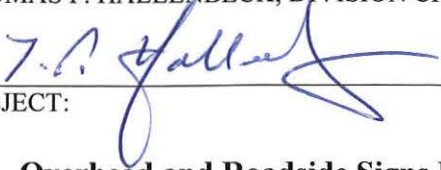


**POLICY DIRECTIVE**

TR-0011 (REV 9/2006)

<b>TRAFFIC OPERATIONS POLICY DIRECTIVE</b>	NUMBER: <b>14-02 Revision 1</b>	PAGE: 1 of 5
THOMAS P. HALLENBECK, DIVISION CHIEF (Signature) 	DATE ISSUED: December 11, 2014	EFFECTIVE DATE: December 11, 2014
SUBJECT:  <b>Overhead and Roadside Signs Policy          on the State Highway System</b>	DISTRIBUTION <input checked="" type="checkbox"/> All District Directors <input checked="" type="checkbox"/> All Deputy District Directors - Traffic Operations <input checked="" type="checkbox"/> All Deputy District Directors - Maintenance <input checked="" type="checkbox"/> All Deputy District Directors - Construction <input checked="" type="checkbox"/> All Deputy District Directors - Design <input checked="" type="checkbox"/> All Deputy District Directors - Transportation Planning <input checked="" type="checkbox"/> Chief, Division of Engineering Services <input type="checkbox"/> Chief Counsel, Legal Division <input checked="" type="checkbox"/> Publications (California MUTCD Website) <a href="http://www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm">www.dot.ca.gov/hq/traffops/signtech/mutcdsupp/ca_mutcd.htm</a> <input checked="" type="checkbox"/> Headquarters Division Chiefs for: <u>Construction, Maintenance,</u> <u>Design, Public Affairs, and, Transportation Planning</u>	
DOES THIS DIRECTIVE AFFECT OR SUPERSEDE ANOTHER DOCUMENT?	IF YES, DESCRIBE TOPD 14-02 Issued 8-21-2014	
WILL THIS DIRECTIVE BE INCORPORATED IN THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES	IF YES, DESCRIBE	

 YES  NO YES  NO

**POLICY DIRECTIVE**

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**DIRECTIVE**

**All signs, with the exception of white background signs, procured to guide, warn or regulate traffic shall include retroreflective sheeting *American Society for Testing and Materials D4956-13 (ASTM) Type XI*, and shall be specified on signs procured for state-furnished materials, and for capital projects on the State Highway System (SHS).**

**All new guide signs shall have retroreflective backgrounds, white legends, and borders made of high performance retroreflective sheeting of ASTM Type XI. White letters, numerals, symbols, arrows, and borders of all green, blue, and brown guide signs shall be retroreflective ASTM Type XI sheeting.**

**All new warning sign panels shall utilize fluorescent yellow, or fluorescent orange backgrounds, made of high performance retroreflective sheeting of American Society for Testing and Materials (ASTM) D4956-13 Type XI.**

**The intent of this policy is to make signs more conspicuous and legible to motorists on the SHS. This policy shall provide uniform application for all new signs installed on the SHS. This policy is also expected to reduce maintenance and operation costs by reducing lighting and power needs, as well as decreasing the potential for graffiti on overhead signs.**

**All new overhead guide sign structure designs shall include appropriate conduit and pull boxes for the future installation of possible Intelligent Transportation System (ITS) elements.**

**When existing overhead guide signs have reached the end of their useful life or are replaced for other reasons, they shall be replaced with new overhead guide signs with retroreflective backgrounds, legends and borders. Warning panels on guide sign assemblies shall use fluorescent yellow ASTM Type XI background sheeting. Future procurement of warning signs, plaques, and panels used for roadside and overhead applications shall utilize fluorescent yellow, or fluorescent orange, ASTM Type XI sheeting.**

Overhead sign lighting and walkways should be removed from sign support structures when installing ASTM Type XI retroreflective sign panels.

Some overhead signs may need to have lighting and walkways installed or maintained if the “Lighting of Overhead Signs” criteria in the implementation section of this policy are met.

In all applications of this policy, engineering judgment should be exercised.

