

POLICY DIRECTIVE

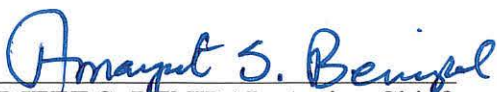
TR-0011 (REV 3/15/17)

TRAFFIC OPERATIONS POLICY DIRECTIVE

NUMBER:

17-01

Page 1 of 4


 AMARJEET S. BENIPAL, Acting Chief
 Division of Traffic Operations

DATE ISSUED:

April 1, 2017

EFFECTIVE DATE:

April 1, 2017

SUBJECT:

**Use of Department-Furnished Signal Controller
 Assemblies and Department-Furnished Software
 Programs on the State Highway System**

DISTRIBUTION

- ☒ All District Directors
- ☒ All Deputy District Directors—Traffic Operations
- ☒ All Deputy District Directors—Maintenance
- ☒ All Deputy District Directors—Construction
- ☒ All Deputy District Directors—Design
- ☐ All Deputy District Directors—Transportation Planning
- ☒ Chief, Division of Engineering Services
- ☒ Chief Counsel, Legal Division
- ☒ Web Posting:
- ☒ External ☐ Internal Only
- ☒ Headquarters Division Chiefs for Maintenance and Construction

DOES THIS DIRECTIVE AFFECT OR SUPERSEDE
 ANOTHER DOCUMENT?

☒ YES ☐ NOIF YES, DESCRIBE *Supersedes:*

1. Memo dated November 23, 1987 – “Model 170 Software and Firmware”
2. Memo dated August 29, 1983 – “Model 170 Traffic Controller Assemblies”
3. Memo dated March 19, 1997 – “State-Furnished Equipment Policy”

WILL THIS DIRECTIVE BE INCORPORATED IN
 THE CALIFORNIA MANUAL ON UNIFORM
 TRAFFIC CONTROL DEVICES (CA MUTCD)?

☐ YES ☒ NO

IF YES, DESCRIBE

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DIRECTIVE

All signalized intersections on the State Highway System (SHS) shall be operated utilizing Department-Furnished equipment which includes the controller, cabinet and traffic signal control software program [as defined in the 2015 Standard Specifications 86-1.02Q(2)].

This directive shall apply to all signalized intersections on the SHS as follows:

- Only the Department-Furnished signal controller cabinet assembly shall be used.
- Only Department Furnished Model 170 or 2070 firmware and software programs shall be operated at existing locations.
- Only Department-Furnished Model 2070 controllers and software programs shall be operated at new or modified locations.

IMPLEMENTATION

This directive updates and combines three policies:

1. "Model 170 Traffic Controller Assemblies" memo dated August 29, 1983, to include Model 170 controller assemblies;
2. "Model 170 Software and Firmware" memo dated November 23, 1987, to include both the Model 170 and 2070 Software and Firmware programs, and
3. "State-Furnished Equipment Policy" memo dated March 19, 1997.

The California Department of Transportation (Caltrans) will **only**, under an approved license agreement, furnish software to cities and counties for signalized intersections operated and/or maintained by Caltrans that are not part of the SHS.

The Headquarters (HQ) Division of Traffic Operations, Office of Traffic Management, **must** approve any request for an exception to this policy. Prior to requesting HQ approval, the exception request must be approved by the Deputy District Director(s) of Traffic Operations and Maintenance for compatibility and operations on the SHS. A full justification for an exception **must** be initiated by the local agency requesting the exception, and **must** accompany the exception request.

Joint-funded projects with cooperative agreements:

If the project is cooperatively financed by the State and a local agency, in accordance with the provisions of the California Department of Transportation Standard Plans and Standard Specifications, the cost of the controller assembly will be included in the cost of the project.

Local-agency-sponsored project (encroachment permit project):

If the project includes an installation of new traffic signal(s) or the modification of existing traffic signal(s) and the project is financed solely by the local agency, the permittee is **required** to install a Department-Furnished Model 2070 controller procured from the Department's warehouse. The cost of the controller will be recovered from the permittee's contractor as Department-furnished material before issuing the double permit.

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Private entity project (encroachment permit project):

The project includes the installation of new traffic signal(s) or the modification of existing traffic signal(s), and the project is financed solely by a private entity. The permittee is **required** to install a Department-Furnished Model 2070 controller procured from the Department's warehouse. The cost of the controller will be recovered from the permittee as Department-furnished material before issuing the permit.

