



California Traffic Control Devices Committee (CTCDC) Agenda Item Report



Meeting Date: August 7, 2025 Item Number: 25-15	From: Tasha Higgins, Caltrans
Sponsored By: Amjad Obeid, Caltrans	Presented By: Tasha Higgins and Johnny Bhullar, Caltrans
Description: Experiment request for 2028 Los Angeles (LA28) Olympic and Paralympic Games traffic control devices.	

Recommendation

Motion by committee to approve CTCDC Experiment 25-15 for the 2028 Los Angeles Olympic and Paralympic Games traffic control devices.

Agency Making Request/Sponsor:

Tasha Higgins, Caltrans / Amjad Obeid, Caltrans

Background:

A Games Route Network (GRN) will be established for the 2028 Los Angeles Olympic (July 14 – 30, 2028) and Paralympic (August 15 – 27, 2028) Games. The GRN

provides dedicated lanes for Olympic Games vehicles to travel between venues to ensure that athletes and accredited persons arrive to their events on time. The GRN will utilize existing freeways, expressways, highways, and local roads to provide a safe, fast, and reliable transportation system. During the Games, to facilitate the movement of athletes and personnel, some of the existing traffic control devices on roadways included in the established GRN will need to be changed temporarily to allow identification of the priority lanes that have been dedicated for the travel of athletes and personnel. All LA28 traffic control devices will be installed and placed temporarily, from June 1, 2028, to September 1, 2028.

Caltrans has requested that the Federal Highway Administration (FHWA) review and approve the Caltrans experiment (see attached) with the use of the light blue color as a background color for use on the “LA28” white or black color legend word message, as a unique identifier to draw attention to the traffic sign plaques, traffic sign panels and pavement markings, to aid recognition and quicker comprehension of the dedicated lanes on GRN roadways to facilitate travel during the Games. Comments from FHWA have been received (see Attachment D) and are being addressed.

Attachments:

Attachment A - Experiment Request Letter, to CTCDC

Attachment B - Experiment Request Letter, to FHWA



California Traffic Control Devices Committee (CTCDC) Agenda Item Report



Attachment C - LA28 Request to Experiment

Attachment D - FHWA Comments and Caltrans Responses

ATTACHMENT A



California Traffic Control Devices Committee (CTCDC) Agenda Item Report



Attachment A – Experiment Request Letter, to CTCDC

CALIFORNIA STATE TRANSPORTATION AGENCY

GAVIN NEWSOM, GOVERNOR

California Department of Transportation

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June 23, 2025

Mr. Robert Bronkall
Humboldt County Public Works, County Surveyor
California Traffic Control Devices Committee (CTCDC) Chair
3033 H Street, STE 124
Eureka, CA 95501

Mr. Bronkall:

A Games Route Network (GRN) will be established for the 2028 Los Angeles (LA28) Olympic (July 14 – 30, 2028) and Paralympic (August 15 – 27, 2028) Games. The GRN provides dedicated lanes for Olympic Games vehicles to travel between venues to ensure that athletes and accredited persons arrive to their events on time. The GRN will utilize existing freeways, expressways, highways, and local roads to provide a safe, fast, and reliable transportation system.

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Caltrans has requested that the Federal Highway Administration (FHWA) review and approve the Caltrans experiment (see attached) with the use of the light blue color as a background color for use on the "LA28" white, or black, color legend word message, as a unique identifier to draw attention to the traffic sign plaques, traffic sign panels and pavement markings, to aid recognition and quicker comprehension of the dedicated lanes on GRN roadways to facilitate travel during the Games. Caltrans will bring this experiment request to the California Traffic Control Devices Committee (CTCDC) at an upcoming meeting.

Caltrans would like to acknowledge the efforts of Mr. Steve Pyburn of the FHWA California Division for working in partnership with Amjad Obeid and Johnny Bhullar of Caltrans' Division of Safety Programs; and Tasha Higgins, Caltrans District 7 Games Liaison in providing guidance on the experimentation request.

"Provide a safe and reliable transportation network that serves all people and respects the environment"



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Please provide your response and approval to Amjad Obeid by email at <amjad.obeid@dot.ca.gov>. If you have any questions, please contact Johnny Bhullar at (916) 662-2397.

Sincerely,

Paul Chung

Paul Chung
Acting Chief
Division of Safety Programs
Caltrans

Attachment:
LA28 Request to Experiment

c: Janice Benton, Deputy Director, Maintenance and Operations, Caltrans
Gloria Roberts, Director, Caltrans District 7
Tasha Higgins, Caltrans District 7 Games Liaison
Duper Tong, Division Chief, Division of Traffic Operations, Caltrans
Shailla Chowdhury, Deputy Division Chief, Division of Safety Programs, Caltrans
Inder Preet Singh, Deputy Division Chief, Transformational Mobility, Division of Traffic Operations, Caltrans
Jaswinder (Sunny) Gill, Chief, Office of Connected Ecosystem, Division of Traffic Operations, Caltrans
Amjad Obeid, Chief, Office of Safety Systems and Devices, Division of Safety Programs, Caltrans
Johnny Bhullar, CA MUTCD Editor, Office of Safety Systems and Devices, Division of Safety Programs, Caltrans
Adriana Surfas, Acting Chief of Staff, Maintenance and Operations, Caltrans
Daniel Rubinstein, Chief of Staff, Division of Safety Programs, Caltrans
Nagi Pagadala, Acting Chief of Staff, Division of Traffic Operations, Caltrans

"Provide a safe and reliable transportation network that serves all people and respects the environment"

ATTACHMENT B

Attachment B – Experiment Request Letter, to FHWA

CALIFORNIA STATE TRANSPORTATION AGENCY

GAVIN NEWSOM, GOVERNOR

California Department of Transportation

DEPARTMENT OF TRANSPORTATION
DIVISION OF SAFETY PROGRAMS
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June 23, 2025

Office of Transportation Operations, HOTO-1
Federal Highway Administration
1200 New Jersey Avenue, SE
Washington, DC 20590

Manual on Uniform Traffic Control Devices Team:

A Games Route Network (GRN) will be established for the 2028 Los Angeles (LA28) Olympic (July 14 – 30, 2028) and Paralympic (August 15 – 27, 2028) Games. The GRN provides dedicated lanes for Olympic Games vehicles to travel between venues to ensure that athletes and accredited persons arrive to their events on time. The GRN will utilize existing freeways, expressways, highways, and local roads to provide a safe, fast, and reliable transportation system.

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Caltrans requests that the Federal Highway Administration (FHWA) review and approve the Caltrans experiment (see attached) with the use of the light blue color as a background color for use on the "LA28" white, or black, color legend word message, as a unique identifier to draw attention to the traffic sign plaques, traffic sign panels and pavement markings, to aid recognition and quicker comprehension of the dedicated lanes on GRN roadways to facilitate travel during the Games.

Caltrans would like to acknowledge the efforts of Mr. Steve Pyburn of the FHWA California Division for working in partnership with Amjad Obeid and Johnny Bhullar of Caltrans' Division of Safety Programs; and Tasha Higgins, Caltrans District 7 Games Liaison in providing guidance on the experimentation request.

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Paul Chung

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ATTACHMENT C



California Traffic Control Devices Committee (CTCDC)
Agenda Item Report



Attachment C - LA28 Request to Experiment

See following pages



Request to Experiment

for LA 28 Olympic and Paralympic Games



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Request to Experiment

Executive Summary

Millions of visitors, from around the world, will descend on Los Angeles in the Summer of 2028. According to data models prepared by the City of Los Angeles, the Olympic and Paralympic Games are expected to generate 1.2 million peak day spectator trips. This volume is equivalent to hosting seven Super Bowls per day, for over month (with an anticipated two Super Bowls per day for the Paralympic Games). Guests will traverse the city, and their first impressions will be shaped by their transit and transportation experiences.

During the Games, athletes, coaches, officials, and other key Games stakeholders will be moved to venues through a dedicated transport system, called the Games Route Network (GRN). These stakeholders will use the GRN, a network of dedicated lanes on freeways and local arterials that connect sports competition venues to the Olympic and Paralympic Village, International Broadcast Center, and training facilities.

In order to facilitate the movement of athletes and Games personnel during the games, some of the existing traffic control devices on roadways included in the established GRN will need to be changed temporarily, to allow identification of the priority lanes that have been dedicated in GRN for athletes and Game personnel travel. This will be accomplished by using “LA28” word message in white or black legend, and on light blue background, as a sign plaque or a sign panel and using it as a word message pavement marking. The Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (Federal Highway Administration, 2023) has not assigned the meaning of light blue color, currently, it has reserved it for future designation. Any use of light blue color on a traffic control device will not be in compliance with the MUTCD. For this reason, we are requesting an experiment to use the light blue color as a background color for “LA28” word message, when used on sign plaques, sign panels and pavement markings to identify dedicated priority lanes for Games-related travel during the summer.

Caltrans requests this experiment be approved now for several reasons: First, many elements for the LA28 project have long procurement and fabrication timelines. In typical projects, it could take over a year to procure and manufacture the required highway sign plaques, sign panels and pavement marking material. The custom sign plaques, sign panels, pavement marking material and equipment needed for this project cannot be purchased off-the-



shelf, it requires considerable coordination and time. Second, local agency development is well underway. Once the experiment is approved, the multiple venue cities can begin their own process of updating their municipal code to make the required modifications. Currently, the Olympic Organizing Committee (LA28) has identified over 80 sporting, competition, training sites in 12 cities throughout Los Angeles, Orange, and San Diego Counties.

Once the experiment is approved, based on available opportunities for upcoming schedules of any similar large-scale special events occurring before the Olympic Games, Caltrans potentially may request a similar experiment (under a separate request) for that event to learn from it for any needed potential revisions to this experiment, to ensure its success.

Although there have been Olympic Games in America before, a project, of this scale, for the operational duration of 60-80 days, with the transportation requirements, has never been done before. This project paves the way for large-scale projects and the work performed now will provide an example for similar needs in the future.

Caltrans will evaluate the success of using light blue background color as a unique identifier to draw attention to the traffic sign plaques, sign panels and pavement markings and aiding recognition and quicker comprehension.

Caltrans will submit semi-annual progress reports, and a final report of the results of the experimentation and lessons learned within 3 months of the conclusion of 2028 Los Angeles Olympics and Paralympics Games to FHWA's Office of Transportation Operations.

Caltrans will restore all sites of the experiment to a condition that complies with the provisions of the MUTCD within 3 months following the conclusion of 2028 Los Angeles Olympics and Paralympics Games.

This document was prepared by:

Tasha Higgins, PE, PMP

Principal Engineer, LA28 Caltrans District 7 Liaison

Amjad Obeid, PE

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2028 Olympic and Paralympic Overview

The City of Los Angeles will host the Olympic Games from Friday, July 14, 2028, to Sunday, July 30, 2028. The Paralympic Games in Los Angeles will take place from Tuesday, August 15, 2028, to Sunday, August 27, 2028. "In 2028, the United States will welcome the world to the Olympic and Paralympic Games in Los Angeles. It has been more than 20 years since the U.S. hosted the Winter Olympic Games (2002 Salt Lake City) and nearly 30 years since the U.S. hosted an Olympic Summer Games (1996 Atlanta). Los Angeles hosted the Olympics in 1932 and 1984, but 2028 will be the first time Los Angeles hosts both the Olympic and Paralympic Games. In addition, 2028 will also be the first time Los Angeles hosts the Paralympic Games. The LA28 Games will be an opportunity to showcase American innovation and ingenuity on the world stage." ((LA28), 2023)

At the time of this proposal, the 2028 Olympics (XXXIV Olympiad) is just over one thousand one hundred days away. The LA28 Games will be the largest peacetime gathering in the history of the world and the largest transport event in the history of the United States. It will have been 44 years since the international stage, at this magnitude, was in Los Angeles and the world was a much different place; The 1984 Olympic Games was pre-911 - before the formation of Homeland Security.

Games Mobility Executives

The Games Mobility Executives (GME) is comprised of leadership from key city and regional transportation agencies, who are responsible for public transport services and systems that will be used for the Games.

Caltrans, as a key partner, will spearhead the integration of a seamless transportation network, as well as be responsible for advanced maintenance strategies before, during, and after the games.

The purpose of the GME is to plan for mobility and transportation for the 2028 Games. The GME meets regularly with both the principals and staff members from each GME agency. The GME aligned on a set of roles and responsibilities regarding governance, planning, funding advocacy, project delivery, and Games transportation operations. Following the Paris 2024 Games, the GME designated lead agency and staff responsible for delivering priority workstreams and critical functional areas.

The GME workstreams are led by the following agencies:

FIGURE 1 - GME WORKSTREAMS

Project Workstream	Lead Agency
GETS/ Zero Emission Bus Program	Los Angeles County Metropolitan Transportation Authority (LA Metro)
Mobility Hubs	Los Angeles County Metropolitan Transportation Authority (LA Metro)
Games Route Network & Integrated Transportation Management	California Department of Transportation (Caltrans) District 7
Light Rail Speed Improvements/ Station Upgrades	Los Angeles County Metropolitan Transportation Authority (LA Metro)
First/Last Mile & Open Streets	City of Los Angeles, Department of Transportation (LADOT)
Regional Rail	The Southern California Regional Rail Authority (Metrolink)
Countywide Bus Only Lanes	Los Angeles County Metropolitan Transportation Authority (LA Metro)
Communication & Outreach	LA28 Organizing Committee
Accessibility	City of Los Angeles, Mayor's Office
Transportation Demand Management & Universal Basic Mobility	The Southern California Association of Governments (SCAG)
Freight Transportation Demand Management	The Southern California Association of Governments (SCAG)
Wayfinding	Los Angeles County Metropolitan Transportation Authority (LA Metro)

Sporting Venues by District/Host City

LA28 expects to activate over 80 venue locations. These locations include festival sites, training sites, the family hotel, the international broadcasting site, and of course the sporting and competition venues. Currently LA28 has confirmed 53 sporting venue locations (see Figure 2 - Sporting Venues by District and City). Caltrans and the GME partners have begun the planning for the Games Route Network, on freeways and local arterials, to get to and from these sporting venues.

FIGURE 2 - SPORTING VENUES BY DISTRICT AND CITY

District/Venue City	Confirmed Sporting Venues	Tentative Sporting Venues	Grand Total Sporting Venues
LOS ANGELES COUNTY (District 7)	51	2	53
Carson	6		6
Inglewood	2		2
Long Beach	11		11
Los Angeles	29	1	30
Pasadena	1		1
San Dimas		1	1
Arcadia	1		1
South El Monte	1		1
ORANGE COUNTY (District 12)	1		1
Anaheim	1		1
SAN DIEGO COUNTY (District 11)	1		1
San Diego County/San Clemente	1		1
Grand Total	53	2	55

Games Route Network (GRN)

Definition

During the Games, the State Highway System (SHS) will serve as the backbone of a road network, aptly titled the Games Route Network (GRN), to facilitate the movement of athletes and related Games personnel to and from the Olympic Village and the various competition, broadcasting center and other relevant venues.

The GRN is a temporary network of roads, freeways, highways, arterials, and bus-only lanes, activated two to four weeks prior to the start of the Olympic Games through completion of the Paralympic Games. Caltrans, District 7 will lead in the coordination of the planning, design, and implementation of the GRN on the SHS.

Purpose

The primary purpose of the GRN is to allow the *Games Family* vehicles, which is an estimated fifty to one hundred thousand specially marked and permitted vehicles, to get their destination on time. These vehicles will be driven by drivers from all over the United States and abroad. Though they will be trained, using standard traffic control devices, and temporarily using few non-standard traffic control devices as unique identifiers to enhance and aid recognition and understanding of GRN roadways is very important to the success of the Games transport plan.

The secondary purpose of the GRN is for use by the Games Enhanced Transit Service (GETS) buses. The GETS buses will be used to take spectators and

volunteers to the competitions. Furthermore, the lanes will be used by law enforcement and emergency personnel.

What about the public?

To not impede on the travel of key vehicles, the public will be prohibited from using the GRN. The *Games Family* vehicles include a myriad of cars, buses and shuttles that will carry designated athletes, officials, dignitaries, politicians, media, and essential personnel to and from the sporting and other non-sporting locations.

