



California Traffic Control Devices Committee (CTCDC) Agenda Item Report



Meeting Date: August 6, 2026 Item Number: 25-15	From: Tasha Higgins, Caltrans
Sponsored By: Devang Vora, Caltrans	Presented By: Tasha Higgins, Caltrans
Description: LA28 Experiment Update	

Recommendation:

None.

Background:

On June 24, 2025, the California Department of Transportation (Caltrans) submitted the LA28 experiment request to the Federal Highway Administration (FHWA) Headquarters for approval. This experiment request was for use of light blue as a background color for the "LA28" message, as a unique identifier to draw attention to GRN sign plaques and panels, aiding recognition and comprehension of the dedicated lanes on GRN roadways to facilitate travel during the LA28 Games. Caltrans received and addressed FHWA comments on the experiment request, then submitted a revised LA28 experiment request on August 5, 2025. FHWA approval for the experiment request was received on August 13, 2025. A Semi Annual Report was submitted to FHWA May, 4, 2026 (see Attachment B).

Tasha Higgins, 2028 Games Caltrans Liaison from District 7, will share the changes and progress since the experiment request approval.

Attachments:

Attachment A - LA28 Experiment Update PowerPoint

Attachment B - LA28 Experiment Semi Annual Report #1 - April 2026

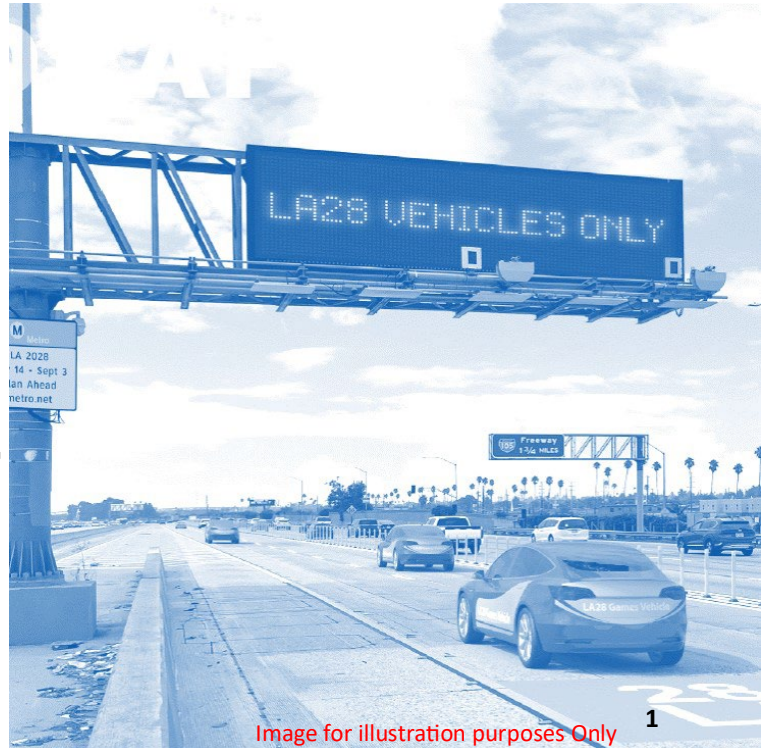
ATTACHMENT A

Attachment A - LA28 Experiment Update PowerPoint



OLYMPIC & PARALYMPIC GAMES UPDATE

CTCDC MEETING
AUGUST 6, 2026



1



708 days

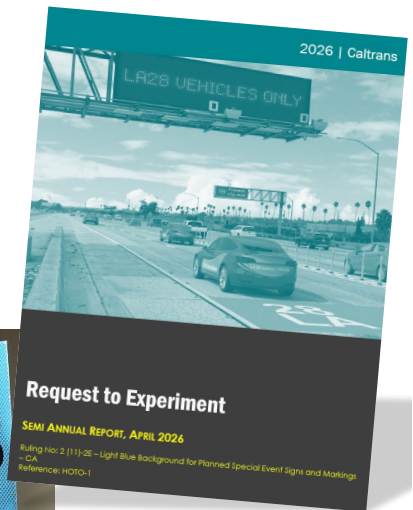
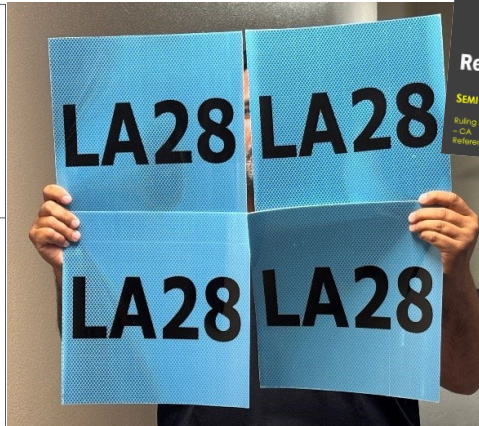
2



MUTCD EXPERIMENT

Request to Experiment

- MUTCD 11th Edition
- Semi Annual Report #1 - April 2026

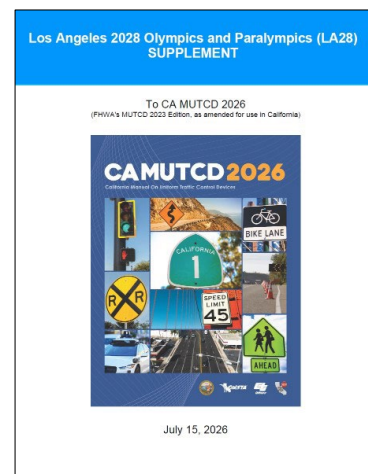


3



SUPPLEMENT TO CA MUTCD

- Now based on CA MUTCD 2026
- Supports the latest LA28 Experiment updates
- Accepted by FHWA 7/15/2026



4

ATTACHMENT B



California Traffic Control Devices Committee (CTCDC)
Agenda Item Report



Attachment B - LA28 Experiment Semi Annual Report #1 - April 2026

See following pages



Request to Experiment

SEMI ANNUAL REPORT, APRIL 2026

Ruling No: 2 (11)-2E – Light Blue Background for Planned Special Event Signs and Markings
– CA
Reference: HOTO-1



