



Caltrans District 7 Advanced Transportation Management System





September 2008

Los Angeles Transportation Management Center (LARTMC)





 The LARTMC serves forty three (43) distinct government functions and was designed with the technologies to support joint operations and act as the center for Intelligent Transportation Systems (ITS) and Emergency Response operations for the next 30 years.



- Over 525 miles of monitored freeway in District 7
- 1,280 Traffic Monitoring Stations (TMS)
- Over 12,000 Inductive Loops, 81 Speedinfo Sensors (plus misc. RTMS Radar and Sensys magneto resistive detectors)





- 125 CMS
- 960 RMS
- 15 HAR systems
- 485 CCTV









ATMS Features

- PC Browser user Interface
- CMS Travel Times
- CMS Message Library and History
- CMS Scheduler
- AMBER Alerts
- Electronic Message Board Control
- New VDS Interfaces (RTMS, Speedinfo, Sensys)
- Digital HAR Interface
- NTCIP CCTV Control w/presets
- Enhanced SWARM w/performance measures
- Duty Paging
- Event Management enhancements
- Automated CHP Event Interface
- New Crystal Reports
- External Agency Interface RIITS
- CCTV Cameras to cell phones (via RIITS)
- Construction Project Impact Tracker
- Work Zone TMS features



Agenda

Map Overview

Traffic Data

Field Device Control

Travel Time

Advanced Management Functions

Reports

Browse Edit

Regional Integration

ATMS Application Web Page



ATMS "Base Map"

• Map of Region

Depicts Roadways



- Freeways, State Highways, Major & Minor Arterials
- Shows Field Element Locations & Status
 - Induction Loops, Ramp Meters, CMS, CCTV, HAR & Beacons
- Overview of All ATMS Operations
 - Freeway Congestion
 - Ramp Metering Operations
 - Current and Scheduled Planned Event Operations



Functionality of Base Map

Map Manipulation

- Multiple Pan & Zoom Options
- Map Overview
- New Map
- Legend
- Control of Map Layers
 - Automatic "Decluttering"
 - User Controllable Views







Map - Layer Display



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Regional Integration

- Failure Management
- Data Normalization
- Real-Time Display

Phase I Failure Management Model

- Detects failures in the raw detector data
- Eliminates need for using historical data to determine status
- Segregates Detectors into Classes
- Segregates Freeway into Links with Similar
 Operating Characteristics
- Dynamic Thresholds





Loop Status State Diagram



Occupancy Threshold Table

Avg Occ	Low Thresh	High Thresh	Suspect to Soft	Soft to OK
0	0	6	15	2
1	0	8	14	2
15	5	30	4	3
16	5	31	3	3
17	6	32	3	3
30	10	40	3	2
100	25	100	2	7
Metering Ramp (excl. greenball)	1	99	10	2
Not Enough Data	1	100	16	2

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Data Normalization

 Occupancy is normalized so that occupancy better represents the same condition regardless of the detector characteristics



Traffic Surveillance - Real Time Data

- Freeway Congestion Overview on Map
 - Updated every polling cycle: 30 seconds
 - Station level display: Average estimated speed, volume or occupancy
 - Lane level display: volume, occupancy, estimated speed
 - Green, yellow, orange, red, gray color code
- Textual Data Display
 - Volume, Occupancy, Estimated Speed
 - Multiple Station Capability



Vehicle Detection Station







	Red	Orange	Yellow	Green	
Speed	0-20mph	20-35mph	35-50mph	50-70mph	
Volume	18-1000 veh/30sec		9-18 veh/30 sec	0-9 veh/30 sec	
Occupancy	30-100%		15-30%	0-15%	
Gr	ay: no val	id data (mul	tiple causes)		altro

