Smarter Work Zones Webinar Series

Webinar #11: Lane Closure and Permitting Systems

Martha Kapitanov, Saud Khan, Elio Espino, Arshad Iqbal, and Yusuf Shatnawi

March 23, 2016 1:00-2:30pm EST

Efficiency through technology and collaboration

Every Day Counts
innovation ingenuity invention imagination

U.S. Department of Transportation
Federal Highway Administration

Smarter Work Zones

Introduction and Today's Speakers

Today's Speakers

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Florida DOT

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Smarter Work Zones (SWZ) Webinar Series

- This is the eleventh in a series of monthly SWZ webinars
- Topics based on **what matters most to you!**
- Previous Webinar topics include:
  - Corridor-Based and Program-Based Project Coordination
  - Queue Warning Systems
  - Variable Speed Limits
  - Dynamic Lane Merge
  - Work Zone Project Coordination Guide and Examples
  - Integrating Project Coordination & Technology Applications: Iowa DOT
  - Designing ITS Based on Identified Needs
- Recordings and materials for previous webinars are available on The National Work Zone Safety Information Clearinghouse website: https://www.workzonesafety.org/swz/webinars
- Coming Up:
  - Webinar #12: *Integrating Technology Applications – Massachusetts DOT*
    Tuesday, April 26, 2016 1:00-2:30pm EDT

Purpose of Today's Webinar

Provide a comprehensive overview of lane closure and permitting systems and discuss real-world examples of how different agencies have developed and use these systems for Project Coordination.

Topics include:

1. SWZ Project Coordination Initiative
   - Show how the SWZ Project Coordination initiative can be used by agencies to enhance their current work zone management practices
2. Lane Closure and Permitting Systems Examples
   - Provide real-world examples of successful lane closure and permitting systems and how these systems have been used for project coordination.

Smarter Work Zones

Project Coordination Initiative

What are Smarter Work Zones (SWZ)?

Innovative strategies designed to optimize work zone safety and mobility

- Policies and practices used to incrementally and continuously improve WZ operations
- Tools to reduce WZ crashes and delays
- Tools to enhance WZ management strategies

Two Identified SWZ Initiatives:

Project Coordination

Coordination within a single project and/or among multiple projects within a corridor, network, or region, and possibly across agency jurisdictions

Today's Focus of Discussion

Technology Application

Deployment of Intelligent Transportation Systems (ITS) for dynamic management of work zone traffic impacts, such as queue and speed management

Project Coordination – What is it?

Coordination within a single project and/or among multiple projects within a corridor, network, or region, and possibly across agency jurisdictions to minimize work zone traffic impacts.

Benefits:

- *For transportation agencies include*:
  - Ability to reduce and manage traffic disruptions from road work
  - Earlier identification of project impacts
  - Dynamic adjustments to schedule
  - Improved communications within and cross agencies
  - Cost savings
- *From the driver's perspective*:
  - Fewer numbers of work zones and street cuts
  - Better quality road surfaces
  - Increased customer satisfaction

Source: FHWA

SWZ Project Coordination Goals:

Goal 1

By December 2016, 25 State DOTs have incorporated work zone project coordination strategies into agency documentation and business processes.

What does this mean?

- Review of:
  - Existing PC-related policies/practices to identify strengths and weaknesses
  - Other agencies' PC-related best practices
- Identify and implement of SWZ PC strategies
- Develop agency documentation and business processes

SWZ Project Coordination Goals:

Goal 2

By December 2016, 5 State DOTs have volunteered to pilot the Work Zone Implementation Strategies Estimator (WISE) software.

What does this mean?

- Use WISE tool to optimize project schedules and analyze mitigation strategies to minimize work zone traffic impacts
- Pilot, evaluate, suggest enhancements, and demonstrate WISE's value for work zone management

Smarter Work Zones

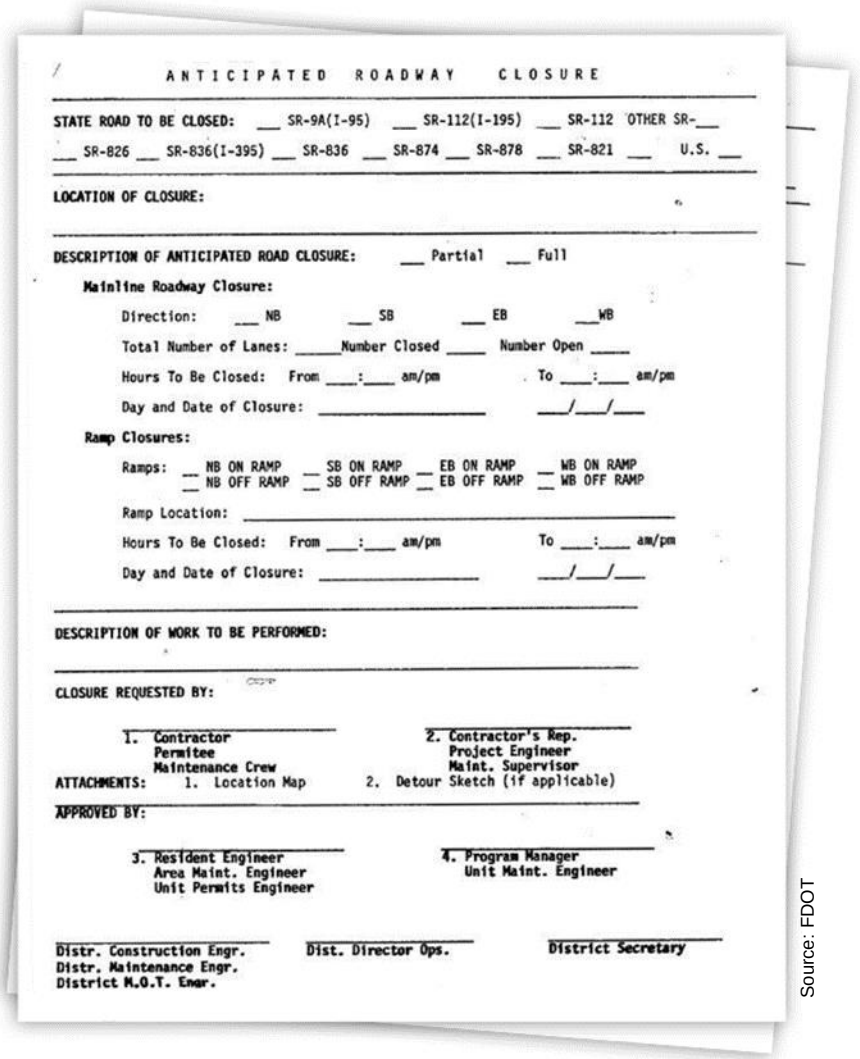
Florida DOT (FDOT) District 6 (D6) Lane Closure Information System (LCIS)

Outline

- LCIS Overview
  - LCIS history
  - Department Needs
  - Main Features
  - User Roles
  - How it works
  - Integration
  - Project references
  - Future Goals
- I-95 Case Study
  - Segment Characteristics
  - Scope of project
  - Benefits of LCIS

District 6 Lane Closure Policy

- Public Demand for Information
- Account for lane closures on State Facility
- Adopted in 1989
- “Notification of lane closures or temporary detours shall be accomplished 14 working days prior to closure, detour, or MOT phase change by submitting the required Anticipated Roadway Closure Form, sketches, calculations, and other data through the Engineer to the District Traffic Operations Office.”
- Lane Closure Request Form V1.0
  - Hard Copy implementation tool



ANTICIPATED ROADWAY CLOSURE

STATE ROAD TO BE CLOSED: ___ SR-9A(I-95) ___ SR-112(I-195) ___ SR-112 OTHER SR-___
___ SR-826 ___ SR-836(I-395) ___ SR-836 ___ SR-874 ___ SR-878 ___ SR-821 ___ U.S. ___

LOCATION OF CLOSURE:

DESCRIPTION OF ANTICIPATED ROAD CLOSURE: ___ Partial ___ Full

Mainline Roadway Closure:

Direction: ___ NB ___ SB ___ EB ___ WB

Total Number of Lanes: _____ Number Closed _____ Number Open _____

Hours To Be Closed: From ___:___ am/pm To ___:___ am/pm

Day and Date of Closure: _____ ___/___/___

Ramp Closures:

Ramps: ___ NB ON RAMP ___ SB ON RAMP ___ EB ON RAMP ___ WB ON RAMP
___ NB OFF RAMP ___ SB OFF RAMP ___ EB OFF RAMP ___ WB OFF RAMP

Ramp Location: _____

Hours To Be Closed: From ___:___ am/pm To ___:___ am/pm

Day and Date of Closure: _____ ___/___/___

DESCRIPTION OF WORK TO BE PERFORMED:

CLOSURE REQUESTED BY:

1. Contractor
Permitee
Maintenance Crew

2. Contractor's Rep.
Project Engineer
Maint. Supervisor

ATTACHMENTS: 1. Location Map 2. Detour Sketch (if applicable)

APPROVED BY:

3. Resident Engineer
Area Maint. Engineer
Unit Permits Engineer

4. Program Manager
Unit Maint. Engineer

Distr. Construction Engr.
Distr. Maintenance Engr.
District M.O.T. Engr.

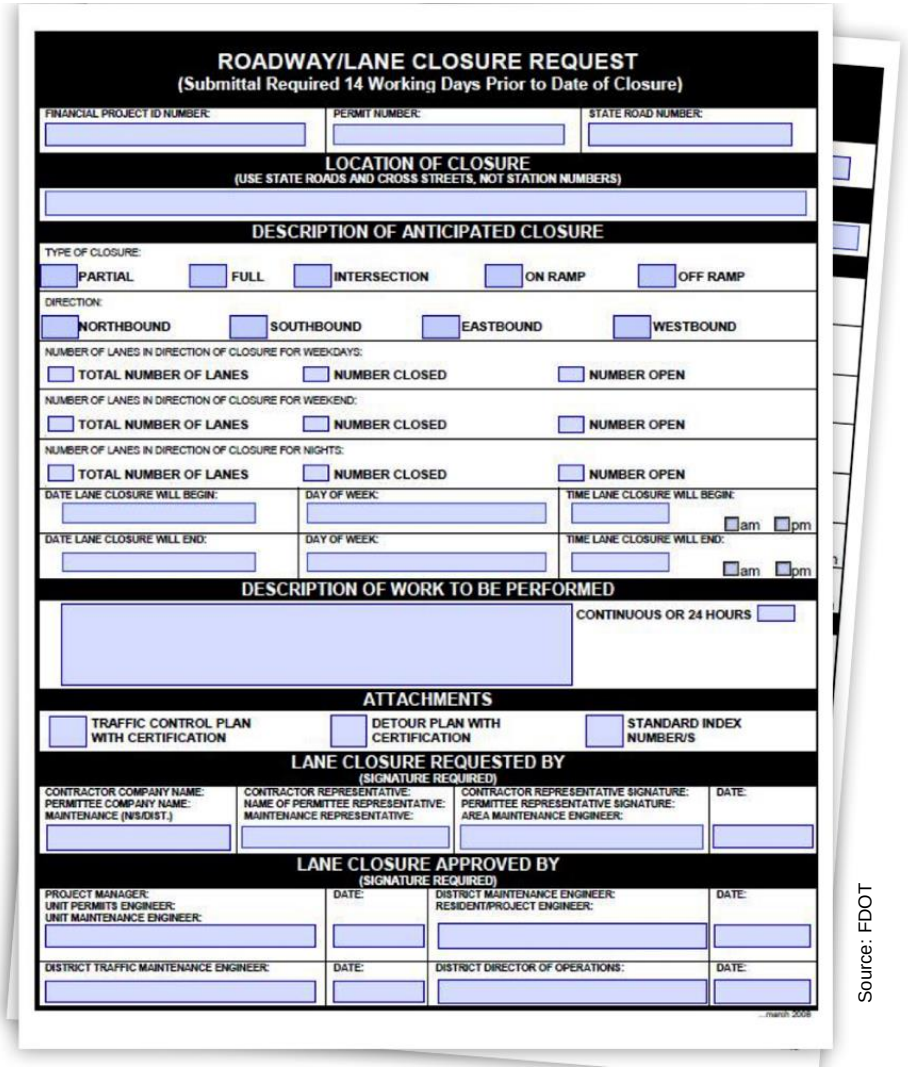
Dist. Director Ops.

District Secretary

Source: FDOT

Lane Closure Request Form V2.0

- Lane Closure Request Form V2.0
  - Digital Form (PDF), 2008
  - Fields refined



ROADWAY/LANE CLOSURE REQUEST
(Submittal Required 14 Working Days Prior to Date of Closure)

FINANCIAL PROJECT ID NUMBER: | PERMIT NUMBER: | STATE ROAD NUMBER:

LOCATION OF CLOSURE
(USE STATE ROADS AND CROSS STREETS, NOT STATION NUMBERS)

DESCRIPTION OF ANTICIPATED CLOSURE

TYPE OF CLOSURE:
☐ PARTIAL ☐ FULL ☐ INTERSECTION ☐ ON RAMP ☐ OFF RAMP

DIRECTION:
☐ NORTHBOUND ☐ SOUTHBOUND ☐ EASTBOUND ☐ WESTBOUND

NUMBER OF LANES IN DIRECTION OF CLOSURE FOR WEEKDAYS:
☐ TOTAL NUMBER OF LANES ☐ NUMBER CLOSED ☐ NUMBER OPEN

NUMBER OF LANES IN DIRECTION OF CLOSURE FOR WEEKEND:
☐ TOTAL NUMBER OF LANES ☐ NUMBER CLOSED ☐ NUMBER OPEN

NUMBER OF LANES IN DIRECTION OF CLOSURE FOR NIGHTS:
☐ TOTAL NUMBER OF LANES ☐ NUMBER CLOSED ☐ NUMBER OPEN

DATE LANE CLOSURE WILL BEGIN: | DAY OF WEEK: | TIME LANE CLOSURE WILL BEGIN: ☐am ☐pm

DATE LANE CLOSURE WILL END: | DAY OF WEEK: | TIME LANE CLOSURE WILL END: ☐am ☐pm

DESCRIPTION OF WORK TO BE PERFORMED

CONTINUOUS OR 24 HOURS ☐

ATTACHMENTS

☐ TRAFFIC CONTROL PLAN WITH CERTIFICATION ☐ DETOUR PLAN WITH CERTIFICATION ☐ STANDARD INDEX NUMBER/S

LANE CLOSURE REQUESTED BY
(SIGNATURE REQUIRED)

CONTRACTOR COMPANY NAME: PERMITTEE COMPANY NAME: MAINTENANCE (N/S/DIST.) | CONTRACTOR REPRESENTATIVE: NAME OF PERMITTEE REPRESENTATIVE: MAINTENANCE REPRESENTATIVE: | CONTRACTOR REPRESENTATIVE SIGNATURE: PERMITTEE REPRESENTATIVE SIGNATURE: AREA MAINTENANCE ENGINEER: | DATE:

LANE CLOSURE APPROVED BY
(SIGNATURE REQUIRED)

PROJECT MANAGER: UNIT PERMITS ENGINEER: UNIT MAINTENANCE ENGINEER: | DATE: | DISTRICT MAINTENANCE ENGINEER: RESIDENT/PROJECT ENGINEER: | DATE:

DISTRICT TRAFFIC MAINTENANCE ENGINEER: | DATE: | DISTRICT DIRECTOR OF OPERATIONS: | DATE:

...march 2008

Source: FDOT

FDOT D6 LCIS - 2010

- D6 Management challenge and support
- Determined the need for a paperless lane closure system
- Wanted the system to provide more accurate information to the public and allow for all lane closures to be published on a map
- Needed to form a development team for the system

Development of the LCIS

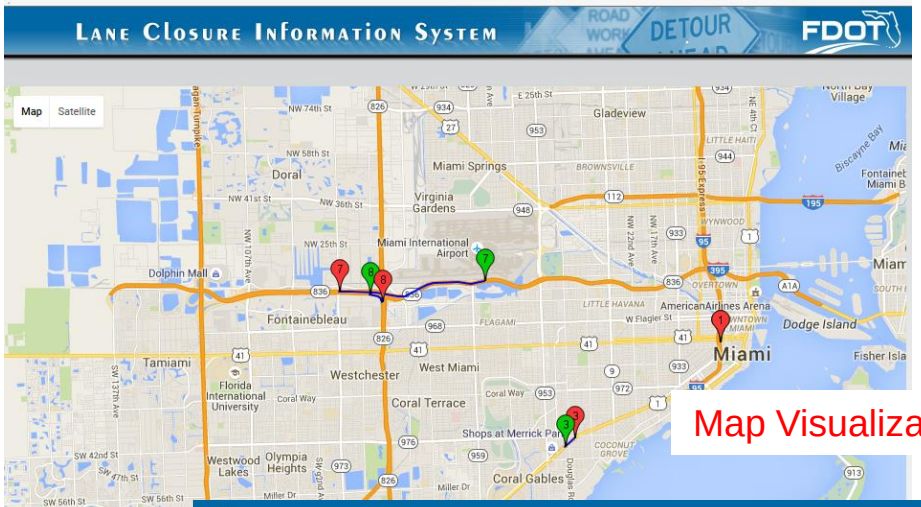
- Collaboration between FDOT and Florida International University (FIU)
- Developed a Master University Agreement Work Order
  - FDOT requires hosting services from FIU to host the D6 LCIS
- Budget and Method of Compensation
  - The budget assigned to this order is $0 and in exchange for hosting the LCIS, the Department will allow FIU full access to all information contained in this program's Database for educational purposes.

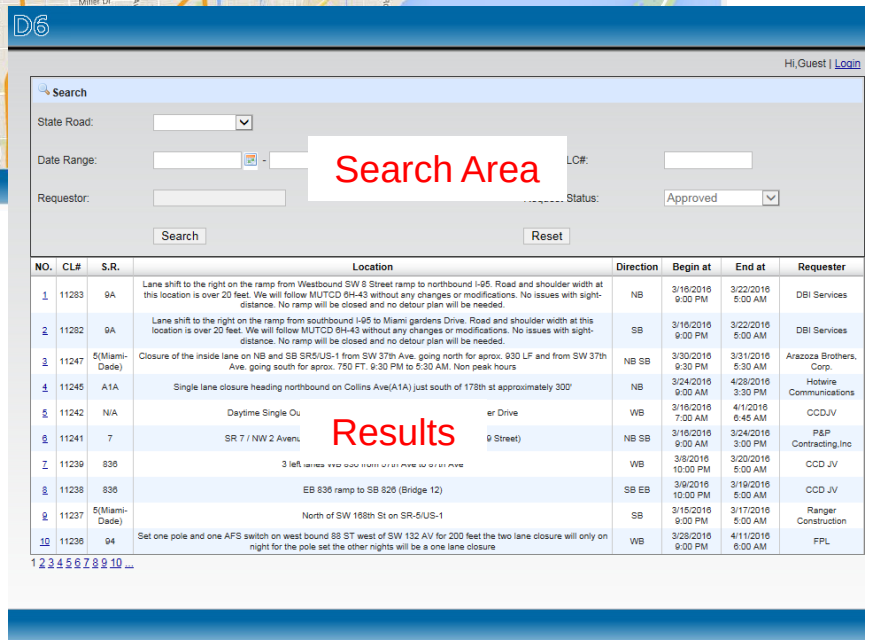
LCIS Roles and Responsibilities

- Administrator
  - Setup of users
  - Change approval sequences
  - Maintains the system
- Requester
  - Make lane closure requests
- Reviewer
  - Reviews lane closure requests
- Public Information Officer (PIO)
  - Receives notifications of approved lane closure requests
- Guest
  - Default user

FDOT D6 LCIS Main Features

- Coordinates simultaneous lane closures
- Application Cost: $70,000
- Capabilities
  - Approved lane closures are available for public viewing
  - Smart notification and approval system
  - Internet access to apply and approve
  - Web-based map application
- Functionalities
  - Request for road closures
  - Manage approval process
  - Notifications request status
  - Mapping requests
  - Integration with other systems





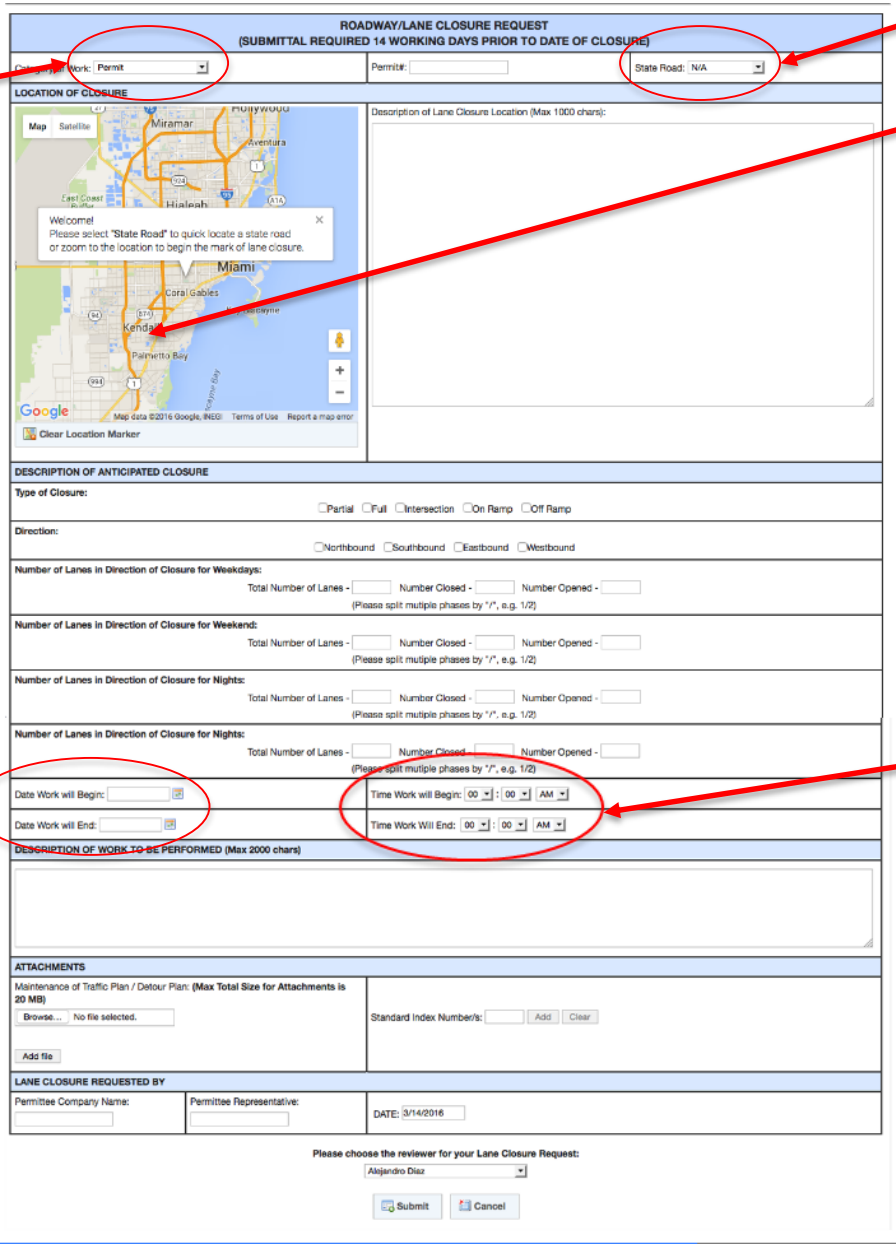
Roadway/Closure Request Form

1) Select category of work. Examples include permit or construction contractor.

2) Select the road for the lane closure from drop down or by drawing on the map.

3) Select the dates the work will begin and end.

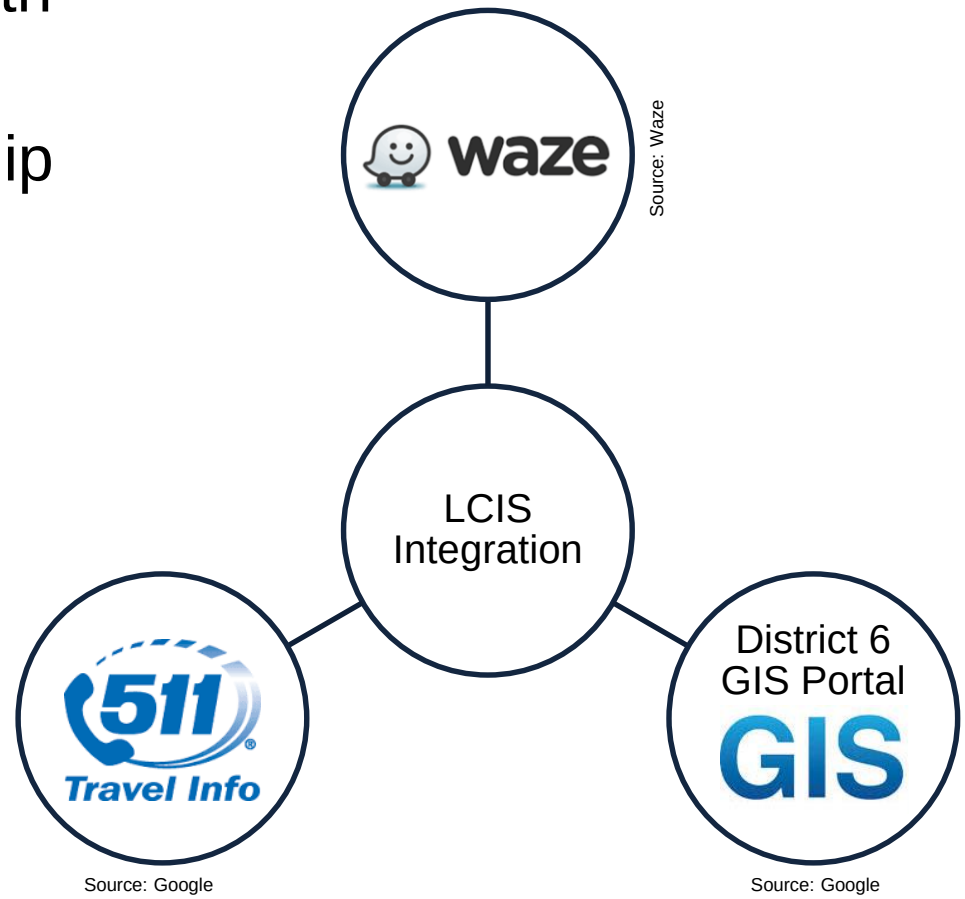
4) Select the times the work will begin and end.



Source: FDOT

LCIS Integration

- The LCIS is integrated with the following systems:
  - Florida DOT partnership with Waze App
  - FDOT 511 Travel Information
  - FDOT D6 Geographic Information System (GIS) portal



LCIS Reference in Documents

- Language in Request for Proposal (RFP) requiring contractors to submit lane closure information via the LCIS.

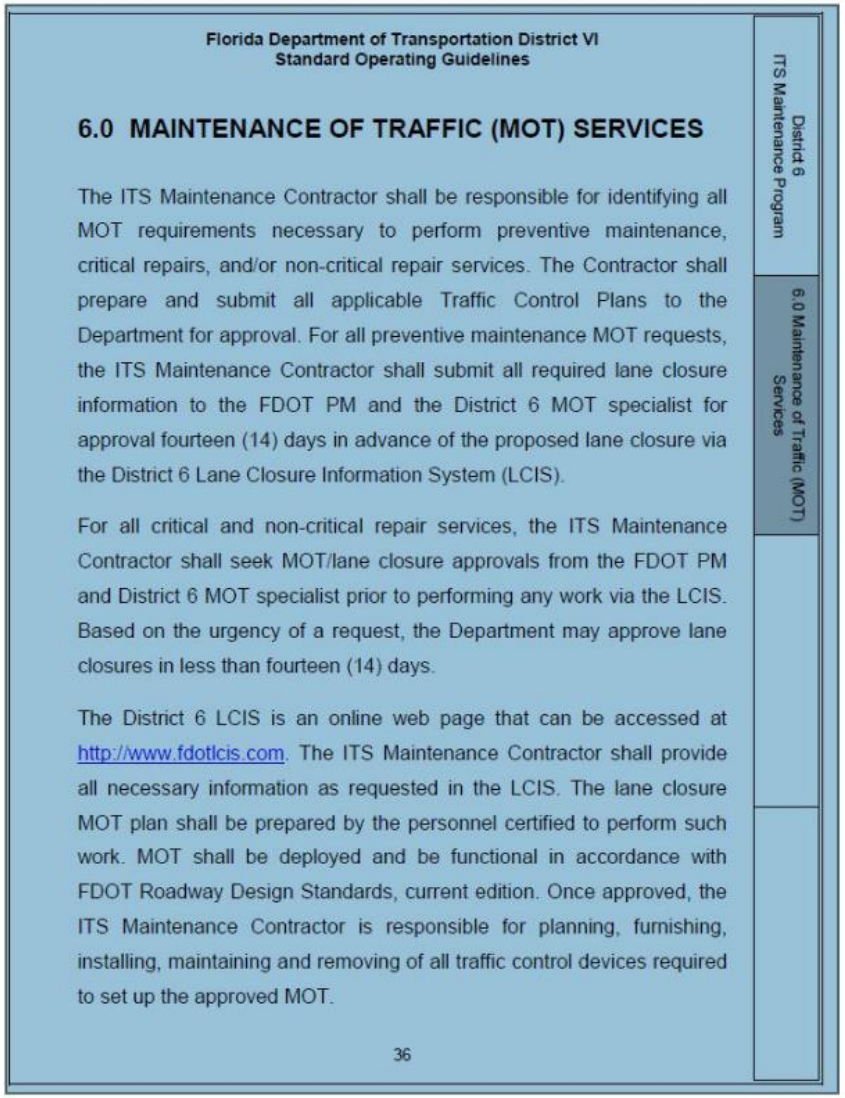
Request for Proposal
I-95 Express DMS and Toll Sign Panel Replacement Project, Miami-Dade County March 15, 2015

The Design-Build Firm shall submit all required lane closure information to the Department's Project Manager and the District Six MOT specialist for approval a minimum of fourteen (14) days in advance of the proposed lane closure via the District Six Lane Closure Information System (LCIS) (www.fdotlcis.com). The Design-Build Firm shall follow the MDX lane closure requirements and procedures provided as an attachment with this Project for performing any lane closures on SR 112.