THIS PAGE INTENTIONALLY LEFT BLANK



LETTER TO FHWA	4
EXPERIMENT BEFORE THE GAMES.....	5
Experiment No. 1 – Use on existing Signs.....	5
Experiment No. 2 – Light Blue Background Color.....	9
Experiment No. 3 – White or Black message.....	13
Experiment No. 4 – Pavement Markings	16
EXPERIMENT DURING THE GAMES.....	17
ATTACHMENT A - 3M REFLECTIVE GRAPHIC FILM DATA SHEET	18
ATTACHMENT B - 3M LA28 PROJECT UPDATE APRIL 2026.PDF	21

Request to Experiment

Letter To FHWA

May 4, 2026

Matthew Zeller
Federal Highway Administration
California Division
matthew.zeller@dot.gov

Re: Ruling No. 2 (11)-2E – Light Blue Background for Planned Special Event Signs and Markings – CA; Reference: HOTO-1

Dear Mr. Zeller

In reference to your approval of the Request to Experiment, granted on August 13, 2025. The information in this report fulfills the requirement for the period July 2025 – December 2025 and January 2025 – June 2026.

Please receive this report providing status of the experiment.

This REPORT was prepared by:

Tasha Higgins, PE, PMP

Principal Engineer, LA28 Caltrans District 7 Liaison

Timothy Kong, PE

Office of Safety Systems & Devices
Division of Safety Programs

Experiment Before the Games

Experiment No. 1 – Use on existing Signs

Experiment Text	Document Section	Field Test
Use existing signs for this application instead of removing existing signs and installing new or special traffic signs Add “LA28” sign plaque to existing traffic signs	Experiment Scope	To make this work, 3M provided specifications for an adhesive tape (type IV and IX) that could be applied onto existing signs (overlay). Adhesive did a good job sticking to the panel and removing the adhesive left the graffiti layer (type XI panel) intact. This was applied to new Avery Dennison and 3M signs.

Field Test Details:

November 4, 2025 – type IV tape over type XI panel. Type IV reflective file/tape specs were provided by 3M [3M™ Scotchlite™ Reflective Graphic Film IJ5100R](https://www.3m.com/3M/en_US/p/d/b00020897/)
https://www.3m.com/3M/en_US/p/d/b00020897/¹

January 12, 2026 – type IX tape over type XI panel

Issues:

1. Adhesive was applied in the shop and not in the field to test ease of application
2. Adhesive was applied to new signs
3. The first adhesive (type IV), while flexible, did not provide adequate retroreflectivity (Nov 4); The second adhesive did have retroreflectivity, but it would be too rigid to go over existing sign panels.
4. Retroreflectivity/Material Compliance - Based on the parameters we provided, we did not achieve comparable Type XI retroreflectivity for the light blue color using digital film/tape.

¹ Attachment A – 3M Reflective Graphic Film Data Sheet

In order to use graphic film, we would be required to reduce the retroreflectivity required to meet the requirements.

5. Quality Control / Equipment Calibration - It is unclear how we can ensure that the sign manufacturer selected by the Contractor has properly calibrated equipment capable of producing consistent and acceptable output using the 3M cartridge.
6. Installation - Procedures to clean existing signs would need to be used for each sign in the field prior to application; we could not guarantee that this would work on all signs in a safe manner in the field from a maintenance or contractor's vehicle
7. Constructability Concerns - From a construction standpoint, installation may be challenging. Peeling applied film (after more than 6 months) on sign panels approximately 3 feet wide by 6–8 feet tall, at heights of 6–7 feet above ground and adjacent to live traffic, could be inefficient.

Images from test:

November 4, 2025 – type IV tape over type XI panel



January 12, 2026 – type IX tape over type XI panel



Guidance was provided by 3M on printing signs on HP printer (available in Maintenance Shop). The color will change slightly if used on other printers.



How to do traffic signage with HP Latex 700 and HP Latex 800 Printer Series

This document will explain the HP Traffic Signage solution using 3M™ reflective sheeting.

For more information, please access the [HP Large Format Knowledge Center](#)



Conclusion:

Caltrans will not use adhesive overlay over existing signs.

Experiment No. 2 – Light Blue Background Color

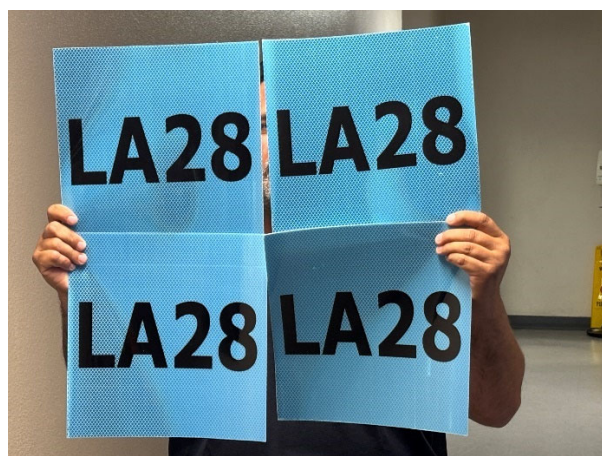
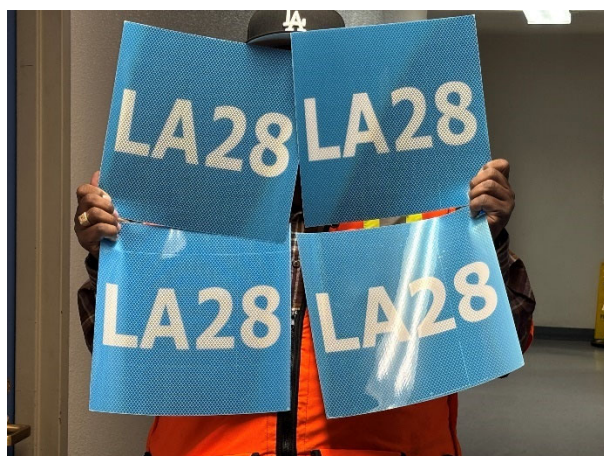
Experiment Text	Document Section	Field Test
Determine the Nighttime color (NTC) specifications limits for retroreflective material of the light blue color can be determined using ASTM test methods included in 23 CFR Part 655	1D – Light Blue Color Code, 1D - Light Blue Color Specifications, and 1D - Color Code for Sign Panel/Plaque Word Message Legend - Black or White 2A – Retro-reflectivity and Illumination	3M provided four samples representative of FHWA day time chromaticity coordinates and measured night time chromaticity coordinates that will be verified for acceptance through this experiment.