**POLICY DIRECTIVE****IMPLEMENTATION****New Guide Signs**

All new guide signs shall have retroreflective backgrounds, white legends, and borders made of high-performance retroreflective sheeting ASTM Type XI. US route shields, US route markers, and directional arrow assembly plaques for US routes shall include white ASTM Type VIII or Type IX backgrounds with black copy. (See Attachment #1 for basic guide for selection of retroreflective sheeting)

All new overhead guide sign structure designs shall include appropriate conduit and pull boxes for the future installation of possible ITS elements.

**Existing Overhead Guide Signs with External Sign Lighting**

All existing overhead guide signs shall continue to be lighted until the lighting fixture/system or sign panels require replacement or major repairs, after which time the existing panel shall be replaced with new ASTM Type XI sheeting.

**Existing Overhead Guide Signs without External Sign Lighting**

Replace panel when it no longer meets retroreflectivity requirements, per Table 2A-3 in the CA MUTCD with new panel using ASTM Type XI sheeting.

**New Warning Sign Panels and Signs**

All new warning signs panels shall have retroreflective fluorescent yellow, or fluorescent orange, backgrounds made of high-performance retroreflective sheeting of ASTM Type XI. Letters, numerals, symbols, arrows, and borders of all warning signs shall be black, non-reflective sheeting.

**Lighting of Overhead Signs**

Lighting options for overhead signs may be needed if a location meets one of the following criteria:

- Signs skewed with angles greater than 25 degrees and are not legible when illuminated by vehicle headlights.
- Signs adjacent to other signs requiring or having sign lighting.
- Signs located along a horizontal curve with radii of 880 feet or less in rural areas and radii of 2,500 feet or less in urban areas.
- Where vertical sag curves within 1,000 feet or closer to overhead sign panels will limit vehicle headlight illumination of sign(s).

**Structural Review**

Request a structural review for the following situations:

- Sign panel replacement is not in-kind (change in panel size or location) except for single post and two-post truss sign structures constructed using the 2004 Standard Plans or later. Additional detailing may be required for formed panel connections.
- A sign structure has been significantly modified since its original installation.
- Sign panel replacement for box beam overhead sign structures.

For additional information see Attachment #4.

**POLICY DIRECTIVE**

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**DELEGATION**

No new delegations of authority are created under this policy.

**BACKGROUND**

On March 16, 1999, Caltrans adopted a policy of utilizing retroreflective sheeting on guide signs. On November 15, 1999, Caltrans established Traffic Operations Policy Directive #99-02 to identify modifications to a previous Traffic Operations memorandum issued in 1990 regarding “‘Lights Out’ on Non-action Advance Guide Signs.” These two policy documents issued in 1999 implemented replacement of opaque button-copy guide signs with retroreflective sign sheeting. Specific to white on green guide signs, Caltrans identified that legend, borders, and background should be ASTM Type III or IV, and has been the practice for over 15 years. In the intervening years, various manufacturers have developed high-performance retroreflective sheeting that provides levels of reflective luminance that preclude use of illumination, and vehicle headlights provide adequate illumination for motor vehicle operators.

High-performance retroreflective sheeting ASTM Type XI provides high nighttime legibility and eliminates the need for fixed lighting illumination for overhead guide signs. Use of high-performance retroreflective sheeting materials facilitate the following benefits:

- A) Reduced electric energy expense and Green House Gas emissions by not requiring electrical energy to illuminate signs.
- B) Decreased overall maintenance costs.
- C) Decreased light pollution.
- D) Increased worker safety by reducing ongoing challenges of maintaining lighting equipment, conducting shoulder and lane closures, and associated temporary traffic control during periodic electrical system maintenance.
- E) Reduced graffiti vandalism due to retrofitting existing, overhead sign structures to remove permanently-installed catwalks.
- F) Mitigation of copper wire theft at overhead sign structures.

Based upon published research from the Federal Highway Administration, the Florida Department of Transportation (DOT), Arizona DOT, and the California Department of Transportation have determined that overhead signs can be installed without illumination; however, some signs may need to have lighting installed or maintained if the “Lighting of Overhead Signs” criteria in the implementation section of this policy is met. Please refer to the web links below for additional information.