Source: FDOT

FDOT D6 Standard Operating Guidelines

- Use of the LCIS is required by the ITS Maintenance contractor during Maintenance of Traffic (MOT) services



Florida Department of Transportation District VI
Standard Operating Guidelines

District 6
ITS Maintenance Program

6.0 Maintenance of Traffic (MOT) Services

6.0 MAINTENANCE OF TRAFFIC (MOT) SERVICES

The ITS Maintenance Contractor shall be responsible for identifying all MOT requirements necessary to perform preventive maintenance, critical repairs, and/or non-critical repair services. The Contractor shall prepare and submit all applicable Traffic Control Plans to the Department for approval. For all preventive maintenance MOT requests, the ITS Maintenance Contractor shall submit all required lane closure information to the FDOT PM and the District 6 MOT specialist for approval fourteen (14) days in advance of the proposed lane closure via the District 6 Lane Closure Information System (LCIS).

For all critical and non-critical repair services, the ITS Maintenance Contractor shall seek MOT/lane closure approvals from the FDOT PM and District 6 MOT specialist prior to performing any work via the LCIS. Based on the urgency of a request, the Department may approve lane closures in less than fourteen (14) days.

The District 6 LCIS is an online web page that can be accessed at http://www.fdotlcis.com. The ITS Maintenance Contractor shall provide all necessary information as requested in the LCIS. The lane closure MOT plan shall be prepared by the personnel certified to perform such work. MOT shall be deployed and be functional in accordance with FDOT Roadway Design Standards, current edition. Once approved, the ITS Maintenance Contractor is responsible for planning, furnishing, installing, maintaining and removing of all traffic control devices required to set up the approved MOT.

36

Source: FDOT

Other Stipulations

- TCP Notes attached to all District Plans

  General:

  1. Notification of lane closures or temporary detours shall be accomplished 14 working days prior to closure, detour, or MOT phase change by submitting the required Electronic Lane Closure Form (www.fdotlcis.com), sketches, calculations, and other data through the Engineer to the District Traffic Operations Office.

- District Utility Permit

1. Permit APPROVAL IN NO WAY CONSTITUTES THAT THE PERMITTED HAS AN APPROVED LANE CLOSURE. Please coordinate a pre-construction meeting with MR. ANTHONY GOLDBERG at (305) 640-7249, (786) 512-0075, Email: Anthony.Goldberg@dot.state.fl.us a minimum of two (2) weeks prior to beginning of work within the FDOT right-of-way.

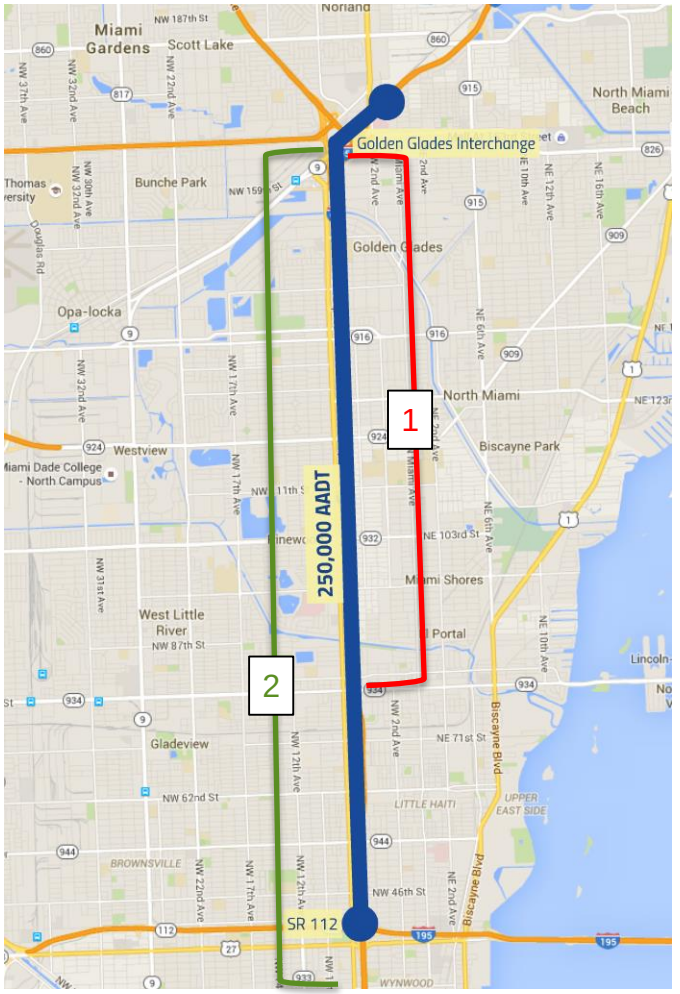
2. Submit a detailed lane closure form, noting work and time phases thru the Lane Closure Information System (LCIS) at https://www.fdotlcis.com. The lane closure request shall be approved by the Department at least 2 weeks prior to beginning work within the FDOT right of way. There shall be no lane closures (unless approved by the District Maintenance Engineer /or the District Maintenance of Traffic Specialist) from Thanksgiving Day to New Year's Day, due to Moratorium.

Improvements
Future Directions and Goals for LCIS

- Make it Active -Develop an LCIS mobile application for lane closure activation and deactivation
- Make the LCIS web application mobile friendly
- Allow reviewers to assign a request to specific reviewer
- Florida Statewide Lane Closure Application launch July 2016
- Modifications may be implemented in next update

I-95 Case Study (1 of 2)

- Location: I-95 Northbound, between the Golden Glades Interchange and State Route 112.
- Scope of Project:
  1. FDOT D6 Construction – Concrete Pavement Replacement
     - 4 of 6 lanes were closed including 2 express lanes
     - Removal and replacement of concrete slabs
     - Closures from 10:00pm to 5:00am
  2. FDOT D6 Regular Maintenance by Asset Maintenance Contractor
     - Express Lanes Delineator Replacement (3 lanes closed)
     - Weekly replacement of damaged delineators
     - Closures from 10:00pm to 5:00am

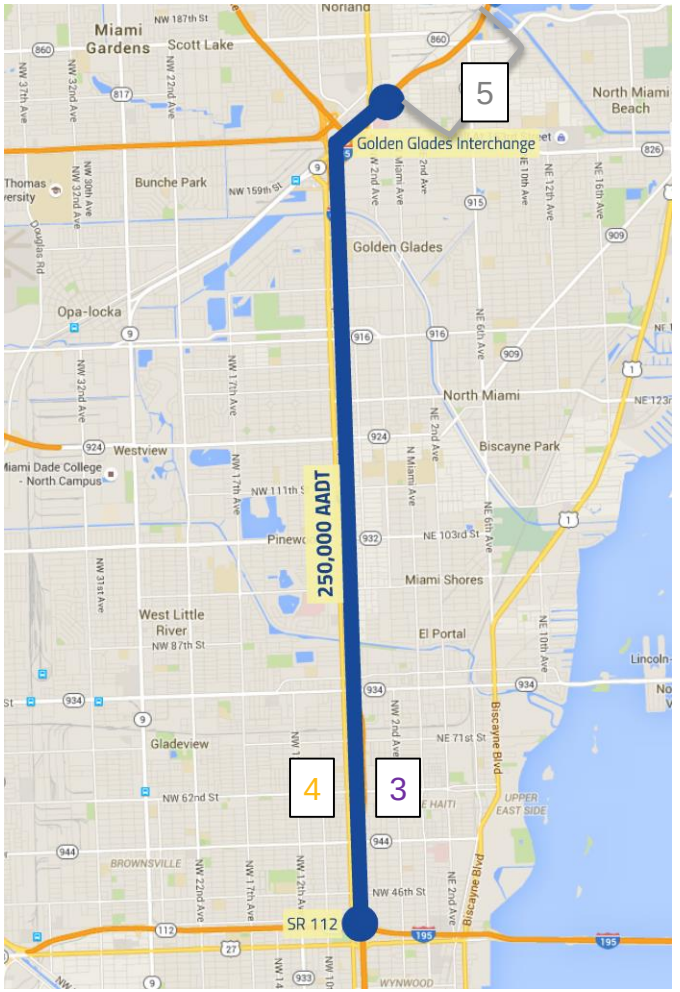


Source: Google

I-95 Case Study (2 of 2)

- Scope of Project:

3. Miami-Dade Expressway Authority ORT Sign Replacement
   - Drilled shaft installation
   - 3 lanes closed including express lanes
   - Closures from 10:00pm to 5:00am
4. Florida Turnpike Toll Maintenance
   - Repaired Express Lane tolling equipment
   - 2 express lanes were closed
   - Closures from 10:00pm to 5:00am
5. FDOT D4 Express Lanes Phase II Project
   - Construction Lane Closures for Phase II project extended into this corridor
   - 2 express lanes were closed
   - Closures from 10:00pm to 5:00am



Source: Google

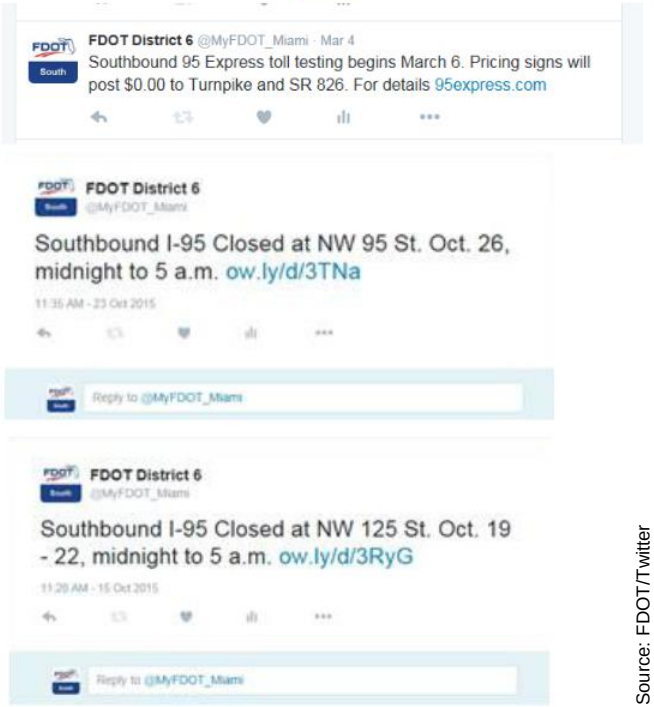
Benefits of LCIS for Project Coordination

- Management and coordination of several lane closures simultaneously
- Reduce traffic impact during construction and maintenance
  - Time and cost savings result
- Allow mapping visualization of the MOT areas
- Generate notifications to PIOs for social media/press release

Public Outreach for I-95 Projects (1 of 2)

- Lane closures were communicated to the traveling public via Facebook and Twitter

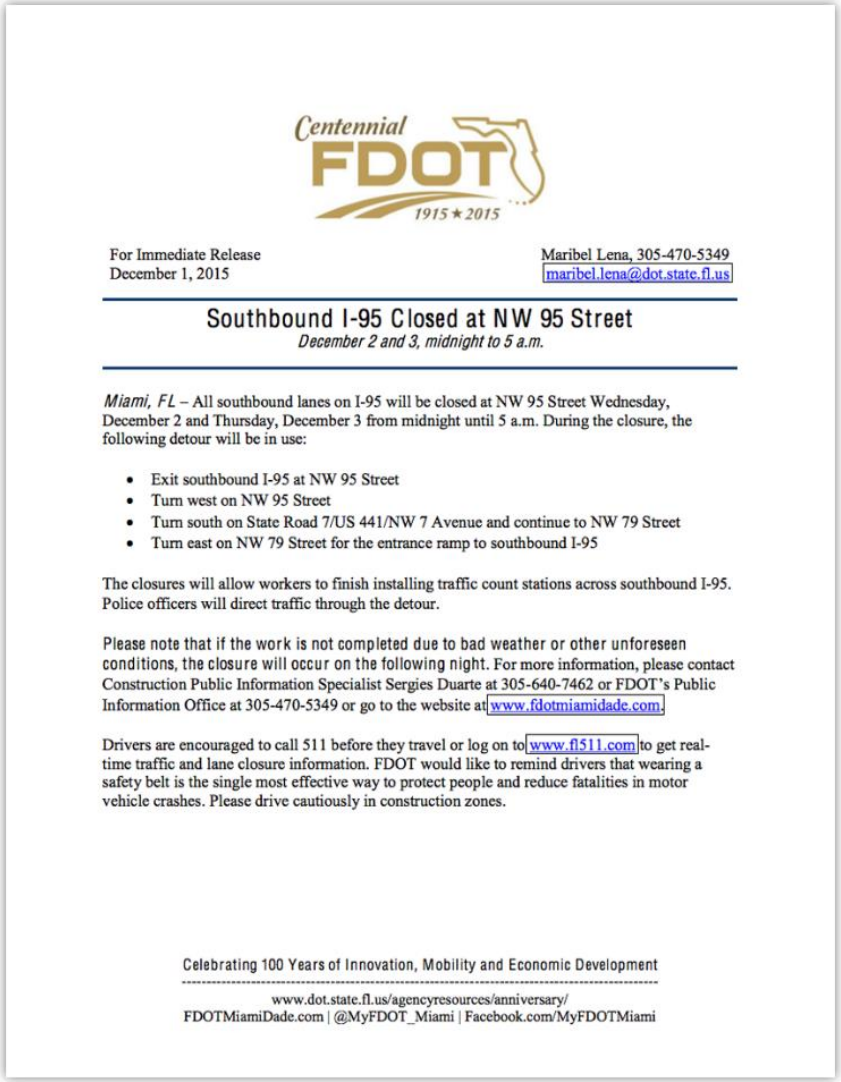
Source: FDOT/Facebook



Source: FDOT/Twitter

Public Outreach for I-95 Projects (2 of 2)

- Press releases were also used to communicate the lane closures to the traveling public



Centennial FDOT 1915 ★ 2015

For Immediate Release
December 1, 2015

Maribel Lena, 305-470-5349
maribel.lena@dot.state.fl.us

Southbound I-95 Closed at NW 95 Street

December 2 and 3, midnight to 5 a.m.