Caltrans

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VDS Data Dialogue

	🚭 VDS 121	3						3
	Jun 27, 2005						2:57 P	м
	VDS ID: MS ID:	717590 1213			C	ata at: Jun 27	,2 Accumu Volumes	lated Loop (5, 15 min)
	Location:	SR134 W	es					
	Postmile:	8.76					30 Sec	ond Loop Data
Loop Status	Cross Stree LDS ID: Status:	et: HARVEY 715473	Good		-		Volu Occu	me upancy
Loop Location	Status.	Memory Page	S		1 -		• Estir	nated Speed
	Loc	p Enable/Disa	able			1	🗌 Freeze Data	
	Lane	Status	Volume (15 Min)	Volume (5 Min)	Volume (30 Sec)	Occupancy	Estimated Speed	
	HOV1	ОК	107	-39	3	1.6	65	
	ML1	ок	301	111	6	2.6	70	
	ML2	OK	324	119	13	6.1	70	
	ML3	OK	216	82	10	5.9	69	
	ML4	ОК	106	39	4	2.0	70	
	ML Avera	age:	7.9	8.8	8.2	4.2	69.6	
Station Totals	ML Total		947	351	33			
			Zoom	to Area	ОК			

Multiple Station Data Display

Adjacent VDS Data / 30-Second Volume

Upstream

Jun 15, 2005

Freeway: 1210 W

Data at: Jun 15, 2005 15:58:30

Freeze Data Data Display



Primary VDS





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ML1

ML2

ML3

×

4:59 PM

New VDS Sensors

- RTMS via loop emulator and FEPT
- Direct ATMS-to-RTMS Interface using InfoTek Wizard
- Direct ATMS-to-RTMS Interface using Airlink Modem
- Sensys Networks via snap server
- Direct ATMS-to-Sensys Interface
- Speedinfo via RIITS



New VDS Devices

🚭 VDS 6501										
Jun 23, 2008				11:"	IS AM					
VDS ID: 769732	🚭 VDS 8012									
MS ID: 6501 Line ID: 0	Jun 23, 2008			🚭 VDS 2199).		1			
Controller ID: 0 County: Los Angeles Location: SR60 W Postmile: 10.91 Cross Street: DECK 1 LDS ID / Type: 769725 / Senst Status: All Loops Good ATMS user ID: testd7 Memory Pages Loop Enable/Disable View/Edit Comments	Jun 23, 2008 VDS ID: 769604 es MS ID: 8012 Line ID: 892 Controller ID: 1 County: Los Angeles Sensy Location: 15 S Good Postmile: 47.68 Cross Street: S/O OLD ROAD 2 LDS ID (Type: 769500 (PTM) ble Status: All Loops Good ATMS user ID: testd7 Vo Loop Enable/Disable		Jun 23, 2008 VDS ID: 717008 MS ID: 2199 Line ID: 73 Controller ID: 19 County: Los Angeles Location: 110 E Postmile: 6.73 Cross Street: MOTOR LDS ID (Type: 746740 / DTE Statu s: Some Loops Bad ATMS user ID: testd7 Memory Pages					Data at: Jun 23	11:17 AM	
ML1 OK	View	Edit Comm	ents	View/Edit Comments				[Freeze Data	
ML2 OK ML3 OK ML4 OK	Lane	Status	Volume (15 Min)	Lane	Status	Volume (15 Min)	Volume (5 Min)	Volume (30 Sec)	Occupancy	Estimated Speed
ML5 OK ML Average: ML Total:	ML1 ML2 ML3 ML4	ML1 OK 90 ML2 OK 180 ML3 OK 270 ML4 OK 360		ML1 ML2 ML3 ML4 ML5	OK OK OK H Failed OK	290 374 341 0 109	91 126 126 0 42	8 14 14 0 7	4.9 13.2 11.4 0.0 5.5	55 36 42 70 61
	ML Average ML Total:		7.5	ML Avera ML Total:	ge:	9.3	9.6	10.8	8.8	45.5

Agenda

Map Overview	
Traffic Data	
Field Device Control	CMS HAR CCTV RMS
Travel Time	
Advanced Management Functions	
Reports	
Browse Edit	
Regional Integration	