Overhead Sign Sheeting and Illumination: A Survey of State Practice and Related Research

[http://www.dot.ca.gov/newtech/researchreports/preliminary\\_investigations/docs/type\\_xi\\_sign\\_sheeting\\_preliminary\\_investigation.pdf](http://www.dot.ca.gov/newtech/researchreports/preliminary_investigations/docs/type_xi_sign_sheeting_preliminary_investigation.pdf)

Minimum Retroreflectivity Levels for Overhead Guide Signs and Street-Name Signs

(Publication No. FHWA-RD-03-082)

<http://www.fhwa.dot.gov/publications/research/safety/03082/>

Florida Document (Univ. of North Florida Study)

[http://www.dot.state.fl.us/research-center/Completed\\_Proj/Summary\\_MNT/FDOT-BDK82-977-07-rpt.pdf](http://www.dot.state.fl.us/research-center/Completed_Proj/Summary_MNT/FDOT-BDK82-977-07-rpt.pdf)

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**POLICY DIRECTIVE**

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**BACKGROUND (Continued)**Arizona DOT Study

<ftp://ftp.dot.state.fl.us/lts/co/construction/RetroreflectivityPresentations/Final%20AZLoop202%20Legend%20Rpt.pdf>

**December 2014, Revision 1:** This directive was originally issued on August 21, 2014, primarily for guide signs. Implementing district personnel identified the need that the 11 bullet points, “*Criteria to be Considered in Determining Which Overhead Guide Signs Shall be Lit,*” must identify specific and measurable criteria. The 11 original points are now consolidated to four. Caltrans general sign specification procurement policy needs to clearly state that fluorescent yellow and fluorescent orange are the specified background colors for warning signs; and, sign sheeting ASTM Type XI will now be used for all signs with the exception of white background signs, plaques and panels. Implementation guidelines are added (see Attachment #2) for state-furnished material sign management, and; for contractor-furnished signs, a non-standard special provision with alternate bid items (Attachment #3). The Division of Engineering Services issued a memorandum regarding replacement of overhead sign panels which was not available in August 2014 (Attachment #4).

**DEFINITIONS**

When used in this Traffic Operations Policy Directive, the text shall be defined as follows:

- 1) **Standard** – a statement of required, mandatory or specifically prohibited practice. All standards text appears in **bold** type. The verb **shall** is typically used. Standards are sometimes modified by Options.
- 2) Guidance – a statement of recommended, but not mandatory, practice in typical situations, with deviations allowed if engineering judgment or engineering study indicates the deviation to be appropriate. All Guidance statements text appears in underline type. The verb should is typically used. Guidance statements are sometime modified by Options.
- 3) Option – a statement of practice that is a permissive condition and carries no requirement or recommendation. Options may contain allowable modifications to a Standard or Guidance statement. All Option statements text appears in normal type. The verb may is typically used.
- 4) Support – an informational statement that does not convey any degree of mandate, recommendation, authorization, prohibition, or enforceable condition. Support statements text appears in normal type. The verbs shall, should, and may are not used in Support statements.

**ATTACHMENTS**

1. Basic Guide for Selection of Retroreflective ASTM 4956-13 Sheeting for Signs on the CA State Highway System (1 page)
2. Implementation Guidelines, including non-standard special provision 56-2.01D\_N10-23-14 for Section 56 (2010 Construction Standards), and Alternative Bid Item Numbers and Descriptions (3 pages)
3. Example of Change Order document for sign replacement projects (1 page)
4. Memorandum to Division of Maintenance, Dated November 19, 2014, from Division of Engineering Services, “STRUCTURES RECOMMENDATIONS FOR SIGN PANEL REPLACEMENT PROJECTS” (3 pages)

Attachment #1

Basic Guide for Selection of Retroreflective Sheeting ASTM D4956-13 for Signs on the CA State Highway System

