

OVERHEAD SIGNS/TRAFFIC SIGNALS AND LIGHTING STANDARDS  
ENCROACHMENT PERMIT PROCEDURES

## 1. Definitions

### 1.1 Overhead Sign Structures

Overhead sign structures include the following structure types:

- Overhead Signs, Truss
- Overhead Signs, Tubular
- Overhead Signs, Changeable Message Signs Model 500\*
- Overhead Signs, Lightweight\*
- Bridge Mounted Signs
- Barrier Mounted Signs
- Overhead Signs, Cladded Truss\*\*
- Overhead Signs, Box Beam\*\*
- Overhead Signs, Box Beam Closed Truss\*\*

Other sign structures that overhang the traveled way or are similar in size or construction to the types given above are often considered overhead sign structures.

\* The standard plans for CMS Model 510, lightweight structures (except EMS), and square pedestals for overhead truss have been cancelled. New permit applications that use these structures will require detailed custom design to be submitted.

\*\* Cladded Truss, Box Beam, and Box Beam Closed Truss structures are considered obsolete. No permit will be approved.

### 1.2 Roadside Signs

Roadside signs are typically signs that do not overhang the traveled way and are not of the types of overhead signs listed above. They are usually not as tall as overhead signs and are usually mounted on solid sawn wood posts or laminated wood box posts.

### 1.3 Traffic Signal and Lighting Standards

Traffic signals and lighting standards\*\*\* include the following structures:

- Traffic Signals
- Lighting Standards
- CCTV Structures
- Vehicle Detection System (VDS) Structures

\*\*\* The standard plans for Types 33, 35, 36-20A, and high-mast lighting have been cancelled. New permit applications that use these structures will require detailed custom design to be submitted.

### 1.4 Temporary Structural Supports For Electrical and Traffic Operations Systems

Temporary structural supports for electrical and traffic operations systems includes structural supports for a variety of items such as overhead data and power cables, traffic signals, and lighting with no more than 5 years of anticipated service before removal or replacement.

## 2 Design Code

AASHTO's *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Sixth Edition* (LTS-6). The adoption memo is available at:

<http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/reference-sheets/page/english/adoption-AASHTO-Sign-Specifications.pdf>

LTS-6 can be purchased from the AASHTO bookstore at:

<https://bookstore.transportation.org/>

In areas designated as "Special Wind Region" by the LTS-6 a design wind speed of 100 mph (3-second gust) must be used unless justified otherwise. For projects where LTS-6 does not indicate a special wind region, but the permit applicant determines that local wind conditions justify use of a basic design wind speed higher than 85 mph, then the higher wind speed may be used.

Overhead cantilevered sign support structures with quadri-chord (4 chord) horizontal trusses of size and stiffness similar to standard plan overhead trusses may exclude galloping loads as permitted by LTS-6.

In cases where LTS-6 is not required, see also

<http://www.dot.ca.gov/hq/esc/techpubs/manual/bridgemanuals/reference-sheets/page/english/am.pdf>

## 3 Materials

Structure and components shall use the same materials used in Caltrans standards for nearest equivalent structure. Substitution of other material for steel shown in Caltrans Standards is typically not allowed.

## 4 Submittals.

Submittals must be complete and sealed by appropriate licensed individuals. Structural plans and detailed structural calculations must be sealed by a California licensed Civil Engineer or Structural Engineer. Geotechnical reports must be sealed by a California licensed Geotechnical Engineer. Submittals are to be submitted through the district permit engineer except as arranged otherwise.

Structures where submittals substantiate that they are fully covered by and conforming to our current construction contract standards and related requirements (such as the Reference Sheets) usually do not require submittal of separate structural plans, detailed structural calculations, or detailed restatement of our specifications. Other situation must include structural plans and and specifications and any required structural calculations and often require geotechnical reports, information related to quality control and quality assurance, and engineering information on for proprietary products.

Structural submittals must conform to the design code and Caltrans standard and practices. Summarized in the section below are some additional applicable references.

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## 5 References

The lists of references below are not comprehensive. Except as noted, the listed references are available at <http://www.dot.ca.gov/manuals.htm> or <http://www.dot.ca.gov/hq/esc/techpubs/>.

### 5.1 Standard Plans

Some standard plans that might be of particular interest include:

- RS1 to RS4, Roadside Signs
- S1 to S6, S8 to S13, S15 to S22, Overhead Signs – Truss
- S30 to S37, S16 to S18 Overhead Signs – Tubular
- S48 to S50, ES-14C Overhead Signs – EMS
- S81 to S95, Sign Panels
- S101 to S116, S140 to S142 Overhead Signs – Changeable Message Signs, Model 500
- ES-6A to ES-6G, Lighting Standards
- ES-7A to ES-7H, ES-7J to ES-7N, Signal and Lighting Standards
- ES-7O to ES-7R and ES-11, ES-14C, ES15A and ES15C, ES-16A to ES-16D, Electrical Systems

### 5.2 Reference Sheets: Structural Design Aids Overhead and Roadside Signs

Portions of particular interest include:

- Sheets 1 through 6, general info
- Sheets 7 through 13, Overhead Signs - Truss
- Sheets 14 through 18 Overhead Signs - Tubular
- Sheets 29 through 31 Overhead Signs - Changeable Message Signs
- Sheets 26 through 30 Roadside Signs

For minimum clearance above bridge soffit and maximum height above barrier for Bridge Mounted Signs see Reference Sheet 25.