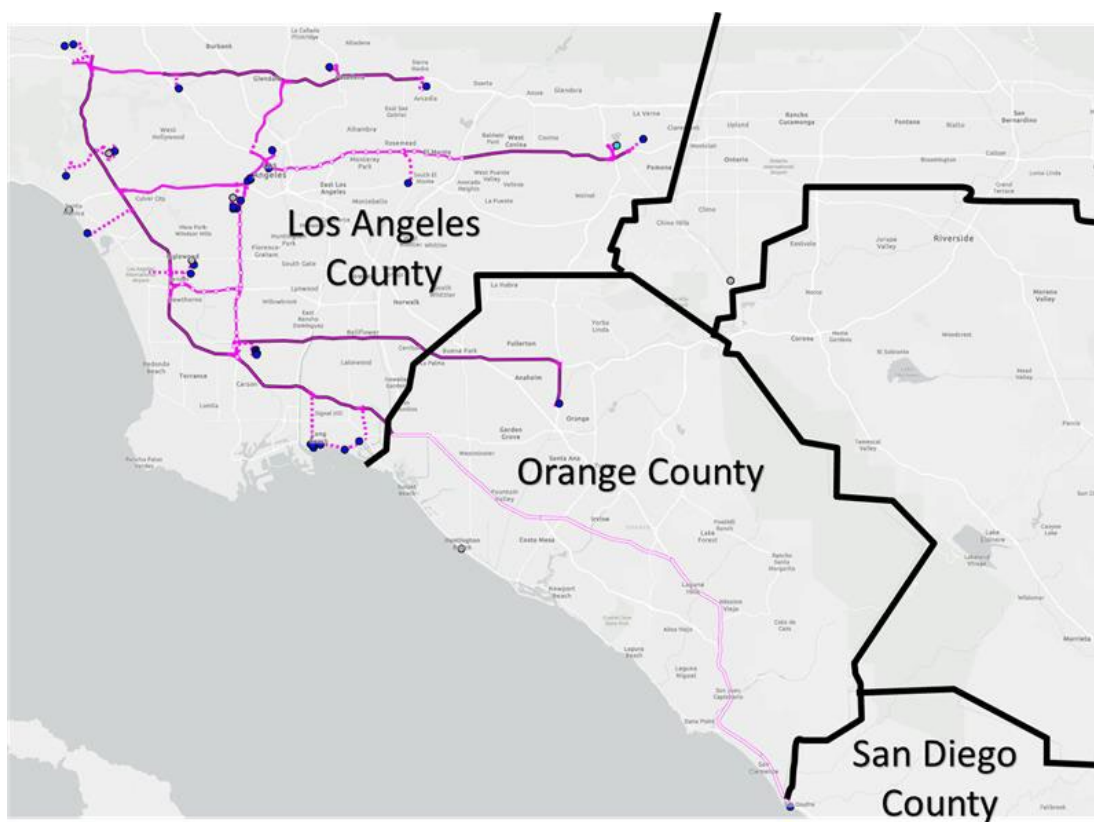
Although this effort is led by District 7, the GRN, or wayfinding elements will also be used in Orange County (Caltrans District 12) and San Diego County (Caltrans District 11).

Requirements

The International Olympic Committee, by contractual agreement, requires the host city to provide consistent and predictable travel times between venues. These travel times shall be based on modelling that is underway to determine the optimal GRN operations parameters and refinements to the GRN. After the GRN is designed and current modeling completed, by May 2027, The Organizing Committee (LA28), along with the agency partners, will provide venue to venue travel times. These travel times will allow the athletes to plan their training and competition travel.

Routes

The GRN on the State Highway System (SHS) constitutes approximately 80% of the 360 centerline miles planned for dedicated travel. The other 20% is on local arterials, see Figure 3 - Games Route Network map. All roadways included in the established GRN are within the geographical boundaries of Los Angeles, Orange and San Diego counties in California.

FIGURE 3 - GAMES ROUTE NETWORK MAP

Security reviews are being conducted for the venues, which may result in changes to the GRN.

Scope of work

The GRN scope of work will include many temporary operational improvements including:

- Converting HOV/Toll lanes to dedicated lanes,
- Converting general-purpose lanes to dedicated lanes,
- Overhead and roadside regulatory and guide signs, some modified by adding LA28 sign plaques (with or without PERMIT ONLY) above, or affixing LA28 sign panels (with or without PERMIT ONLY) on the face of some, and
- Adding LA28 word message pavement markings, with or without PERMIT ONLY word message pavement markings
- Using GRN messages on changeable message signs and portable changeable message signs, by incorporating LA28 word message with or without using PERMIT ONLY word message, as part of the overall message and
- Dynamic ramp metering systems and advanced signal synchronization by deploying operational strategies to make changes to signal timing and signal phasing utilizing traffic data and algorithms for effective queue management and improved travel times.

Except for the use of light blue color as the background color for LA28 word message, all other aspects of the traffic control devices for existing, and if needed, any new traffic control devices, will be in compliance with the MUTCD.

There are legacy components that will remain after the conclusion of the Games:

- Closed circuit cameras, and
- Active transportation management system
- Pre-existing and any new standard traffic control devices, if added, will be restored to conditions that comply with the MUTCD provisions

Project development schedule

The development schedule is expedited for this project with a constrained deadline for completion. Preliminary timeline for when activities will need to be completed for Caltrans to be ready is shown in Figure 4 below.

FIGURE 4 - GRN DEVELOP SCHEDULE

Activity (Caltrans)	Approx Completion
Planning	Summer 2025
Environmental	Summer 2025
Design	Summer 2027
Bid	Summer 2027
Construction	Summer-Winter 2027
Operational Readiness	Winter 2028
Construction Moratorium	Summer 2028
GRN Activated	Summer 2028

Games operational timeline

The operational timeline for various activities is shown in Figure 5 below.

FIGURE 5 - 2028 GAMES OPERATIONAL TIMELINE

Activity (LA28)	Approx Timelines
GRN Construction Completed*	December 2027
Preparation, build-up for Olympics	March – June, 2028
Construction Moratorium Starts	June 1, 2028
GRN Activated	June 1, 2028
Venues and Media Center Open	June 13, 2028
Olympic Village Open	June 30, 2028
Opening Ceremony for Olympics	July 14, 2028
Olympic Games	July 14 – July 30, 2028
Departure, tear down for Olympics	August 3, 2028
Preparation, build-up for Paralympics	August 3 – 14, 2028
Opening Ceremony for Paralympics	August 15, 2028
Paralympic Games	August 15 – 27, 2028
Departure, tear down for Paralympics	August 28 – 30, 2028

Activity (LA28)	Approx Timelines
Olympic Village Closes	September 1, 2028
Construction Moratorium Ends	September 1, 2028
GRN Deactivated	September 1, 2028
GRN Reconstruction Completed*	October 2028

* GRN construction and reconstruction Dates are dependent on construction contracts and could vary

Locations

Caltrans has identified highway segments that are currently being considered for the GRN as follows (updated October 2024):

FIGURE 6 - GRN ROUTES AND POSTMILES

District	State Highway Route (Tentative)	Post Mile Limits (Tentative)		From – To
7	405	41.378	0	Victory to Orange County Line
7	110	24.535	8.818	Stadium Way - I405
7	105	2.112	7.342	I405 - I110
7	10	21.838	43.66	I605 – Fairplex Dr
7	105	16.976	21.838	Downtown – I605
7	57	7.716	8.653	I10 – Via Verde (Frank Bonelli Park)
7	91	6.352	20.717	I110 – County Line
7	101	2.838	0	S2/Alvarado St – I10
7	134	0	13.327	U101 – I210
7	2	18.839	12.776	S134 – Glendale Blvd (@US101)
7	210	24.144	24.756	Mountain - S134
7	210	24.756	30.629	S134-N. Baldwin (Wayfinding)
7	10	5.492	16.976	I405 - Downtown
7	101	18.624	17.096	Havenhurst - I405
7	101	17.096	11.812	I405 - S134
7	164	5.605	3.116	I10 – Shooting Park
12	405	24.165	0	LA County Line - I5 (Wayfinding)
12	57	15.6	12.531	S91 – Katella Ave
12	91	0	6.124	County Line – S57
12	5	21.059	0	I405 - SD County Line (Wayfinding)
11	5	72.379	71.379	OC County Line - Basilone Road (Wayfinding)

As the Games near, if there are any changes to the highway segments included in the GRN, Caltrans plans to submit request to modify these highway segments locations under this experiment.

Sign Inventory

Caltrans, District 7 has identified an estimate of the number of signs on State Highway System within the boundaries of District 7 that are on GRN roadways that will be temporarily changed by either covering the sign, adding a sign

plaque or affixing a sign panel to the face of a sign to overlay a portion of the sign. Figure 7 below provides a summary of the number of signs by route.

FIGURE 7 - GRN SIGNS BY ROUTE

State Highway (District 7 Only)	Approx. Number signs to Overlay or Cover
I-10	174
I-105	84
I-110	41
I-405	240
SR-210	54
SR-91	155
SR-134	99
Total Signs	847

An inventory of signs in Caltrans District 11 and 12 that will be temporarily changed, is pending. Several signs on local arterials may also need to be changed temporarily. Caltrans is working closely with the local agencies, but do not currently have an estimate of the number and type of signs that may need to be changed temporarily during the games.

Local Agency Coordination

The GME includes members from the following agencies:

- Caltrans
- City of Los Angeles Mayor's office
- Los Angeles Department of Transportation
- Los Angeles County Metro
- Metrolink
- Southern California Association of Governments (SCAG).

The GME members meet frequently to discuss specific traffic and transportation-related projects and collaborate to on support funding pursuits.

Each arena will be accessed by a freeway on the state highway system (SHS). The GRN will leave the SHS onto local arterials directly to the sporting venue and signage must be consistent throughout to keep the thousands of drivers on track.

Example: Venue City – Long Beach, California

Currenting, the city of Long Beach will be hosting six sporting events at five venues: sailing, handball, water polo, marathon swimming, canoe sprinting and canoe rowing. Long Beach is also in negotiations with LA28 to host the triathlon.

Figure 8, is a map of the location of the sporting venues in reference to the state highway. In many locations, in Los Angeles, the venue is very close to the freeway.

In other locations, the local agencies need to implement dedicated lanes for miles to get travelers off the state highways to the sporting venues. Figure 8, is an example of the Long Beach venue locations showing proximity to the state highway.

FIGURE 8 - SAMPLE GAMES ROUTE NETWORK – LONG BEACH, CA



Request to Experiment

Experiment Scope

Background

2028 Los Angeles Olympics and Paralympics (LA28), which includes the Summer Olympics (July 14-30, 2028) and Summer Paralympics (August 15-27, 2028), will establish a Games Route Network (GRN) with dedicated lanes for Olympic Games vehicles to travel between venues and ensure athletes, coaches, officials, and other key Games stakeholders get to their events and venues on time. The GRN will establish a temporary network of dedicated lanes on roads, freeways, expressways, highways, arterials, local roads, and managed lanes that connect sports competition venues to the Olympic and Paralympic Village, International Broadcast Center, and training facilities, to provide a safe, fast, and reliable transportation system.

During the Games, in order to facilitate the movement of athletes and Games personnel, some of the existing traffic control devices on roadways included in the established GRN will need to be changed temporarily, to allow identification of the priority lanes that have been dedicated in GRN for athletes and Game personnel travel.

Similar to the way the GRN has been implemented in other countries, a combination of light blue background colored traffic sign plaques, traffic sign panels and pavement markings using the LA28 word message will be used as a unique identifier on new signs, or in conjunction with existing traffic signs, and as new pavement markings, to keep the road users and the public, aware of the dedicated lanes on GRN roadway segments, on state highways and local roads, to facilitate travel during LA28 games.



Experimentation Request

Caltrans is requesting the use of light blue color as a background color for use on the “LA28” white, or black, color legend word message, as a unique identifier to draw attention to the traffic sign plaques, traffic sign panels and pavement markings, to aid recognition and quicker comprehension of the dedicated lanes on GRN roadways to facilitate travel during LA28 games. Caltrans request for permission to experiment is specifically for the use of light blue color as the background color for the “LA28” word message.

Deviation from MUTCD

MUTCD has not assigned the meaning to the light blue color, currently, it has reserved it for future designation as per MUTCD Section 1D.05. As a result, any use of light blue color on a traffic control device will not be in compliance with the MUTCD.

MUTCD Provisions

At some locations, in addition to the LA28 sign plaque or panel, the “PERMIT ONLY” black legend on white background will also be used as a sign plaque or sign panel and in white legend as a pavement marking. The use of LA28 and PERMIT ONLY word messages, whether used on traffic sign plaques, traffic sign panels or pavement markings, do not require experimentation as the use of word messages complies with the National MUTCD. As per MUTCD Section 2A.04, agencies are allowed to develop special word legend signs based on engineering judgment, and unlike colors that have not been assigned, or symbols that have not been approved for signs, new word legend signs can be used without the need for experimentation.

Other options considered

Caltrans considered few other options to act as a unique identifier to draw attention to the LA28 word message, some compliant with MUTCD provisions and others deviating from the MUTCD provisions and thus requiring experimentation. Caltrans is open to suggestions to use any other color as the background color for the LA28 word message, to act as a unique identifier to draw attention to the traffic sign plaques, sign panels and pavement markings and aiding recognition and quicker comprehension.

Other potential colors that were considered are purple, coral, yellow, orange and fluorescent pink (See Figure 9). Brief explanation for not selecting these colors follows:

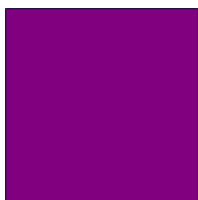
- **Purple color** is used for electronic toll collection (ETC) purposes only and on toll roadways, the varying facilities in the GRN restrict using purple at these facilities.
- **Coral color** is the other color that has not been assigned and is reserved for future designation and already identified by FHWA as being appropriate for use in conveying traffic control information.
- **Yellow color** is used as background color for LEFT EXIT Plaques for exits that are on the left side and is a unique identifier. Using yellow color as background color for LA28 word message will reduce effectiveness of the LEFT EXIT Plaques and pose potential safety concerns.
- **Orange color** is assigned for use for temporary traffic control and is applicable to temporary situations. Orange color is used as background color on warning signs located in temporary traffic control zones when the

normal function of the roadway is suspended, which will be similar to the temporary change of dedicated lanes in GRN roadways during the games. Since orange color is already used in temporary traffic control zones on the roadways, its effectiveness as a unique identifier, will be diminished, when comparing to using a new color that has not been used on the roadways.

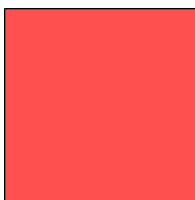
- **Fluorescent pink color** is assigned for use for incident management purposes and is applicable to temporary situations. Fluorescent Pink color is used as the background color on warning signs located in traffic incident management areas. Fluorescent Pink color warning signs are used as part of other devices in a system, to inform road users of the incident, provide guidance information, protect the incident responders and workers (at the incident scene), aid in moving road users expeditiously past or around the traffic incident, reducing secondary traffic crashes, and preclude unnecessary use of the surrounding local road system. Since fluorescent pink color is already used in incident management areas on the roadways, its effectiveness as a unique identifier, will be diminished, when comparing to a new color that has not been used on the roadways.

Caltrans also considered some of the following methods included in MUTCD Section 2A.11 (see Figure 9) to enhance conspicuity of the LA28 Sign word message:

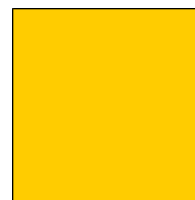
- Adding a diagonally striped black and yellow (or black and fluorescent yellow) strip of retroreflective sheeting around the perimeter of the plaque and panel.
- Adding red or orange flags above existing regulatory and guide signs
- Adding a warning beacon
- Adding a rectangular rapid flashing beacon
- Adding light-emitting diode (LED) units
- Adding a strip of retroreflective material to the sign supports

FIGURE 9 - OTHER OPTIONS CONSIDERED, NOT USED**A - Light Blue Color Determination pending Caltrans Testing**

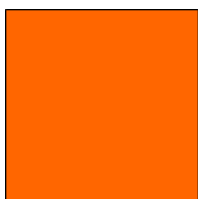
Color Purple



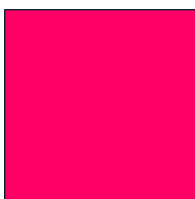
Color Coral



Color Yellow

B - White Legend on Light Blue Color Background

Color Orange



Color Fluorescent Pink



Diagonally-striped border

C - Black Legend on Light Blue Color Background

Red/Orange Flags



Warning Beacon



LEDs on border

Caltrans, upon review and consideration of these methods, decided not to use any of these methods as they are already being used on the roadways to enhance conspicuity of the existing signs. They would not be as effective as the proposed use of the light blue background color for the LA28 word message, as a unique identifier, as it is a new color which hasn't been used on the roadways.

Light blue color in public domain

The proposed light blue color to be used as the background color on the sign plaques, sign panels and pavement markings is an aspect of these traffic control devices (sign plaques, sign panels and pavement markings) which regulates or guide's traffic. As per MUTCD Section 1D.05, light blue color has been identified as being appropriate for use in conveying traffic control information. Further, the general meaning of the light blue color has not been established and it is reserved for future designation by FHWA. Since the light blue color is included in the MUTCD, this color aspect of the traffic control device is not protected by a patent, trademark, or copyright in accordance with MUTCD Sections 1B.05 and 1D.06, and this color aspect of the traffic control device is in the public domain and can be used freely in traffic control device design and application without infringement or claim of trade secret misappropriation. Caltrans is aware that if patent, trademark, or copyright protection is established in the future for the light blue color aspect of the traffic control device or application, such action will result in cancellation of the authorization for experimentation.

Limitations on using Olympic Rings symbol

There are three primary reasons Caltrans is requesting the use of light blue color as a background color for "LA28" word message and not the Olympic rings, or other symbols to identify the dedicated lanes on GRN roadways to facilitate travel during LA28 games:

1. "LA28" refers to the name of the event, named by the host city plus the 2-digit year (e.g., Paris24); furthermore, abbreviating the year allows the word message to be as brief as practical while keeping it simple, allowing for easier accommodation of the plaque or panel on existing signs or within the lane as a pavement marking.
2. The Olympic rings only represent one of the two games that will be covered under this request. Los Angeles will also be hosting the Paralympic Games. The International Paralympic Committee (IPC) is a complete separate organization with a different name, logo, and organizing body. It is not prudent to design and install two separate sets of sign plaques, sign panels and pavement markings, one set for each game.
3. The use of the Olympic rings is prohibited by copyright laws.