Miami, FL – All southbound lanes on I-95 will be closed at NW 95 Street Wednesday, December 2 and Thursday, December 3 from midnight until 5 a.m. During the closure, the following detour will be in use:

- Exit southbound I-95 at NW 95 Street
- Turn west on NW 95 Street
- Turn south on State Road 7/US 441/NW 7 Avenue and continue to NW 79 Street
- Turn east on NW 79 Street for the entrance ramp to southbound I-95

The closures will allow workers to finish installing traffic count stations across southbound I-95. Police officers will direct traffic through the detour.

Please note that if the work is not completed due to bad weather or other unforeseen conditions, the closure will occur on the following night. For more information, please contact Construction Public Information Specialist Sergies Duarte at 305-640-7462 or FDOT's Public Information Office at 305-470-5349 or go to the website at www.fdotmiamidade.com.

Drivers are encouraged to call 511 before they travel or log on to www.fl511.com to get real-time traffic and lane closure information. FDOT would like to remind drivers that wearing a safety belt is the single most effective way to protect people and reduce fatalities in motor vehicle crashes. Please drive cautiously in construction zones.

Celebrating 100 Years of Innovation, Mobility and Economic Development

www.dot.state.fl.us/agencyresources/anniversary/
FDOTMiamiDade.com | @MyFDOT_Miami | Facebook.com/MyFDOTMiami

Source: FDOT

For More Information:

Saud Khan, Project Manager
Florida DOT
saud.khan@dot.state.fl.us

Elio Espino, Ph.D., P.E., PTOE
A&P Consulting Transportation Engineers
eespino@apcte.com

Florida DOT Lane Closure Information System: www.fdotlcis.com

Smarter Work Zones

CALTRANS LANE CLOSURE SYSTEM

Caltrans Districts

Source: Caltrans

Transportation Management Center (TMC)

- Adjust to field conditions
- Operate field elements
- Provide traveler information
- Help with Incident Management
- Located in all 12 districts

Caltrans' Transportation Management Plan (TMP) Policy

Construction

Special Events

Deputy Directive 60 (DD-60; Effective 2000)

Deputy Directive 60-R1 (Effective 2009)

Deputy Directive 60-R2 (Effective 2015)

TMPs are required for all planned construction, maintenance, and encroachment permit activities on the statewide highway system to minimize work related traffic delays while reducing overall duration of work activities.

Encroachment Permits

Caltrans' commitment: Minimize motorist delays for ALL planned activities on the state highway system without compromising:

- Public or worker safety
- Quality of the work

Maintenance

Highlights of DD-60

- District Traffic Manager (DTM):
  - Responsible for coordination of all planned activities on State Highway System (SHS)
  - Responsible for the day-to-day decisions pertaining to traffic impacts from planned activities requiring lane/ramp/connector closures on the state highway
  - Recommends termination or modification of lane closure activities without compromising the safety of the public or workers when traffic impact becomes significant
  - Approves lane closure requests
  - Coordinates with TMC staff when significant delays occur on our highways

Other highlights of DD-60

- Major Lane Closures are closures that are expected to result in *significant traffic impacts* despite the implementation of TMPs.
- Significant Traffic Impact is defined as being an individual traffic delay of 30 minutes or more above normal recurrent travel time on the existing facility or the delay time set by the DTM, whichever is less.
- District Lane Closure Review Committee (DLCRC) is composed of the Deputy District Directors of Construction, Design, Maintenance and Traffic Operations, and the District Public Information Officer (PIO).
- Headquarters Lane Closure Review Committee (HLCRC) is composed of the Division Chiefs of Construction, Design, Maintenance, Traffic Operations, and the Deputy Director of External Affairs. The California Highway Patrol may be called upon to participate as appropriate at the district or headquarters level.

Project Coordination - Specification

Section 5-1.20A. Use if work under other contracts is at or near the job site. Identify the other contracts. In the 3rd column, insert (1) the city for a project within city limits or (2) a distance from a physical landmark such as an intersection or a bridge for a project not within city limits. Add or delete rows as necessary.

Add to the end of section 5-1.20A:

During the progress of the work under this Contract, work under the following contracts may be in progress at or near the job site of this Contract:

Coincident or Adjacent Contracts

Contract no.	County–Route–Post Mile	Location	Type of work

Utility Permits

Caltrans general policy is to allow utilities within conventional highway rights-of-way subject to reasonable conditions to provide for the safety of the traveling public.

Caltrans policy with regard to freeways and expressways is to exclude utilities from within access controlled highway rights-of-way, to the extent practicable. Requests for utility encroachments or utility access within freeway or expressway right-of-way are considered an exception to policy and are to be submitted to the Division Chief of the Division of Design (DOD, Chief) for approval.

The **Project Manager**, in conjunction with the **Project Development Team** will agree to a set of map delivery dates at the Project Initiation Document kick-off meeting. These dates will define when the responsible unit will deliver the information and may include:

Estimate Maps	**Positive Location Maps**	**Relocation Plans**
R/W Data Sheet Report	**Positive Location**	**Final Utility Maps**
Verification Maps	Document Facilities	**Utility Relocation**
Owner Response	**Conflict Maps**	Utility As-Builts

The **Utility Coordinator** is responsible for coordinating the requirements of this policy with all **Utility Owners**, and must work with the **Project Engineer** in accomplishing this coordination.

Lane Closure System (LCS; 1 of 2)

- Caltrans uses the LCS to report and monitor the status of lane closures on the California State Highway System.
- LCS is up approximately 99% of the time and is down for 15 minutes of daily routine maintenance.
- The LCS disseminates construction information to QuickMap, Commercial Wholesale Web Portal (CWWP), Performance Monitoring System (PeMS), and Caltrans Highway Information Network (CHIN).

Lane Closure System (LCS; 2 of 2)

- LCS provides:
  - Access to lane closure information statewide through the internet.
  - The ability to check for conflicts and restrictions on routes that may impede traffic across the districts.
  - Coverage between districts in the event of a major incident or catastrophe.

- Prior to implementation of the LCS,
  - Information on lane closures varied between each district,
  - Information was often times inaccurate,
  - No centralized access or procedures.

Lane Requirement Chart Development

- Charts are developed using the latest available traffic volumes from:
  - Reports
    - Traffic Volume Reports
    - Truck Traffic Reports
    - Ramp Volume Reports
    - Peak Hour Volume Reports
  - TSN – Transportation System Network
  - PeMS – Performance Measurement System
  - District 04 Database
  - Special Counts
- Charts are based on actual volume and allowable capacities.
- Each project is analyzed to balance the needs of the work hour requirements and the safety of the motoring public.

Basic Lane Requirements Charts: PeMS

- Replaced with by hand method with automatic method in PeMS.
- Can be done instantly for any location that has data (doesn't tie to a lane closure record).

Chart No. _
Freeway/Expressway Lane Requirements

County:	Route/Direction:	PM:

Closure Limits:

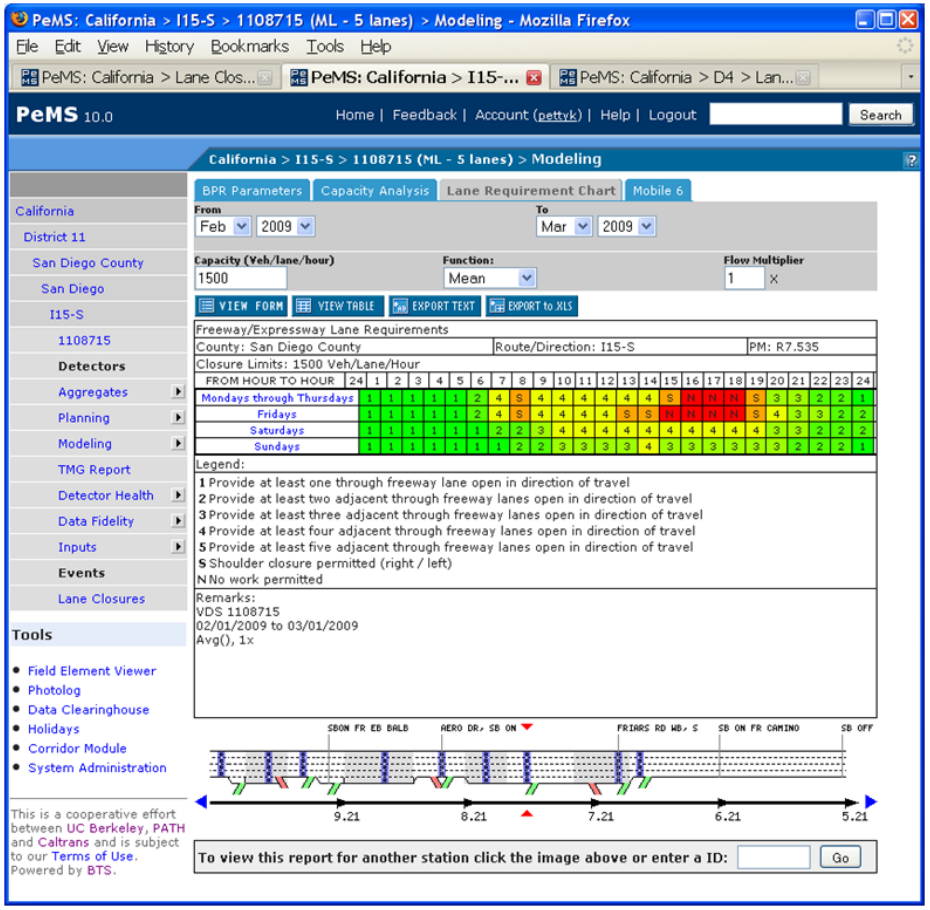
FROM HOUR TO HOUR	24 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Mondays through Thursdays	
Fridays	
Saturdays	
Sundays	

Legend:

1	Provide at least one through freeway lane open in direction of travel
2	Provide at least two adjacent through freeway lanes open in direction of travel
3	Provide at least three adjacent through freeway lanes open in direction of travel
4	Provide at least four adjacent through freeway lanes open in direction of travel
5	Provide at least five adjacent through freeway lanes open in direction of travel
S	Shoulder closure permitted (right / left)
N	No work permitted
	Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:

Source: Caltrans



Source: Caltrans

Lane Requirement Chart (1 of 2)

Chart No. 1
Freeway Lane Requirements

County: ALA	Route/Direction: 80/EB	Post Mile: 4.2-6.8

Closure limits: From Shellmound St. off-ramp to Gillman St. on-ramp

Hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mon – Thu	3	2	2	2	2	3	4																	S	3
Fri	3	2	2	2	2	3	4																		S
Sat	3	3	3	2	2	2	3	4																S	S
Sun	4	3	3	2	2	2	2	3	4															4	4

Legend:

Delete any legend not used.
Do not use shading or crosshatching. Half-hour increments can be accomplished by splitting the appropriate cell. Place the cursor inside the cell, right click on the mouse, and select *Split Cells*.
Edit for the type of highway. Insert *freeway* or *expressway*.
Edit for a right or left shoulder closure. Do not edit if both shoulder closures apply.

1	Provide at least 1 through freeway lane open in the direction of travel.
2	Provide at least 2 adjacent through freeway lanes open in the direction of travel.
3	Provide at least 3 adjacent through freeway lanes open in the direction of travel.
4	Provide at least 4 adjacent through freeway lanes open in the direction of travel.
~~5~~	~~Provide at least 5 adjacent through freeway lanes open in the direction of travel.~~
S	Shoulder closure is allowed (right / left).
~~N~~	~~No work is allowed.~~

Source: Caltrans

Lane Requirement Chart (2 of 2)

Chart no. 1
Conventional Highway Lane Requirements

County: Sac	Route/Direction: 160 NB/SB	PM: L6.98
Closure limits: PM L6.98 at Three Mile Slough Bridge		

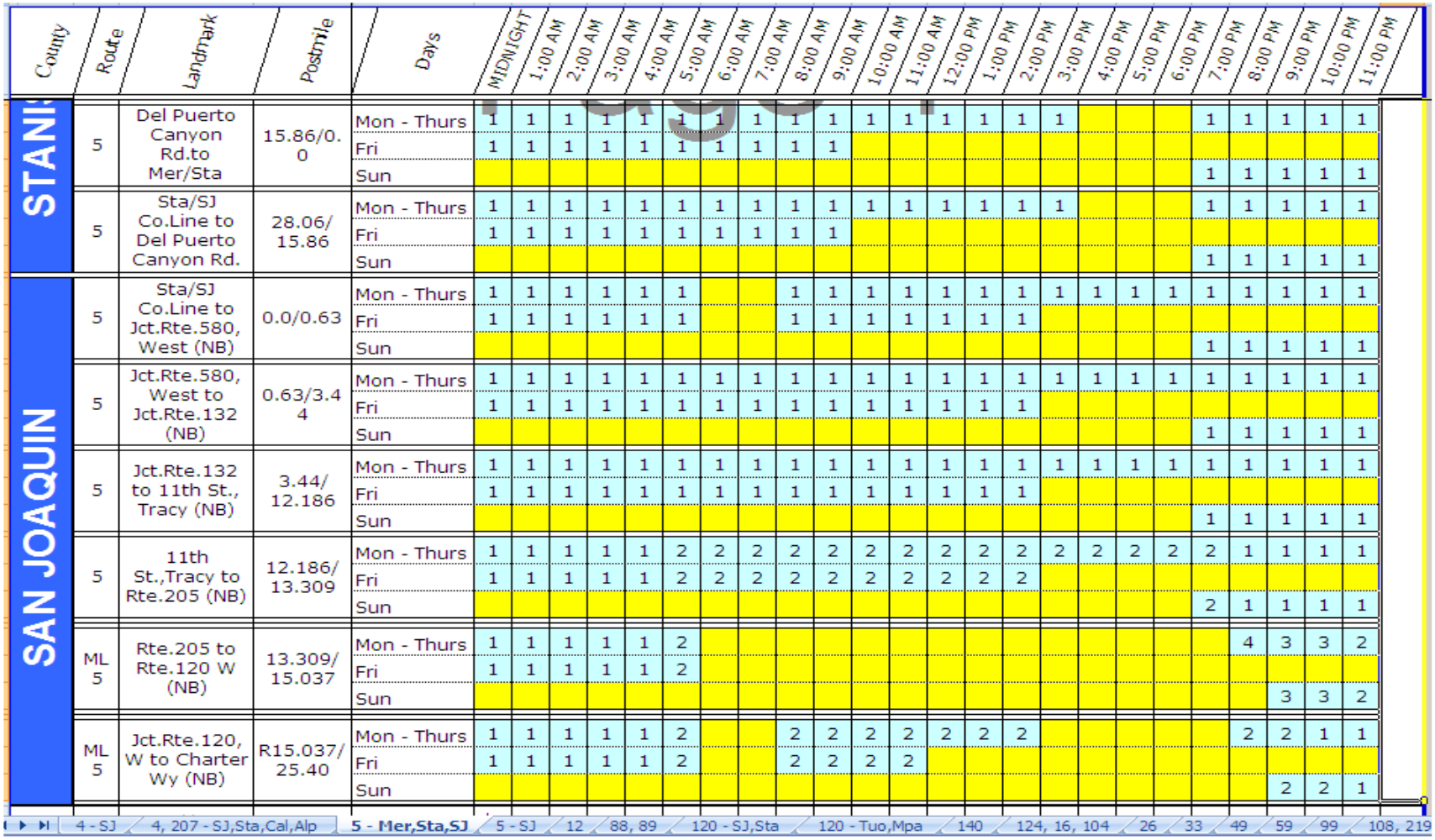
Hour	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mon-Thu	R	R	R	R	R	R				R	R	R	R	R	R				R	R	R	R	R	R	
Fri	R	R	R	R	R	R	R													R	R	R	R	R	
Sat	R	R	R	R	R	R	R	R												R	R	R	R	R	
Sun	R	R	R	R	R	R	R	R	R											R	R	R	R	R	

For a stationary one-way-reversing traffic-control lane closure, you may stop traffic in 1 direction for periods not to exceed _____ minutes. After each stoppage, all accumulated traffic for that direction must pass through the work zone before another stoppage is made.