Device Control

Changeable Message Signs

- Operational Status
- Manual User Control
- System Scheduled

RMS

- **Operational Status (Mode, Rate)**
- Central Algorithm Configuration (SWARM)
- HAR & Beacons
 - **Operational Status**
- CCTV
 - Camera Selection (point and click)
 - Pan / Tilt / Zoom / Iris
 - Video Wall Control
 - Video Snapshot Configuration



I-5 S/B E-RAMP CLOSED



lakira



Field Devices - Icon Display

×

🍜 Field Device Icon Display

Legend	Name	Visible	Control	Default	Display	Filter
– 1	Changeable Message Signs (CMS)		Default	0.6	Normal	All
	CCTV		Default	0.5		
2	HAR	✓	On	0.5		
0	Vehicle Detector Stations (VDS)	✓	Default	1.0	Speed	All
	RMS, OnRamp Metered		Default	0.2		All
	OnRamp, Unmetered		Default	0.2		All
	OffRamp		Default	0.2		All
			All On	All Of	f De	efault OK

CMS Manual Control

🚳 CMS 95 Nov 14, 2005 5:30 PM Multiple CMS Single CMS Detail CMS Control CMS DETAILS 5:29 PM Nov 14, 2005 CMS ID: 95 Multiple CMS Single CMS Detail PLAN-County: Los Angeles **CMS** Location: 15 N Location Cross Street Status Proposed Current CCTV View 4 95 15 N OSBORNE ST Good Summary **Cross Street: OSBORNE ST** 1 1405 N 135TH ST Bad O Msq Details Postmile: 37.37 2 1405 N MANHATTAN BCH BLVD Good 3 110 E DORCHESTER AVE Good O Schedule MODEL 500 Type: 4 SR91 W W/O CENTRAL AVE Good Status: Good Add E/O WASHINGTON BLVD 6 110 E Good 1 7 SR101 S WHITSETT AVE Good Add All Zoom to Area 8 SR101 N W/O WOODMAN AVE Good **Add Active** 9 15 N DITMAN AVE Good Delete EDIT 10 1110 S NINTH ST Bad 13 SR101 S MELROSE AVE Good Select All 14 110 E CRENSHAW BLVD Good 2 Phase () 1 Phase **Deselect All** Π 15 110 W ALAMEDA ST Good Phase 1 16 1110 N GAGE Good Send Display Time: 2 Seconds 💙 17 1710 N WASHINGTON BLVD Good Blank WESTERN AVE 18 110 E Good Reset 19 1405 N BEL AIR CREST RD Good 💿 Immediate 🔘 Schedule EDIT 2 Phase 0 1 Phase Preview Phase 1 Phase 2 CIBBN Display Time: 2 Seconds 😪

🖲 Immediate 🔘 Schedule

OK

History

Library

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CMS System Scheduler

Enter message start and end time	
Nov 15, 2005 10:21 AM	
	10:12 A/
Now 12:00 14:00 16:00 18:00 20:00 22:00 00:00 02:00 04:00 06:00 08:00 10:00	15:00
	Send >> A message is scheduled for this sign
	Blank >>
Now 12:00 14:00 16:00 18:00 20:00 22:00 00:00 02:00 04:00 06:00 08:00 10:00	Reset >>
OK Cancel	
💿 2 Phase 🔿 1 Phase	Preview
Display Time: 2 Seconds 💉 Phase 1 P	Phase 2 Clear
Cimmediate At 15:00	History
C miniculate (FAL 13.00	Library
ОК	
de # 20	Lalter Calter

CMS Scheduler Detail

• N	Aultiple	CMS O	Single Ch	MS Detail						
PLA	N.				1					1
	CMS	Location	C	ross Street	Dhacal	Scheduled N Phase2	lessage Stort	End	Operator	View
] 81	1210 W	ALLEN A	VE.	SCHEDULE TEST MESSAGE	Fliass2	15:00	21:00	testd7	Summary Msg Detail
										Add
										Add All
										Add Active
										Delete
										Select All
										Select All Deselect All
										Select All Deselect All Clear Sched

