



Local Programs Procedures

LPP 99-03 Highway Safety Features

Reference: *Local Assistance Procedures Manual*, Chapter 11, "Design Standards"

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Approved: _____

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This LPP discusses the highway safety features that meet the National Cooperative Highway Research Program (NCHRP) Report 350 (hereafter this document is referred to as Report 350) testing criteria. These safety features are to be used for all local highway work on the National Highway System (NHS) regardless of funding source.

BACKGROUND

In 1993 the Report 350 was published by the Transportation Research Board of the National Research Council. The Report 350 is used to evaluate the safety performance of various highway safety features, and as the most current set of procedures to do so, it superseded the NCHRP Report 230 (Published in 1980). This update was needed in order to reflect significant changes in vehicle fleet, the emergence of many new barrier designs, increased interest in matching safety performance to levels of roadway utilization, and other considerations.

The Federal Highway Administration (FHWA) issued a "Policy Memorandum" of July 25, 1997 entitled *Identifying Acceptable Highway Safety Features* which required all new or replacement safety features on the NHS covered by the Report 350 to be included in projects advertised for bids or in work done by force-account or by State (or Local) forces starting October 1, 1998. An extension was granted in an FHWA Memorandum of August 28, 1998 for certain kinds of roadside hardware presented in a matrix of compliance dates.

In a letter from FHWA, California Division, Caltrans Local Programs was instructed to ensure that NHS routes under local jurisdiction meet Report 350 requirements. Caltrans has been updating its *Standard Plans* to meet the Report 350 compliance dates. Also, Caltrans' maintenance and construction staffs have taken appropriate steps to implement this.

Caltrans - Office of Local Programs
May 12, 1999

EXISTING PROCEDURES

The NCHRP Report 230 has been the official document for the evaluation of highway safety features. Safety features in the Caltrans *Standard Plans* have met the NCHRP Report 230 criteria, as have many other manufacturer's products. Caltrans *Manual of Traffic Control* for construction and maintenance work zones contains information about the work zone devices allowed on highways and streets in accordance with Section 21400 of the California Vehicle Code. The Caltrans *Standard Specifications* contains the section on "Construction Area Traffic Control Devices" which describes these devices for highway construction contracts. Also, Chapter 11 of the *Local Assistance Procedures Manual* (LAPM) has information on highway safety design.

NEW PROCEDURES

FHWA is requiring that all highways on the NHS are to have safety features that are tested and found acceptable to the Report 350 for projects advertised for bids, work done by force-account, work done by local agency forces, or work done by utility forces according to prescribed compliance dates. Caltrans is in the process of updating the *Standard Plans* so that these safety features will apply to Caltrans' projects on the State highway system. Local agency work on the State highway system is performed under an encroachment permit (or similar authorization) which makes it subject to the same standards of work as Caltrans' projects. Caltrans' personnel performs inspection and oversight of local agency work consistent with Caltrans' methods and standards of safety. Therefore, for the State of California these safety features will be standard for all work on the NHS under local agency jurisdiction and for all work on the State highway system for projects advertised for bids, work done by force account, work done by local agency forces, or work done by utility forces—according to the safety features and compliance dates contained in the attached matrix. Noncompliance with this policy must be documented in writing with an explanation of the engineering decision that is as complete and convincing as possible.

For work done by permit on the NHS under local agency jurisdiction, the local agency will be responsible for informing the permittee—utility company, private entity, etc.—of the applicability of using safety work zone devices that meet the performance criteria specified in the Report 350.

Some of the compliance dates are for a future time for which there is not yet a standard. Also, some manufacturer's standards may be approved later for past compliance dates. Since it is anticipated that these changes will take place, the attached matrix will be posted on the Local Programs Home Page (www.dot.ca.gov/hq/LocalPrograms) and updated as these changes occur.

It is recommended that affected projects advertised for bids according to the compliance dates use the following special provision or something similar:

LPP 99-03
Highway Safety Features
Page 3

The Contractor's attention is directed to the National Cooperative Highway Research Program (NCHRP) Report 350 published in 1993. Categories 1 & 2 of Work Zone Traffic Control Devices shall meet applicable safety performance criteria specified in NCHRP Report 350 as required by the Federal Highway Administration (FHWA). Vendors of such devices shall self-certify compliance with FHWA requirements. The Contractor shall give the Engineer a letter, prior to the first work on this contract requiring the use of such devices, certifying that only devices complying with the FHWA requirements will be used on the project. After work has started, upon request by the Engineer, the Contractor shall provide, within two working days, a letter from the manufacturer or vendor certifying compliance with applicable FHWA requirements.

The use of temporary proprietary work zone hardware is usually selected by the contractor. For projects that have participating Federal-aid funds, this hardware can be assumed to be exempt from the requirements for the use of proprietary products covered in Chapter 12 of the LAPM. However, products of proprietary hardware specified by name in a contract must comply with Chapter 12 of the LAPM.