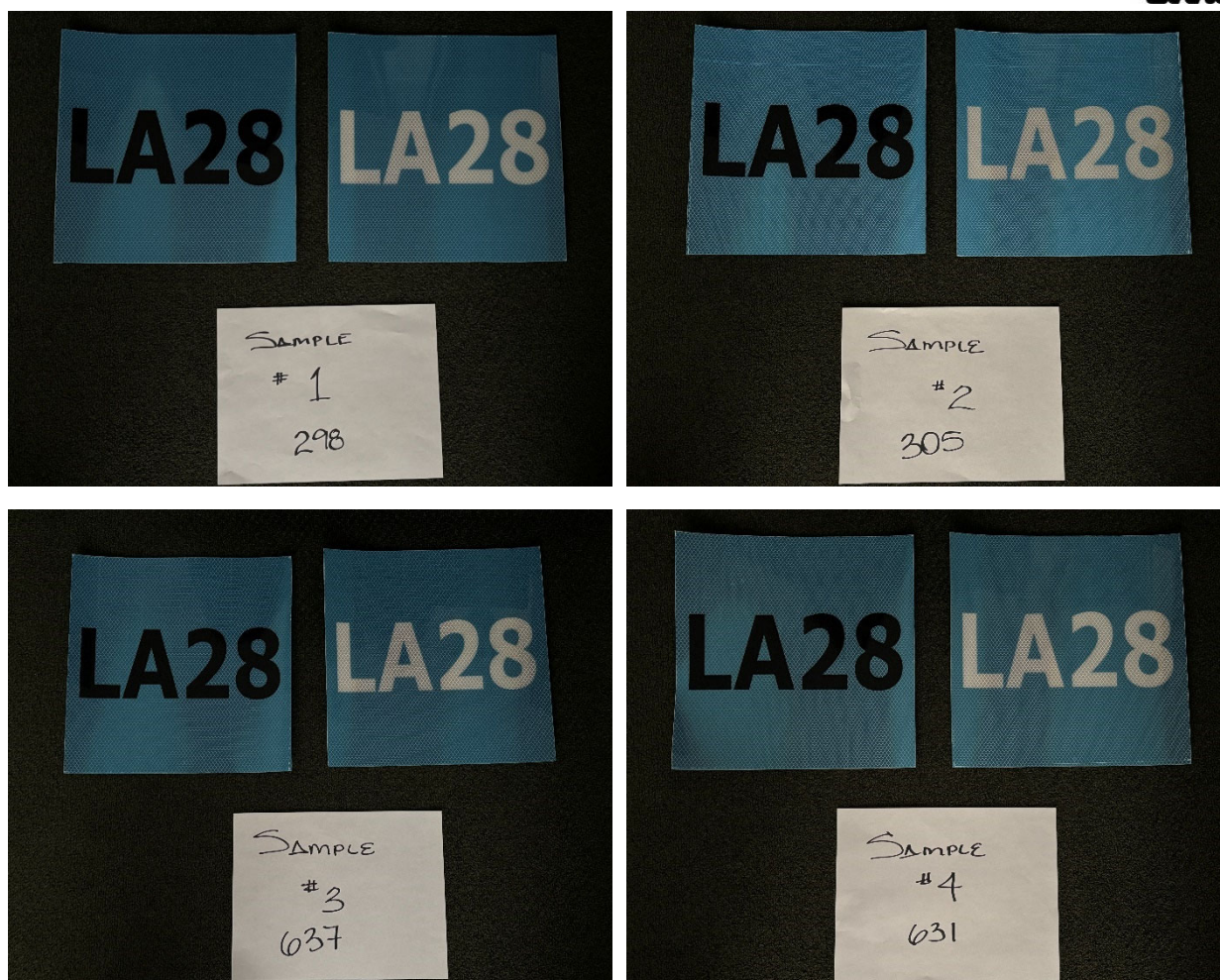
Field Test Details:

April 29, 2026 – Type IX film, with light blue color with the specifications described in the subsequent sections below, also with black and white text.

Issues:

Not Applicable

Images from test:



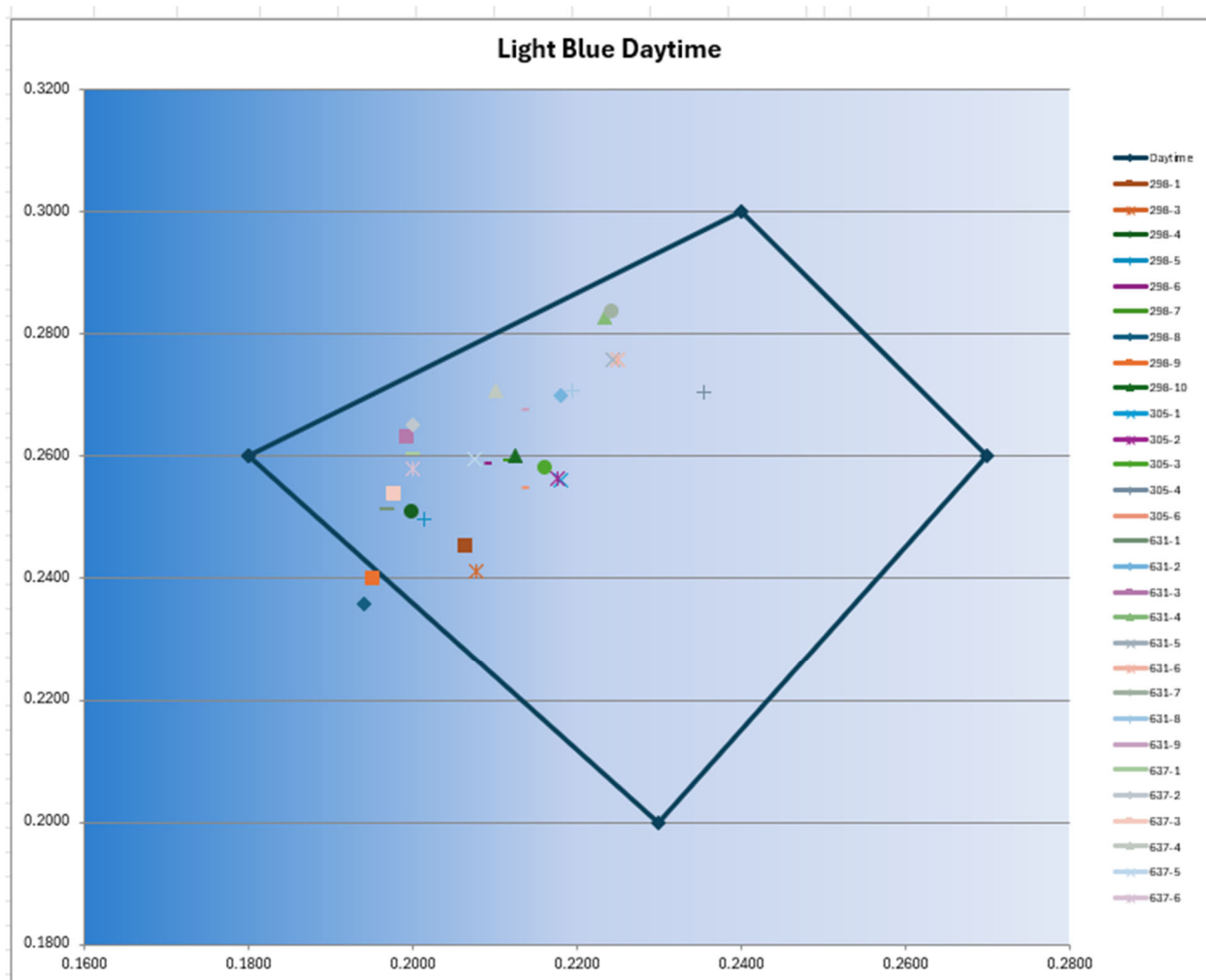
Caltrans and 3M conducted test trial to establish a range of light blue color that will be used in this experiment. The trial test was initiated by developing samples of light blue color using FHWA daytime chromaticity coordinates. These samples were tested to measure their nighttime chromaticity coordinates. The chromaticity coordinates and other specifications associated with these samples are provided below.

Day Time Color (DTC)

3M provided several formulations that meet the Day Time Color Box (DTC) and retroreflectivity requirements for the light blue color².

The following chromaticity coordinates and plot are for DTC:

	1		2		3		4	
	x	y	x	y	x	y	x	y
Day	0.18	0.26	0.24	0.30	0.27	0.26	0.23	0.20



² ATTACHMENT B - 3M LA28 Project Update April 2026 ([3M LA28 Project Update April 2026.pdf](#))

Type XI (4090 DG ³)						
The average of 0° and 90° must meet 70% for ink imparted colors.						
observation angle entrance angle	R'[cd/lx/m²] Enter average of 0° and 90°					
	0.2°		0.5°		1.0°	
	-4°/avg	30°/avg	-4°/avg	30°/avg	-4°/avg	30°/avg
LIGHT BLUE enter formulation	NA	NA	NA	NA	NA	NA
298-6	350.0	114.7	246.0	88.1	88.1	37.7
→ 305-3	457.0	158.0	321.0	113.8	107.5	47.7
631-2	351.0	127.2	247.5	89.6	92.2	38.2
637-5	328.5	120.9	230.0	87.6	83.4	34.9
Minimum Retros ASTM D4956 Type XI Sheeting						
white	580	220	420	150	120	45
yellow	435	165	315	110	90	34
blue	26	22	19	7	5	2

Nighttime Color (DTC)

We need to show the nighttime chromaticity coordinates measured by 3M. These coordinates would be verified using field and lab testing to make sure the light blue color is visible at night with almost same characteristics as during the daytime.

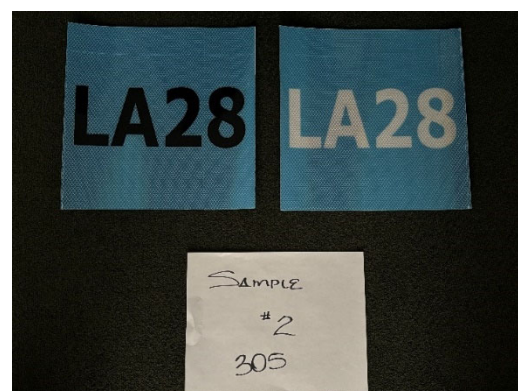
	1		2		3		4	
	x	y	x	y	x	y	x	y
Night	0.35	0.41	0.35	0.42	0.39	0.42	0.39	0.41

Luminance

According to 3M, luminance is not defined for Type XI sheeting, and the color did not meet the range³. 3M therefore recommends a luminance between 10 and 19.

Conclusion:

Given the accelerated schedule for this project, we ask if we could change our approach. By recommendation and in coordination with 3M, we would like to suggest a background and color combination that works for both chromaticity and retro reflectivity requirements outlined in this experiment.