The maximum length of a single stationary one-way-reversing traffic-control lane closure is 2 miles between flaggers.

Not more than ____ stationary one-way-reversing traffic-control lane closures will be allowed at one time. Concurrent closures in the same direction of travel must be spaced no closer than ____ miles apart.

Maintenance Lane Requirement Chart



County	Route	Landmark	Postmile	Days	MIDNIGHT	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 PM
STANI	5	Del Puerto Canyon Rd.to Mer/Sta	15.86/0.0	Mon - Thurs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				1	1	1	1	1
				Fri	1	1	1	1	1	1	1	1	1	1														
				Sun																				1	1	1	1	1
	5	Sta/SJ Co.Line to Del Puerto Canyon Rd.	28.06/15.86	Mon - Thurs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1				1	1	1	1	1
				Fri	1	1	1	1	1	1	1	1	1	1														
				Sun																				1	1	1	1	1
SAN JOAQUIN	5	Sta/SJ Co.Line to Jct.Rte.580, West (NB)	0.0/0.63	Mon - Thurs	1	1	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				Fri	1	1	1	1	1	1			1	1	1	1	1	1	1									
				Sun																				1	1	1	1	1
	5	Jct.Rte.580, West to Jct.Rte.132 (NB)	0.63/3.44	Mon - Thurs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				Fri	1	1	1	1	1	1	1	1	1	1	1	1	1	1										
				Sun																				1	1	1	1	1
	5	Jct.Rte.132 to 11th St., Tracy (NB)	3.44/12.186	Mon - Thurs	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
				Fri	1	1	1	1	1	1	1	1	1	1	1	1	1	1										
				Sun																				1	1	1	1	1
	5	11th St.,Tracy to Rte.205 (NB)	12.186/13.309	Mon - Thurs	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	1
				Fri	1	1	1	1	1	2	2	2	2	2	2	2	2	2										
				Sun																				2	1	1	1	1
	ML 5	Rte.205 to Rte.120 W (NB)	13.309/15.037	Mon - Thurs	1	1	1	1	1	2															4	3	3	2
				Fri	1	1	1	1	1	2																		
				Sun																						3	3	2
	ML 5	Jct.Rte.120, W to Charter Wy (NB)	R15.037/25.40	Mon - Thurs	1	1	1	1	1	2			2	2	2	2	2	2	2						2	2	1	1
				Fri	1	1	1	1	1	2			2	2	2	2												
				Sun																						2	2	1

4 - SJ | 4, 207 - SJ,Sta,Cal,Alp | 5 - Mer,Sta,SJ | 5 - SJ | 12 | 88, 89 | 120 - SJ,Sta | 120 - Tuo,Mpa | 140 | 124, 16, 104 | 26 | 33 | 49 | 59 | 99 | 108, 219

Source: Caltrans

1	Provide at least 1 through freeway lane open in direction of travel
2	Provide at least 2 adjacent through freeway lanes open in direction of travel
	No work allowed, all lanes must be open for traffic

Delay Damages Specification

Use if estimated damages equal or exceed $6,000 per hour for a mainline segment or connector closure. The transportation management plan manager or district traffic manager will calculate the damages. The concurrence of the regional or district division chief of construction is required when damages are included. Edit the number and type of facilities as appropriate. Calculate damages as follows:

12-4.02C(2) Delay Damages

Mainline or connector	For the 1st half hour, without exceeding 0.5% of the estimated cost or $3,000/10 minutes, use the higher of the following: 1. 50% of the amount for 10-minute intervals 2. $1,000/10 minutes For the 2nd half hour, use the higher of the following: 1. 75% of the amount for 10-minute intervals 2. $1,000/10 minutes For the 2nd hour and beyond, use the amount for 10-minute intervals.	Example: Amount = $48,000/hour based on traffic volumes over a 2-hour period 1st half hour = $8,000/10 min x 50% = $4,000/10 min (>$1,000/10 min). Limit is $3,000/10 min or 0.5% of the estimated cost. Use $3,000/10 minutes. 2nd half hour = $8,000/10 min x 75% = $6,000/10 min (>$1,000/10 min). Use $6,000/10 minutes. 2nd hour and beyond = $8,000/10 minutes

For each 10-minute interval or fraction thereof past the time specified to open the closure, the amount for liquidated damages per interval shown in the table below is deducted. Liquidated damages are limited to 5 percent of the total bid per occurrence. Liquidated damages are not assessed if the Engineer orders the closure to remain in place beyond the scheduled pickup time.

Type of facility	Route	Direction or segment	Period	Liquidated damages/interval
Mainline			1st half hour 2nd half hour 2nd hour and beyond	$_____/10 minutes $_____/10 minutes $_____/10 minutes
Connector			1st half hour 2nd half hour 2nd hour and beyond	$_____/10 minutes $_____ / 10 minutes $_____/10 minutes

Chart No. 1
Freeway Lane Requirements

County: ALA | Route/Direction: 80/EB | Post Mile: 4.2-6.8

Closure limits: From Shellmound St. off-ramp to Gillman St. on-ramp

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Mon – Thu	3	2	2	2	2	3	4																	S	3
Fri	3	2	2	2	2	3	4																		S
Sat	3	3	3	2	2	2	3	4																S	S
Sun	4	3	3	2	2	2	2	3	4															4	4

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1 Provide at least 1 through freeway lane open in the direction of travel.

2 Provide at least 2 adjacent through freeway lanes open in the direction of travel.

3 Provide at least 3 adjacent through freeway lanes open in the direction of travel.

4 Provide at least 4 adjacent through freeway lanes open in the direction of travel.

~~5~~ ~~Provide at least 5 adjacent through freeway lanes open in the direction of travel.~~

S Shoulder closure is allowed (right / left).

~~N~~ ~~No work is allowed.~~

Standard Specifications

12-4.02A(3)(b) Closure Schedules

Every Monday by noon, submit a closure schedule request for planned closures for the next week.

Submit a closure schedule request from 25 days to 125 days before the anticipated start of any job site activity that reduces:

1. Horizontal clearances of traveled ways, including shoulders, to 2 lanes or fewer due to activities such as temporary barrier placement and paving
2. Vertical clearances of traveled ways, including shoulders, due to activities such as pavement overlays, overhead sign installation, or falsework girder erection

Submit closure schedule changes, including additional closures, by noon at least 3 business days before a planned closure.

Cancel closure requests using LCS at least 48 hours before the start time of the closure.

The Department notifies you through LCS of unauthorized closures or closures that require coordination with other parties as a condition for authorization.

Specifications (1 of 2)

12-4.02C Construction

12-4.02C(1) General

Work that interferes with traffic is limited to the hours when closures are allowed.

Do not reduce an open traffic lane width to less than 10 feet. If traffic cones or delineators are used for temporary edge delineation, the side of the base of the cones or delineators nearest to traffic is considered the edge of the traveled way.

Do not close on-ramps or off-ramps servicing 2 consecutive local street interchanges in the same direction of travel. The Engineer may authorize a closure if:

1. You submit a request
2. Traffic will be better served
3. Work will be expedited

Keep a minimum of 1 paved traffic lane at least _____ feet wide open for traffic in each direction of travel.

If a connector closure is required within the limits of a freeway lane closure, first complete the work on the connector and the freeway traveled way necessary for the safe passage of traffic between the connector and the open freeway lanes.

Specifications (2 of 2)

Use for project limits longer than 8 miles.

Not more than 1 stationary closure is allowed per direction of travel at one time.

Concurrent stationary closures must be more than 5 miles apart. Closure spacing is the distance between the last cone of the upstream closure and the temporary sign (W20-1) of the downstream closure. The number of lanes open in the upstream closures must be less than or equal to the number of lanes open in the downstream closures. For multiple closures in each direction of travel, pick up the downstream closures first.

Do not perform work on city streets that interferes with traffic from ____ to ____ or from ____ to ____ hours.

If local authorities regulate traffic, notify them at least 5 business days before the start of job site activities. Cooperate with the local authorities to handle traffic through the work zone and to make arrangements to keep the work zone clear of parked vehicles.

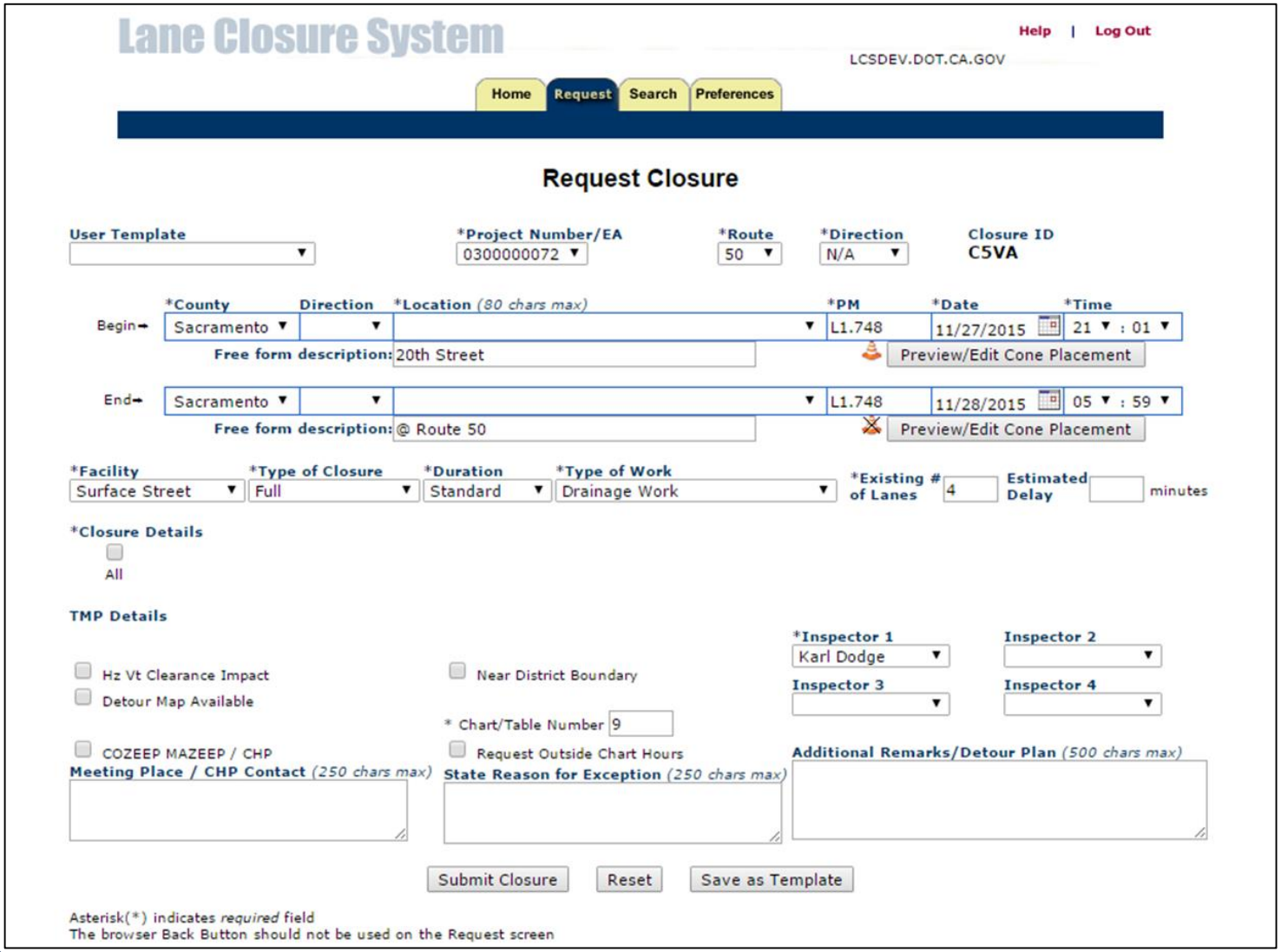
Use to limit the number and spacing of stationary closures in the same direction. The number of closures may be higher for slab replacement projects, multiple bridge activities, or other activities that require multiple closures.

Not more than 2 stationary closures are allowed in each direction of travel at one time.

Concurrent stationary closures in the same direction of travel must be spaced no closer than 2 miles apart. Closures in the same direction of travel on alternating inside lanes and outside lanes must be spaced by an additional 2 miles.