Exception process:

See Attachment 1—Exception Process for TOPD 17-01

DELEGATIONS

No new delegations of authority are created under this policy.

BACKGROUND

Since the mid-1970s, Caltrans, in partnership with the State of New York, designed a traffic signal controller assembly – the Model 170 controller, which provided complete interchangeability of controller units, cabinets, detector sensor units, isolation modules, switch packs, conflict monitors, flashers and modems. Since 1977, Caltrans has been purchasing the Model 170 controllers and providing them to the districts as Department-Furnished Material to benefit from cost savings and quality control. In the 1990's, Caltrans developed specifications to update the Model 170 controller, resulting in the Model 2070 controller. The Model 2070 controller is also Department-Furnished.

To achieve operational uniformity and to reduce maintenance cost, Caltrans requires that engineers maintain the Traffic Signal Control Program (TSCP) software installed in the controller units. This applies to state-highway intersections as well as local-agency intersections that are operated and/or maintained by Caltrans.

This policy reduces maintenance costs for training staff on a standardized product. Use of standardized software that has been fully tested for reliability improves the safety record and preserves the integrity of the traffic signal control system. This policy also results in cost savings through a master purchase agreement for procurement of large quantities. This long-standing policy is also intended to reduce Caltrans' exposure to tort liability.

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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 sometimes 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. 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.
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ATTACHMENTS

1. Exception Process for TOPD 17-01
2. Flowchart for Exception Process for TOPD 17-01
3. Memorandum dated August 29, 1983, “Model 170 Traffic Controller Assemblies”
4. Memorandum dated November 23, 1987, “Model 170 Software and Firmware”
5. Memorandum dated March 19, 1997, “State-Furnished Equipment Policy”

3/24/2017

Exception Process for TOPD 17-01

"Use of Department-Furnished Signal Controller Assemblies and Department-Furnished Software Programs on the State Highway System"

OBJECTIVE: Caltrans needs to be able to operate and maintain a state traffic signal if/when it is deemed needed, and as quickly as possible while allowing local agencies to improve mobility on their adjacent facility by using traffic signal controllers compatible with their existing system.

Non-standard equipment and/or non-standard software shall be consistent with the National Intelligent Transportation System (ITS) Architecture and be interoperable with the Caltrans Integrated Corridor Management (ICM) or "connected corridors " and **are to be solely funded and maintained by a Local Agency**. The local agency is required to enter into a Maintenance and Operations agreement prior to installation of the non-standard equipment and/or non-standard software.

All agreements with local agencies for signalized intersection locations with non-standard equipment and/or non-standard software shall have agreements that document specific details of the exception. All existing agreements must have a "sunset" date of 3 years (April 2020), at which time the local agency may re-apply to renew the agreement. If approved, the agreement would be valid for a maximum of 3 years. If there is no documented agreement for an exception, the district must enter into an agreement with the local agency. The approved document would be valid for a maximum of 3 years. An agency may re-apply for agreement renewals.

Review/Approval/Renewal Process is described below:

Applicable to:

- Joint-funded projects with cooperative agreements
- Local-agency-sponsored project (encroachment permit project)

1. Requests for an exception to operate and/or maintain a state-owned and/or operated traffic signal shall be reviewed for approval or denial with primary considerations to safety and appropriateness, and is initiated by the local agency and submitted to the district Encroachment Permit Engineer.
2. Initial requests are reviewed by Deputy District Director (DDD) of Operations, with concurrence from DDD of Maintenance. If the DDD's approve, the district notifies Headquarters Traffic Ops of pending request for exception, with specifics on location and proposed hardware and software for the traffic signal controller cabinet, and who will operate and maintain the signalized intersection.
3. Headquarters Traffic Ops reviews pending request and responds to district Permit engineer with initial approval, or requests more information/data within 30 days.
4. The district responds to local agency with the following possible responses:
 - o Accepts as submitted
 - o Denies request for exception
 - o Accepts with specific changes/revisions
5. If local agency wishes to comply with Caltrans-required changes for approval, local agency resubmits updated request for approval to the district. The district resubmits request to Headquarters.
6. If Headquarters *denies* request, the response shall document the explanation(s) for denial in writing within one month.