³ ATTCHMENT B - 3M LA28 Project Update April 2026.pdf ([3M LA28 Project Update April 2026.pdf](#))

Experiment No. 3 – White or Black message

Experiment Text	Document Section	Field Test
Determine the Nighttime color (NTC) specifications limits for retroreflective material of the light blue color can be determined using ASTM test methods included in 23 CFR Part 655	1D – Light Blue Color Code, 1D - Light Blue Color Specifications, and 1D - Color Code for Sign Panel/Plaque Word Message Legend - Black or White 2A – Retro-reflectivity and Illumination	Testing the nighttime color in the maintenance shop with headlights

Field Test Details:

- May 1, 2026
- May 3, 2026

Issues:

Not Applicable

Images from test:





Conclusion:

The Experiment will continue.

During initial testing of the messaging (black or white text), District team realizes that while the black text is more visible at night, the contract washes out the blue background.

Caltrans will continue the experiment scientifically with the HQ lab to provide more accurate information.

Experiment No. 4 – Pavement Markings

Experiment Text	Document Section	Field Test
Light blue color can be used as a background color for the LA28 white color legend pavement marking. Black can be used as a contrasting color to enhance light blue background color or the white legend color (if used without any background) but will not be used for the pavement marking itself.	1D – Color Code for Pavement Marking Word Message Legend – White 3A – Standardization of Application, and Color and 3H – Light Blue Colored Pavement for GRN Lanes	N/A

Field Test Details:

Not Applicable

Issues:

Not Applicable

Images from test:

Not Applicable

Conclusion:

Under the advisement of the professional engineer, Caltrans will not pursue light blue background for pavement markings. The LA28 pavement markings will be white color legend. This part of the experiment is concluded.

Experiment During the Games

As stated in our experiment, Caltrans will measure the success of the experiment in several ways, both during and after the Games. Although the exact strategies are yet to be finalized, the strategies and observations will be comprehensive, both quantitatively and qualitatively and will assess the success of the use of the light blue background on the facility.

One or all, of the following methods will help us evaluate the effectiveness of the experiment:

Comprehension and Feedback Surveys: This survey will be similar to the current regional surveys conducted by SCAG for the LA28 Games. SCAG sent surveys and is conducting regional summits for freight and passengers to ensure knowledge and mitigate traffic for the LA28 Games. The surveys will be targeted surveys during and after the Games to collect usage, visibility, comprehension, and clarity of messages. Caltrans and SCAG have plans to use Artificial Intelligence technology for signs data collection. In SCAG's TDM Plan, Caltrans will also ensure the new signage and markings are included as part of the advanced work and communications plan for the region and public outreach.

Games Family and Permitted Vehicle Driver Feedback: LA28 will issue permitted decals for use of the GRN and will potentially track usage. LA28 is expecting to permit over 60,000 vehicles. Recently a trailer bill, Senate Bill 128, was passed on June 27, 2025, authorizing the use of the Games lanes for specially permitted vehicles. Caltrans, in collaboration with LA28, will create a targeted group to survey drivers (e.g. passenger vehicles, coach buses, vans, etc.). Caltrans will survey this target group of users to understand their usage and experience and readability of the signs and markings of this experiment.

Public Sector Agency Surveys: In collaboration with local agencies and law enforcement, Caltrans has been working closely with transit agencies, the Los Angeles Police Department, the County Sheriff and partner agency, the California Highway Patrol. Caltrans will survey law enforcement and transit operators before and during the games to seek legibility of the signs and implementation. The survey will assess effectiveness of sign placement, visibility, and reflect-ability of striping and pavement markings. Caltrans will also collect incident response and ticketing information in areas of usage.



ATTACHMENT A

Regulatory Data Sheet

Copyright, 2025, 3M Company.

All rights reserved. Copying and/or downloading of this information for the purpose of properly utilizing 3M products is allowed provided that: (1) the information is copied in full with no changes unless prior written agreement is obtained from 3M, and (2) neither the copy nor the original is resold or otherwise distributed with the intention of earning a profit thereon.

This Regulatory Data Sheet is provided as a courtesy in response to a customer request.

Document Group: 22-4244-4
Issue Date: 10/29/25

Version Number: 14.02
Supersedes Date: 09/26/24

3M™ Scotchlite™ Reflective Graphic Film 5100R-10, IJ5100R-10 White

3M
Commercial Branding and Transportation Division
3M Center, St. Paul, MN 55144-1000, USA
1-888-3M HELPS (1-888-364-3577)

RDSs are available at www.3M.com

Regulations and Industry Standards

SDS (US OSHA)

This product is an article and therefore is not subject to the requirements of the US Occupational Safety and Health Administration's (OSHA) Hazardous Communications Standard 29 CFR 1910.1200(b)(6)(v) to provide a Safety Data Sheet (SDS).

California Proposition 65

This product is an industrial product manufactured outside of California. It has not been assessed for consumer sale or use. Contact the manufacturer if more information is needed for your use.

China RoHS

This product does not meet the definition of Electrical and Electronic Products (EEP) as per Article (3) of MIIT Order 32, Administrative Measures on the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Products, or it is an excluded EEP product category as defined in the MIIT FAQ of China RoHS, #11.

Conflict Minerals

Conflict Minerals, which the U.S. Securities and Exchange Commission ("SEC") has defined as gold, columbite-tantalite (coltan), cassiterite, wolframite, or their derivatives (tin, tantalum, or tungsten), are not contained in and are not "necessary to the functionality or necessary to the production" of the above-listed product, as the term "necessary to the functionality or the production" is defined under the SEC's Conflict Minerals Rule. 77 Fed. Reg. 56274 (Sept. 12, 2012). Adhesive liners and similar materials that function like packaging to preserve product usability up to and following product purchase are not considered to be part of the product. They are out of scope for conflict minerals reporting (reference: National Association of Manufacturers Guidelines for Interpreting the SEC Conflict Minerals Disclosure Rule, section II).