		NEW SIGNS <sup>(1,6)</sup>			Premium Overlay Film, or Protective Spray-on Coating (Clear) <sup>(4)</sup>
		Microprismatic			
		High Performance			
Category	Retroreflective Sheeting	Type VIII	Type IX	Type XI	
Guide	<b>WHITE ON GREEN</b>			RS, OH	X
Guide	<b>WHITE ON BLUE</b>			RS, OH	X
Guide	<b>WHITE ON BROWN</b>			RS, OH	X
Guide	<b>BROWN ON CREAM<sup>(5)</sup></b>			RS background	X
Guide (warning panels)	<b>BLACK ON YELLOW<sup>(2,3)</sup></b>			RS, OH background	X
Regulatory	<b>WHITE ON RED<sup>(1)</sup></b>			RS	X
Warning	<b>BLACK ON YELLOW<sup>(2,3)</sup></b>			RS, OH background	X
Warning & Temporary Traffic Control	<b>BLACK ON ORANGE<sup>(2,3)</sup></b>			RS, OH background	X
		NEW SIGNS <sup>(1)</sup>			
		High Performance			
		Type VIII	Type IX		
Regulatory & Guide (US route shield & white background assembly panels)	<b>BLACK<sup>(1,2)</sup> RED OR GREEN ON WHITE</b>	RS, OH background	RS, OH background	NR	X

KEY:

FOOTNOTES:

- RS = OK on roadside signs
- OH = OK on overhead signs
- NR = Not Recommended

- (1) Caltrans' policy for all signs, with the exception of white background signs shall include ASTM retroreflective sheeting Type XI for background and copy on guide signs, and for red background regulatory signs. Specify Type XI sheeting background for warning signs, and minimum Type VIII or Type IX for white background signs.
- (2) Black is non-reflective and does not have an ASTM designation.
- (3) The procurement standard for yellow warning signs, plaques and panel backgrounds is fluorescent yellow, or fluorescent orange for Temporary Warning Signs on the State Highway System.
- (4) Sign designers may specify anti-graffiti premium overlay film, or protective spray-on coating if a sign is anticipated for installation in graffiti-prone areas (use of spray-on coating voids retroreflective sheeting manufacturer's warranty).
- (5) Cream colored background signs shall be retroreflective, brown copy is non-reflective.
- (6) This is not a comprehensive color listing for all sign colors and combinations, such as fluorescent yellow-green school signs, fluorescent pink incident management signs, purple electronic toll collection signs, or light blue background signs used for various information and guide signs. All background colors shall use retroreflective sheeting Type XI, except for white background signs.

**Implementation Guidelines**  
**Traffic Operations Policy Directive #14-02 Revision 1**  
**Overhead and Roadside Signs on the State Highway System**

In accordance with Caltrans memorandum *Retroreflective Sheeting for Guide Sign Policy*, dated July 2, 2014, and *Traffic Operations Policy Directive 14-02, Revision 1*, dated December 11, 2014, ground-mounted and overhead signs with the exception of white background signs shall use high-performance *American Society for Testing Materials* (ASTM) D4956-13 Type XI retroreflective sheeting. These guidelines provide implementation dates of state-furnished and contractor-furnished signs.

State-Furnished Materials Sign Contract 1-14-97-32<sup>1</sup> was awarded to Safeway Sign Company on August 29, 2014, for a two-year timeframe. For state-furnished materials signage, the ongoing replacements in-kind, or for sign improvements, please specify Type XI sheeting for all signs with the exception of white background signs on district sign installation orders. All sign installation orders initiated prior to August 29, 2014, shall be procured and installed as specified. Procurement and warehouse management of signs shall utilize existing non-Type XI sheeting sign stock to replace in-kind on a provisional basis, only when no Type XI sheeting signs are available. Type XI sign sheeting should be ordered and provided as a priority by the divisions of Traffic Operations, Maintenance, and Procurement and Contracts.

For capital outlay projects that include new signs, districts shall implement the following:

- Before project is Ready to List (RTL): districts shall specify Type XI retroreflective sheeting on sign assemblies with the exception of white background signs. Specify Type VIII or IX retroreflective sheeting for white background signs.
- Projects after RTL phase: districts should prepare an addendum to update sign retroreflective sheeting to Type XI.
- For projects in construction with contractor-furnished signs:
  - For projects to reach Construction Contract Acceptance (CCA) through January 31, 2015, install signs as specified in the contract plans.
  - For projects that reach CCA after February 1, 2015, if the contractor has not procured all signs for the project, districts should consider a change order to specify retroreflective sheeting to Type XI for signs included in the project. District Construction and Traffic Operations staff should work with resident engineers to review signs procured for awarded contracts to assess sign sheeting types and make potential change orders if all signs except white background signs have not been procured with Type XI sign sheeting by February 28, 2015. If all signs except white background signs have been procured by the contractor before February 28, 2015, install per the contract requirements.