Change to existing signs and markings

To save costs, expedite implementation and for fiscal responsibility, since the change is needed temporarily, instead of removing existing signs and installing new or special traffic signs, most of the changes will be limited to changing existing traffic signs. New signs will be used only when existing signs are not available at the location or impractical to change. The "LA28" sign plaque will be added to some of the existing traffic signs, a portion of some traffic signs will be overlayed with the "LA28" sign panel, while some of the traffic signs would be

covered during the games. The PERMIT ONLY plaque and panel will be used in conjunction with the LA28 plaque or panel, on some of the traffic signs. The “LA28” pavement markings, in conjunction with, or without, the PERMIT ONLY pavement markings will be installed in some lanes of the GRN roadways.

Time Period for field deployment

All LA28 related traffic control devices, including devices covered by this experiment request, will be installed and placed temporarily, from June 1, 2028, to September 1, 2028, covering both, the 2028 Summer Olympics (July 14-30, 2028) and Summer Paralympics (August 15-27, 2028) games. Caltrans intends to install all LA28 related traffic control devices for the entire duration of this time period. Caltrans may potentially be open to the suggestion to changing the background color or changing to another method between the Summer Olympics (July 14-30, 2028) and Summer Paralympics (August 15-27, 2028) games, in order to evaluate which color or method will be more effective in making the LA28 word message as a unique identifier but does not recommend doing so. Reason for not changing the color or method between the games is to not cause any confusion for the road users and potential safety problems it may cause due to the short time between the games and the cost and logistics involving in implementing the change during the games.

Benefit

If this experiment is approved, upon deployment, it will allow Olympic Games vehicles to travel between venues and ensure athletes, coaches, officials, and other key Games stakeholders get to their events and venues on time while providing a safe, fast, and reliable transportation system for all road users during the games, leading to their success. Since the 2028 Los Angeles Olympics and Paralympics (LA28) are an atypical large-scale special event, upon successful completion of the experiment, it could result in changes to the MUTCD provisions, to provide policy and guidance on implementing some of the features of this experiment for similar other large-scale special events nationwide.

National MUTCD 2023 (11th Edition) - General

1C – Meaning of GRN and LA28 Acronyms

The meaning of Games Route Network will be as a network of existing roads connecting Los Angeles 2028 Summer Olympics and Paralympics competition and key non-competition venues involving a wide range of traffic management measures. The meaning of acronym GRN will be Games Route Network.

The meaning of acronym LA28 will be Los Angeles 2028 Olympics and Paralympics. As per California Vehicle Code Section (Not available, pending legislative action), vehicles with a permit only will be allowed to use the dedicated lanes on roadways in GRN.

Specific preferential lanes that are used as dedicated lane(s) for Olympic Games vehicles to travel between venues and included in the established GRN, are referred to as “GRN lane(s)”.

1D – Abbreviations used on Changeable Message Signs

When the word messages shown in Table 1 need to be abbreviated on a changeable message sign or portable changeable message sign, the abbreviations shown in Table 1 will be used.

TABLE 1 - ABBREVIATIONS USED ON CHANGEABLE MESSAGE SIGNS

Word Message	Standard Abbreviation	Prompt Word That Should Precede the Abbreviation	Prompt Word That Should Follow the Abbreviation	Example
Los Angeles 2028	LA28		Permit (Optional)	LA28 PERMIT ONLY
PERMIT ONLY	PERMIT ONLY	LA28		LA28 PERMIT ONLY

1D – Light Blue Color Code

Using the light blue color for the background was chosen as this color is already included in the National Manual on Uniform Traffic Control Devices (MUTCD). The light blue color in the MUTCD is reserved for future designation, and not assigned any specific purpose. The proposed use of the light blue color during the Games does not comply with the National MUTCD, it requires approval to experiment from FHWA.

The light blue color used as the background color on the sign plaques, sign panels and pavement markings are an aspect of these traffic control devices (signs and markings) which regulates or guide's traffic. As per MUTCD Section 1D.05, light blue color has been identified as being appropriate for use in conveying traffic control information. Further, the general meaning of the light blue color has not been established and it is reserved for future designation by FHWA. Caltrans proposes using light blue color as background color to provide clear and

consistent color scheme for messaging of the dedicated lanes on GRN roadways and to match the publicizing theme for the games. One aspect of the unique identifier is color, and the use of light blue color will serve as the unique identifier, while simply using the white color will not.

Since the light blue color is included in the MUTCD, this color aspect of the traffic control device is not protected by a patent, trademark, or copyright in accordance with MUTCD Sections 1B.05 and 1D.06, and this color aspect of the traffic control device is in the public domain and can be used freely in traffic control device design and application without infringement or claim of trade secret misappropriation. Caltrans is aware that if patent, trademark, or copyright protection is established in the future for the light blue color aspect of the traffic control device or application, such action will result in cancellation of the authorization for experimentation.

The light blue color will be temporarily used as background color for "LA28" word message with white or black legend on sign plaques, sign panels and pavement markings installed on roadways in GRN during the Olympic games as shown in Table 2.

TABLE 2 - COMMON USES OF SIGN COLORS

Type of Sign	Legend								Background											
	Black	Green	Red	White	Yellow	Orange	Fluorescent Yellow Green	Fluorescent Pink	Black	Blue	Brown	Green	Orange	Red	White	Yellow	Purple	Fluorescent Yellow Green	Fluorescent Pink	Light Blue
LA28	X			X																X
PERMIT ONLY	X			X											X					

" - The use of light blue on signs is restricted to LA28 word message only.

Although the assigned color of purple is used only for electronic toll collection (ETC) purposes on specific traffic signs on toll roadways, the varying facilities in the GRN restrict us from using purple as the background color for LA28 word message sign panels, sign plaques and pavement markings in all locations of GRN roadways. These varying facilities include 360 centerline miles of freeway in GRN, with a mixture of high-occupancy toll, high-occupancy vehicle, and general-purpose lanes that will be converted to dedicated lanes on GRN roadways as well as lanes on local arterials in cities within the GRN.

1D – Light Blue Color Specifications

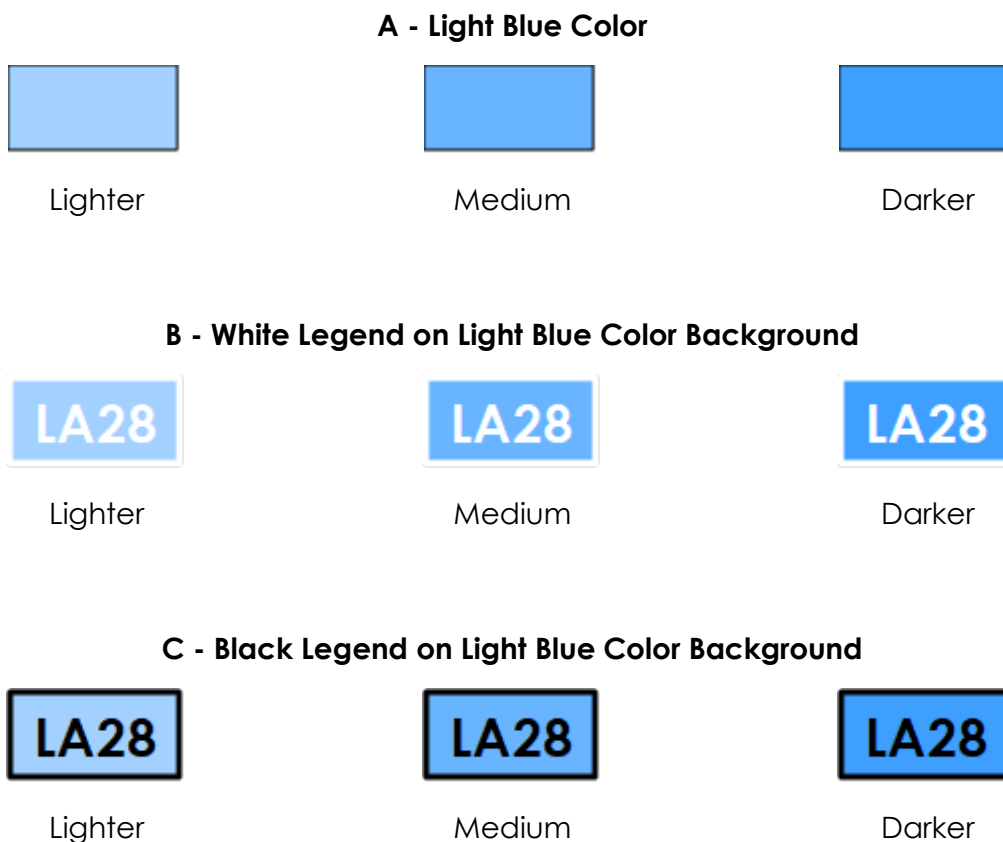
Color specifications for light blue color, including tolerance limits, are contained in 23 CFR Part 655, Appendix to Subpart F which is available at the Federal Highway Administration's MUTCD Web site at <http://mutcd.fhwa.dot.gov>. The

daytime color specification limits and luminance factors (percent) for retroreflective material of the light blue color can be determined from Tables 1 and 1a to Appendix to 23 CFR Part 655, Subpart F. Nighttime color specifications limits for retroreflective material of the light blue color can be determined using ASTM test methods included in 23 CFR Part 655.

1D – Color Code for Sign Panel/Plaque Word Message Legend - Black or White

Caltrans will determine the appropriate legend color combination, white or black, for use with the light blue color background, for the LA28 word message, when used on a sign plaque or sign panel. It is not clear as to which legend color, black or white, may provide better contrast for the sign plaque and sign panel.

Caltrans plans to engage Caltrans Headquarters Division of Research and Information Systems and Headquarters Transportation Laboratory to conduct an off-roadway, closed-course or laboratory evaluation and study to test the use of legend color, black and white, for the LA28 word message (see Figure 10) using the light blue color as the background color to evaluate which color provides better contrast for the sign plaques and sign panels. This testing for the legend color will be conducted in advance of the actual deployment under this experimentation request of the sign plaques and sign panels during the games. The reason for conducting this determination or test for the legend color in advance, is that white color may not provide adequate contrast with the light blue color tolerance limits. A black legend color may provide better contrast than white, when used on the light blue color background.

FIGURE 100 - TESTING TO IDENTIFY LEGEND COLOR AS BLACK OR WHITE

Any field testing, if needed, will be conducted within Caltrans Maintenance Yard or facility, to determine the appropriate legend and background color combination, that provides better contrast for the LA28 word message, when used on sign plaques and sign panels. The decision to use legend color, black or white, for LA28 word message on the light blue colored background will be made in advance of the games and not during the games to avoid road user confusion and related safety concerns during the games. Only one color, either black or white, will be used as the legend color in the actual experiment during the games.

1D – Color Code for Pavement Marking Word Message Legend - White

The legend color for LA28 word message used as a pavement marking, shall be white. Black color shall not be used as the legend color for the word message, when it is used on the pavement as a pavement marking as the material used for black color is opaque and non-retroreflective. All word, symbol and arrow pavement markings are white colored (see MUTCD Section 3B.20). Pavement marking colors of yellow, red, blue or purple are allowed only in narrow applications. Black can be used as a contrasting color to enhance light-colored pavement markings but will not be used for the pavement marking itself.

National MUTCD 2023 (11th Edition) - Signs

2A – Standardization of Application

The provisions of Part 2 regarding signs in general (Chapter 2A), regulatory signs (Chapters 2B and 2G), guide signs (Chapters 2D, 2E and 2G) and changeable message signs (Chapter 2L) shall apply to all roadways included in the established GRN in locations specified by Caltrans experimentation request to FHWA.

2A - Traffic sign header panels and plaques

The “LA28” traffic sign header panels and plaques will be used to create or change existing signs that are consistent with the formats in the MUTCD 11th Edition (2023). The “LA28” traffic sign plaque with white or black color legend on light blue color background will be used as a header plaque above existing or new regulatory and guide signs. The “LA28” traffic sign panel with white or black color legend on light blue color background will be used as a header panel and affixed to the face of a sign to overlay a portion of existing or new regulatory or guide signs. The LA28 sign plaque and the LA28 sign panel will be combined with the word message PERMIT ONLY in black legend on a white background on some existing or new regulatory and guide signs. Some of the existing traffic signs would be covered during the games.

The LA28 sign plaque and LA28 sign panel should be used only where deemed necessary or desirable and justified by engineering judgment, as provided in MUTCD Sections 1C.02 (#76) and 1D.03.

The LA28 sign plaque and the LA28 sign panel may be used on any new or existing regulatory or guide sign, where engineering judgment determines the need to identify dedicated lanes on GRN roadways. If used, the LA28 sign plaque and the LA28 sign panel may be combined with the word message PERMIT ONLY in black legend on a white background at some locations, where engineering judgment determines it is needed.

The LA28 sign plaque and the LA28 sign panel shall be rectangular and shall consist of the word message “LA28” in white or black legend on a light blue background. The LA28 legend shall be a single line for horizontal configuration. The LA28 legend for the vertical configuration shall be 2 lines, with LA legend in line 1 and 28 legend in line 2. If used, the LA28 sign plaque shall be added as a header plaque above any new or existing regulatory or guide sign, to identify dedicated lanes on GRN roadways.

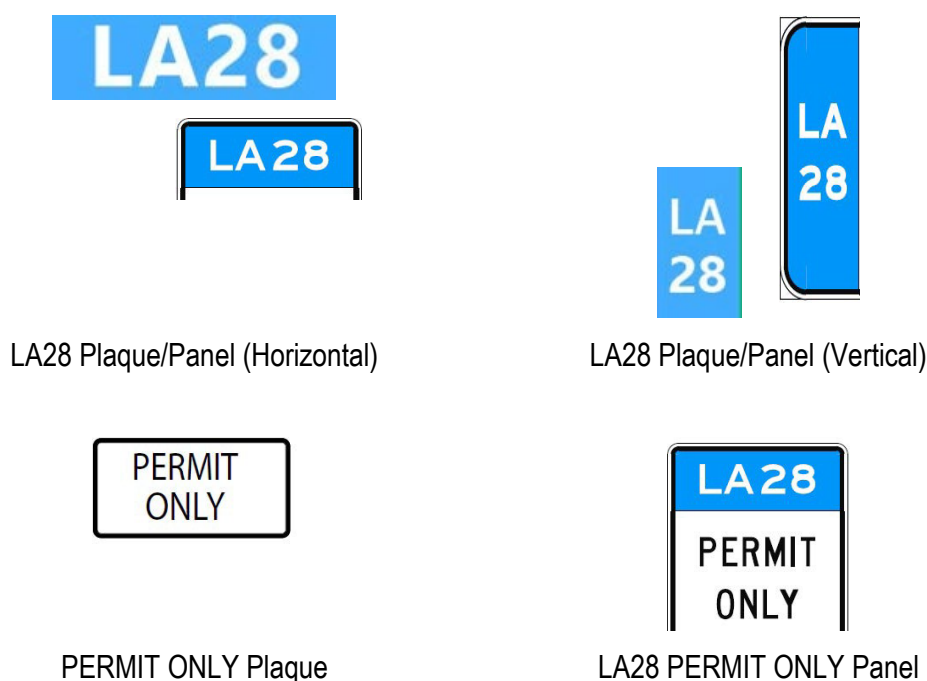
If used, the LA28 sign panel shall be used as a header panel and affixed to the face of a sign to overlay a portion of any new or existing regulatory or guide sign to identify dedicated lanes on GRN roadways. If using the LA28 sign header panel in the horizontal configuration, it shall be placed in the top portion of the regulatory or guide sign. If using the LA28 sign header panel in

A blue rectangular sign header panel with the text 'LA28' in white, bold, sans-serif font.

the vertical configuration, it shall be placed on the top left edge of the regulatory or guide sign. The LA28 sign plaques and LA28 sign panels shall not be used alone.

If signs using LA28 sign plaque or LA28 sign panel are needed to be installed at new locations to identify GRN dedicated lanes during LA28, refer to MUTCD Section 2A.13 for standardization of location for these signs.

FIGURE 111 - EXAMPLES OF LA28 AND PERMIT ONLY PLAQUES AND PANELS



2A – Excessive Use of Signs

Installing new signs, including new signs at new locations on GRN roadways to facilitate, travel during LA28 games should be avoided for fiscal responsibility and to avoid excessive signing and removal of these signs after the games. To save costs and expedite implementation, since the change is needed temporarily, opportunities to use LA28 sign plaque and LA28 sign panel with the existing traffic signs should be considered, if signing is needed.

2A – Design

The specifications for the individual regulatory or guide signs included in National MUTCD and CA MUTCD, The general appearance of the legend, color, and size for the existing or new regulatory or guide signs that will be used in dedicated lanes on GRN roadways are shown in the MUTCD and CA MUTCD figures and tables and in the Standard Highway Signs book and Caltrans sign specifications,

they are not always detailed in the text. Detailed drawings of these standard regulatory and guide signs, alphabets, symbols, and arrows are shown in the “Standard Highway Signs and Markings” book and Caltrans sign specifications.

The term legend shall include LA28 and PERMIT ONLY word messages for use on the sign plaque and as part of the sign panel to convey specific meaning. Uniformity in design of the LA28 and PERMIT ONLY sign plaque and sign panel shall include shape, color, dimensions, legends, borders, and illumination or retro reflectivity. Standardization of these sign plaque and sign panel does not preclude further improvement by minor changes in the proportion, width of borders, or layout of word messages, but all shapes and colors shall be as indicated.

2A – Retro-reflectivity and Illumination

The LA28 Sign Plaque and Sign Panel shall be retroreflective (see MUTCD Section 2A.21) or illuminated to show the same shape and similar color by both day and night. Retroreflection of LA28 Sign Plaque and Sign Panel elements may be accomplished by the means shown in MUTCD Table 2A-4. The uniformity of the sign design shall be maintained without any decrease in visibility, legibility, or driver comprehension during either daytime or nighttime conditions.