ELV (End of Life Vehicles)

This product does not contain intentionally added amounts of substances restricted by EU Directive 2000/53/EC, as amended 2008/33/EC. *IMDS I.D. number 578480231*

EU Persistent Organic Pollutants (POPs)

This product is not known to contain Persistent Organic Pollutants (POPs) at or above the applicable thresholds per Annexes

I, II, or IV; and it is not known to contain POPs substances from Annex III of Regulation (EU) 2019/1021 and its amendments.

EU REACH

Substances listed in Annex XIV of Regulation No 1907/2006 of the European Parliament and the Council concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH) are not intentionally added to this product.

EU REACH

This product is an article, without intended release of a chemical substance, under the Regulation No 1907/2006 of the European Parliament and the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (refer to REACH, Article 3(3)). It is not a chemical preparation. Therefore, it is not subject to the (pre)-registration or the registration process. It does not require a safety data sheet.

EU REACH

This product, including any article that the product is composed of, does not contain at greater than 0.1% by weight a Substance of Very High Concern (SVHC) substance identified according to Article 59 of REACH. This declaration reflects the substances on the candidate SVHC list, effective June 2025.

EU RoHS

This product does not exceed the maximum concentration values (MCVs) set under EU Directive 2011/65/EU (RoHS recast/RoHS 2), as stated in Annex II to that directive. This means that each of the homogenous materials within this product does not exceed the following MCVs: (a) 0.1% (by weight) for lead, mercury, hexavalent chromium, polybrominated biphenyls or polybrominated diphenyl ethers; and (b) 0.01% (by weight) for cadmium.

EU RoHS Phthalates

This product does not exceed the maximum concentration values (MCVs) for phthalates set under EU Directive 2011/65/EU (RoHS recast/RoHS 2), as amended by EU 2015/863, which applies to finished EEE after July 22, 2019 for Category 1-7, 10-11 products and after July 22, 2021 for Category 8 and 9 products. This means that each of the homogeneous materials within this product does not exceed the MCV of 0.1% (by weight) for each of the following phthalates: DEHP, BBP, DBP, and DIBP.

Stockholm Agreement

This product does not contain Persistent Organic Pollutants (POPs) at or above applicable thresholds per Annexes A, B, and C of the Stockholm Convention, May 2004 and subsequent amendments.

TSCA 8(a) Nanomaterial Reporting

This product does not contain nanoparticles subject to reporting under TSCA Section 8(a). Under the “Chemical Substances When Manufactured or Processed as Nanoscale Materials: TSCA Reporting and Recordkeeping Requirements” rule, a reportable nanoparticle is defined as having at least one dimension in the size range of 1 – 100 nm and is manufactured or processed to exhibit unique and novel properties because of its size.

TSCA Section 6(h) PBT Chemicals

This product is not known to contain the five TSCA Section 6(h) Persistent, Bioaccumulative, and Toxic (PBT) Chemicals issued December 2020: Decabromodiphenyl Ether (Deca-BDE) (CAS 1163-19-5), 2,4,6-Tri-tert-butylphenol (CAS 732-26-3), Phenol, isopropylated phosphate (3:1) (PIP (3:1)) (CAS 68937-41-7), Hexachlorobutadiene (HCBD) (CAS 87-68-3), and Pentachlorothiophenol (PCTP) (CAS 133-49-3).

Chemicals and/or Compounds of Interest

Asbestos : Not known to contain.

Azocolorants and Azodyes : Not known to contain.

Ozone Depleting Chemicals (ODCs) : Not known to contain.

Perchlorates : Not known to contain.

Polyvinyl Chloride (PVC) : Contains.

Residual Organic Solvents : Organic solvents were used in the processing of this product. This product undergoes further processing that should remove any residual solvents. This product is not tested for residual organic solvents.

Definitions

Note: all Definitions take Disclaimers into account and apply to the “Chemicals and/or Compounds of Interest” and/or “Per and poly-fluoroalkyl Substances (PFAS)” sections only

Terms	Definitions
-------	-------------

Contains*	Present based on composition information disclosed by 3M suppliers, analytical testing, or both.
Not known to contain*	1. Analytical measurement for presence is not currently available; 2. If measurement is possible, a) The material has not been identified or disclosed to 3M and b) The material has not been specifically quantified or detected; OR c) Based on information from raw material suppliers, possible presence as an impurity or by-product at or below regulatory thresholds (e.g., 0.1 or 0.01 %)
Intentionally added**	Desired in the final product to provide a specific characteristic, appearance, or quality and/or to perform a specific function.
Not intentionally added**	By-product(s), impurity(ies) and/or unintended artifact(s) resulting from the formulation and/or manufacture of a material.
By-product***	A chemical substance produced without a separate commercial intent during the manufacture, processing, use, or disposal of another chemical substance or mixture.
Impurity***	A chemical substance which is unintentionally present with another chemical substance (e.g., residuals, catalysts, process solvents).

*Terms apply to the Chemicals and/or Compounds of Interest Section only (if section is present)

**Terms apply to the PFAS Section only (if section is present)

***Terms apply to both the Chemicals and/or Compounds of Interest and PFAS Sections (if section(s) are present)

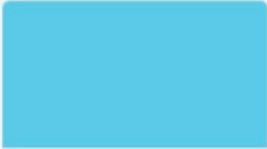
Disclaimers: The information provided in this document related to material content represents 3M's knowledge and belief, which may be based in whole or in part on information provided by suppliers to 3M. This is intended to answer commonly asked questions about 3M products and is not intended to be a comprehensive listing of all substances that may be of interest or that may be regulated in this or other 3M products, nor is it intended to be a comprehensive summary of any and all regulations that may apply to this product. Where substances are listed, their listing does not infer or constitute a judgment as to their safety, environmental or health impacts. Information is supplied upon the condition that the persons receiving the same will make their own determination as to its suitability for their purposes prior to use. Customers are encouraged to consult with legal and regulatory experts to determine applicable regulations in light of intended use of the product.