At present, there are two vendors for Type XI retroreflective sheeting and the Federal Highway Administration has not approved a proprietary interest finding for its use. Use of Type XI

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<sup>1</sup>For on-line information for SFM contract documents, see:

< <http://www.dot.ca.gov/hq/traffops/engineering/control-devices/contracts.htm> >

**Implementation Guidelines  
Traffic Operations Policy Directive #14-02 Revision 1  
Overhead and Roadside Signs on the State Highway System**

retroreflective sheeting will require that it be paid for separately and that federal funds not be used. Implementation will include use of a non-standard special provision and newly-added segregated bid item codes.

Implementation of this policy will require changes to the following construction contract documents:

1. Revise the contract plan sheets and quantity schedules to specify Type XI retroreflective sheeting for all signs with the exception of white background signs.

2. Specifications (nSSP)

Replace the first paragraph of section 56-2.01D:

“The payment quantity for retroreflective sheeting (Type XI) for any type of sign panel is the area of the panel determined from the dimensions shown.

Payment for retroreflective sheeting (Type XI) is not included in the payment for furnishing any type of sign panel.”

{ XE "56-2.01D\_N10-23-14" }

Page 1 of 1

Section 56-2.01D. Use for sign panels fabricated with Type XI retroreflective sheeting.

Replace the 1st paragraph of section 56-2.01D with:

The payment quantity for retroreflective sheeting (Type XI) for any type of sign panel is the area of the panel determined from the dimensions shown.

Payment for retroreflective sheeting (Type XI) is not included in the payment for furnishing any type of sign panel.

3. Estimate

- a. Use new bid item 568048A Retroreflective Sheeting (Type XI) paid by the square foot.
- b. Segregate bid item 568048A in the estimate as state or local funds only.
- c. Identify furnished panels for Type XI sheeting per alternate bid items table provided, on the following page.



**Implementation Guidelines  
Traffic Operations Policy Directive #14-02 Revision 1  
Overhead and Roadside Signs on the State Highway System**

Table of Alternate Bid Items, per 2010 Standard Specifications, Section 56

568024A	FURNISH FORMED PANEL SIGN (ROADSIDE) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568026A	FURNISH FORMED PANEL SIGN (OVERHEAD) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568028A	FURNISH LAMINATED PANEL SIGN (1"-TYPE A) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568030A	FURNISH LAMINATED PANEL SIGN (1"-TYPE B) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568032A	FURNISH LAMINATED PANEL SIGN (2 1/2"-TYPE B) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568034A	FURNISH LAMINATED PANEL SIGN (2 1/2"-TYPE H) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568036A	FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-UNFRAMED) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568038A	FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-UNFRAMED) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568040A	FURNISH SINGLE SHEET ALUMINUM SIGN (0.125"-UNFRAMED) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568042A	FURNISH SINGLE SHEET ALUMINUM SIGN (0.063"-FRAMED) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568044A	FURNISH SINGLE SHEET ALUMINUM SIGN (0.080"-FRAMED) FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568046A	FURNISH FIBERGLASS REINFORCED PLASTIC PANEL SIGN (0.135") FOR RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56
568048A	RETROREFLECTIVE SHEETING (TYPE XI)	SQFT	56

If you or your staff have any questions regarding implementation of this policy, please contact Don Howe at (916) 654-2634, or by e-mail at <don.howe@dot.ca.gov>.

**CHANGE ORDER**

CEM-4900 (REV 2/2014)

Change Requested by:  Engineer  Contractor

CHANGE ORDER NO.	SUPL. NUMBER	CONTRACT NUMBER	CO-RTE-PM	FEDERAL NUMBER(S)
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TO

, **contractor**

*You are directed to make the following changes from the plans and specifications or do the following described work not included in the plans and specifications for this contract. **NOTE: This change order is not effective until approved by the engineer.***

Description of work to be done, estimate of quantities, and prices to be paid. (Segregate between additional work at contract price, agreed price, and force account.) Unless otherwise stated, rates for rental of equipment cover only such time as equipment is actually used and no allowance will be made for idle time. The last percentage shown is the net accumulated increase or decrease from the original quantity in the Bid Item List.