CMS Message History

🚳 CMS Message History



	Location	Cross Street	Phase1	Phase2	Start	End	Du	Operator
81	1210 W	ALLEN AVE.	20000000000000000000000000000000000000	TESTING 1 TESTING 2	2005.06.23 16:37	2005.06.23 16:39	00:01	testd7
81	1210 W	ALLEN AVE.		TESTING 1 TESTING 2	2005.06.23 16:39	2005.06.23 16:39	00:00	testd7
81	1210 W	ALLEN AVE.	TEST TEST1	_	2005.06.23 16:41	2005.06.23 16:41	00:00	testd7
81	1210 W	ALLEN AVE.	TEST		2005.06.23 18:15	2005.06.23 18;25	00:10	testd7
81	1210 W	ALLEN AVE.	A TEST MESSAGE		2005.06.24 08:56	2005.06.24 08:56	00:00	testd7
81	I210 W	ALLEN AVE.	PHASE 1 MESSAGE	-	2005.06.24 08:58	2005.06.24 08:59	00:00	testd7
81	1210 W	ALLEN AVE.	2 PHASE Part 1	2 PHASE PART 2	2005.06.24 08:59	2005.06.24 08:59	00:00	testd7
81	1210 W	ALLEN AVE,	SHEDULED 1 PHASE MESSAGE		2005.06.24 09:04	2005.06.24 09:05	00:00	testd7
81	1210 W	ALLEN AVE.	SCHEDULED 2 PHASE - PARTI	SCHEDULED 2 PHASE - PART	22005.06.24 09:07	2005.06.24 09:07	00:00	testd7
81	1210 W	ALLEN AVE.	TESTING AAA		2005.06.27 11:48	2005.06.27 13:24	01:35	testd7
81	1210 W	ALLEN AVE.	TEST AMBER ALERT		2005.06.27 13:38	2005.06.27 13:39	00:01	testd7



Cancel

OK

CMS Message Library

🚭 CMS Message Library

×

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ID	Title	Phase1	Phase2	Last Modified	Operator	
1	TEST MESSAGE - 2	TEST LINE 1 Test line 2	TEST LINE 3 TEST LINE 4	2005.07.11 12:06	testd7	^
2	CONGESTION	CONGESTION AHEAD		2005.11.15 10:51	testd7	
3	WINDY	GUSTY WINDS AHEAD		2005.11.15 10:51	testd7	
4	DUSTY	POOR VISIBILITY AHEAD		2005.11.15 10:51	testd7	
5	·		_			
6						
7						
8						
9						
10						
		Modi	ify New	Delete	ок	Cancel



Slide # 33

Ramp Metering

Manual Control

- Traditional Time of Day & Local Responsive
- Controller Memory Configuration

Multiple "Automated" Modes

- 3 Central Algorithms
 - Swarm 1 Adaptive System-wide
 - Swarm 2a Headway-based local responsive
 - Swarm 2b Density-based local responsive





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Ramp Metering Control

🚭 RMS 12	88							
Jun 15, 2005							7:15 PM	
RMS ID:	716612				Data at	t: Jun 15, 200	05 18:14:30	
MS ID:	1288			Metering St	tatus: I	Not Currently	y Metering	
County:	Los Ang	eles		Metering M	ode: I	Local: TOD		
Location:	I210 W			Metering R	ate: 👘	Off		
Postmile	: 40.26			Controller	Override:	None		
Cross St	reet: CITRUS			% Violation	IS:	0		
LDS ID:	715515			Metered La	nes:	2		
Status:	Good			Ramp Lane	es:	2		
Se	lect Metering	Mode	HOV Lane Location: None					
Conf	igure SWARM	Control		Platoon Me	ter Ramp:	No		
Mete	ering Rate Sta	tistics						
Config	ure Controlle	r Memory				1	18 - Teles	
Loo	p Enable/Disa	able				F	reeze Data	
RMS Type	e: OR	Accu	mulated Vol	ume	30) Second Dat	ta	
Loop	Loop	15 Min	5 Min	1 Min	Volume	Occupancy	Estimated	
Туре	Status						Speed	
OR	ок	116	37	7	3	1.7	70	
PA	ок	116	37	7	2	1.0	70	

