaticity coordinates of the International Commission on Illumination (CIE) standard system.
Road sign	Road Sign Regulation and Enforcement, 2016	Ministry of Land, Infrastructure and Transport	The background color is green, letter or symbols are blank and column is dark gray. The specification of the reflective surface is based on the chromaticity coordinates of each color.
Address Sign	Address Sign Regulation, 2014	Ministry of Government Administration and Home Affairs	Use navy for background, white for letters under the KS A 0062, KS A 0011, KS A 0066, KS A 3507. Navy:5PB 2/8, white:N9, brown:5YR 2/4, orange:10YR 7/14, green:10GY 2/2
Traffic safety sign	Road Traffic Regulation and Enforcement, 2015	Ministry of Government Administration and Home Affairs	Use black, blank, blue, red, yellow under the Korean Industrial Standards's KS A 0062, KS M 6020. Dark red:7.5R 3/10, yellow orange:10YR 7/14, dark green:2.5G, dark navy:7.5PB 2/2, blank:N 9.25, black:N 1.5
	Road Safety Sign Installation and Management Guideline, 2011	National Police Agency	Warning signs : dark yellow, red, black. Regulatory markers : blank, red, black. Indication signs : blue, blank. Assistance signs : blank, black
Children protection zone sign	Children/Senior/Dis-able Protection Zone Guideline, 2015	National Security Agency	The individual traffic safety signs on the integrated sign follow the colors and formats in Appendix 6 of the Road Traffic Regulation and Enforcement.
Automat-ic control sign	Children/Senior/Dis-able Protection Zone Guideline, 2015	National Security Agency	Use dark yellow(color no. 13538) for the background, black(color no. 17038) for frames, letters and symbols.
Bollard	Rules on the Enforcement of Transportation Convenience Law, 2014	Ministry of Land, Infrastructure and Transport	Install by using bright reflective paints etc for it's highly recognition.
Traffic signal controller	Standard Specification for Traffic Signal Controller, 2010	National Police Agency	Use Grayish color (C0 M0 Y0 K70, C0 M0 Y0 K5) as a base color, bluish or yellowish color (C100 M75 Y8 K0, C100 M100 Y0 K0, C0 M40 Y100 K0) as an assistance color for principle use.
Outdoor advertise ment	Act on the Enforcement of Outdoor Advertising, 2016	Presidential decree	Section16 (Method of marking standing signs) No electricity is allowed and colors such as green, blue that can be confused with other road signs or traffic safety signs can not be

			used.

RESULTS AND DISCUSSION

Guideline conditions comprehends, 3 main problems. First, the language of the terms. Terms such as 'considering the environment' is a vague language that may degrade the authority and reliability of the guidelines. Also uses mixture of terms such as, red, dark red or white, blank. Furthermore the term blank and green is restricted terms. Second, it is using inconsistent color codes such as chromaticity coordinates, Munsell and paint code which should be categorized in organized depending on it's facility's character. Third, the color itself is contradictory to the wrong regulation. Especially in the road surface marking guidelines, the color itself regulated under Ministry of Government Administration and Home Affairs and National Police Agency differs to each other. Also color that is not using is included in The Enforcement Decree of the Road Traffic Act Appendix 6.

CONCLUSION

The problem with the traffic safety colors are that each guidelines are considered individually, not considering different facilities that are distributed in an environment This not only unable to maintain the overall harmony of the environment but enforcing without exact implementation of colors. Each guideline emphasizes the hierarchy colors in it's regulations. However managing guides individuality depending on it's department, will only result abuse of high chroma colors under the term of safety colors.

We continuously repeat the color perception process in the road environment and traffic safety color operates as safety, symbolic and identification functions. It is also an element operating as universal validity to successfully communicate between the traffic environment and the user. However in the guidelines only the engineering aspects in installation is emphasized and it delivers the difficulty of relating the characteristics of urban and color's function effectively. Therefore understanding the conflict between the law which has a characteristic of the absolute standards and characteristic of color which is relative subject in perceiving, the research has to be continuously developed through various analyses and studying the other worlds cases.

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