7. If Headquarters responds *favorably*, the district will draft an agreement. The steps are described below.
 - I. Using your district's standard agreement template, the agreement is then submitted to the local agency for comments/feedback. A copy of the draft agreement is submitted to Headquarters Division of Traffic Operations, Office of Traffic Management. The agreement will have an expiration date of a maximum 3-year time frame.
 - II. If approved the District Permit Engineer is responsible for the following:
 - a) Forwarding the final approved submittal to District Maintenance Signal & Lighting Coordinator
 - b) Forwarding the final approved submittal to District Maintenance Agreement Coordinator
 - (i) Agreement Coordinator will draft the agreement, coordinate review with HQ & Legal, and obtain signatures
 - c) Ensuring a Maintenance & Operations Agreement is completed prior to issuance of the encroachment permit
 - d) Issuing the Encroachment Permit to the Local Agency
 - e) Notifying the District Signal & Lighting Coordinator of construction completion
 - f) Provide copies of permit and agreement to HQ Traffic Ops
 - III. Headquarters Division of Traffic Operations, with input from Headquarters Maintenance, reviews the draft agreement. Headquarters Division of Traffic Operations submits response with feedback to district within one month, with a copy to 1) DDD of Operations, 2) DDD of Maintenance, 3) Headquarters Division Chief for Operations and Maintenance and 4) district senior traffic signal operations engineer.
 - IV. Updated/modified agreement is submitted for the following signatures:
 - District Deputy Director Traffic Operations
 - District Deputy Director Maintenance (if not the same)
 - Headquarters Legal
 - Headquarters Traffic Operations, Office Chief of Traffic Management
 - V. Copies of the signed agreement must be archived in the district and Headquarters Office of Traffic Management.
 - VI. Agreements will be reviewed annually by the districts, to evaluate the performance of the exceptions. If there are issues, the district will inform the local agency and request that a response be submitted within one month. The district will decide whether the exception should continue. Two months prior to expiration of the agreement, the district will alert the local agency that the agreement will soon expire. The local agency may apply for renewal of the agreement. Headquarters, Division of Traffic Operations, Office of Traffic Management will follow up with the district to track and document whether a request for extension was requested or whether the district withdrew the exception.

Private entity project (encroachment permit project):

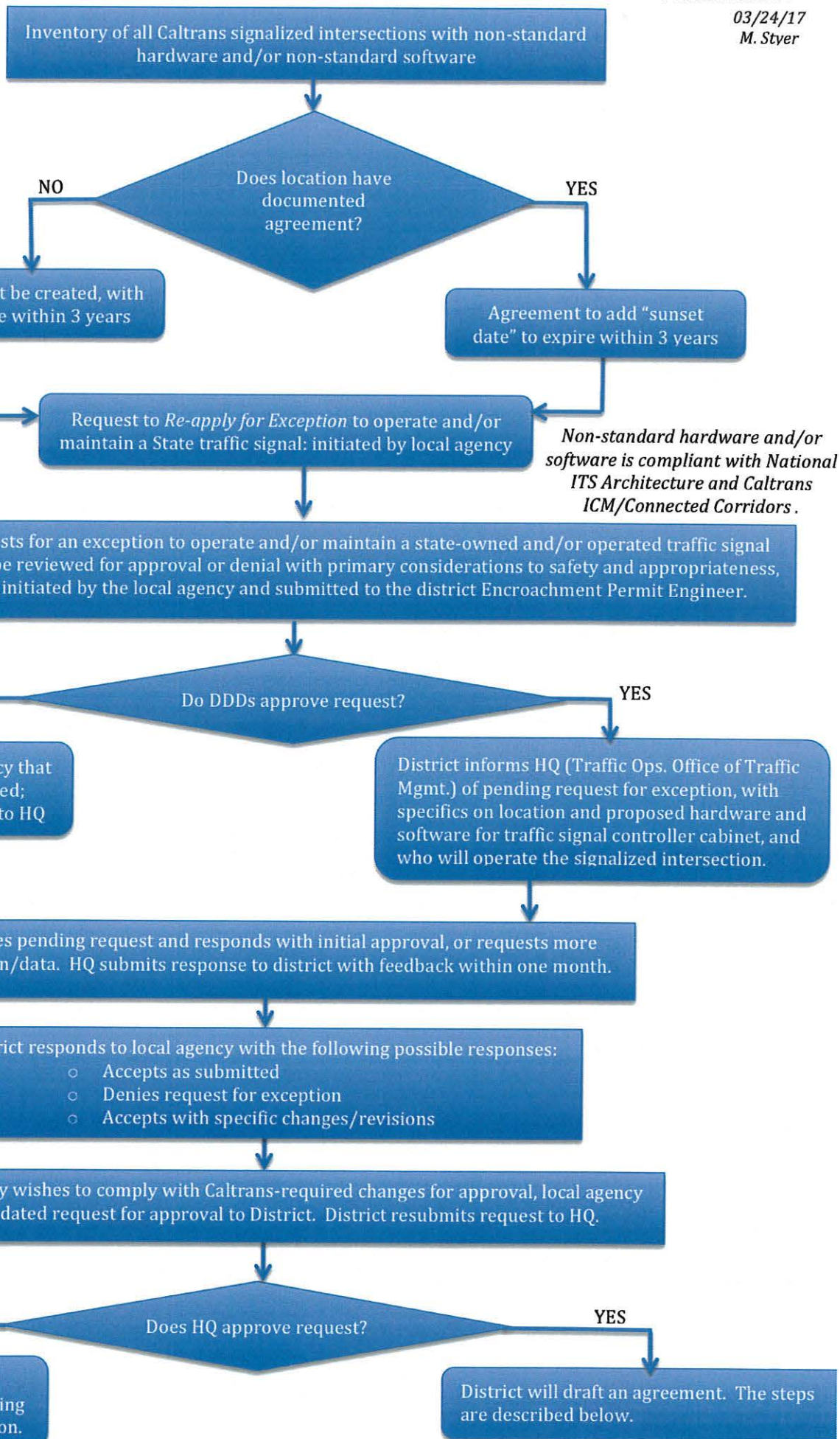
If the Local Agency having jurisdiction in the project location refuses to execute a Maintenance and Operations Agreement for the non-standard equipment and/or non-standard software, a Permit Special Provisions shall constitute the maintenance and operations agreement requirements.