Limitation of Remedies and Liability: In the event any Product is proven not to conform with the information in this document, then to the extent permitted by law, 3M's entire liability and Buyer's exclusive remedy, will be at 3M's option either: (i) replacement of Product with a conforming product, or (ii) refund of the purchase price paid by Buyer for each non-conforming Product, within a reasonable time after written notification of said non-conformance and return of said Product to 3M. 3M shall not under any circumstances be liable for direct, incidental, special, or consequential damages (including but not limited to loss of profits, revenue, or business) related to or arising out of this certification, including, the use, misuse or inability to use the Product. Unless stated otherwise in writing, the foregoing language cannot be waived, modified, or supplemented in any manner whatsoever.

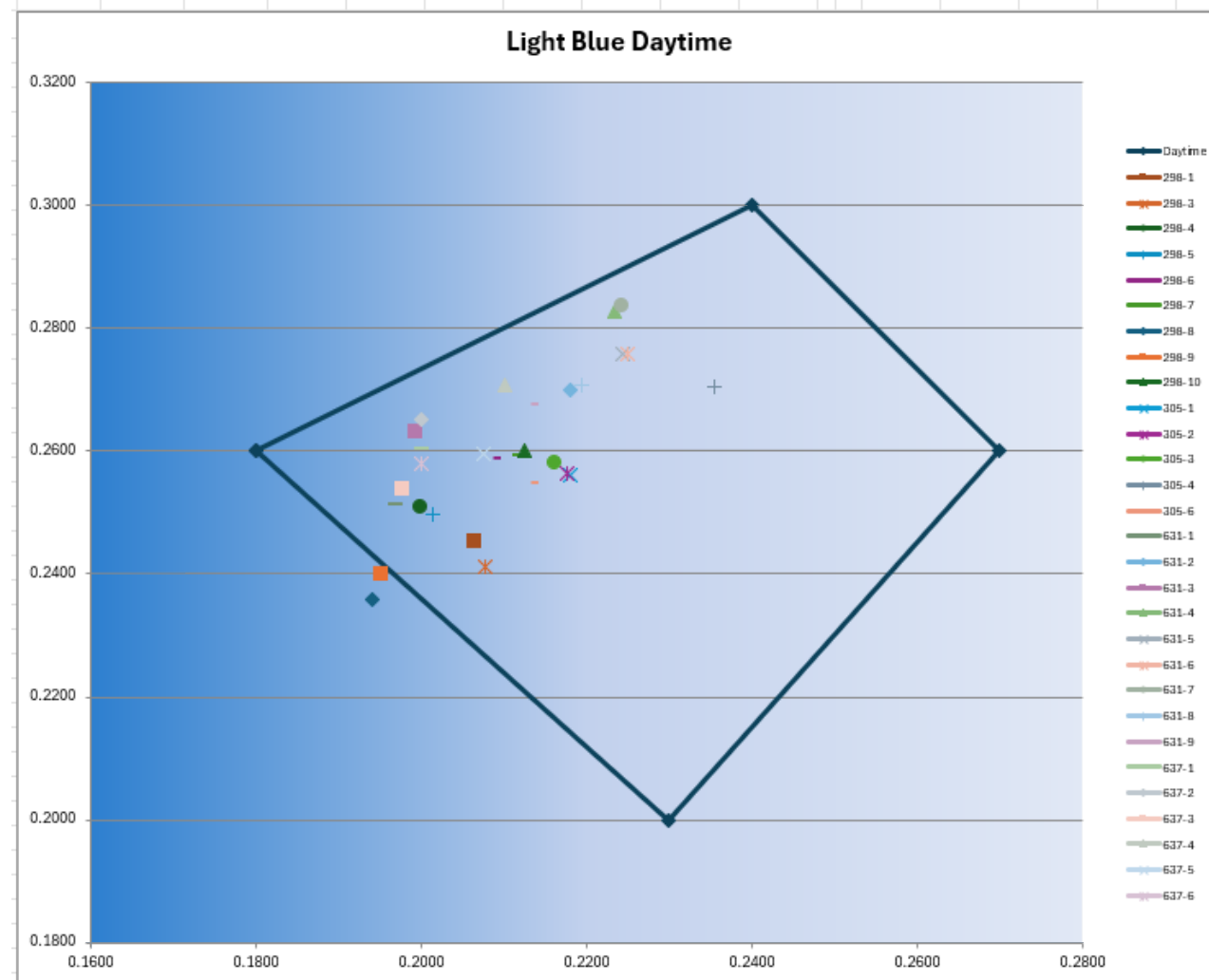
LA28 Olympics Signage Custom Light Blue Update April 30, 2026

Pantone Colors Requested

- Several samples prepared using HP830W printer.
- Samples are variations of suggested Pantone Colors:

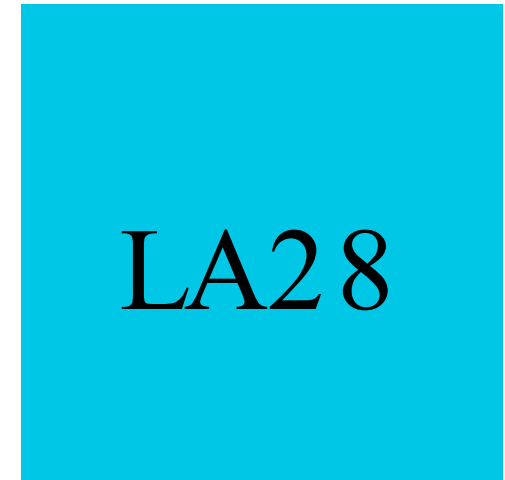
			
Pantone 298 C Hex: #41B6E6 RGB: (65,182,230)	Pantone 305 C Hex: #59CBE8 RGB: (89,203,232)	Pantone 631 C Hex: #3EB1C8 RGB: (62,177,200)	Pantone 637 C Hex: #4EC3E0 RGB: (78,195,224)