38

32

Zoom to Area

7 8 5

0K

2 3 3

1.5

3.5

70

42



Slide #36

DM

QU

ОK

OK

118

106

CCTV Interface





Video Wall Display Control



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CCTV Functionality – NTCIP and Presets



Iris Control Auto Open Close **Focus Control** Auto Near Far



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CCTV Functionality – NTCIP and Presets



Preset
10 Positions
Preset 1 is Default



Slide # 39

CCTV Snapshot Configuration



File Events Field Devices Map Configuration Help Admin

💽 🤁 🔍 🔍 🖤 🖷 🍬 🛍 🔚 🗂 👔 🕨 📕 🗛 💽 🎾 Zoom = 1.00



Digital HAR Interface

🍜 HAR 03		
Apr 24, 2007		7:19 PM
O Multiple HAR O Single HAR Detail	<u></u>	
HAR ID: 03 County: Los Angeles Location: I5 N Cross Street: OSBORNE ST Postmile: 37.28 Type: HIS Status: Unknown	Proposed: This is a test of the Caltrans Pistrict 7 HAR system.	Send Blank Beacons
EDIT This is a test of the	Caltrans District 7 HAR system.	Preview Clear



Electronic Message Board (EMB)



un 27, 2005	5		3:07
MS Board	Event Board		
O Man	ual 💿 Automatic		
IMS #	MESSAGE	CMS #	MESSAGE
5	CONV CTR 13 MIN	1	TRAVEL TO
	I-710 20 MIN		LAX 4 MIN
)	SR60 4 MIN	2	41 MIN TO
	SR170S 31 MIN	1. T. A.	R. REAGAN FRWY
11	SR19 13 MIN	42	TRAVEL TO
	AZUSA AV 25 MIN		I-105 3 MIN
3	CONV CTR 16 MIN		
	csula 23 min		
5	TRAVEL TO		
	CONV CTR 9 MIN		

in 27, 20	005			3:07 PM
MS Boar	rd Event	Board		
OMa	nual (Automatic		
AD	TIME	LOCATION	TYPE	LNS CLSD
	1912	w118@collins dr	I: JACKKNIFE	12
	1840	E2@SR 134	S:	34
	1835	S5@PIONEER/IMPERI	I: JACKKNIFE	23
234	1810	E10@FAIRFAX AVE	I:COLLISION	1234
	1808	S5@PIONEER/IMPERI	I: JACKKNIFE	23
	1544	W91@PARAMOUNT BLV	I: JACKKNIFE	345
239	2038	S405@WILMINGTON	I: JACKKNIFE	1235
		Send Clear	OK	

EMB Event (for LARTMC)

🕗 Electronic Message Board Control	
Jun 27, 2005	3:07 PM
CMS Board Event Board	
🔿 Manual 💿 Automatic	
CAD TIME LOCATION TYPE	LNS_CLSD
1912 W118@COLLINS DR I: JACKK	NIFE 12
1840 E2@SR 134 S:	34
1835 S5@PIONEER/IMPERI I: JACKK	NIFE 23
1234 1810 E10@FAIRFAX AVE I:COLLI	SION 1234
1808 S5@PIONEER/IMPERI I: JACKK	NIFE 23
1544 W91@PARAMOUNT BLV I: JACKK	NIFE 345
2239 2038 s405@wilmington I:jackk	NIFE 1235
Send Clear OK	