The agreement should contain the following conditions:

- The agreement must clearly state the roles and responsibilities of operations and maintenance of the specific traffic signal.
- The agreement must be clear that vehicle traffic may not be allowed to back up onto the freeway and that Caltrans may take back control of a traffic signal at any time if the signal is not meeting Caltrans standards.
- The yellow signal timing must be compliant with the latest version of the CA MUTCD.
- The pedestrian timing must be compliant with TOPD 12-01. Traffic signals shall be maintained in compliance with ADA requirements.
- The expiration date must be clearly documented in the agreement.
- The agreement may be renewed after a full traffic signal review by the district's traffic signal operations staff.
- Standards shall not be revised or modified.

Exception Process for TOPD 17-01

*"Use of Department-Furnished Signal
Controller Assemblies and
Department-Furnished Software
Programs on the State Highway"*



NEW REQUESTS FOR EXCEPTIONS:

Steps for Agreement for TOPD 17-01

Using your district's standard agreement template, the agreement is then submitted to the local agency for comments/feedback. Copy of the draft agreement is submitted to HQ Division of Traffic Operations, Office of Traffic Management. Agreement will have an expiration date of a maximum of 3-year timeframe.

If approved the District Permit Engineer is responsible for the following:

- a) Forwarding the final approved submittal to District Maintenance Signal & Lighting Coordinator
- b) Forwarding the final approved submittal to District Maintenance Agreement Coordinator
 - (i) Agreement Coordinator will draft the agreement, coordinate review with HQ & Legal, and obtain signatures
- c) Ensuring a Maintenance & Operations Agreement is completed prior to issuance of the encroachment permit
- d) Issuing the Encroachment Permit to the Local Agency
- e) Notifying the District Signal & Lighting Coordinator of construction completion
- f) Provide copies of permit and agreement to HQ Traffic Ops

HQ Division of Traffic Operations, with input from HQ Maintenance, reviews the draft agreement. HQ submits response with feedback to district within one month, with a copy to 1) DDD of Operations, 2) DDD of Maintenance, 3) HQ Division Chief for Operations and Maintenance and 4) district senior traffic signal operations engineer

Updated/modified agreement is submitted for the following signatures:

- District Deputy Director Traffic Operations
- District Deputy Director Maintenance (if not the same)
- HQ Legal
- HQ Traffic Operations, Office Chief of Traffic Management

Copies of the signed agreement will be archived in the District and at the HQ Office of Traffic Management.