2A – Shapes

The standard shapes and standard proportions of existing regulatory and guide sign that are temporarily changed during LA28, shall be retained as much as practical, and comply with MUTCD Table 2A-1.

2A – Dimensions

When LA28 sign plaque or LA28 sign panel are installed with larger sized signs, a corresponding increase in the size of the plaque or the panel and its legend should also be made. The resulting plaque or panel size should be approximately in the same relative proportion to the larger-sized sign as the conventional sized plaque or panel is to the conventional-sized sign. The LA28 and PERMIT ONLY legends used on sign plaques and sign panels shall have letters and numerals that comply with the minimum height requirements shown in the MUTCD Tables included in MUTCD for the roadway classifications and the specific signs that they supplement.

2A – Symbols

The LA28 Sign plaque and Sign Panel shall not include any Olympic games, Para-Olympics symbol or any other symbol.

2A – Word Messages

Except as provided in next sentence, the LA28 sign plaque and LA28 sign panel shall include only the legend “LA28” as a word message. The LA28 sign plaque and the LA28 sign panel may be combined with the word message PERMIT ONLY at some locations, where engineering judgment determines it is needed. The LA28 and PERMIT ONLY lettering used on sign plaque and sign panel shall be in upper-case letters and shall be of the Standard Alphabets as provided in the “Standard Highway Signs” publication. The unique letter forms used, shall not be stretched, compressed, warped, or otherwise manipulated. MUTCD Section 2D.03 contains information regarding the acceptable methods of modifying the length of a word for a given letter height and series for guide signs.

2A – Standardization of Location

If engineering judgment determines the need to identify GRN dedicated lanes to facilitate LA28 games travel at either existing sign locations or new locations and space is limited for sign installation and there is a demand for several different types of signs, an order of priority for sign installation should be established so as not to overload road users with too much information. Because regulatory information is more critical to the road user than guidance information, any regulatory signs using LA28 sign plaque or LA28 sign panel whose location is critical should be displayed rather than guide signs that are using LA28 sign plaque or LA28 sign panel, in cases where conflicts occur. Information of a less critical nature should be moved to less critical locations or omitted.

2A – Overhead Sign Installations

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY, may be used on any existing regulatory or guide Overhead signs on freeways and expressways, where engineering judgment determines the need to identify GRN dedicated lanes to facilitate travel during LA28 games.

Figure 12 below, shows an existing overhead sign for the HOV lane. Shown to the right is the proposed LA28 sign. The enforceable portion of the regulatory sign (black on white) is replaced with “Permit Only” and the diamond is replaced with the “LA28” legend. Details on how this sign and others will be used is outlined in the attached LA28 Supplement.

FIGURE 122 - LA28 REGULATORY SIGNS

2B – Regulatory Signs

2B – Application of Regulatory Signs

The LA28 sign plaque and the LA28 sign panel combined with the word message PERMIT ONLY in black legend on a white background shall only be used on signs in GRN dedicated lanes, on which the GRN permit requirements and restrictions are applicable. These signs with the combined LA28 and PERMIT ONLY sign plaques or sign panels shall be installed at or near where the restriction applies.

FIGURE 133 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE REGULATORY SIGNS AND PLAQUE

A - Barrier-mounted Games Route Network regulatory signs and plaque

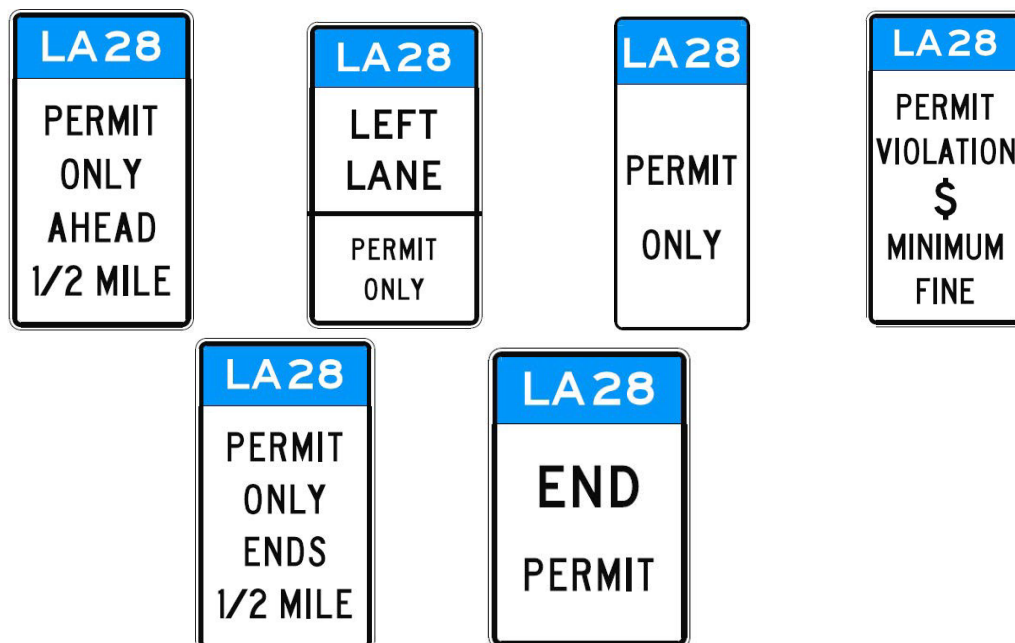


FIGURE 144 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE REGULATORY SIGNS AND PLAQUE

B - Overhead Games Route Network regulatory signs

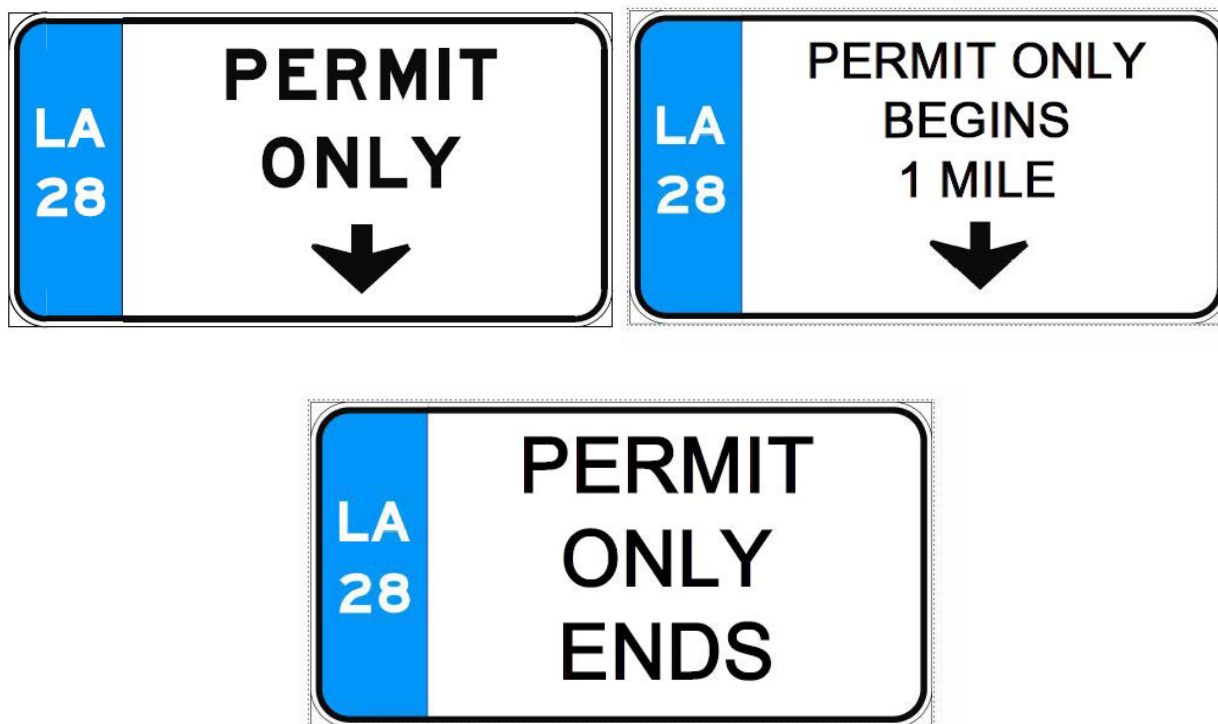
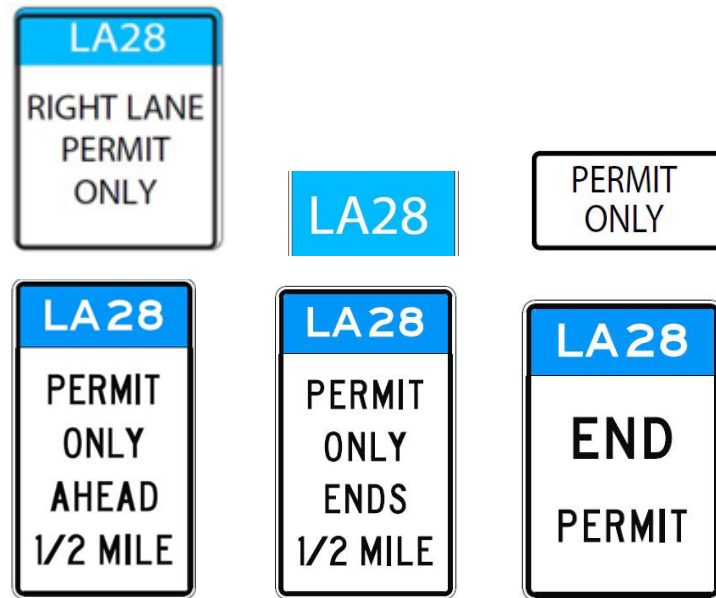


FIGURE 155 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE REGULATORY SIGNS AND PLAQUE

C- Post-Mounted Arterial Street Games Route Network regulatory signs and plaques



2B – Size of Regulatory Signs

Except as provided in MUTCD Section 2A.07 and this document titled Dimensions, the sizes for any new installations of regulatory signs to identify dedicated lanes on GRN roadways shall be as shown in MUTCD and CA MUTCD Tables 2B-1 and 2B-1(CA) respectively.

2B – Movement Prohibition and Lane Control Signs

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY, may be used on any of the following existing regulatory signs where engineering judgment determines the need to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games:

- Section 2B.26 Movement Prohibition Signs (R3-1 through R3-4, R3-18, and R3-27))
- Section 2B.27 Intersection Lane Control Signs (R3-5 through R3-8).
- Section 2B.28 Mandatory Movement Lane Control Signs (R3-5, R3-5a, R3-7, R3-19 Series, and R3-20) and Plaques.
- Section 2B.29 Optional Movement Lane Control Signs (R3-6 Series).
- Section 2B.30 Advance Intersection Lane Control Signs (R3-8 Series).

Refer to MUTCD and CA MUTCD Figures referenced in these sections and Figure 12 through Figure 16 in this document for examples showing the sign plaque addition and affixing the sign panel to the face of these regulatory signs.

FIGURE 166 - EXAMPLES OF LA28 SIGN PANEL USAGE ON LANE CONTROL SIGNS

(Former Continuous-Access Contiguous or Buffer-Separated HOV Lane)

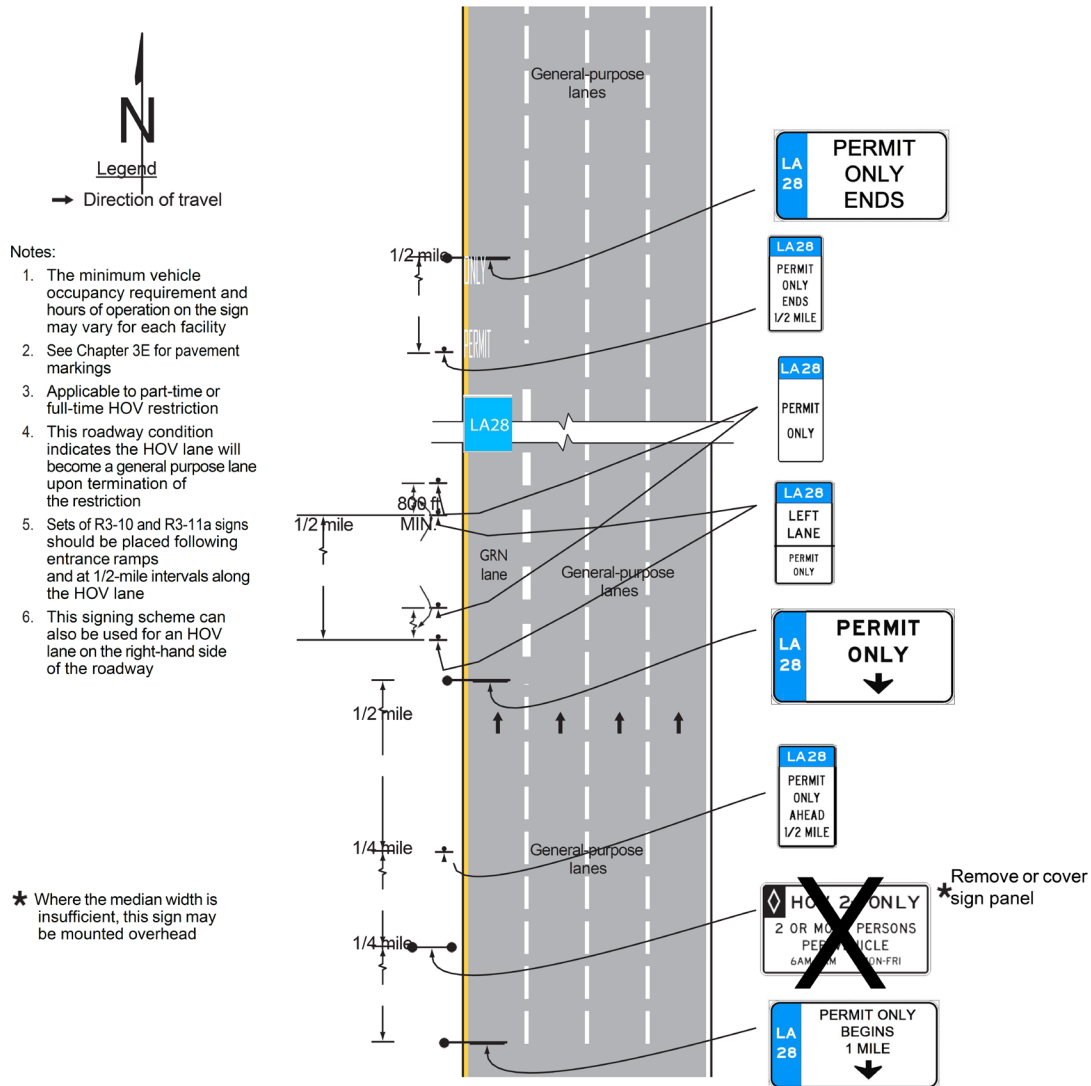
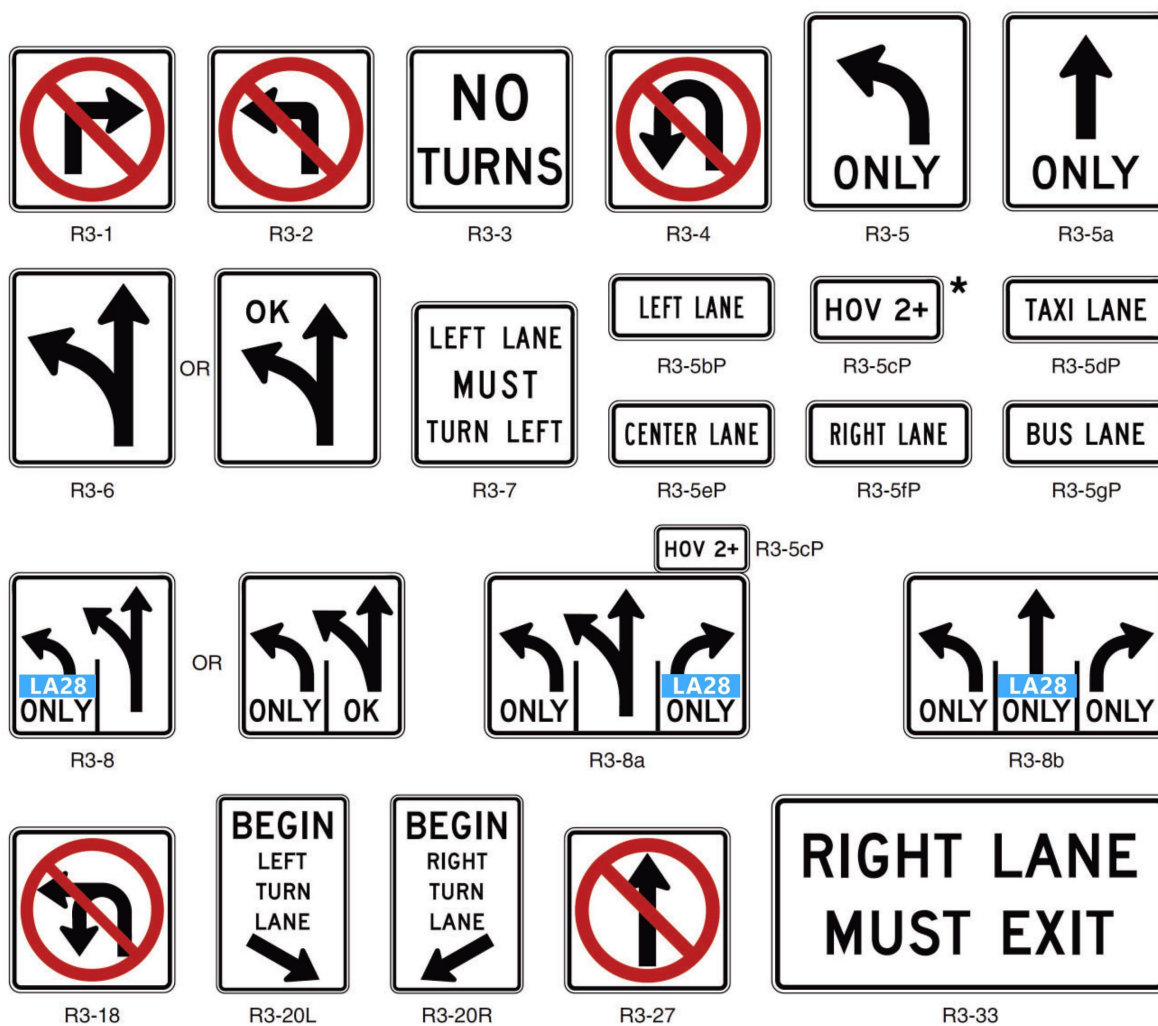


FIGURE 177 - EXAMPLES OF LA28 SIGN PANEL USAGE ON LANE CONTROL SIGNS

* The diamond symbol may be used instead of the "HOV" word message. The minimum vehicle occupancy level may vary, such as 2+, 3+, 4+. The words "LANE" or "ONLY" may be used with this sign when appropriate.