COMPLIANCE DATES FOR USE OF NCHRP REPORT 350 TESTED ROADSIDE HARDWARE

Feature	Safety Hardware Type	Use in New Installations	Use in 3R Projects	Standard Available	Manufacturer having Standard¹
Traffic Barriers	Longitudinal Barriers: Guard Railings, Median Barriers	October 1, 1998	October 1, 1998 (Replacement of existing hardware meeting 230 is not required)	Caltrans current Metric Std Plans	Not Available
Traffic Barriers	Bridge Railing	October 1, 1998	October 1, 1998 (Replacement of existing hardware meeting 230 is not required)	Caltrans current Std Drawings ²	Not Available
Traffic Barriers	Guard Railing to Bridge Railing Transition	October 1, 2002 (October 1, 1998 meet 230)	October 1, 2002 (Replacement of existing hardware meeting 230 is not required)	Not Available	Not Available

LPP 99-03
Highway Safety Features
Page 4

Traffic Barriers	Guard Railing Terminals	October 1, 1998	October 1, 1998 (Replacement of existing hardware not meeting 350 is required)	Caltrans current Metric Std Plans ET-2000 SRT-350 CAT-350	Syro, Inc. ³ Syro, Inc. Syro, Inc.
Traffic Barriers	Crash Cushions	October 1, 1998	October 1, 1998 (Replacement of existing hardware meeting 230 is not required)	Caltrans current Metric Std Plans Energite Barrels CAT-350 ADIEM II 350 REACT 350.9 Fitch Barrels	EASI ⁴ Syro, Inc. Syro, Inc. Roadway SS ⁵ Roadway SS
Work Zone Category 1 Devices	Plastic or Rubber Cones, Tubular Markers, Flexible Delineator Posts, Plastic Drums w/ <u>no</u> lights, signs, batteries, etc.	October 1, 1998 New Devices purchased after October 1, 1998 must comply to 350 (Agencies can phase out existing devices as they complete their normal service life)	October 1, 1998 New Devices purchased after October 1, 1998 must comply to 350 (Agencies can phase out existing devices as they complete their normal service life)	Caltrans current Metric Std Specs Caltrans current Manual of Traffic Controls WATCH Manual ⁶	Manufacturers of the device must provide a self-certification that the device meets the safety performance criteria according to the NCHRP Report 350

LPP 99-03
Highway Safety Features
Page 5

Work Zone Category 2 Devices	Barricades, Portable sign supports, Intrusion detectors and alarms, drums, vertical panels, or cones with lights	October 1, 2000 New units purchased after this date must comply to 350 (Agencies can phase out existing devices as they complete their normal service life)	October 1, 2000 New units purchased after this date must comply to 350 (Agencies can phase out existing devices as they complete their normal service life)	Caltrans current Metric Std Specs Caltrans current Manual of Traffic Controls WATCH Manual	Manufacturers of the device must obtain an Acceptance Letter from FHWA indicating acceptability of the device and the NCHRP Report 350 test level for which it qualifies
Work Zone Category 3 Devices	Devices in Category 2 greater than 100 lbs: Barriers (i.e. k-rail), fixed sign supports, and others Devices not meeting def. of Category 1 or 2	October 1, 2002 Barriers with joints that fail to transfer tension and moment from one segment to another must be updated by October 1, 2000	October 1, 2002 Barriers with joints that fail to transfer tension and moment from one segment to another must be updated by October 1, 2000	Not Available	Not Available
Work Zone Category 3 Devices	Truck Mounted Attenuators and Work Zone Crash Cushions (same as Traffic Barrier Category)	October 1, 1998 New units purchased after October 1, 1998 must comply to 350	October 1, 1998 New units purchased after October 1, 1998 must comply to 350	Alpha 70K Alpha 100K	EASI EASI
Work Zone Category 4 Devices	Portable, usually Trailer-mounted devices, flashing arrow panels, variable message signs, portable traffic/signal lighting equip., and Misc Hardware	Announcement of an implementation date will be made by October 1, 2000	Announcement of an implementation date will be made by October 1, 2000	Not Available	Not Available
Break-away Devices	Signs and Luminaire Supports	October 1, 1998	October 1, 1998	Caltrans current Metric Std Plans	Not Available

LPP 99-03
Highway Safety Features
Page 6

¹ The manufacturer's standard will only be listed if one is available and if it has been approved by Caltrans.

² The Caltrans Standard Drawings (XS-Plan Sheets) may be obtained from either a district office design section Cadd files or from the Office of Structures Maintenance & Investigations, Local Assistance Unit, P.O. Box 942874, Sacramento, CA 94274-0001.

³ Syro, Inc., (800) 772-7976, P.O. Box 99, Centerville, Utah 84014.

⁴ The EASI is Energy Absorption System Inc., (800) 255-3240, One East Wacker Dr., Chicago, IL 60601.

⁵ Roadway SS, (800) 822-7735, 1533 Berger Dr., San Jose, CA 95112.

⁶ The WATCH Manual is the Work Area Traffic Control Handbook published by BNI Publications, Inc., (800) 873-6397, 1612 S. Clementine, Anaheim CA 92802.