Agreements will be reviewed annually by the Districts to evaluate the progress of the exceptions. If there are any issues, the District will inform the local agency and request that a response be submitted within one month. The District will decide whether the exception may continue or to withdraw the exception. Within 2 months of the end of the 3-year term (max.), the District will alert local agency that the agreement will soon expire. The local agency may apply for renewal of the agreement.

The agreement should contain the following conditions:

- The agreement must detail the roles and responsibilities of operations and maintenance of the specific traffic signal.
- The agreement must make it clear that vehicle traffic may not be allowed to back up onto the freeway and that Caltrans may take back control of a traffic signal at any time if the signal is not meeting Caltrans standards.
- The yellow signal timing must be compliant with the latest version of the MUTCD.
- The pedestrian timing must be compliant with TOPD 12-01. Traffic signals shall be maintained in compliance with ADA requirements.
- The expiration date must be made clear.
- The agreement may be renewed, after a full traffic signal review by the district's traffic signal operations

Memorandum

To : All District Directors
 Attention Traffic Operations Engineers
 Maintenance Engineers

Date : August 29, 1983

File No.:

From : DEPARTMENT OF TRANSPORTATION
 Director's Office

Subject: Model 170 Traffic Controller Assemblies

PURPOSE

To establish policy for the use of State-furnished Model 170 Traffic Signal Controller Assemblies on the State highway system (SHS).

To provide procedures for State-furnishing these controller assemblies.

BACKGROUND

In the mid-1970's, Caltrans, with New York, designed a traffic signal controller assembly--the Model 170--that provided complete interchangeability of controller units, cabinets, detector sensor units, isolation modules, switchpacks, conflict monitors, flashers and MODEMS.

Caltrans has had six years of favorable experience with the Model 170. Because of demonstrated significant improvement over conventional controller assemblies in cost, reliability, flexibility of operation and ease of maintenance, Caltrans has standardized on the Model 170.

Since 1977, Caltrans has been purchasing and warehousing the Model 170 in OBM warehouses. From this source, the traffic controller signal assemblies can be requisitioned by the Districts.

POLICY

Only Model 170 Traffic Signal Controller Assemblies will be installed on the SHS.

This policy applies to each new and existing traffic signal including those at the intersection of freeway ramps and local streets, whether they be maintained by the State or by a local agency.

All new traffic-actuated signals shall use Model 170 Traffic Signal Controller Assemblies. Consideration shall be given to using Model 170 for a pretimed signal where pre-emption or actuated phases are involved.

All District Directors
Page Two
August 29, 1983

All electromechanical traffic-actuated controller assemblies shall be replaced with Model 170's. Solid-state (Type 90) traffic-actuated controller assemblies shall be replaced with Model 170's as they become obsolete or develop high maintenance costs. Electromechanical pretimed controller assemblies may also be replaced with Model 170's.

IMPLEMENTATION

State Project

On a State project, the cost of the controller assemblies will be identified in the project report and the preliminary report and will be included in the PS&E. Funding will be from the appropriate allotment.

If the State project is cooperatively financed by the State and a local agency, in accordance with the provisions of the Traffic Manual, the cost of the controller assembly will be included in the cost of the project.

Local Agency Project

The State will furnish a Model 170 Controller Assembly at no cost to the local agency if:

- a) The project includes the replacement of an existing controller assembly in advance of the State's planned replacement. The approval document will be the encroachment permit.
- b) The project includes the installation of new signal(s) or the modification of existing signal(s) and the project is financed solely by the local agency. The approval document will be the project report.

Private Party Project (Permit Project)

If, as a mitigating factor, the project requires a private party to install a new signal or to relocate or modify an existing controller assembly, the State, in the encroachment permit, will require the private party to install a Model 170. The private party must obtain the Model 170 from the private sector and have it tested by the State's Transportation Laboratory--both at his expense.

However, when a private party is relocating an existing controller assembly as part of a signal modification and the controller assembly is of a type that is scheduled for replacement, the private party will be directed to install a State-furnished Model 170.