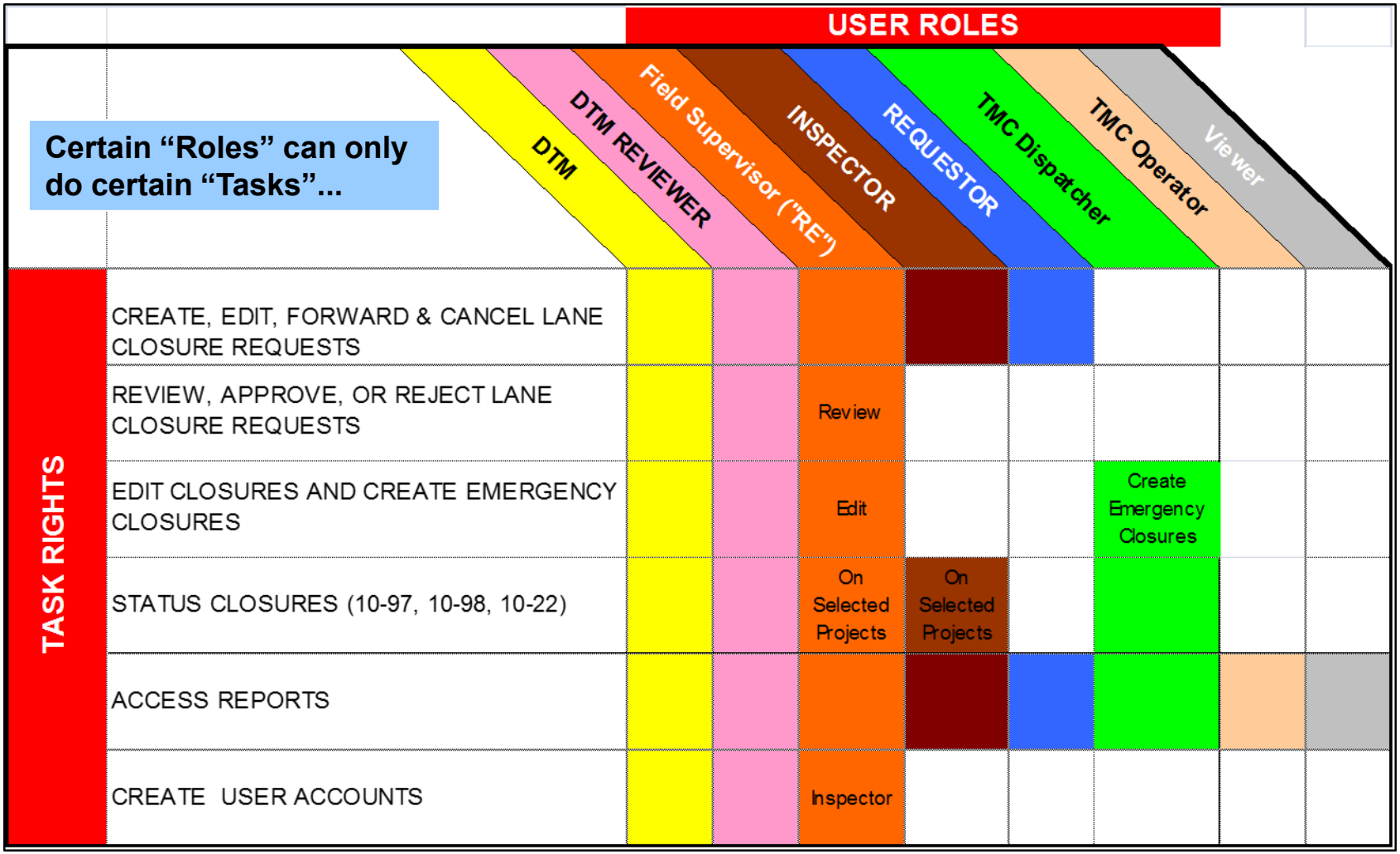
Concurrent stationary closures in the same direction of travel must be spaced no closer than 5 miles apart.

Request Closure



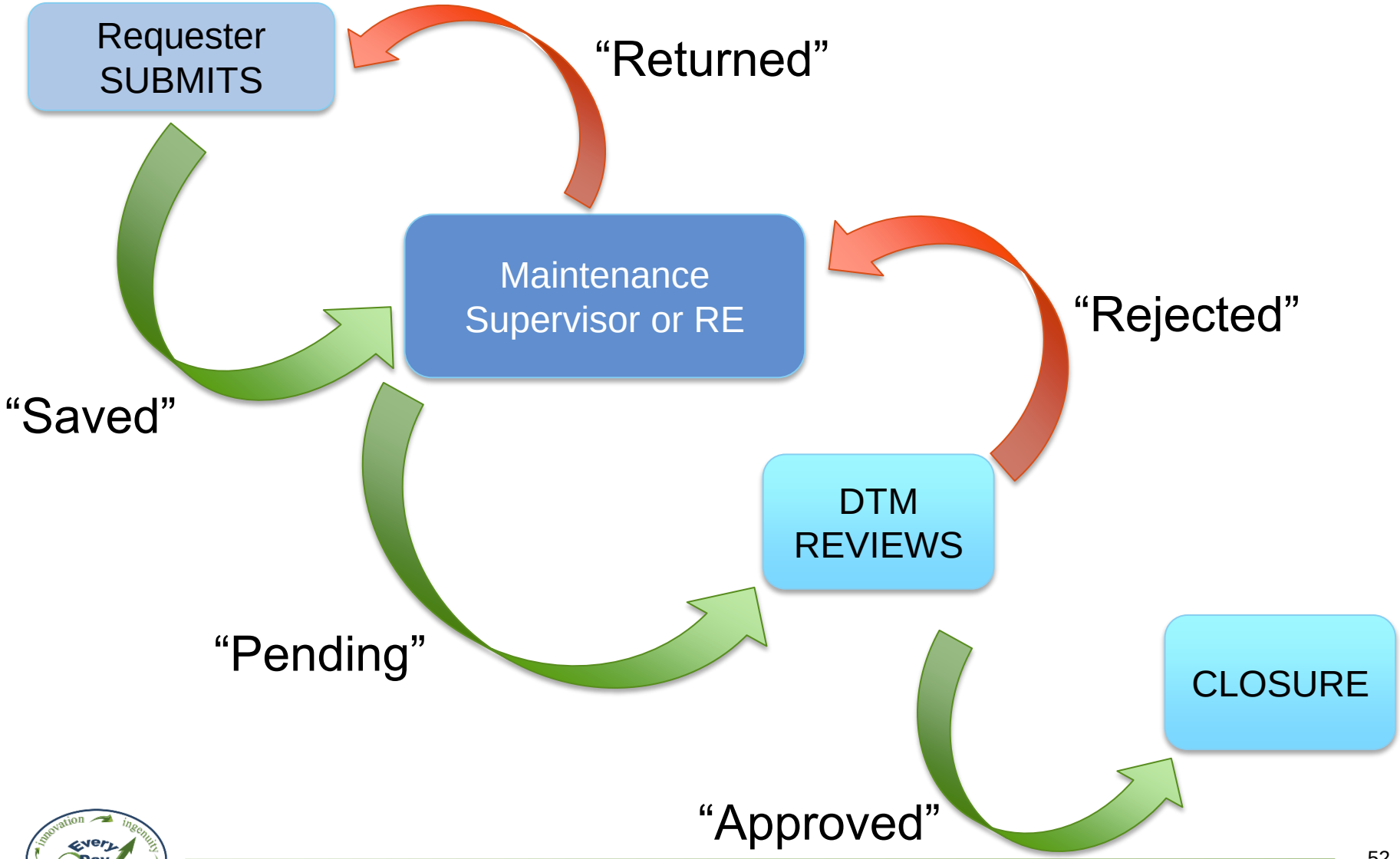
Source: Caltrans

Roles and Access Rights

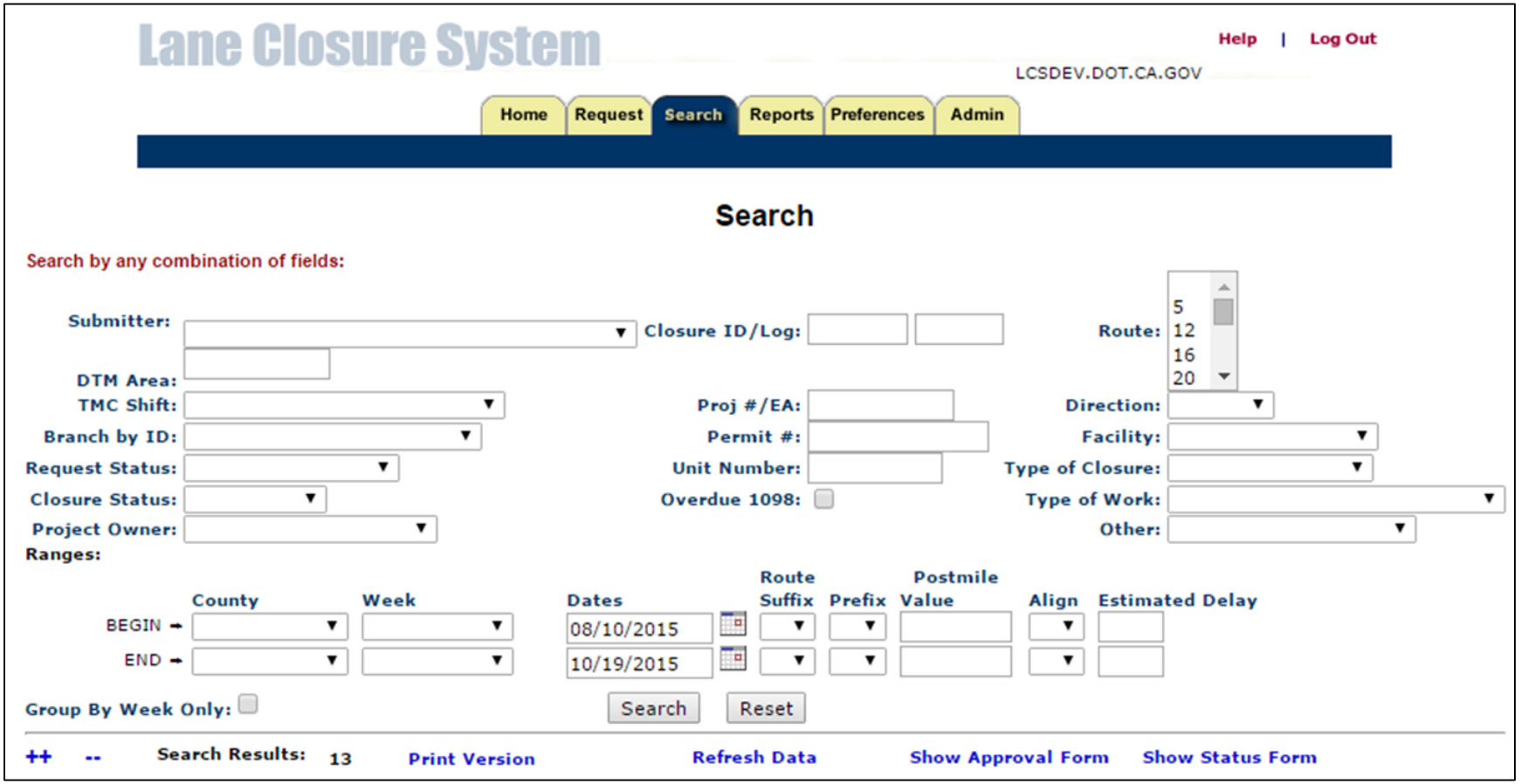


Source: Caltrans

The Path of a Request



Search (1 of 2)



Source: Caltrans

Search (2 of 2)

▼ Week of 11/06/2015

▼ 11/10

▼ Sacramento50

DTM Area	Closure ID/ Log No.	Dir./ Type Of Closure	Post Miles/ End County	Status	Start Date/ End Date	Hrs Ckd/ Chart-Table #	Facility/ Lanes	Limits	Description	Requestor/ Radio Call No.	
C	C50LB --- 1	EB --- Lane	L0.147 --- L0.147 Sacramento	Saved	11/10/2015 04:01 --- 11/10/2015 08:01	☐ --- 5	Off Ramp --- #1 of 2	EB Route 50 --- Eb Off To Rte 5	Drainage Work	John Mohammed ---	View Detail --- Edit --- Cancel
A	C50DC --- 1	EB --- Lane	L1.3 --- L2.2 Sacramento	Approved	11/10/2015 11:01 --- 11/10/2015 13:01	☐ --- 3	Mainline --- #1 of 5	14th Street --- 15 ft East of 26st Street	Bridge Inspection	John Mohammed ---	View Detail

▼ Marin580

DTM Area	Closure ID/ Log No.	Dir./ Type Of Closure	Post Miles/ End County	Status	Start Date/ End Date	Hrs Ckd/ Chart-Table #	Facility/ Lanes	Limits	Description	Requestor/ Radio Call No.	
A	C580IB --- 4	EB --- Lane	2.491 --- 7.786 Contra Costa	Rejected	09/02/2014 23:01 --- 03/30/2018 05:01 Long Term	☐ --- 1	--- 0 of 1	EB West End of Richmond-San Rafael Bridge --- EB Cc/Mrn Co Ln	Bridge Painting	David Lau --- 4C-249	View Detail --- Edit --- Cancel