### 5.3 Bridge Standard Detail Sheets (xs-sheets)

Portions of particular interest include:

- Sheets 18-010 through 18-050 and 18-080-1 through 18-080-5 includes Temporary Structural Supports For Electrical And Traffic Operations Systems
- Sheet xs16-075 includes Type 60P barrier which supports small roadside signs along stretches of Type 60 barrier

## **5.4 Standard Specifications**

Standard Specifications are available at:

[http://www.dot.ca.gov/hq/esc/oe/construction\\_standards.html](http://www.dot.ca.gov/hq/esc/oe/construction_standards.html)

Portions of particular interest include:

- Section 56 for overhead and roadside signs and most types of sign panels.
- Section 86 for traffic signals, lighting, and CCTV. But note that some of the info traditionally in Section 86 is being moved to Section 56.
- 11-3.03, "Welding For Overhead Sign and Pole Structures"
- 52-6, "Splicing"

Note that these sections make reference to many other sections.

## **5.5 Standard Special Provisions**

The Standard Special Provisions are available at:

[http://www.dot.ca.gov/hq/esc/oe/construction\\_standards.html](http://www.dot.ca.gov/hq/esc/oe/construction_standards.html)

Portions of particular interest include:

- Division 6, "Structures", especially those related to section 56.
- Division 9, "Traffic Control facilities", especially those related to section 86.

Note that these sections make reference to many other sections.

## **5.6 Bridge Memo to Designers (MTD)**

Some items of particular interest include:

### **5.6.1 MTD 5-81 Anchorage to Concrete**

### **5.6.2 MTD 3-7 Design Data Documentation and Evaluation of Anomalous Concrete Shafts**

## **5.7 Manuals**

### **5.7.1 The Encroachment Permits Manual (EPM)**

Portions of Chapter 500, "Specific Encroachment Permits", of particular interest include:

- Section 508.9, Engineering Services
- Chapter 515, Signal and Lighting
- Chapter 517, Traffic Control and Temporary Signals and Signs

### **5.7.2 Construction Manual**

Portions of particular interest include Chapter 4, Sections 56 and 86.

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### **5.7.3 Highway Design Manual (HDM)**

Portions of particular interest include:

- Index 82.5, "Effective Date for Implementing Revisions to Design Standards"
- Topic 309, "Clearances", especially Index 309.1(2) and Index 309.2
- Topic 207, "Airway-Highway Clearances"
- Index 210.2(3)(b), the portion relating to earth retaining systems supporting signs

### **5.7.4 Bridge Construction Records and Procedures Manual (BCRP Manual)**

Portions of particular interest include Volume II, Section 168-4.0.

### **5.7.5 Plans Preparation Manual (PPM)**

Portions of particular interest include Section 2-2.18, "Sign Plans, Details, and Quantities" and Section 2-2.23, "Electrical System Plans and Details"

### **5.7.6 California Manual on Uniform Traffic Control Devices (CAMUTCD)**

#### **5.7.7 Traffic Manual**

Of particular interest are the portions of Chapter 9 dealing with lighting and the portions of Chapter 7 dealing with the clear recovery zone.

## **5.8 Guides**

- Overhead Sign Structures Guide is available at:

[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)

## **5.9 Audited Facilities Lists and Authorized List of Resistance Welding Fabricators**

Certain welded items must be fabricated at facilities that have passed a specific audit recently or are authorized. Lists of audited facilities are at:

[http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/Internet\\_auditlisting.pdf](http://www.dot.ca.gov/hq/esc/Translab/OSM/documents/smdocuments/Internet_auditlisting.pdf)

Portions that are of particular interest include:

- Welded Steel for Overhead Sign Structures
- Welded Steel Poles for Lighting and Signal Structures

The *Authorized List of Resistance Welding Fabricators* (related to resistance butt welds for welded hoops) is available at:

[http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/](http://www.dot.ca.gov/hq/esc/approved_products_list/)

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### 5.10 Authorized Materials Lists

These are available at [http://www.dot.ca.gov/hq/esc/approved\\_products\\_list/](http://www.dot.ca.gov/hq/esc/approved_products_list/). Some lists of particular interest include

- Anaerobic Thread Locking Compounds
- Highway Safety Features
- Organic Zinc-Rich Primer List
- Resin Capsules
- Steel Reinforcing Couplers

### 5.11 Qualified Products List

This is available at <http://www.dot.ca.gov/hq/traffops/electsys/QPL.htm>. Some portions of particular interest include the material related to Changeable Message Sign.

### 5.12 Other References

#### 5.12.1 New Products website

This is at <http://www.dot.ca.gov/hq/esc/Translab/NewProducts/>

This site includes links to various publications such as

- *New Product Evaluation Guidelines*
- *New Product Evaluation Process Flowchart*
- *New Product Deputy Directive (DD-45)*
- *New Product Submittal Criteria and Forms*
- *New Product Initial Review and Assessment Worksheet*

#### 5.12.2 Transportation Electrical Equipment Specifications (TEES)

This is available at <http://www.dot.ca.gov/hq/traffops/electsys/TEES.htm>. Of particular interest is Chapter 8 on "Changeable Message Sign Systems"

#### 5.12.3 California Test Methods

These are available at <http://www.dot.ca.gov/hq/esc/ctms/>. Some items that might be of particular interest include

- 605, "Method of Test for Deflection of Plastic Traffic Signal Face"
- 611, "Method of Test for Testing Durability of Mast Arm-mounted Luminaires"
- 666, "Method of Test for Fracture and Defection of Metal Traffic Signal Section Housing"
- 681,. "Method for Testing Creep Performance of Concrete Anchorage Devices"