Light Blue Daytime

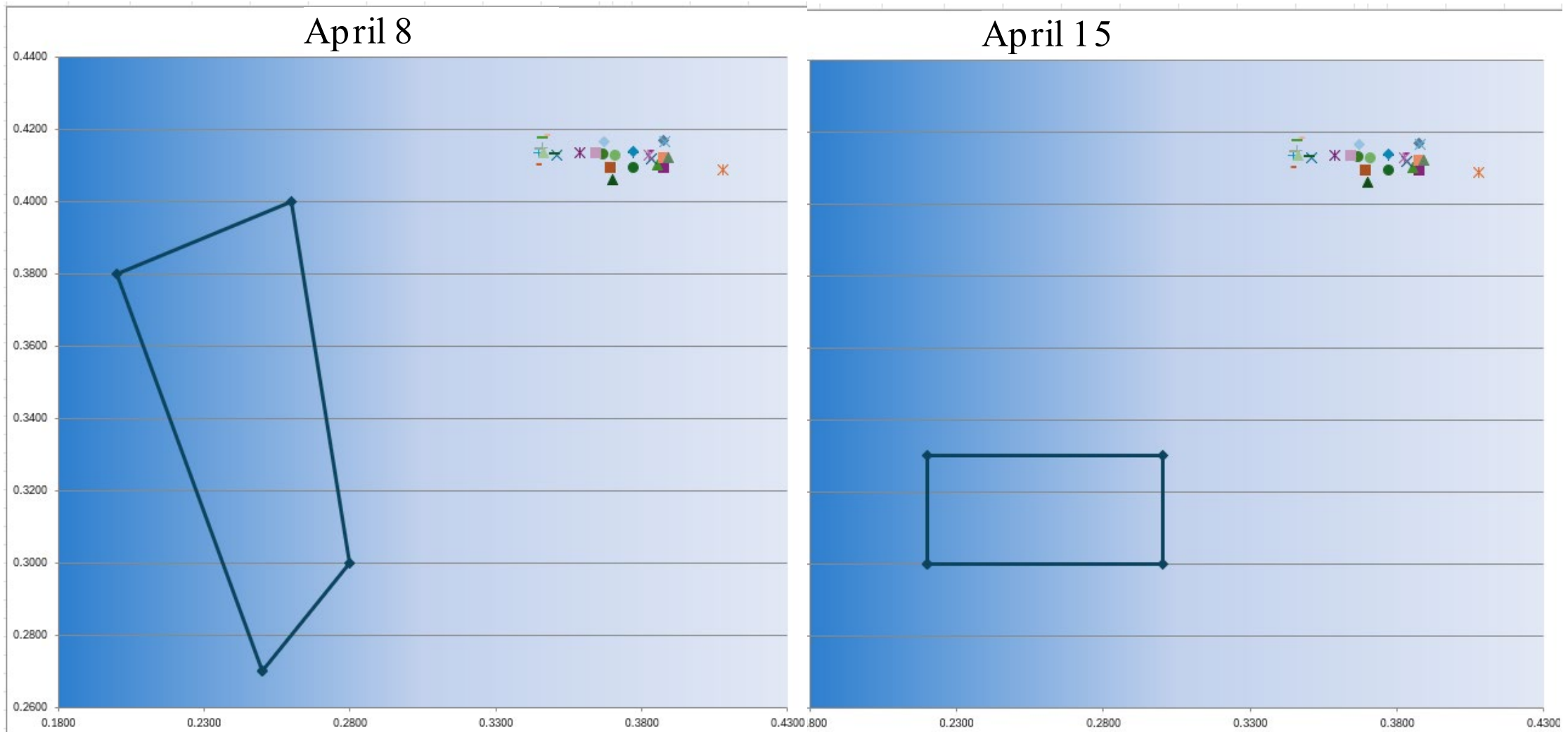


Define Light Blue Custom Color

- Select samples that met DTC were prepared as larger samples with "LA28" copy in either black or white (white = unprinted sheeting).
- Samples sent to Shawn at LA Sign Shop



Night Time Color – Is Specification Required?



Retroreflectivity

- Using handheld instrument. Expect slightly lower retro levels.
- Is retroreflectivity specification required?

Type XI (4090 DG ³)						
The average of 0° and 90° must meet 70% for ink imparted colors.						
observation angle entrance angle	R ⁱ [cd/lx/m ²] Enter average of 0° and 90°					
	0.2°		0.5°		1.0°	
	-4°/avg	30°/avg	-4°/avg	30°/avg	-4°/avg	30°/avg
LIGHT BLUE enter formulation	NA	NA	NA	NA	NA	NA
298-6	350.0	114.7	246.0	88.1	88.1	37.7
305-3	457.0	158.0	321.0	113.8	107.5	47.7
631-2	351.0	127.2	247.5	89.6	92.2	38.2
637-5	328.5	120.9	230.0	87.6	83.4	34.9
Minimum Retros ASTM D4956 Type XI Sheeting						
white	580	220	420	150	120	45
yellow	435	165	315	110	90	34
blue	26	22	19	7	5	2

Luminance

- FHWA standard does not have any reference to the ASTM Type XI for capY.
- Email exchange with the engineer from Caltrans suggests that we use the range of 18-40, which appears to the specs for Types IV, VII, and VIII from FHWA 23 CFR Part 655.
- capY values fall within the range of 10-19 for test samples

Fabrication

- Color output will change if different ink/ printer systems are used
 - HP830W used for this study. Expect similar results if printed on HP830, HP730 and HP730W printers
- There will be variation from shop-to-shop, printer-to-printer
- Defining process for printing CMYK custom color vs defining one Pantone color allows for flexibility that may be required when signs are fabricated.

Important Notice: The information we are furnishing you is being provided free of charge and is based on tests performed at 3M laboratory facilities. While we believe that these test results are reliable, their accuracy or completeness is not guaranteed. Your results may vary due to differences in test types and conditions. This information is intended for use by persons with the knowledge and technical skills to analyze, handle and use such information. You must evaluate and determine whether the product is suitable for your intended application. The foregoing information is provided “AS-IS”. In providing this information 3M makes no warranties regarding product use or performance, including any implied warranty of merchantability or fitness for a particular use.