FIGURE 188 - EXAMPLES OF LA28 SIGN PLAQUE USAGE ON ADVANCE TURN ARROW AUXILIARY**SIGNS**R3-1
Activated Blank-OutR3-2
Activated Blank-OutR3-4
Activated Blank-OutR3-18
Activated Blank-OutR3-27
Activated Blank-Out

R18A (CA)



R18B (CA)



R33 (CA)



R33A (CA)



R60B (CA)



R61-1 (CA)



R61-3 (CA)



R61-5 (CA)



R61-7 (CA)



R61-9 (CA)



R61-11 (CA)



R61-13 (CA)



R61-15 (CA)



R61-17 (CA)



R61-19 (CA)



R61-22 (CA)



R61-24 (CA)



R61-26 (CA)



R61-28 (CA)



R61-30 (CA)



R61-32 (CA)



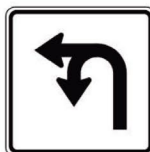
R61-34 (CA)



R61-36 (CA)



R73-1 (CA)



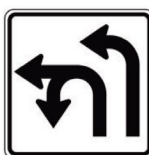
R73-2 (CA)



R73-3 (CA)



R73-4 (CA)



R73-5 (CA)



R73-6 (CA)



R73-8 (CA)

2B – BEGIN and END Plaques

The BEGIN (R3-9cP) or END (R3-9dP) plaque (see National MUTCD 2023 Section 2B.33 and Figure 2B-6) may be used to supplement any regulatory sign that, based on engineering judgment, is being used to identify GRN dedicated lanes to facilitate travel during LA28 games.

2D – Guide Signs Conventional Road

2D – Guide Signs Conventional Road Applications

Standardization of application, color, retroreflection and illumination of the guide signs used to identify dedicated lanes in GRN to facilitate travel during LA28 games is discussed previously in this document in topic 2A.

2D – Size of Guide Signs and Lettering

Refer to National MUTCD 2023 Sections 2A.04, 2A.07, 2A.08, including figure and table references and the respective CA MUTCD sections, figures and tables, and in this LA28 Supplement document, sections titled Design, Dimensions and Word Messages, for the sizes of any new installations of guide signs to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games.

2D – Guide Signs – Conventional Roads

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY, may be used on any of the following existing guide signs where engineering judgment determines the need to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games:

- Section 2D.26 Advance Turn Arrow Auxiliary Plaques (M5-1P, M5-2P, and M5-3P)
- Section 2D.27 Lane Designation Auxiliary Plaques (M5-4P, M5-5P, and M5-6P)
- Section 2D.28 Directional Arrow Auxiliary Plaques (M6 Series)
- Section 2D.29 Route Sign Assemblies
- Section 2D.30 Junction Assembly
- Section 2D.31 Advance Route Turn Assembly
- Section 2D.32 Directional Assembly
- Section 2D.34 Trailblazer Assembly
- Section 2D.36 Destination Signs (D1 Series)
- Section 2D.38 Combination Lane-Use/Destination Overhead Guide Sign (D15-1)
- Section 2D.49 Signing on Conventional Roads on Approaches to Interchanges
- Section 2D.55 Community Wayfinding Signs

Refer to MUTCD and CA MUTCD Figures referenced in these sections and Figure 18 through Figure 31 in this document for examples showing the sign plaque addition and affixing the sign panel to the face of the guide signs.

FIGURE 19 - EXAMPLES OF LA28 SIGN PLAQUE USAGE ON ADVANCE TURN ARROW AUXILIARY

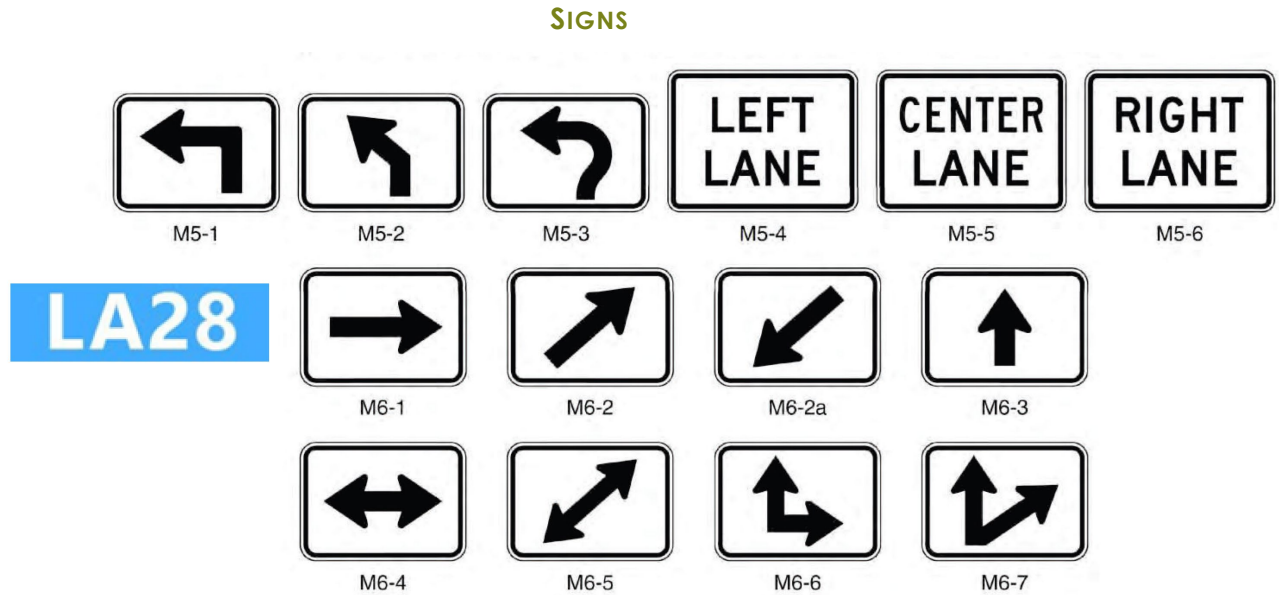


FIGURE 190 - EXAMPLES OF LA28 SIGN PLAQUE USAGE ON ADVANCE TURN SIGNS



2E – Guide Signs – Freeways and Expressways

2E – Guide Signs – Freeway and Expressway Guide Sign Applications

Standardization of application, color, retroreflection and illumination of the guide signs used to identify dedicated lanes in GRN to facilitate travel during LA28 games is discussed previously in this document in topics 2A and 2D.

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY, may be used on any of the following existing signs where engineering judgment determines the need to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games:

- Section 2E.27 Pull-Through Signs (E6-1 Series and E6-2 Series)
- Section 2E.19 Overhead Sign Installations
- Section 2E.21 Interchange Guide signs
- Section 2E.23 Interchange Advance Guide Signs (E1-1 through E1-3)
- Section 2E.25 Exit Direction Signs (E4 Series)
- Section 2E.26 Exit Gore Signs and Plaque (E5-1 Series).
- Section 2E.24 Interchange Sequence Signs (E9-1 and E9-2)
- Section 2E.55 Route Signs and Trailblazer Assemblies

Refer to MUTCD and CA MUTCD Figures referenced in these sections and Figure 18 through Figure 31 in this document for examples showing the sign plaque addition and affixing the sign panel to the face of the guide signs.

Figure 21 below, shows an existing overhead sign for the HOT lane. Details on how this sign and others will be used is detailed in the attached LA28 Supplement.

FIGURE 201 - LA28 GUIDE SIGNS



2G. - Preferential and Managed Lane Signs

2G. - Preferential and Managed Lane Sign Applications

The provisions of Chapter 2G for regulatory and guide signs shall apply to all Preferential and Managed Lane signs on roadways included in the established GRN in locations specified by Caltrans.

2G. - Preferential and Managed Lane Regulatory Signs

The provisions of Sections 2G.03 through 2G.07 regarding regulatory signs for preferential lanes shall apply to dedicated lanes on GRN roadways, operated at all times, or at certain times, based on the needs of established GRN, to allow Olympic Games vehicles to travel between venues and ensure athletes, coaches, officials, and other key Games stakeholders and accredited persons get to their events and venues on time. Such GRN lanes shall use changeable message signs or changeable message elements within static signs to display the appropriate regulatory sign messages only when they are in effect.

When certain types of vehicles (such as without LA28 permit) are prohibited from using a dedicated lane in GRN or when a dedicated lane in GRN is restricted to use by only certain types of vehicles (such as with a LA28 permit) during certain operational strategies, regulatory signs or regulatory panels within the appropriate guide signs that include changeable message elements shall be used to display the open/closed status of the managed lane for such vehicle types.

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY at some locations, may be used on any of the following existing signs where engineering judgment determines the need to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games:

- Section 2G.03 Regulatory Signs for Preferential Lanes
- Section 2G.04 Preferential Lane Vehicle Occupancy Definition Regulatory Signs (R3-10 Series and R3-13 Series)
- Section 2G.05 Preferential Lane Periods of Operation Regulatory Signs (R3-11 Series and R3-14 Series)
- Section 2G.06 Preferential Lane Advance Regulatory Signs (R3-12, R3-12e, R3-12f, R3-15, R3-15a, and R3-15d)
- Section 2G.07 Preferential Lane Ends Regulatory Signs (R3-12a, R3-12b, R3-12c, R3-12d, R3-12g, R3-12h, R3-15b, R3-15c, and R3-15e)

Refer to MUTCD and CA MUTCD Figures referenced in these sections and Figure 18 through Figure 31 in this document for examples showing the sign plaque addition and affixing the sign panel to the face of the regulatory signs.

Regulatory signs applicable only to a dedicated lane on GRN roadway shall be distinguished from regulatory signs applicable to general-purpose lanes by the inclusion of the legend “LA28” and/or “PERMIT ONLY” (see Figure 12). The

legend “LA28” color shall be white or black and the background color for the legend shall be light blue. If used, the legend “PERMIT ONLY” color shall be black and the background color shall be white.

The word message and light blue color background displayed on a particular GRN Lane regulatory sign will vary based on the specific type of allowed traffic and on other related operational constraints that have been established for a particular lane.

Changeable message signs may supplement, substitute for, or be incorporated into static dedicated GRN Lane regulatory signs where travel conditions change or where multiple types of operational strategies (such as time of day requirements or vehicle types) are used and varied throughout the day or week, or on a real-time basis, to manage the use of, control of, or access to the dedicated GRN lanes.

When changeable message signs (see MUTCD Chapter 2L) are used as regulatory signs for dedicated lanes on GRN roadways, they shall be the required sign size and shall display the required letter height and legend format that corresponds to the type of roadway facility and design speed.

When regulatory signs are used at new locations on conventional roads to facilitate GRN travel during LA28 games, the decision regarding whether to use a barrier-mounted, post-mounted, or overhead version of a particular type of sign should be based on an engineering judgment that considers the available space, the existing signs for the adjacent general-purpose traffic lanes, roadway and traffic characteristics, the proximity to existing overhead signs, the ability to install overhead signs, and any other unique local factors.

If overhead regulatory signs applicable only to a dedicated lane on GRN roadways are located in approximately the same longitudinal position along the highway as overhead signs (applicable only to the general-purpose lanes), the signs for the dedicated lane on GRN roadway should be separated laterally from the signs for the general-purpose lanes to the maximum extent practicable to minimize conflicting information, while maintaining their visual relationship to the lanes below, necessitated by specific legend or arrows indicating lane assignment.

On conventional roadways, existing signage and new sign installation locations' (if needed) spacing should be determined by engineering judgment based on speed, block length, distances from adjacent intersections, and other site-specific considerations.

The agencies that own and operate roadways included in the established GRN have the authority and responsibility to determine how they are operated , including the GRN permit requirements.

Figure 15 and Figure 21 through Figure 27 illustrate the use of LA28 sign panels on regulatory signs for the beginning, along the length, and at the end of contiguous or buffer-separated dedicated lanes on GRN roadways that provide continuous access with the adjacent general-purpose lanes.

2G. - Preferential Lane Periods of Operation Regulatory Signs

On conventional roads, If signs using LA28 sign plaque or LA28 sign panel are needed to be installed at new locations to identify dedicated lanes on GRN roadways during LA28, post-mounted signs may be used in lieu of, or in addition to, overhead signs. Additional overhead or post-mounted signs may be provided along the length of any type of dedicated lane(s) included in the established GRN. If signs using LA28 sign plaque or LA28 sign panel are needed to be installed at new locations to identify GRN dedicated lanes during LA28, refer to MUTCD Section 2A.13.

2G. - Preferential Lane Advance Regulatory Signs

Additional barrier-mounted, post-mounted or overhead GRN Lane Advance Regulatory signs (see Figure 13) may be placed farther in advance of or closer to the beginning or initial entry points to a preferential lane.

2G. - Preferential and Managed Lane Guide Signs

On conventional roads, guide signs applicable only to dedicated lanes on GRN roadways, if used, should comply with the provisions for guide signs in Chapter 2D and any principles for Preferential Lane guide signs in Sections 2G.10 through 2G.15 that engineering judgment finds to be appropriate for the conditions.

Additional guidance and standards related to the designation, operational considerations, signs, pavement markings, and other considerations for dedicated lanes on GRN roadways are provided in MUTCD Sections 2G.03 through 2G.07, 2G.09, and Chapter 3E.

Signs applicable only to a dedicated lane on GRN roadways, shall be distinguished from signs applicable to a preferential lane or general-purpose lanes by the inclusion of the LA28 sign plaque or sign panel using white legend on light blue background.

When post-mounted guide signs applicable only to a GRN lane are installed on a median barrier with limited lateral clearance to the adjacent travel lanes or shoulders, the guide signs may have a vertically-oriented rectangular shape. Where lateral clearance is limited, such as when a post-mounted GRN Lane guide sign is installed on a median barrier, the edges of the sign should not project beyond the outer edges of the barrier.

Where lateral clearance is limited, guide signs on dedicated lanes in GRN roadways that are 72 inches or less in width may be skewed up to 45 degrees in order to fit within the barrier width or may be mounted higher, such that the vertical clearance to the bottom of the sign, light fixture, or its structural support,

whichever is lowest, is not less than 17 feet above any portion of the pavement and shoulders.

Where lateral clearance is limited, GRN Lane guide signs that are post-mounted on a median barrier and that are wider than 72 inches shall be mounted with a vertical clearance that complies with the provisions of MUTCD Section 2A.11 for overhead mounting.

Changeable message signs may supplement, substitute for, or be incorporated into static guide signs involving Los Angeles 2028 Summer Olympics and Paralympics competition and key non-competition venues involving a wide range of traffic management measures, including where travel conditions change or where multiple types of operational strategies are used and varied throughout the day or week to manage the use of, control of, or access to dedicated lanes on GRN roadways.

When changeable message signs (see Chapter 2L) are used as guide signs for dedicated lanes on GRN roadways, they shall be the required sign size and shall display the required letter height and legend format that correspond to the type of roadway facility and design speed.

2G. - Guide Signs for Entry Points, Egress, Direct Entrance and Direct Exit from/to Preferential Lanes,

The LA28 sign plaque and the LA28 sign panel, including if it is combined with the word message PERMIT ONLY at some locations, may be used on any of the following existing signs where engineering judgment determines the need to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games:

- Section 2G.11 Guide Signs for Initial Entry Points to Preferential Lanes
- Section 2G.12 Guide Signs for Intermediate Entry Points to Preferential Lanes)
- Section 2G.13 Guide Signs for Egress from Preferential Lanes to General-Purpose Lanes
- Section 2G.14 Guide Signs for Direct Entrances to Preferential Lanes from Another Highway
- Section 2G.15 Guide Signs for Direct Exits from Preferential Lanes to Another Highway

Refer to MUTCD and CA MUTCD Figures referenced in these sections and Figure 18 through Figure 31 in this document for examples showing the sign plaque addition and affixing the sign panel to the face of the preferential and managed lane guide signs.