All District Directors .
Page Three
August 31, 1983

PROCEDURES

Ordering

- a) All Model 170 Controller Assemblies that are State-furnished will be requisitioned from the Office of Business Management (OBM) warehouse inventory on standard local request (LR EDP) forms.
- b) Assemblies that are back ordered by the warehouse may be purchased by the Districts directly from manufacturers/suppliers if they are urgently needed--through individual District contract delegations, with prior approval from Materiel Operations Branch.
- c) Assemblies that are not routinely stocked by the warehouse will be requisitioned from OBM on purchase estimates or through individual District contract delegations.

Charges and Coding

- a) When Model 170 Controller Assemblies are requisitioned for either a State or State/Local Agency project, the appropriate EA will be used and the assemblies will be transferred by the warehouse on a Transaction Code 200 (TC 200).
- b) Assemblies may also be requisitioned at any time as a transfer from OBM warehouse inventory to a District's inventory. EA's will not be used in these transactions and the warehouse will transfer assemblies on a TC 220.

Maintenance should order all their requirements on a TC 220.

Districts will transfer assemblies from their inventory to specific projects on a TC 100 using an appropriate EA.

- c) When a controller assembly is to be supplied at no cost to a local agency or to a private party, the District can take the assembly from their own inventory or requisition one from OBM on a TC 220 for shipment to the District for pretest. In either case, the assembly will be transferred out of the District's inventory to the local agency or to the private party on a TC 451.

Permit numbers will be used on these documents.

Original Signed J. R. Cropper

J.R.
R. G. ADAMS
Deputy Director
Highway Maintenance and
Transportation Operations

HLBegin:sb
bcc:HLBegin
WAJHovensten
KCGilbert
HFox - FOC
SCarlson - FOC
RNevis - OBM
All Dist. Materiel Managers
Director's Files
Director's X-Ref.

OCT-30-'91 WED 11:48
State of California

ID: TRAFFIC OPERATIONS HQ TEL NO: 916 327-1020

#855 P02
Business, Transportation and Housing Agency

Memorandum

To : District Traffic Engineers

Date : November 23, 1987

File No.:

From : DEPARTMENT OF TRANSPORTATION
Division of Traffic Engineering

Subject: Model 170 Software and Firmware

It is State policy that the firmware which is installed in the Model 170 Controller units shall be from software that has been designed and developed by Caltrans Traffic Engineers. This applies to state-highway intersections as well as local-agency intersections which are operated and/or maintained by State personnel. This long-standing policy is intended to reduce Caltrans' exposure to tort liability and was endorsed by Headquarters Legal Division.

Any request for an exception to this policy must be reviewed by Headquarters Division of Traffic Engineering. Thorough and complete justification for an exception must be initiated by the local agency requesting the exception and must accompany the request for an exception.

Original Signed
C. D. BARTELL

C. D. BARTELL
Division of Traffic Engineering

cc: R. L. Donner

e California

Business, Transportation and Housing Agency

e m o r a n d u m

DISTRICT DIRECTORS

Date: March 19, 1997

DISTRICT DIVISION CHIEFS

Project Development, Construction
and Operations

File:

DEPARTMENT OF TRANSPORTATION
Traffic Operations
Mail Station 36

Subject: State-Furnished Equipment Policy

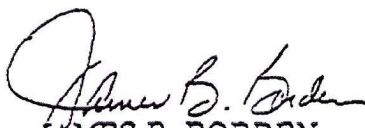
The following is to clarify existing policy regarding State-furnished equipment:

- All Model 170 Controller Assemblies, regardless of application, installed on the State highway system that are included in contracts that the State advertises, awards or administers shall be State-furnished.

When the Model 2070 Controller units are introduced, all Model 2070 Controller Assemblies, regardless of application, installed on the State highway system that are included in contracts that the State advertises, awards or administers shall be State-furnished.

We are currently working on a new Model 170 and 2070 Controller policy for traffic signals installed on the State highway system. Until the new policy is implemented, traffic signal controller assemblies that are not covered under the criteria listed above shall be State-furnished, if possible, or contractor provided with testing being performed by Material Engineering & Testing Services or an independent lab.

We also will further explore the possibility of future contractor furnishing of Changeable Message Signs and Model 170 Controller equipment by establishing a task force to examine all the issues. On a statewide basis; Steve Hancock from the Office of Electrical Systems will organize this task force. Please contact Steve Hancock at 654-5309 for input to and/or participation on the task force.


JAMES B. BORDEN
Program Manager
Traffic Operations

Attachments

SHancock: dc
bc: JBorden
LKabel
SHancock