Per Attachment #2 of TOPD 14-2 Revision 1, insert non-standard special provision 56-2 01D\_N10-23-14 in Section 56-2.01D:

**Replace the 1st paragraph of section 56-2.01D with:**

The payment quantity for retroreflective sheeting (Type XI) for any type of sign panel is the area of the panel determined from the dimensions shown.

Payment for retroreflective sheeting (Type XI) is not included in the payment for furnishing any type of sign panel.

Revise contract plan sheets, quantity schedules and details to specify Type XI retroreflective sheeting for all signs with the exception of white background signs, including background, borders, bars, arrows, route shields, and applied copy, if copy is retroreflective. For white retroreflective backgrounds, signs specified with Type VIII or Type IX retroreflective sheeting are acceptable.

Revise bid items for furnishing formed panels, laminated panels, single sheet aluminum, or fiberglass reinforced plastic panel signs "... FOR RETROREFLECTIVE SHEETING (TYPE XI)" per Table of Alternate Bid Items provided on Attachment #2.

Segregate bid item #568048A "RETROREFLECTIVE SHEETING (TYPE XI)" to be paid for by local or State funds, as a federal non-participating item for contract, to amend contract to furnish all signs with Type XI retroreflective sheeting, with the exception of signs, plaques and panels with white backgrounds. For white retroreflective backgrounds, signs specified with Type VIII or Type IX retroreflective sheeting are acceptable.

Estimated Cost:  Increase  Decrease \$

For this order, the time of completion will be adjusted as follows:

**SUBMITTED BY**

SIGNATURE	(PRINT NAME AND TITLE)	DATE
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**APPROVAL RECOMMENDED BY**

SIGNATURE	(PRINT NAME AND TITLE)	DATE
-----------	------------------------	------

**ENGINEER APPROVAL BY**

SIGNATURE	(PRINT NAME AND TITLE)	DATE
-----------	------------------------	------

We, the undersigned contractor, have given careful consideration to the change proposed and agree to provide equipment, furnish materials, and perform the work specified above, and will accept as full payment the prices shown above. **NOTE: If you do not sign this order, you are directed to proceed with the ordered work. You may file a Request for Information within the time specified.**

**CONTRACTOR ACCEPTANCE BY**

SIGNATURE	(PRINT NAME AND TITLE)	DATE
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## Memorandum

*sew's drought.  
Help save water!*

**To:** AUGUSTIN ROSALES  
Program Advisor, SHOPP 170  
Roadway Maintenance  
Division of Maintenance

**Date:** November 19, 2014

**File:** FY 2014/2015 Sign  
Panel Replacement

**From:** SHANNON POST   
Chief, Office of Design & Technical Services  
Division of Engineering Services

**Subject:** **STRUCTURES RECOMMENDATIONS FOR SIGN PANEL REPLACEMENT PROJECTS**

This memorandum provides recommendations from the Office of Design & Technical Services (ODTS), Division of Engineering Services for the 15 projects statewide included in the FY 2014/2015 SHOPP Program 201.170, Signs and Lighting Rehabilitation Program. The primary purpose and need of these 15 projects is to upgrade sign panels with retro-reflective sheeting. See Traffic Operations Policy Directive, (TOPD), 14-02, "Overhead Guide Sign Policy on the State Highway System".

When identifying overhead sign structures for inclusion in these projects, Districts should refer to the "Overhead Sign Structure Inspection Reports" available from Structure Maintenance and Investigations (SM&I). Structural repairs recommended for overhead signs in Category 1 may be outside the project scope.

### Sign Panel Replacement:

1. In most cases, sign panels may be replaced in-kind without a structural review. The replacement sign panel shall be the same size, type and at the same location as the existing panel. This is applicable to the following types of overhead sign structures: single post truss, two-post truss, single post tubular, two-post tubular, lightweight and bridge mounted signs.
2. In most cases, formed and laminated sign panels may be replaced, added or moved without a structural review for single post and two-post truss sign structures constructed using the 2004 Standard Plans or later. Additional detailing may be required for formed panel connections.
3. For sign panel replacement for box beam overhead sign structures, consider the following (see attachment for additional discussion):
  - a. Box beam structures are prone to corrosion.
  - b. Many of these structures are nearing the end of their service life
  - c. The sign connection details used on box beam structures are not compatible with current standard plan sign panels and mounting hardware.
4. Consider requesting a structural review for the following situations:
  - a. Sign panel replacement is not in-kind (change in panel size, type or location) except as noted in number 2 above.
  - b. A sign structure has been significantly modified since its original installation.