FIGURE 212 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE GUIDE SIGNS

Overhead GRN Lane Entrance Advance Guide Signs

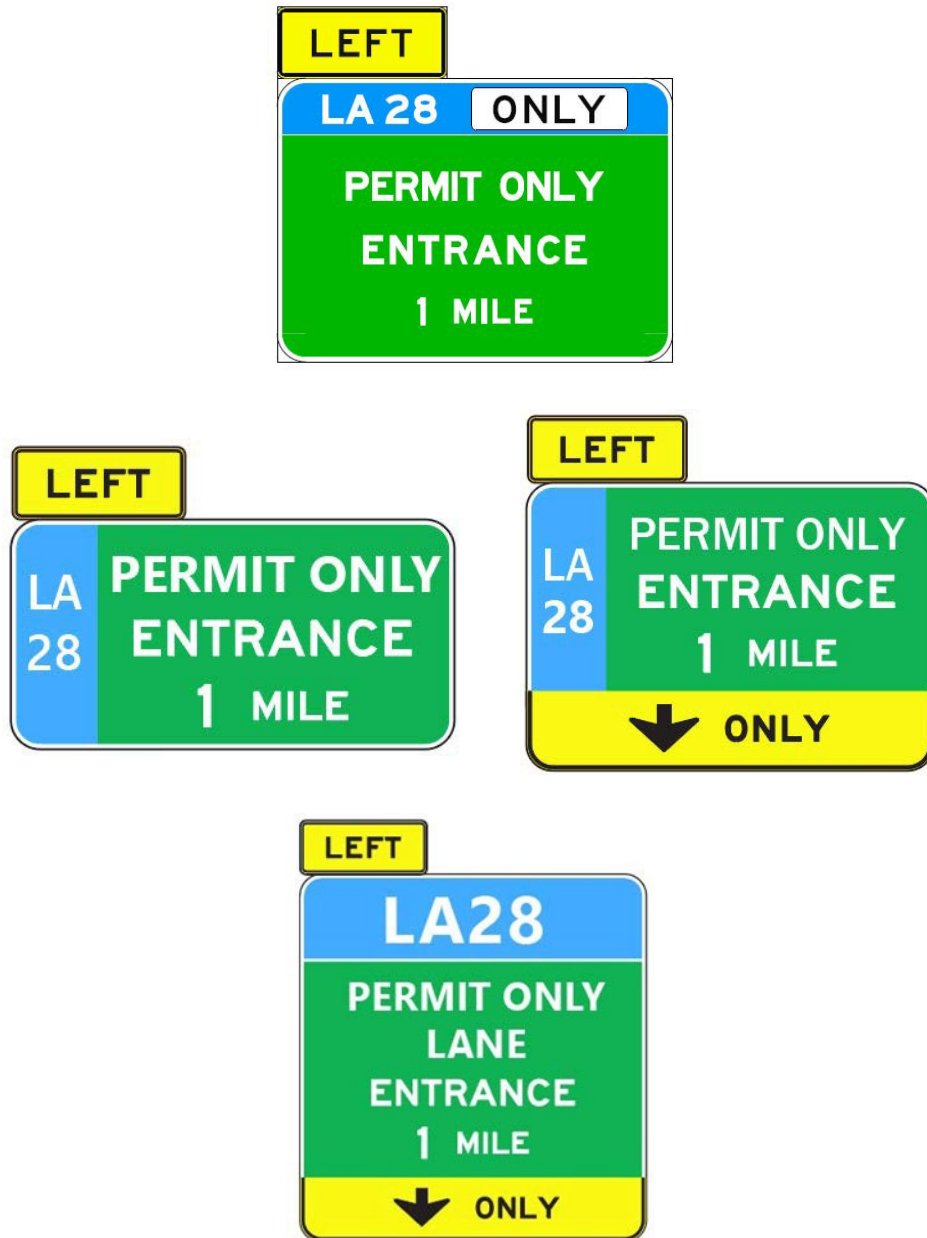


FIGURE 223 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE GUIDE SIGNS

Overhead or Post-Mounted GRN Lane Entrance Direction Signs

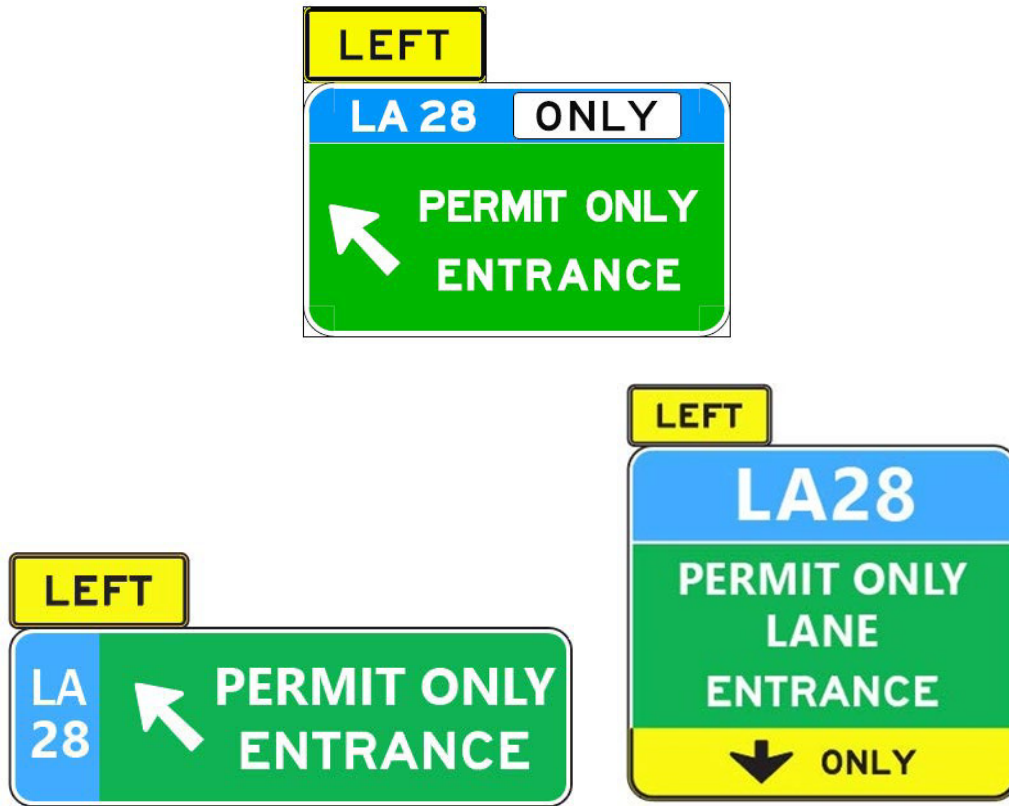
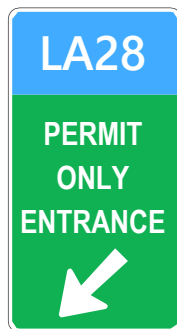


FIGURE 234 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE GUIDE SIGNS

Entrance Gore Signs for Barrier-Separated GRN Lanes



(Former Preferential Lane)

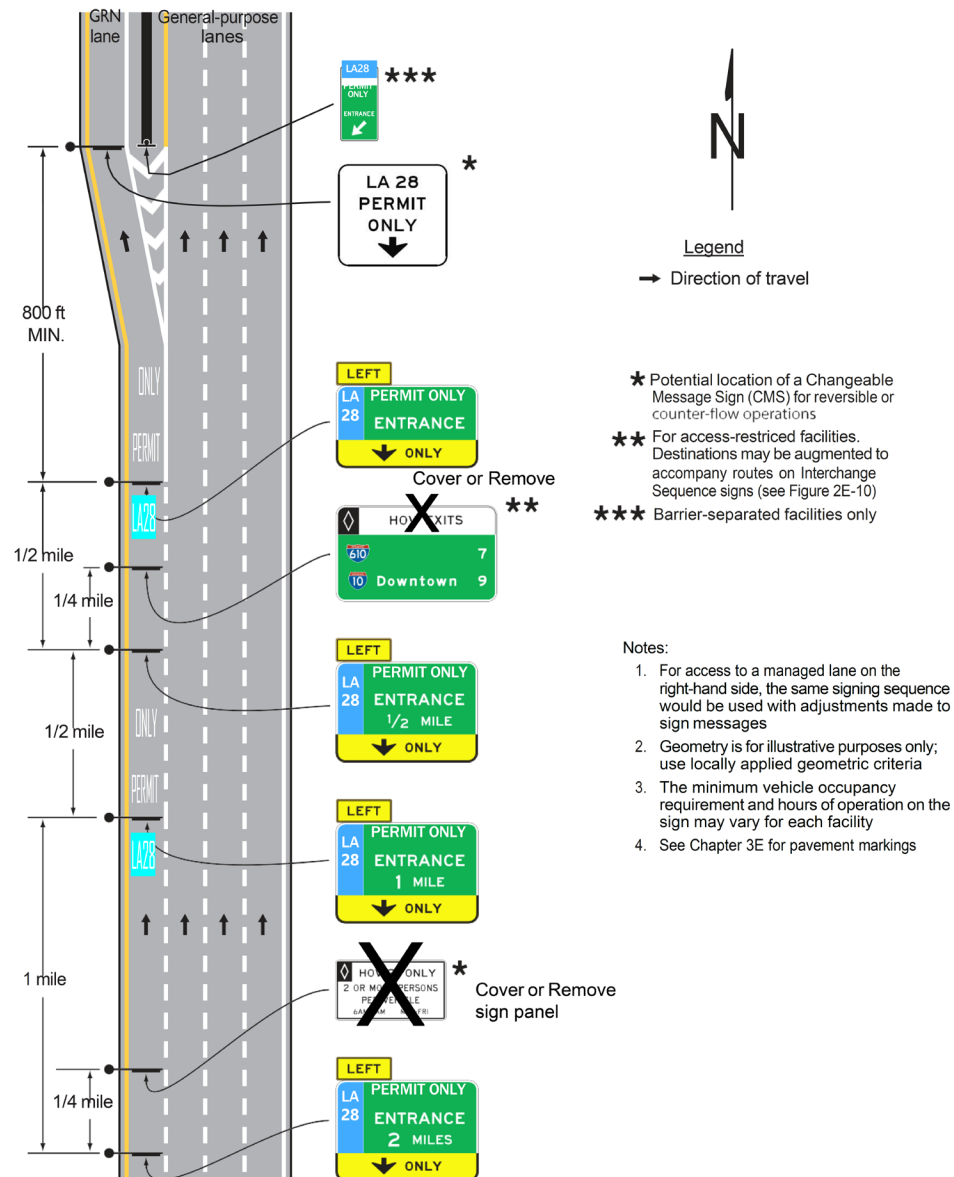


FIGURE 256 - EXAMPLE OF SIGNING FOR AN ENTRANCE TO GAMES ROUTE NETWORK LANES
(Former Access-Restricted HOV Lanes)

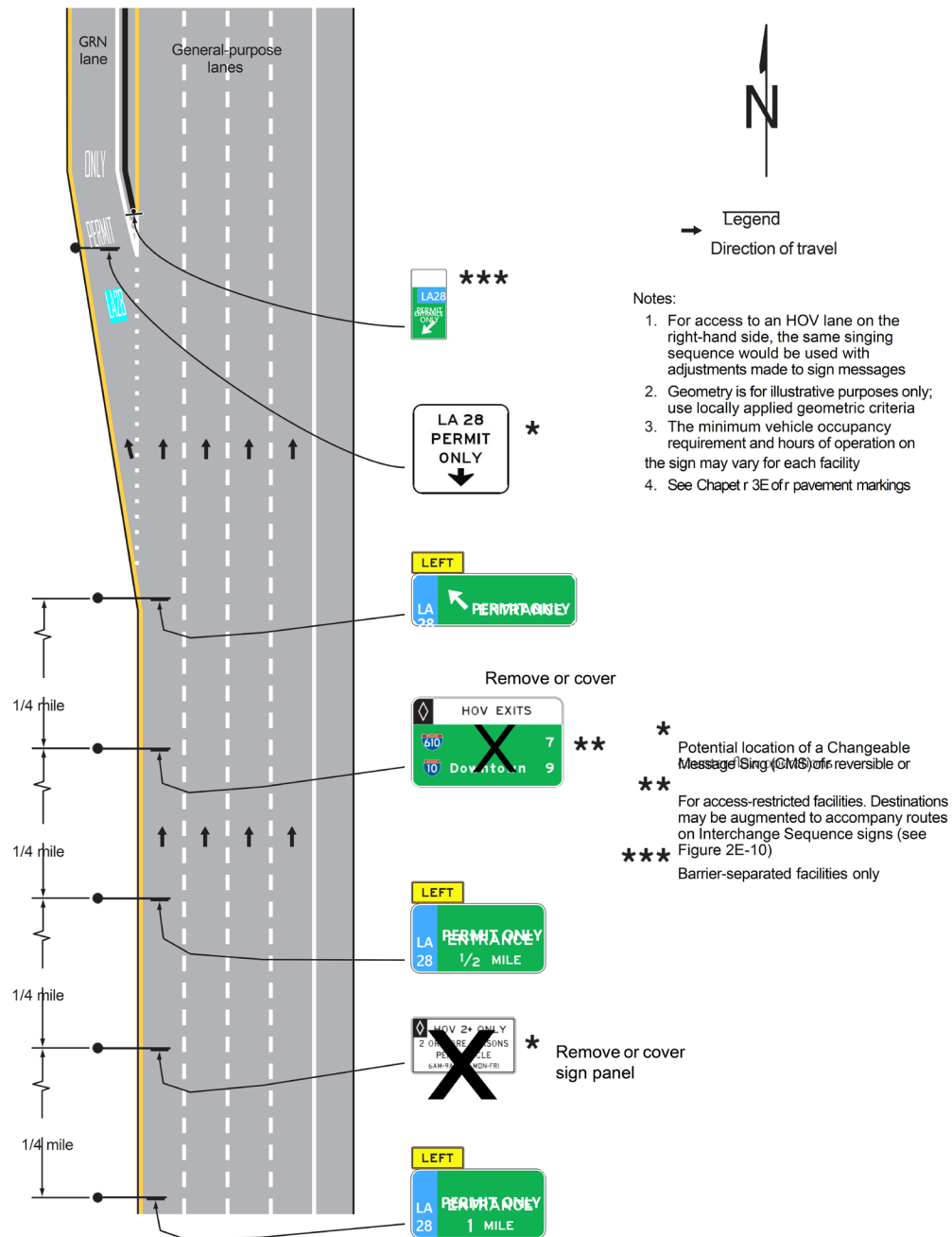


FIGURE 267 - EXAMPLE OF SIGNING FOR THE INTERMEDIATE ENTRY TO, EGRESS FROM, AND END OF GAMES ROUTE NETWORK LANES

(Former Access-Restricted HOV Lanes)

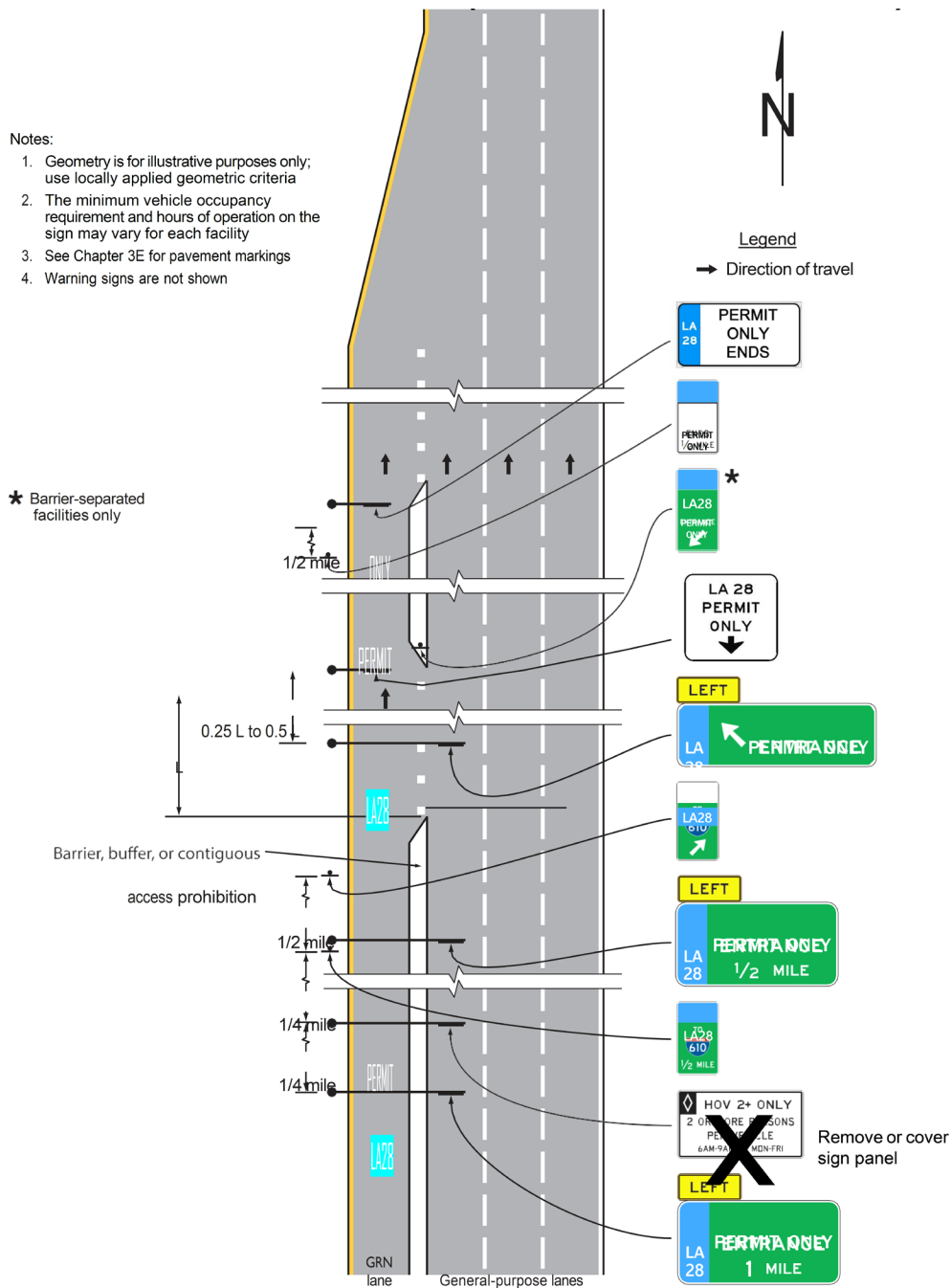


FIGURE 278 - EXAMPLES OF LA28 SIGN PANEL USAGE ON GRN LANE GUIDE SIGNS



(Former Access-Restricted Priced Managed Lane – ETC Account Required)