Agenda

Map Overview

Traffic Data

Field Device Control

Travel Time

- Signing Configuration
- Signing Scheduler
- Target Selection

Advanced Management Functions

Reports

Browse Edit

Regional Integration

Congestion Signing/Travel Times

 Current Operations ✓ 50 signs 12 hours/day 7 days/week Non-contiguous Freeway signing Freeway-to-freeway pivots





Congestion Signing Configuration



Congestion Signing Scheduler

Scher	duler						
Jun 27, 20	05						3:10 PM
Glob	al Congestio	n Signing:	 Activate Deactivat 	e			
Activa	te Congestic	on Signing At	Selected Ho	urs:			
	Mon	Tue	Wed	Thu	Fri	Sat	Sun
00:00							
01:00							
02:00							
03:00							
04:00							
05:00							
06:00	Image: A start of the start	Image: A start and a start		Image: A start of the start	Image: A start of the start		¥
07:00	Image: A start of the start						Image: A start of the start
08:00	Image: A start of the start				Image: A start and a start		¥
09:00	Image: A start of the start						Image: A start of the start
10:00	Image: A start of the start						Y
11:00	Image: A start of the start	Image: A start of the start			Image: A start and a start		¥
12:00	Image: A start of the start					Y	Image: A start of the start
13:00	Image: A start of the start	Image: A start of the start			Image: A start and a start		¥
14:00	Image: A start and a start	Image: A start of the start	Image: A state of the state				Image: A start of the start
15:00	Image: A start of the start	Image: A start of the start	Image: A start of the start			Y	Image: A start of the start
16:00	Image: A start and a start	Image: A start of the start	Image: A start of the start				Image: A start of the start
17:00	Image: A start of the start		Image: A start of the start			Y	Y
18:00						Y	V
19:00				V			
20:00							
21:00							
22:00							
23:00							
	Apply	Se	lect All	Dese	elect All	Ca	ncel



Target Selection

🥗 Congesti	ion Sign	ing Target Selection 18			\mathbf{X}
Jun 27, 2005				3:0	IS PM
CMS ID: County: Location: Cross Street: Postmile: Type: Status:	18 - Act Los Any I10 E WESTE 12.80 MODEL Good	tive geles IRN AVE 500	Assoc Count Locat Cross Postn Type: Statu	ciate VDS:716057 y: Los Ang ion: I10 E Street: GRAMEF nile: 12.58 ML s: No Resp	eles {CY
Select	Up to 3 T	arget Locations			
Destination T VDS	arget	Target Description	Travel Time (min)	Select	
7592	:80	CONV CTR	4		
7371	58	SR60 E	7		
7373	13	I-5 N	7		
7373	44	CSULA	11		
7170	170	I-710	11		
7171	27	SR19	17		-
7171	95	SR39	30		
7172	:32	CAL POLY	35		_
7172	:36	1210/57	35		_
7161	81	I-210/71	36		
7172	:47	FAIRPLEX	38		



Sample Travel Time Message

🚭 CMS 11		
Aug 22, 2005		5:57 PM
Multiple CMS Single CMS Detail		
CMSID: 11		
County: Los Angeles Location: SR60 E	Proposed: Send >> Current: TT_MG	R
Cross Street: INDIANA ST	Blank >> RTE 605.	. 10 14 min
Type: MODEL 500	Reset >> RTE 57	45 MIN
Status: Good		
Zoom to Area		
EDIT		
💿 2 Phase 🔵 1 Phase		Preview
Display Time: 2 Seconds V	1 Phase 2	Clear
		History
💿 Immediate 🔿 Schedule		Library
	ОК	

Caltrans



Map Overview

Traffic Data

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Reports

Browse Edit

Regional Integration

- SWARM
- Incident Detection
- Event Management

System Wide Adaptive Ramp Metering

- Develops metering rates based on real time conditions
- SWARM 1 Network
 - Looks at the complete system
 - Forecasts traffic conditions x minutes into the future
 - Changes metering rates now to avoid predicted future problems
- SWARM 2
 - Looks at local traffic conditions near ramp
 - Based on current data
 - SWARM 2a Headway (time between vehicles)
 - SWARM 2b Storage