Structure Recommendations for Sign Panel Projects  
November 19, 2014  
Page 2 of 2

Send requests for structural review or special details to the Office of Design & Technical Services. Requests should include current photos, As-Builts and other pertinent information.  
[http://onramp.dot.ca.gov/hq/des/spi/design\\_and\\_technical\\_services/](http://onramp.dot.ca.gov/hq/des/spi/design_and_technical_services/)

Catwalks, Lighting and Safety Cables:

1. TOPD 14-02 says, "District staff should consider if walkways (also referred to as catwalks) and lighting should be installed, removed or maintained with each new or existing overhead sign structure that requires major repair."
2. If the Districts decide to remove catwalks and lighting, we recommend addressing the removal in the project specifications, as a contractor submittal.
3. If the Districts opt to retain the catwalks and lighting, it is the District's responsibility to address the need for a safety cable.
  - a. In most cases, overhead signs using the 2004 Standard Plans or later include a safety cable. See S16 "Overhead Signs Walkway Details".
  - b. In most cases, single post truss overhead sign structures constructed using Standard Plans from 1984 to 2002 can be retrofitted with a safety cable. Request details from ODTS.
  - c. Overhead signs constructed using Standard Plans prior to 1984 require a special review from ODTS to analyze and design safety cable retrofits.

For general information on overhead sign structures and common panel types, please refer to the "Overhead Sign Structures Guide":

[http://onramp.dot.ca.gov/hq/des/spi/design\\_and\\_technical\\_services/docs/Overhead%20Sign%20Structures%20Guide.pdf](http://onramp.dot.ca.gov/hq/des/spi/design_and_technical_services/docs/Overhead%20Sign%20Structures%20Guide.pdf)

For questions regarding these recommendations, please contact K C Liu at 916-227-8863 or Stanley P Johnson at 916-227-8674.

Attachment 1: Box Beam Overhead Sign Structures

- c: Duper Tong, Division of Traffic Operations  
Andrew Brandt, Division of Traffic Operations  
Ching Chao, Structure Maintenance & Investigations South, Division of Maintenance  
Dolores Valls, State Bridge Engineer, Division of Engineering Services  
Steve Altman, Division of Engineering Services  
Vong Toan, Division of Engineering Services  
Michael Keever, Division of Engineering Services  
Stanley P Johnson, Division of Engineering Services  
K C Liu, Division of Engineering Services

Box beam overhead sign structures were developed by Caltrans in the 1960's. Several versions appeared in the 1960's and early 1970's. Construction of new box beam structures stopped by the early 1990's. Common box beams are easily identified by ribbed metal sheeting on the front and back face of the structure.

Districts should consult with Structure Maintenance and Investigations (SM&I) for the structural condition of existing box beam sign structures.

For sign panel replacement on box beam overhead sign structures, consider the following:

- a) Box beam structures are prone to corrosion. Corrosion could impact the stability of the structure and the ability to fasten sign panels securely in place. SM&I inspection reports might include information on corrosion. Corrosion in box beams can occur at locations that are difficult to inspect such as the interior where the ribbed metal sheeting connects to the bottom chords angles. Some risk factors for corrosion are age, corrosive environment (salt, frequent fog, etc), lack of maintenance, thinner sheeting, and lack of galvanizing.
- b) The sign connection and metal sheeting penetration details and specifications used on existing box beam structures are not always compatible with current contract construction standards. Changes in sign panel type might require custom detailing to handle revised connections and penetrations of ribbed metal sheeting. It might be possible to replace existing standard porcelain coated steel single sheets mounted on removable sign panel frames (RSPF's) with the same size formed panels mounted to the RSPFs without additional detailing.
- c) For structures without corrosion to the ribbed metal sheeting or its connections, it may be possible to move an existing single sheet sign panel laterally, however, an NSSP for the connection would likely be needed.
- d) Modifications to box beam overhead sign structures not addressed above require a structural analysis prior to the commencement of work.