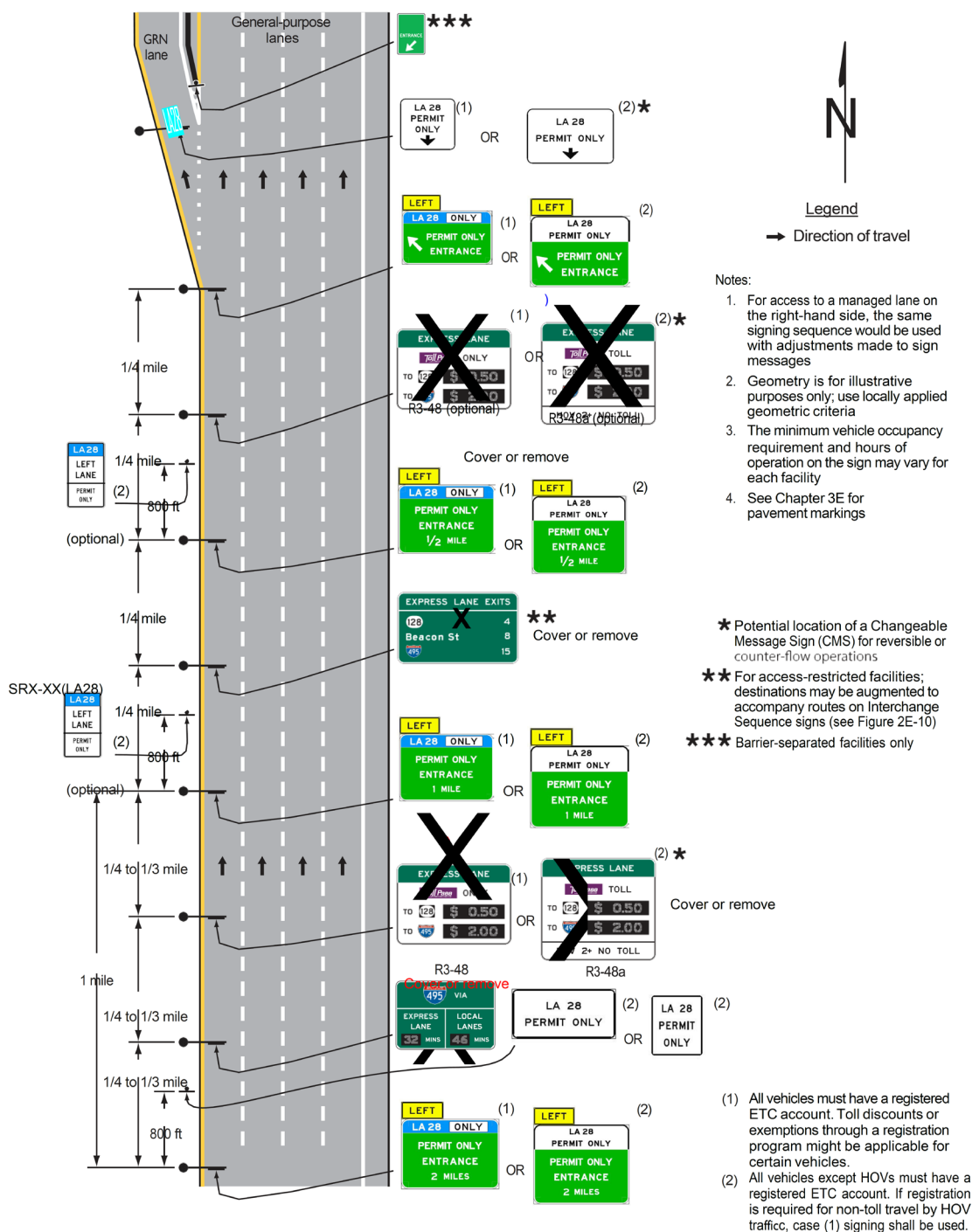


FIGURE 280 - EXAMPLE OF SIGNING FOR A GENERAL-PURPOSE LANE BECOMES A GAMES ROUTE**NETWORK LANE**

(Former Access-Restricted Price Managed Lane)

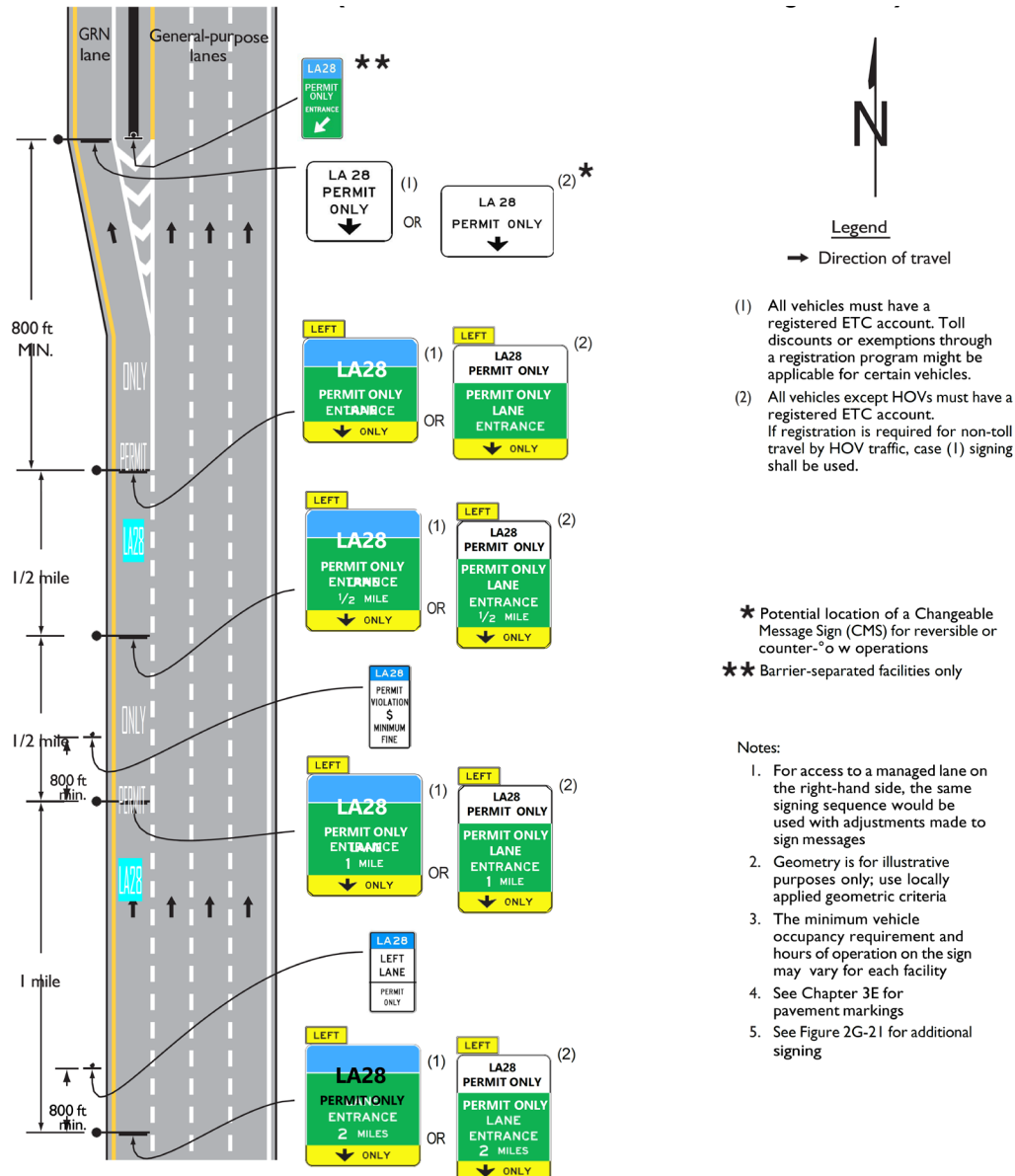
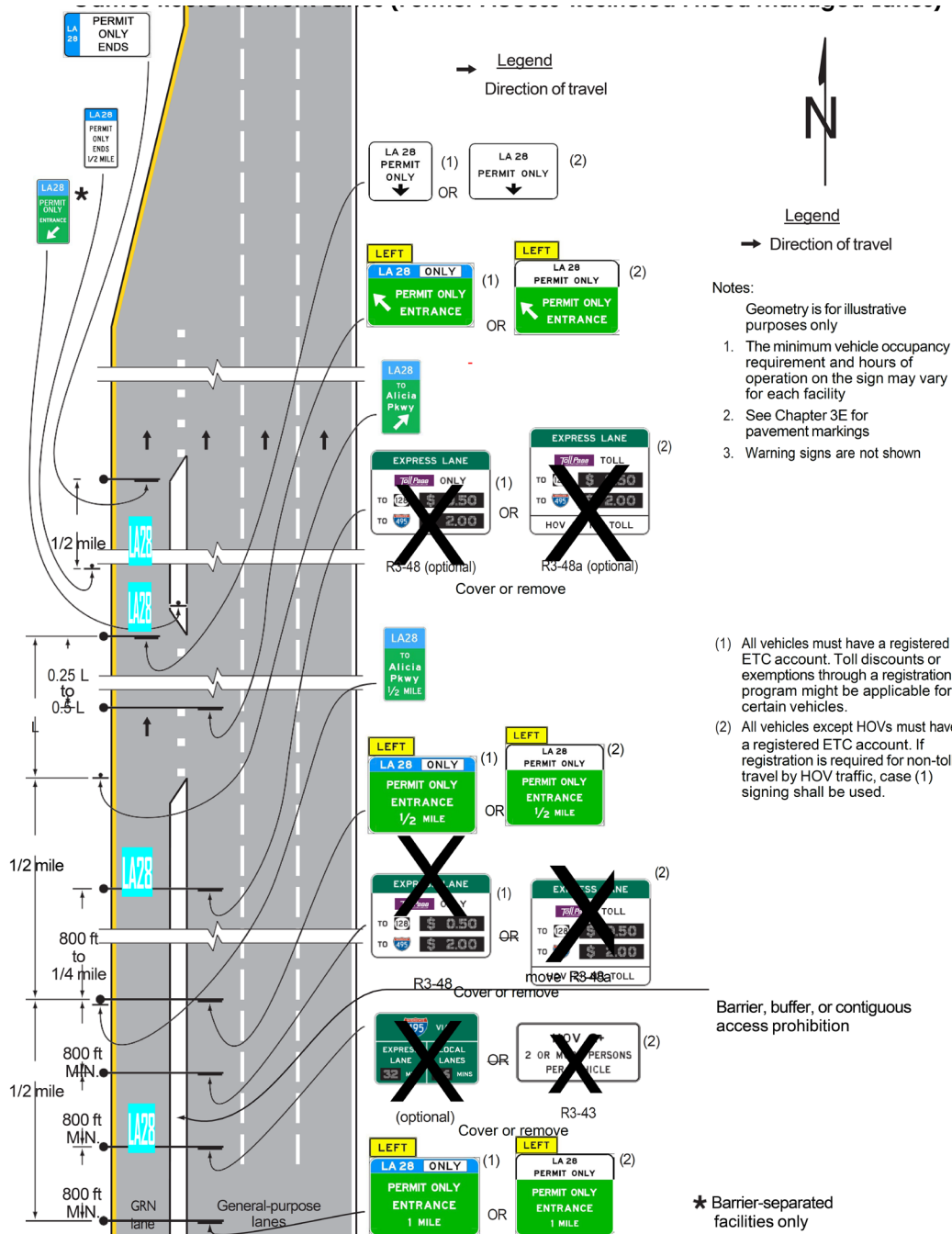


FIGURE 291 - EXAMPLE OF SIGNING FOR THE INTERMEDIATE ENTRY TO, EGRESS FROM, AND END OF GAMES ROUTE NETWORK LANES

(Former Access-Restricted Priced Managed Lanes)



2L Changeable Message Signs

The transportation-related messages on CMS will be used as an operational strategy, but there will be no deviation from CMS provisions in the MUTCD."

National MUTCD 2023 (11th Edition) - Markings

3 – Pavement markings

The LA28 word message in white color legend on a light blue color, no color (pavement), or black contrast background will be used as pavement markings in some lanes of the GRN roadways. The LA28 pavement marking will be combined with PERMIT ONLY word message, with the PERMIT ONLY legend in white color on the pavement at some locations of the lanes of the GRN roadways.

3A - Standardization of Application and Color

The provisions of MUTCD Part 3 regarding markings in general, material, retro reflectivity (Chapter 3A), pavement word markings (Chapter 3B), preferential lane markings (Chapter 3D) and colored pavements (Chapter 3G) shall apply to all roadways included in the established GRN in locations specified by Caltrans experimentation request to FHWA.

When a GRN has been established with dedicated lanes for Olympic Games vehicles to travel between venues, the LA28 sign plaque, LA28 sign panel, including when combined with PERMIT ONLY message (see Chapters 2A, 2B, 2D, 2E and 2G) and LA28 and PERMIT ONLY word pavement markings (see Chapters 3A, 3B, 3D and 3G) for these lanes shall be used to advise road users of GRN permit requirements and restrictions.

When used, the LA28 word pavement markings shall be white color on a light blue color or no color (pavement) background and the PERMIT ONLY word pavement marking shall be white color. Black may be used as contrast marking when the LA28 markings are installed on a light-colored pavement.

The LA28 word marking (see Figure 33 and Figure 34) should be used only where deemed necessary or desirable and justified by engineering judgment, as provided in MUTCD Section 1D.03. The LA28 word pavement marking, with either the light blue color or no color background, should only be used where it contrasts significantly with adjoining paved areas. It can be used in combination with the black color to enhance its visual contrast with adjoining paved areas.

The LA28 word marking may be used on any roadway that is included in the established GRN, where engineering judgment determines the need to identify dedicated lanes on GRN roadways for Olympic Games vehicles to travel between venues that are included in the established GRN. To enhance the

identification of dedicated lanes on GRN roadways, the PERMIT ONLY word marking in white legend on a contrasting pavement background maybe used at some locations in conjunction with the LA28 word marking, where engineering judgment determines it is needed.

If used, the LA28 word marking and the PERMIT ONLY word markings (see Figure 33 and Figure 34) should be in place before the games begin and maintained during the games for the time period June 1, 2028 to September 1, 2028. Where used on roadways in GRN, the LA28 word marking and the PERMIT ONLY word marking shall be removed after September 1, 2028, or the end of the games and the roadway restored to the condition of previous markings.

The provisions of MUTCD Section 3A.05 requiring a method designed to maintain minimum pavement marking Retro reflectivity, do not apply to word pavement markings, which includes LA28 and PERMIT ONLY word pavement markings.

3A – Marking Materials

The chromaticity coordinates that define the ranges of acceptable colors, including white and light blue, for traffic control devices are found in the Appendix to Subpart F of 23 CFR 655.

The material used for the white color legend and light blue color background for both the LA28 and PERMIT ONLY word pavement markings shall be retroreflective, as these pavement markings are traffic control devices under the specific application that is planned to be deployed by Caltrans in this experiment. The materials used for LA28 and PERMIT ONLY word pavement markings should provide the specified light blue and white color through their temporary use period from June 1, 2028, to September 1, 2028.

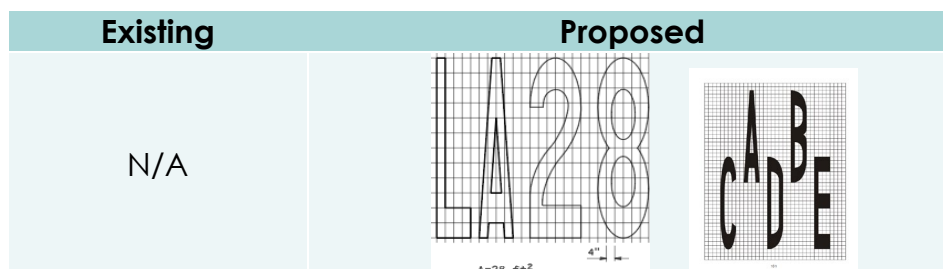
Consideration should be given to selecting pavement marking materials that will minimize tripping or loss of traction for road users, including pedestrians, bicyclists, and motorcyclists. Installation of light blue background color to one lane or an area or portion of a multi-lane traveled way can create differentials in skid resistance values between the areas of colored pavement and non-colored pavement that might be unexpected by the road user.

3B – Pavement Word Markings

The LA28 and PERMIT ONLY word markings are used to identify priority lanes that have been dedicated on roadways in the established GRN to facilitate the movement of athletes and Games personnel during the games. These LA28 and PERMIT ONLY word pavement markings can be helpful to road users in some locations by supplementing signs and providing additional emphasis, because the markings do not require diversion of the road user's attention from the roadway surface.