SWARM 1 VDS Locations





SWARM 1Forecasting





RMS Advanced Management Dialog

- 19M9 1535								
Apr 24, 2007							4:15 PM	
RMS ID:	718211				Data	at: Apr 24, 20	t: Apr 24, 2007 16:11:00	
MS ID:	1296		Metering Status:			Current	y Metering	
Line ID:	55			Mete	ering Mode:	Local: L	MR	
Controller ID:	: 19			Mete	Greenba	ll		
County:	Los Angel	es		Cont	roller Overrid	le: None		
Location:	1210 W			% Vi	olations:	0		
Postmile:	35.12			Mete	ered Lanes:	1		
Cross Street	: BUENA VIS	STA		Ram	p Lanes:	2		
LDS ID / Type	: 715522/1	70		HOV	Lane:	Yes		
Status: ATMS user II	Good D: testd7			Plate	oon Meter Ran	mp: No		
and a second sec	No FILET C.							
Meteri	ing Mode/Sch	eduler						
Meteri Config	ing Mode/Sch ure SWARM (eduler Control						
Meteri Config Meter	ing Mode/Sch ure SWARM (ing Rate Stat	eduler Control istics						
Meteri Config Meter Configu	ing Mode/Sch ure SWARM (ing Rate Stat re Controller	eduler Control istics Memory						
Meteri Config Meter Configu	ing Mode/Sch ure SWARM (ing Rate Stat re Controller) Enable/Disal	eduler Control istics Memory ble						
Meteri Config Meter Configu Loop	ing Mode/Sch ure SWARM (ing Rate Stat re Controller) Enable/Disal w/Edit Comme	eduler Control istics Memory ble ents					Freeze Data	
Meteri Config Meter Configu Loop View RMS Type: O	ing Mode/Sch ure SWARM (ing Rate Stat re Controller Disable/Disa N/Edit Comme R	eduler Control istics Memory ble ents Accum	nulated Volum	ne		Second Data	Freeze Data	
Meteri Config Meter Configu Loop RMS Type: O Loop Type	ing Mode/Sch ure SWARM (ing Rate Stat re Controller DEnable/Disal w/Edit Comme R Loop Status	eduler Control istics Memory ble ents Accum 15 Min	nulated Volum 5 Min	ne 1 Min	30 Volume	Second Data Occupancy	Freeze Data	
Meteri Config Meter Configu Loop Viev RMS Type: O Loop Type OR	ing Mode/Sch ure SWARM (ing Rate Stat re Controller D Enable/Disa w/Edit Comme R Loop Status OK	eduler Control istics Memory ble ble ents Accum 15 Min 128	nulated Volum 5 Min 43	ne 1 Min 8	30 Volume 5	Second Data Occupancy 4.5	Freeze Data Estimated Speed	
Meteri Config Meter Configu Loop Vies RMS Type: O Loop Type OR PA	ing Mode/Sch ure SWARM (ring Rate Stat re Controller Disa Enable/Disa N/Edit Comme R Loop Status OK OK	eduler Control istics Memory ble ents Accum 15 Min 128 120	nulated Volum 5 Min 43 40	ne 1 Min 8 7	30 Volume 5 5	Second Data Occupancy 4.5 4.7	Freeze Data Estimated Speed 56 53	
Meteri Configu Meter Configu Loop Type OR PA DM	ing Mode/Sch ure SWARM (ring Rate Stat re Controller (a Enable/Disa w/Edit Comme R Loop Status OK OK S Failed	eduler Control istics Memory ble ents Accun 15 Min 128 120 0	nulated Volum 5 Min 43 40 0	ne 8 1 Min 8 7 0	30 Volume 5 5 6	Second Data Occupancy 4.5 4.7 9.2	Freeze Data Estimated Speed 53 33	
Meteri Config Meter Configur Loop Vies RMS Type: O Loop Type OR PA DM QU	ing Mode/Sch ure SWARM (ring Rate Stat re Controller Denable/Disal N/Edit Comme R Loop Status OK S Failed OK	eduler Control istics Memory ble ents Accum 15 Min 128 120 0 143	nulated Volum 5 Min 43 40 0 48	ne 8 1 Min 8 7 0 10	30 Volume 5 5 6 6	Second Data Occupancy 4.5 4.7 9.2 11.0	Freeze Data Estimated Speed 56 53 33 27	