▼ Week of 03/20/2015

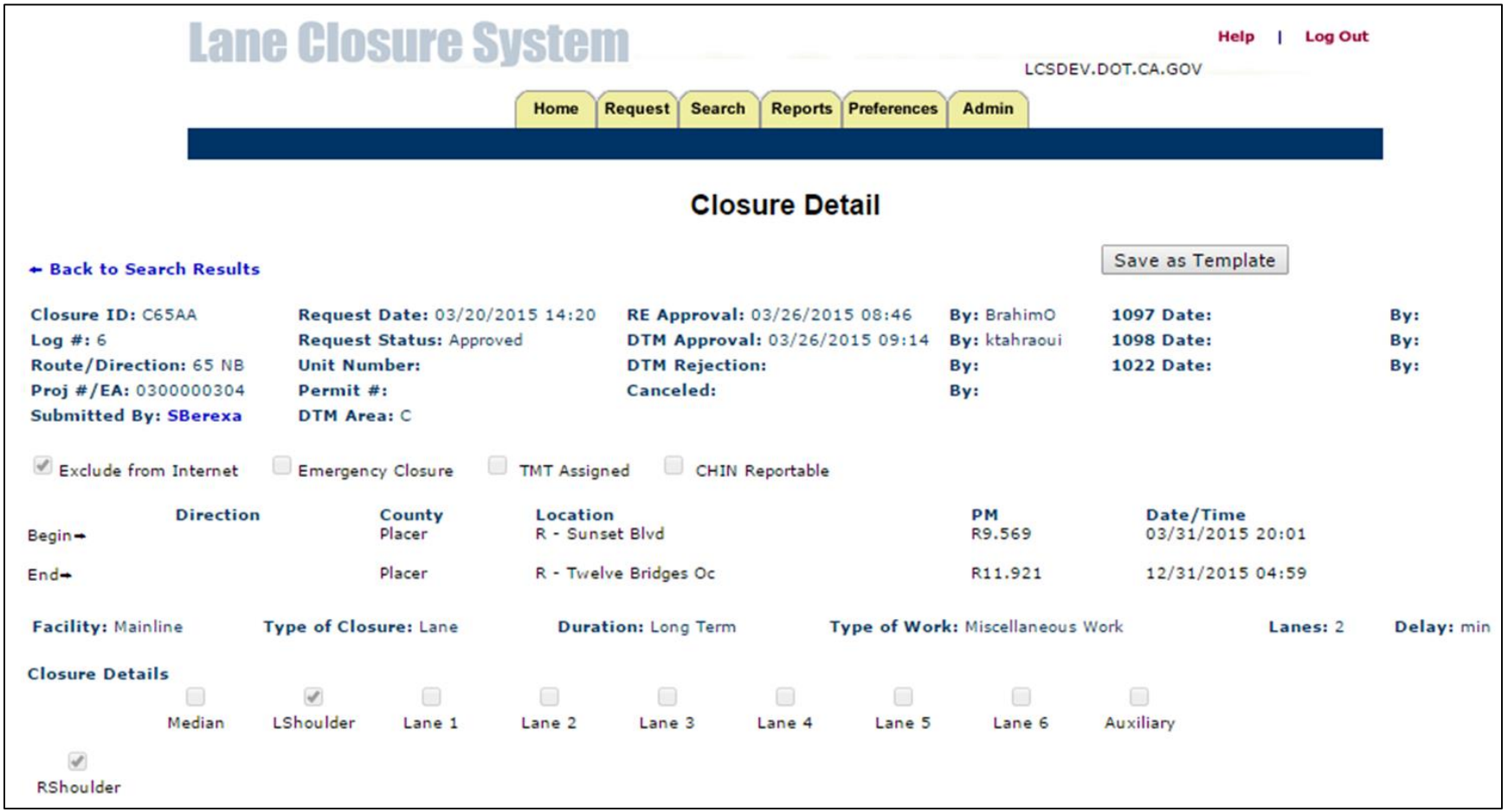
▼ 03/24

▼ San Mateo92

DTM Area	Closure ID/ Log No.	Dir./ Type Of Closure	Post Miles/ End County	Status	Start Date/ End Date	Hrs Ckd/ Chart-Table #	Facility/ Lanes	Limits	Description	Requestor/ Radio Call No.	
P	P92BA --- 1	N/A --- Lane	11.633 --- 11.63 San Mateo	Approved	03/24/2015 00:01 --- 12/31/2016 23:59 Long Term	☐ --- NA	Surface Street --- #2 of 2	EB ConCar Dr --- Between 92WB Off Ramp and S. Delware St	Pile Driving	Fred Farid ---	View Detail --- Edit --- Cancel

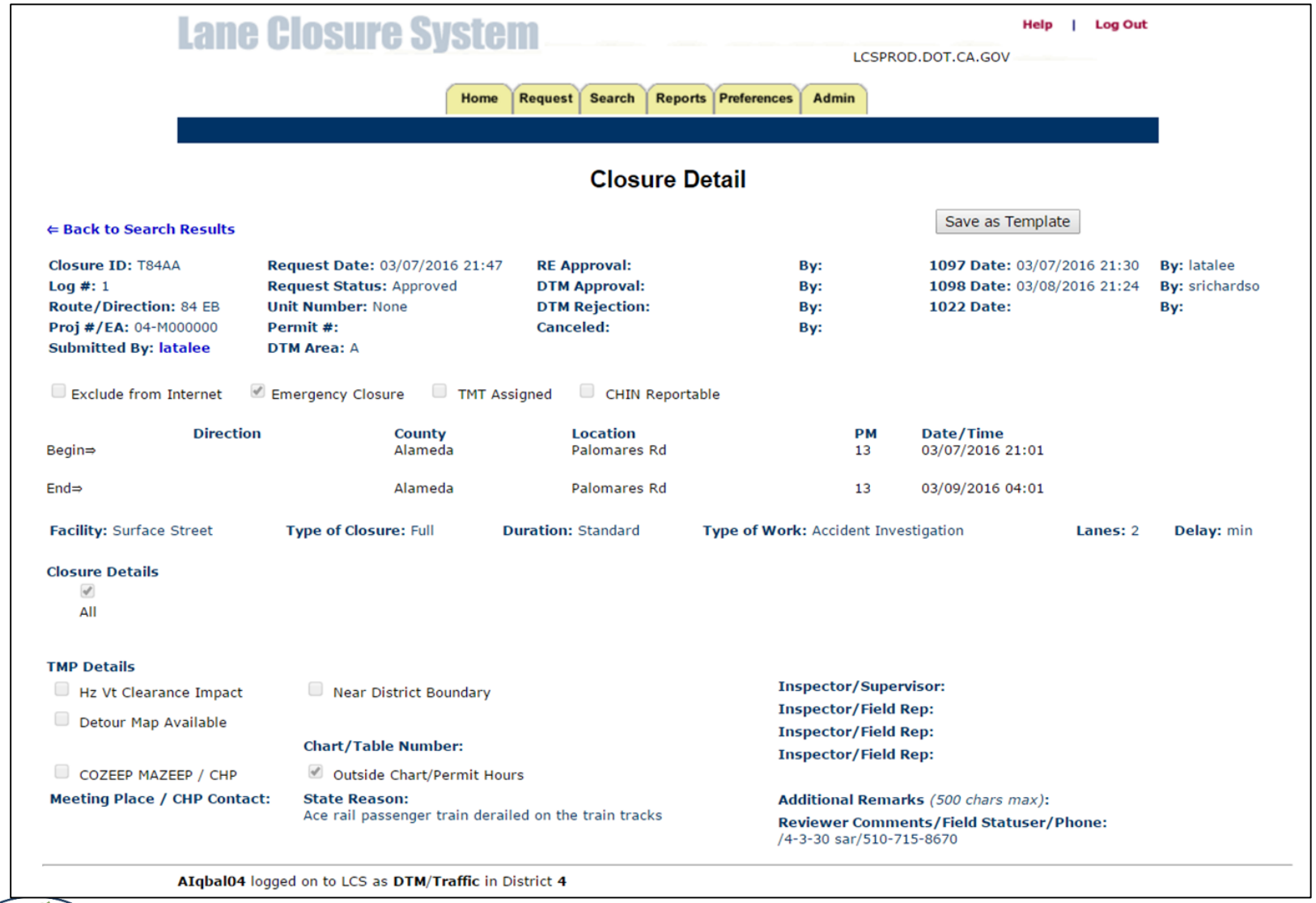
Source: Caltrans

Search: View Detail



Source: Caltrans

Project Coordination



Lane Closure System

Help | Log Out

LCSPROD.DOT.CA.GOV

Home | Request | Search | Reports | Preferences | Admin

Closure Detail

⇐ Back to Search Results

Save as Template

Closure ID: T84AA	**Request Date:** 03/07/2016 21:47	**RE Approval:**	**By:**	**1097 Date:** 03/07/2016 21:30	**By:** latalee
Log #: 1	**Request Status:** Approved	**DTM Approval:**	**By:**	**1098 Date:** 03/08/2016 21:24	**By:** srichardso
Route/Direction: 84 EB	**Unit Number:** None	**DTM Rejection:**	**By:**	**1022 Date:**	**By:**
Proj #/EA: 04-M000000	**Permit #:**	**Canceled:**	**By:**		
Submitted By: latalee	**DTM Area:** A				

☐ Exclude from Internet ☑ Emergency Closure ☐ TMT Assigned ☐ CHIN Reportable

	Direction	County	Location	PM	Date/Time
Begin⇒		Alameda	Palomares Rd	13	03/07/2016 21:01
End⇒		Alameda	Palomares Rd	13	03/09/2016 04:01

Facility: Surface Street **Type of Closure:** Full **Duration:** Standard **Type of Work:** Accident Investigation **Lanes:** 2 **Delay:** min

Closure Details

☑ All

TMP Details

☐ Hz Vt Clearance Impact ☐ Near District Boundary

☐ Detour Map Available

Chart/Table Number:

☐ COZEEP MAZEEP / CHP ☑ Outside Chart/Permit Hours

Meeting Place / CHP Contact:

State Reason:
Ace rail passenger train derailed on the train tracks

Inspector/Supervisor:
Inspector/Field Rep:
Inspector/Field Rep:
Inspector/Field Rep:

Additional Remarks *(500 chars max)*:

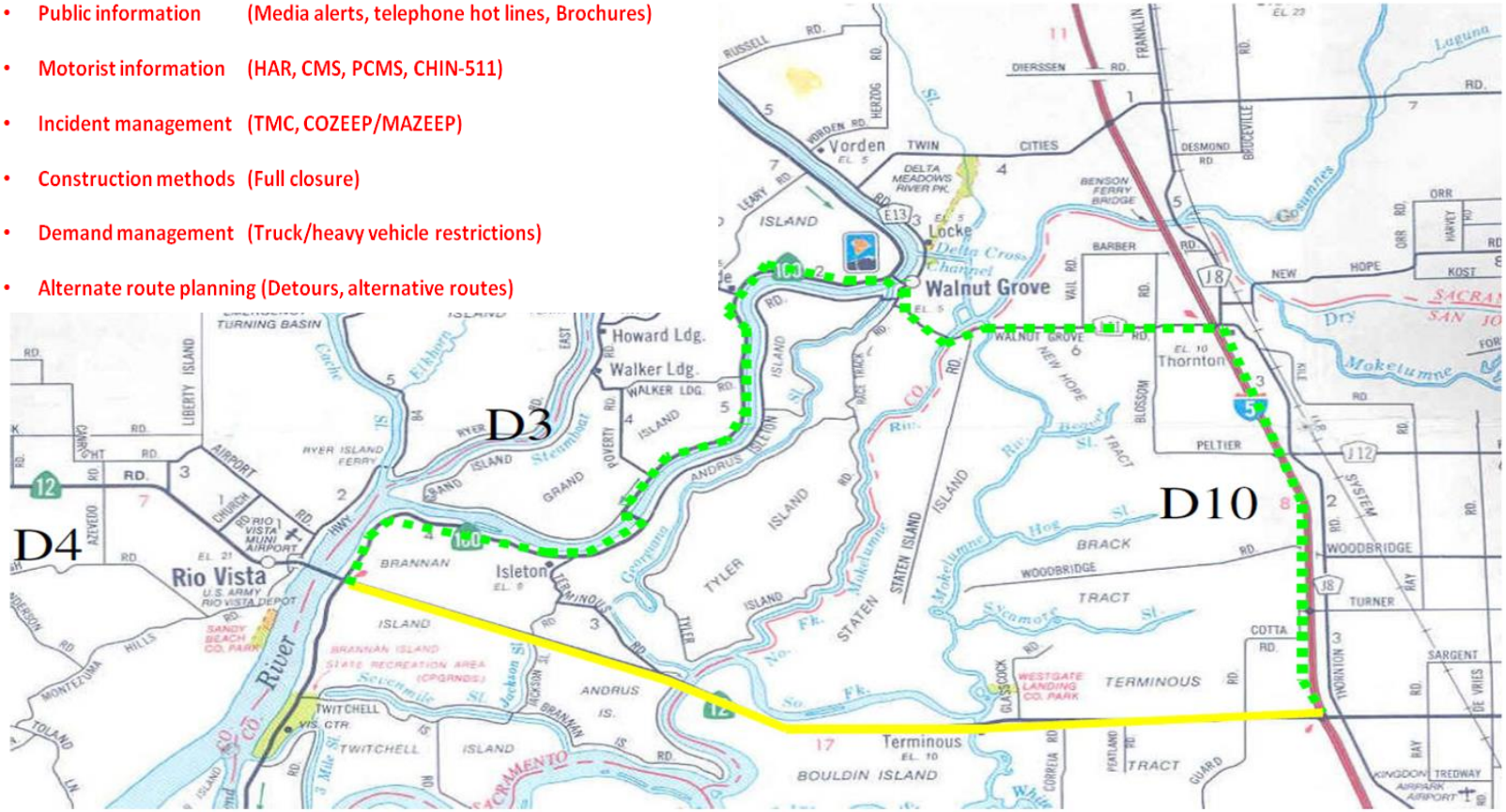
Reviewer Comments/Field Statuser/Phone:
/4-3-30 sar/510-715-8670

AIqbal04 logged on to LCS as **DTM/Traffic** in District **4**

Source: Caltrans

Extreme Maintenance Operations
District 10 – State Route 12

- Public information (Media alerts, telephone hot lines, Brochures)
- Motorist information (HAR, CMS, PCMS, CHIN-511)
- Incident management (TMC, COZEEP/MAZEEP)
- Construction methods (Full closure)
- Demand management (Truck/heavy vehicle restrictions)
- Alternate route planning (Detours, alternative routes)



Source: Caltrans

Details of Closure

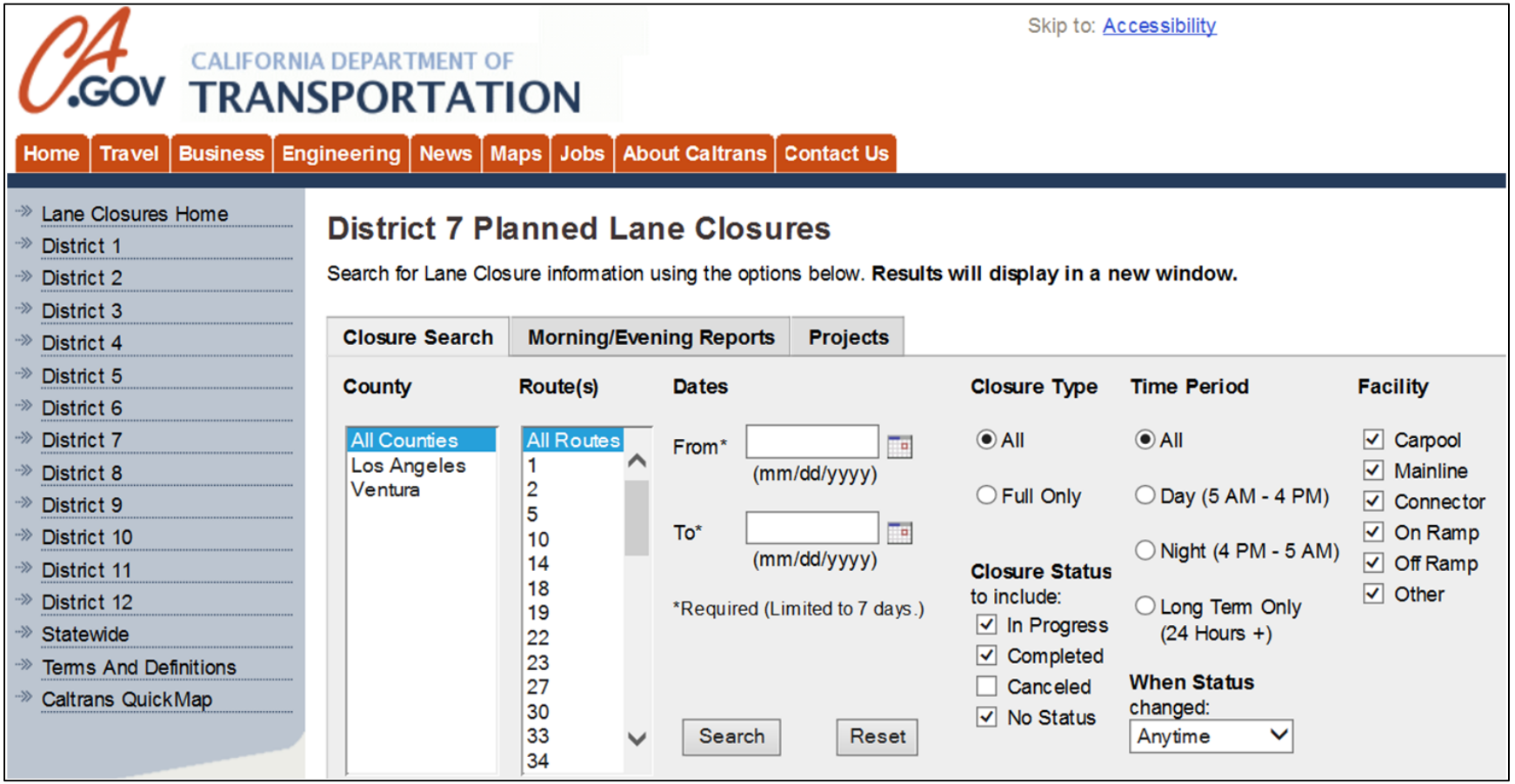
Source: Caltrans

- Closure in 3 of 12 Caltrans Districts
- 16-miles closure
- Between SR-160 and I-5
- 28-mile detour
- Closed 7:00am-4:00pm daily
- Three consecutive mid-week days
- Closed once yearly