The LA28 word pavement markings may be used as determined by engineering judgment to supplement signs and/or to provide emphasis for regulatory and guide signs that have been modified by using the LA28 sign plaque or sign panel. The LA28 word pavement marking may be used alone, as a single line of information.

FIGURE 302 - LA28 WORD MESSAGE PAVEMENT MARKINGS



The PERMIT ONLY word pavement marking may be used in conjunction with the LA28 word pavement markings, as determined by engineering judgment to supplement signs and/or to provide additional emphasis for regulatory and guide signs that have been modified by using the LA28 sign plaque or sign panel. The PERMIT ONLY word pavement markings shall not be used alone, it shall always be used in conjunction with the LA28 word pavement markings.

If used, the LA28 word pavement marking shall be in a single line. If PERMIT ONLY word pavement marking is used in conjunction with the LA28 word pavement marking, it shall consist of three lines of information. Each word of the information, LA28, PERMIT and ONLY, shall constitute as a single separate line. This, three lines of information, shall read as LA28 PERMIT ONLY in the direction of travel, with the first word LA28, nearest to the road user (see Figure 34).

Detailed drawings of the LA28 and PERMIT ONLY pavement word markings and alphabet details are shown in Figure 34 and the “Standard Highway Signs and Markings” book. MUTCD Section 1A.05 contains information regarding how to obtain this publication.

If used, the LA28 word marking shall be white legend on a light blue or no color (pavement) background. If used, the PERMIT ONLY word marking shall be white legend. If used, the PERMIT ONLY word marking shall not be used alone, it shall be used in conjunction with the LA28 word marking. The LA28 and PERMIT ONLY pavement marking letters and numerals shall be installed in accordance with the design details in the Pavement Markings chapter of the “Standard Highway Signs and Markings” book (see MUTCD Section 1A.05).

The LA28 and PERMIT ONLY word pavement markings may be proportionally scaled to fit within the width of the facility upon which they are applied.

If used, each of the LA28, PERMIT and ONLY word pavement marking used on freeway and arterial streets segments in the GRN, should be spaced 50 feet apart, as shown in Figure 34 Part B. If used, each of the LA28, PERMIT and ONLY word pavement marking used on continuous lane segments in the GRN, should be spaced 250 feet apart, as shown in Figure 34 Part C.

When used, the LA28 and PERMIT ONLY word pavement markings letter heights should be as shown in Figure 34.

3D – Preferential Lane Word Markings

The provisions of Chapter 3D for preferential lane word and symbol markings shall apply to all roadways included in the established GRN in locations specified by Caltrans experimentation request to FHWA.

When certain types of vehicles (such as without LA28 permit) are prohibited from using a GRN lane or when a GRN lane is restricted to use by only certain types of vehicles (such as with a LA28 permit) as an operational strategy, the LA28 word pavement marking alone, or in conjunction with the PERMIT ONLY word pavement marking shall be used to identify GRN dedicated lanes, to facilitate the movement of athletes and Games personnel during the games.

The LA28 and PERMIT ONLY word pavement markings may be omitted at toll plazas where physical conditions preclude the use of the markings.

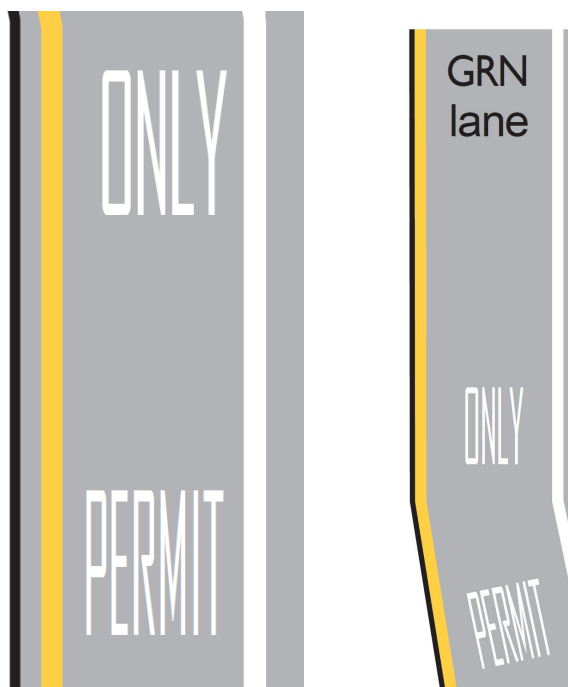
The location for the LA28, and if used, PERMIT ONLY word pavement markings should be based on engineering judgment that considers the prevailing speed, block lengths, distance from intersections, and other factors that affect clear communication to the road user.

If used, the spacing interval shown in Figure 34 should be used based on the roadway classification. The LA28, and if used, PERMIT ONLY word pavement markings should be placed on roadways in the established GRN at strategic locations such as major decision points, departures from the GRN lane, and along access to and from adjacent general-purpose lanes.

FIGURE 313 - LA28 AND PERMIT ONLY WORD MESSAGE PAVEMENT MARKINGS



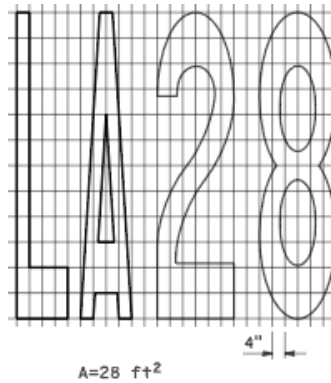
LA28 Markings



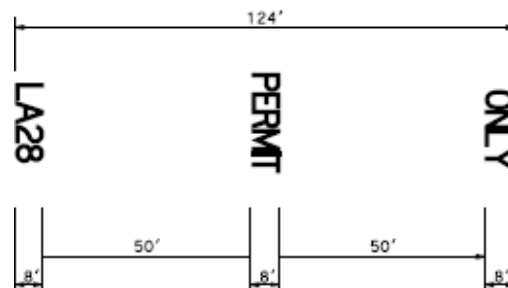
PERMIT ONLY Markings

FIGURE 324 - EXAMPLES OF LA28 AND PERMIT ONLY MARKINGS

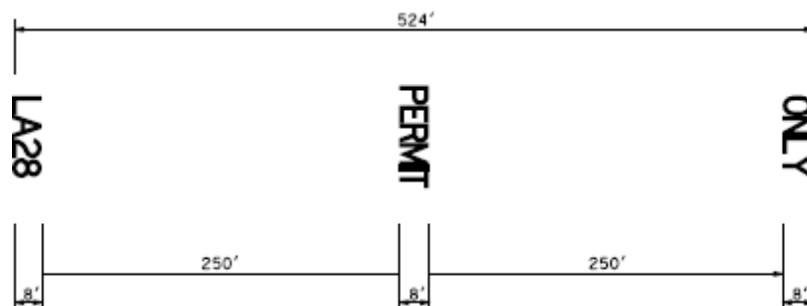
A – LA28 Pavement Marking



B – LA28 PERMIT ONLY at Games Route Network Lane Opening (Freeway) and Arterial streets



C – LA28 PERMIT ONLY at Continuous Games Route Network Lane



3G – Delineators

The provisions of Chapter 3G for delineators shall apply to all roadways included in the established GRN in locations specified by Caltrans experimentation request to FHWA. Delineators may be used on GRN roadways at locations where the alignment might be confusing or unexpected, to identify and separate dedicated lanes from general purpose lanes, to facilitate travel during the games. Delineators, if used, they will be in compliance with the MUTCD and not be non-standard, nor require experimentation.

3H – Light Blue Colored Pavement for GRN Lanes

Light blue colored pavement background may be used for the LA28 white legend word pavement making, to enhance the conspicuity of the LA28 word pavement marking. The LA28 word pavement marking is used in conjunction with other traffic control devices to identify dedicated lanes on GRN roadways to facilitate travel during LA28 games. Refer to Figure 33 and Figure 34. The LA28 word pavement markings with the light blue color used as background color, should only be used where it contrasts significantly with adjoining paved areas. Black pavement marking may be used to increase or provide visual contrast.

National MUTCD 2023 (11th Edition) – Highway Traffic Signals

4 – Highway Traffic Signals

All highway traffic signals used on GRN roadways will comply with MUTCD Part 4, no deviations or non-standard applications for traffic signals are proposed. Any change to signal timing, signal phasing, signal coordination for coordinated mode in a progressive system for advanced signal synchronization, would be in compliance with the MUTCD Part 4. However, some aspects of these operational strategies deployed to coordinate and synchronize traffic signals for operational improvements, aren't traffic control device policies and although related to the traffic control devices, they constitute engineering practices and are not included in MUTCD Part 4. Deploying these engineering practices as part of the operational strategies to modify traffic signals for operational improvements do not require experimentation.

National MUTCD 2023 (11th Edition) – Temporary Traffic Control

6F – Temporary Traffic Control Devices

The provisions for temporary traffic control devices in Part 6, shall apply to all temporary traffic control devices used on roadways included in the established GRN in locations specified by Caltrans experimentation request to FHWA.

6F – Portable Changeable Message Signs

The provisions of design and application principles in Chapter 2A, preferential and managed lane signs in Chapter 2G, changeable message signs in Chapter 2L

and temporary traffic control in Part 6 of CA MUTCD 2014R9 and this LA28 Supplement shall apply to portable changeable message signs used in GRN dedicated lane(s) for Olympic Games vehicles to travel between venues that is included in the established GRN.

Portable changeable message signs may be used to display GRN messages, where engineering judgment determines the need to use GRN messages on GRN roadways to facilitate travel during LA28 games. GRN messages used on portable changeable message signs shall be used only if the portable changeable message signs are located in or on approaches to GRN dedicated lane(s) for Olympic Games vehicles to travel between venues that is included in the established GRN.

FIGURE 335 - SAMPLE CHANGEABLE MESSAGE EQUIPMENT (GLASGOW 2014)



Justification for not using Control Sites

The 2028 Los Angeles Olympics and Paralympics (LA28) are a global atypical large-scale preeminent special sporting event. These games include over 11,000 competitors representing over 200 nations and attracting millions of visitors with an estimated 1.2 million peak day spectator trips.

Due to the large scale of this global event and the venue and location of most of the events being in a single city, it is a unique event. There are no control sites available that can be used for this experiment.

Evaluation Methodology

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 of 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.

Metric - Travel Time

In addition to the TDM, LA28's has an important key performance indicator required by the International Olympic Committee. This requirement is to provide journey time to each venue. Tracking this performance will help determine the effectiveness of the GRN implementation.

Reports

Caltrans will submit semi-annual progress reports throughout the course of this experiment. These semi-annual reports will be submitted no later than August 1st for the preceding period of January through June, and no later than February 1st for the preceding period of July through December.

Caltrans will submit a final report of the results of the experimentation and lessons learned on the field deployment of the light blue color during the Games within 3 months of the conclusion of this experiment to FHWA's Office of Transportation Operations. This experiment will end with the completion of the 2028 Los Angeles Olympics and Paralympics on August 27, 2028.

Caltrans is aware that FHWA's Office of Transportation Operations shall have the right to terminate approval of an agency's experiment if reports are not received in accordance with this schedule. Caltrans is also aware that if a final report is not received by FHWA's Office of Transportation Operations, and Caltrans fails to notify FHWA of any mitigating circumstances within 6 months of the end of the approved experimentation period, then the experiment shall be considered terminated and shall constitute rescission of the FHWA's approval to the experimenting agency, requiring restoration of the site(s) to a condition that complies with the provisions of the MUTCD within 3 months.

Post-Game GRN Roadway Restorations

Caltrans will restore all sites of the experiment where any sign plaques, sign panels and pavement markings deployed the use of the light blue color as the background color to a condition that complies with the provisions of the MUTCD within 3 months following the end of the time period of the experiment. This experiment will end with the completion of the 2028 Los Angeles Olympics and Paralympics on August 27, 2028.

Caltrans will terminate this experimentation at any time that it determines that safety concerns are directly or indirectly attributable to the experimentation and



Caltrans will provide timely notification to the FHWA's Office of Transportation Operations.

Caltrans is aware that FHWA's Office of Transportation Operations shall have the right to terminate approval of the experimentation at any time if there is an indication of safety or operational concerns, or if the terms of the approval are not being adhered to. Caltrans is also aware that if, as a result of the experimentation, a request is made that this Manual be changed to include the meaning of the light blue color being experimented with, or another meaning is established by FHWA, FHWA's Office of Transportation Operations will determine whether the device or application can be permitted to remain in place until an official rulemaking action has occurred. Legacy improvements (e.g., additional CCTV cameras) however, will remain as a permanent asset.

References

(LA28), L. A. (2023). *LA28 Games Mobility and Transport Plan VI*.

Federal Highway Administration. (2023, December). Retrieved from MUTCD 11th Edition:

https://mutcd.fhwa.dot.gov/pdfs/11th_Edition/mutcd11thedition.pdf

International Olympic Committee. (2013). *Final Report of the ICO Coordination Commission, Games of the XXX Olympiad, London 2012*.

International Olympic Committee. (2023). *Guidelines on the Effective Delivery of Infrastructure and Associated Services for the Olympic Games*. Retrieved from <https://doi.org/10.1787/7e3f4805-en>

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ATTACHMENT D



California Traffic Control Devices Committee (CTCDC)
Agenda Item Report



Attachment D - FHWA Comments and Caltrans Responses

See following pages

LA28 Experiment Request

FHWA Comments and Caltrans Responses

General: Please ensure all reference links are working, as they show up throughout the request as bookmarked links that are referencing documents that are not available.

Checked/refreshed links - Table of Figures, Bookmark links, "Error! Reference source not found" throughout the document.

Evaluation Methodology and Performance Metrics (Page 67):

- FHWA previously commented that the evaluation plan needs to be more concrete as to what strategies will be used and how and who will conduct close monitoring of the experimentation, throughout all stages of its field implementation, especially given the proposed various agencies involved. The evaluation has to include appropriate evaluation methodology, such as before and after analysis, or other appropriate methodology as well as quantitative data describing the performance of the experimental device. With the large number of variables and strategies being implemented during the experiment timeframe, this evaluation plan does not yet identify how success or failure of the experiment can be attributed to the light blue color of traffic control devices apart from all the other strategies. (For example, legibility of the color during the day vs at night)
- There are still a number of strategies listed that are unclear and we would ask for them to be expanded to provide some additional detail on what the surveys will entail, what questions will be asked, and how observations will take place. (Bullets 1-3 and 21)
- There are a number of methods that appear to be unrelated to the evaluation of Light Blue as a traffic control device (All bullets from "surveying private sector firms" through "Web and Mobile applications for commuters with trip planning software". These items should be removed from the request and the evaluation should only focus on the light blue as a traffic control device. Essentially evaluating whether road users understood its meaning, any unintended consequences, and legibility of the color.

Evaluation Methodology updated with Comprehension and Feedback Surveys, Games Family and Permitted Vehicle Driver Feedback, and Public Sector

Agency Surveys. All bullets from “surveying private sector firms” through “Web and Mobile applications for commuters with trip planning software” removed.

Page 15: Please clarify the route number for the Glendale/Alvarado location. (11th segment on the list)

Verify this has a route or is conventional highway only? Completed, eliminated.

Page 25: The request indicates that light blue chromacity coordinates are not available. This should be modified as 23 CFR 655 does have the chromacity coordinates for the color box for light blue for daytime use as well as ASTM test methods that can be used for nighttime.

Modified all sections to reference/reflect that 23 CFR 655 Appendix to Subpart F has provisions for the light blue color.

Page 58, Table 3:

- With no deviations from CMS provisions, CMS can be removed from the experiment request. A simple statement for clarity can be retained if determined appropriate, such as “transportation-related messages on CMS will be used as an operational strategy, but there will be no deviation from CMS provisions in the MUTCD.”
- Feedback for Caltrans outside this request:
 - o Example #1: Consider whether repeating half of the message in both phases is necessary.
 - o Example #3 and #4: Some lines of the legend are not centered. Section 2L.05, Par. 4 requires each line of legend to be centered.
 - o Example #4: There are 4 lines of text in a single phase. Section 2L.05, Par. 4 limits a phase to no more than three lines of text.
 - o Example #5: “LA28” is not specific enough to be actionable by the road user.

Removing Table 3 and reference to CMS. Adding note to Section 2L as indicated.

Page 59: Please clarify if Caltrans intends to use both white and black markings on a light blue background as part of the experiment. The 4th paragraph on this page indicates they shall be white on light blue yet black may be used when needed. Page 28 indicates they will only be white. FHWA is not adverse to testing both and noting this in the evaluation of the color for legibility purposes, but we request additional clarity in this Section on the specific Caltrans plan.

Modified text in document to reflect:

White or black color for the LA28 word message when used on a **sign plaque or sign panel**. The use of white or black color will be determined by Caltrans in advance of the actual deployment under this experimentation request of the sign plaques and sign panels during the games, as indicated on page 26. Please review the entire document to ensure consistency. Although black color is inherently not retroreflective, it is routinely used on traffic signs as it represents only a small portion of the total surface area of a traffic sign, while the rest of the sign's surface area is retroreflective, although the Retroreflectivity levels vary based on the background color that is used.

White color for the LA28 word message when used as a **pavement marking**. The use of only the white color (and not the black color) for LA28 word message as a pavement marking is that white color is retroreflective, while the black color is inherently not retroreflective. As a result, black color is not used as a color for any pavement markings, it is only used as a background color to provide contrast. This is the reason why page 59 text for pavement markings only includes the color white as a pavement marking color.

Also clarified that for **pavement markings**, the light blue background is an option, along with no color (pavement) background. Black pavement marking may be used as contrast.