Other work accomplished during full closure:

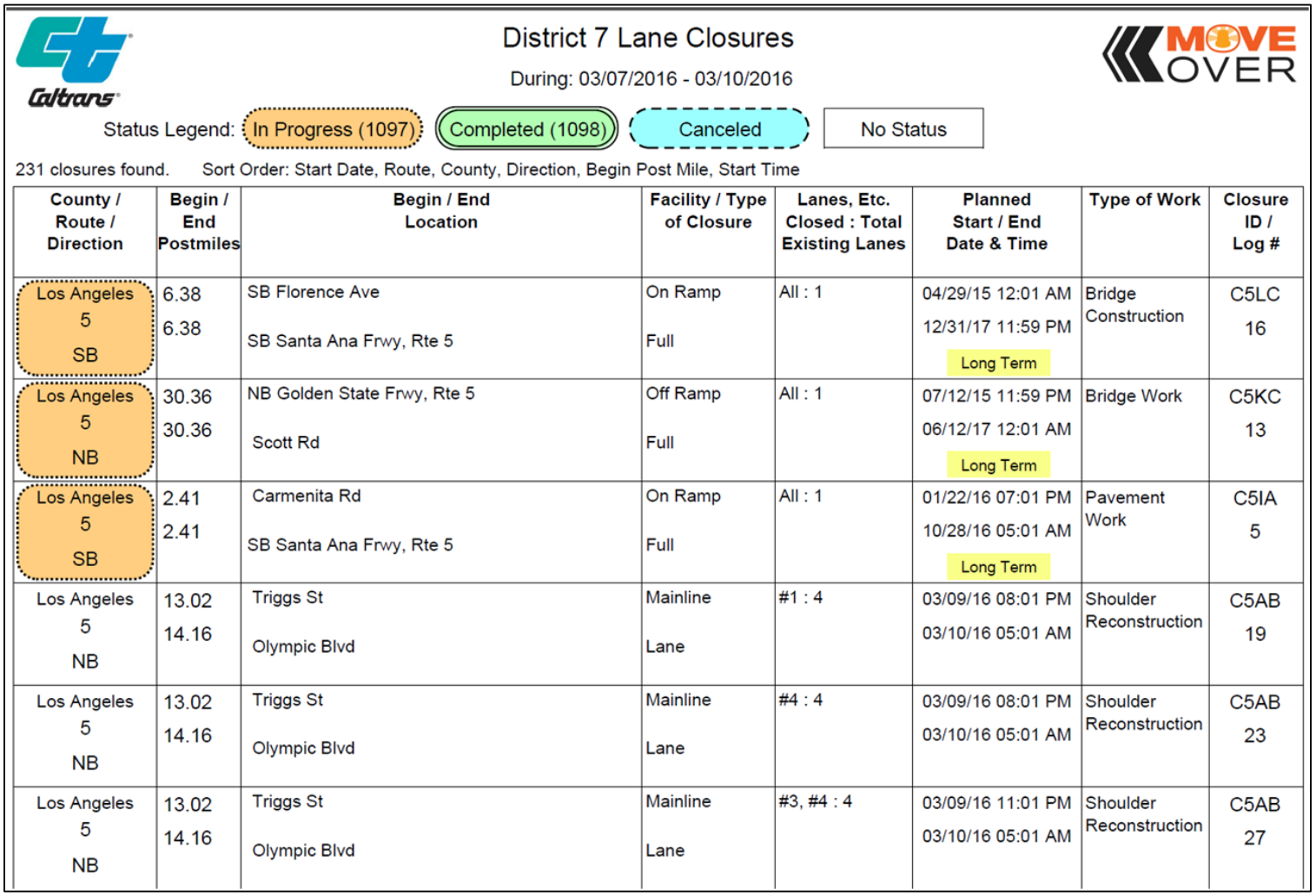
- Crack sealing
- Bridge serviced
- Herbicide Application
- Litter pick-up
- Pavement Markings
- Shoulder Backing
- Misc. AC placed

Planned Lane Closures (1 of 2)



Source: Caltrans

Planned Lane Closures (2 of 2)



District 7 Lane Closures

During: 03/07/2016 - 03/10/2016

Status Legend: In Progress (1097) | Completed (1098) | Canceled | No Status

231 closures found. Sort Order: Start Date, Route, County, Direction, Begin Post Mile, Start Time

County / Route / Direction	Begin / End Postmiles	Begin / End Location	Facility / Type of Closure	Lanes, Etc. Closed : Total Existing Lanes	Planned Start / End Date & Time	Type of Work	Closure ID / Log #
Los Angeles 5 SB	6.38 6.38	SB Florence Ave SB Santa Ana Frwy, Rte 5	On Ramp Full	All : 1	04/29/15 12:01 AM 12/31/17 11:59 PM Long Term	Bridge Construction	C5LC 16
Los Angeles 5 NB	30.36 30.36	NB Golden State Frwy, Rte 5 Scott Rd	Off Ramp Full	All : 1	07/12/15 11:59 PM 06/12/17 12:01 AM Long Term	Bridge Work	C5KC 13
Los Angeles 5 SB	2.41 2.41	Carmenita Rd SB Santa Ana Frwy, Rte 5	On Ramp Full	All : 1	01/22/16 07:01 PM 10/28/16 05:01 AM Long Term	Pavement Work	C5IA 5
Los Angeles 5 NB	13.02 14.16	Triggs St Olympic Blvd	Mainline Lane	#1 : 4	03/09/16 08:01 PM 03/10/16 05:01 AM	Shoulder Reconstruction	C5AB 19
Los Angeles 5 NB	13.02 14.16	Triggs St Olympic Blvd	Mainline Lane	#4 : 4	03/09/16 08:01 PM 03/10/16 05:01 AM	Shoulder Reconstruction	C5AB 23
Los Angeles 5 NB	13.02 14.16	Triggs St Olympic Blvd	Mainline Lane	#3, #4 : 4	03/09/16 11:01 PM 03/10/16 05:01 AM	Shoulder Reconstruction	C5AB 27

Source: Caltrans

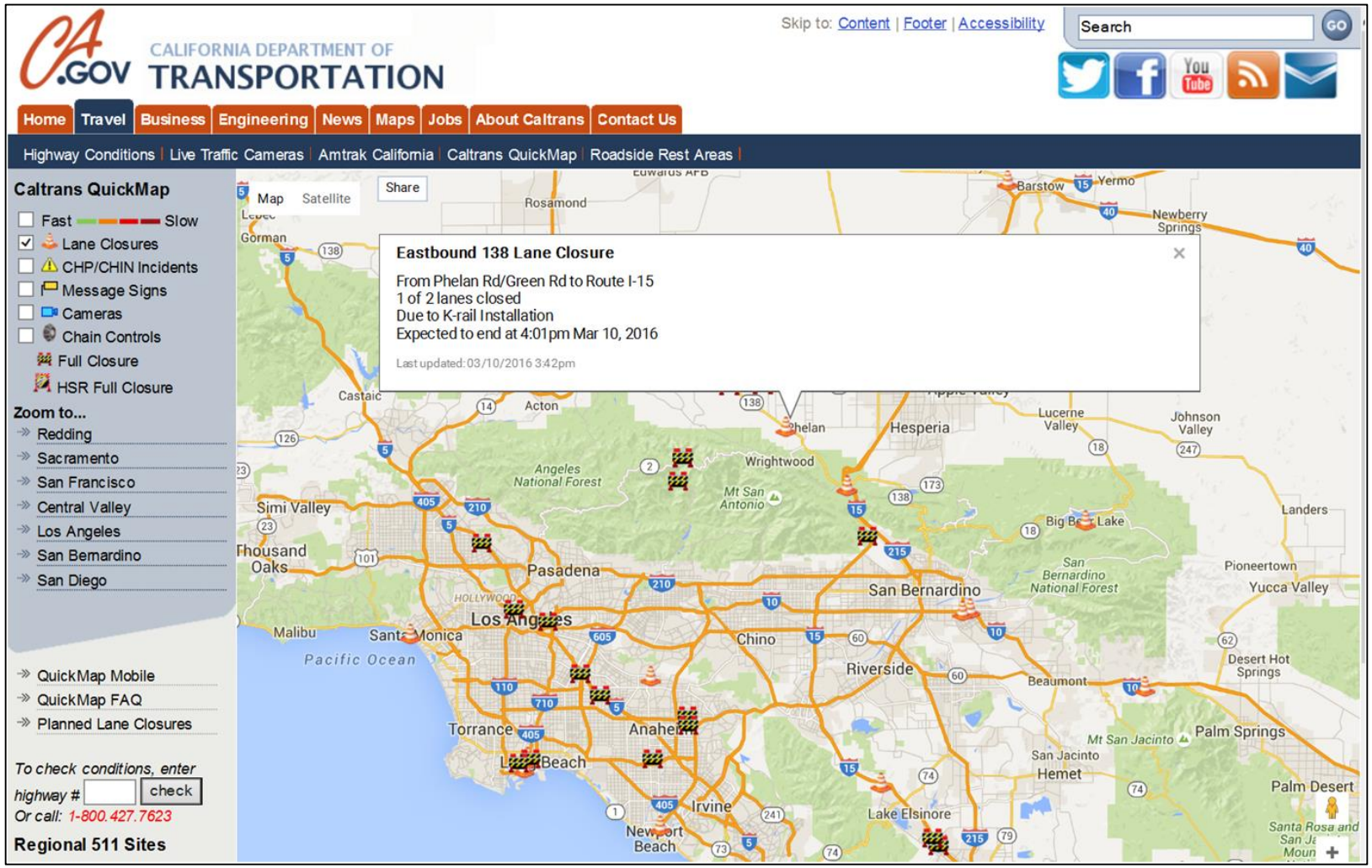
QuickMap (1 of 2)

Public Information: Gives Travelers Choice and Control

- Caltrans uses QuickMap to report real-time traffic information to the public regarding lane closures.

- QuickMap, a web page that is updated every five minutes with real-time traffic information feeds from other data sources including:
  - Caltrans' Commercial Wholesale Web Portal (CWWP)
  - Changeable Message Signs (CMS) content
  - Caltrans Highway Information Network (CHIN)
  - Transportation Management Center Activity Log (TMCAL)
  - LCS

QuickMap (2 of 2)



Source: Caltrans

Caltrans Highway Information Network (CHIN)

Source: Caltrans

LCS Status Updates

12-4.02C(2)(b) Status Updates for Authorized Closures

Update the status of authorized closures using the LCS Mobile web page.

- The current method of changing the status of a closure requires a Caltrans field staff or the contractor to call the district TMC who will then enter the information into the LCS.
- The LCS mobile application allows Caltrans field staff and contractors to change the status of the closure themselves via mobile devices, such as a cell phone or tablet, without calling the TMC.

Source: Caltrans

Public Coordination – Social Media

Source: Caltrans

Source: Caltrans

Facebook

YouTube

Twitter

Instagram

Source: Caltrans

Public Coordination Example

District 3 - Sacramento, US Highway 50 Camellia City Viaduct Project

Source: Caltrans

Effectiveness of Fix50 Outreach Campaign

- Transit ridership increased 10 to 15 percent
- Traffic counts fell 24.5 percent
- Average delays were under 30 minutes or non-existent
- The campaign website received 737,864 hits over 5 months
- Paid media delivered over 91 million impressions, with over 25 percent added value

(Six-month outreach campaign from January-June)

For More Information:

Arshad Iqbal, P.E.
Caltrans
arshad.Iqbal@dot.ca.gov

Yusuf Shatnawi, P.E.
Caltrans
yusuf.shatnawi@dot.ca.gov

Smarter Work Zones

FHWA Resources

SWZ Interactive Toolkit Available!

https://www.workzonesafety.org/swz

Other Resources

Project Coordination Resources	
FHWA	• FHWA Work Zone Mobility and Safety Program – Project Coordination http://www.ops.fhwa.dot.gov/wz/construction/crp/index.htm • FHWA Work Zone Mobility and Safety Program – Peer-to-Peer Program http://www.ops.fhwa.dot.gov/wz/p2p/index.htm
TRB SHRP2	• WISE Software Users Guide http://onlinepubs.trb.org/onlinepubs/shrp2/SHRP2_S2-R11-RW-2.pdf
NCHRP	• NCHRP Synthesis 413: Techniques for Effective Highway Construction Projects in Congested Urban Areas http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_41.pdf
Others	• Highway Construction Coordination to Minimize Traffic Impacts http://planning.transportation.org/Documents/8-36/NCHRP8-36(56)FinalReport.pdf

Thanks for joining us!

- **Upcoming Events**
  - Webinar #12: Integrating Technology Applications – Massachusetts DOT
    - Tuesday, April 26, 2016, 1:00-2:30pm EST
    - Registration: Coming Soon!
  - Check The National Work Zone Safety Information Clearinghouse website for updates https://www.workzonesafety.org/swz
- **Questions or Comments?**
  - Jawad Paracha (FHWA Operations, WZ Team) Jawad.Paracha@dot.gov