RMS Scheduler - SWARM

🍻 Ramp Metering Operation and	Scheduler								
Ramp	Metering	System							
	OPERATIO	N and SCHE	DULING						
Global Enable Scheduling on All Ramps Enable schedule for selected ramps O ON SW Target Rate Controller Over	716019 Freew 1616 Locat le Local: TOD e Internet Unknown	ray 15 N ion HASLEY CANYO Mode Repo Rate Repo	L N F Inted Disabled Ted Off tatus Not Curro	ine ID 50 Postmile 56.71	6 Abs M Abs N Contr	Ramp Lanes Controller IC flin Rate flax Rate oller Status	(Metered) 3 15 Good	1 (1) 8 TOD Rate Ramp Volume (Veh/Lane/30 sec)	on
	Time			I EDI	EAT	EIIN			
CALZONA PASADENA RVERSIDE FLETCHER GLENDALE LOS FELIZ EB COLORADO VESTERN EB VESTERN EB VESTERN WB ALAMEDA EB ALAMEDA WB OLIVE BURBANK 2 LINCOLN BUENA VISTA HOLLYWOOD WAY SUNLAND TUXFORD LANKERSHIM SHELDON OSBORNE 1 OSBORNE 2 PAXTON LAUREL CANYON CALGROVE VALENCIA MAGIC MOUNTAIN HASLEY CANYON	00:00 Local 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 11:00 12:00 13:00 14:00 15:00 14:00 15:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00	Local Local	Local	Local	Local	Local	Man Veh Def O To Min O To Se	Local Dr. SWARM 1 SWARM 1 SWARM 2a SWARM 2b SWARM 2b SSWARM 2b SSWA	iration 30 00 10 10 10 10 10 10 10 10 1

Dynamic Bottlenecks





Performance Measures – RMS



Performance Measures – RMS



Slide # 63

Performance Measures – RMS



Metering Mode screen



Configure SWARM Control

Configure SWARM	A Control							×
Jun 15, 2005							7:	18 PM
RMS ID: MS ID: County: Location: Postmile: Cross Street: LDS ID: Status:	716612 1288 Los Ang 1210 W 40.26 CITRUS 715515 Good	eles	Meteri Meteri Contro % Viol Meteri Ramp HOV L Meter Platoc	ing Sta ing Mo ing Ra oller C lations ed Lar Lane Lane L Head on Met	atus: ode: ote:)verrido s: s: s: s: Locatio ter Ran	e: n: on: 1p:	Data at: Jun 15, 2005 18: Not Currently Mete Local: TOD Off None 0 2 2 2 None Both No	18:00 ring
		Proposed				С	ommanded	
Minimum Rate Co	ontrol:	TOD Table	~			тор) Table	
Default Rate Cont	trol:	TOD Table	*			тор) Table	
SWARM Startup S	trategy:	Operate SWARM Anytime	*					
				Se	nd			
		0	к					

Set controls that govern how SWARM rates are determined and implemented



Metering Rate statistics

Metering Rate Sta	tistics		
Jun 15, 2005			7:19 PM
RMS ID: MS ID: County: Location: Postmile: Cross Street: LDS ID: Status:	716612 1288 Los Angeles I210 W 40.26 CITRUS 715515 Good	Metering Status: Metering Mode: Metering Rate: Controller Override: % Violations: Metered Lanes: Ramp Lanes: HOV Lane Location: Meter Head Location Platoon Meter Ramp	Data at: Jun 15, 2005 18:19:30 Not Currently Metering Local: TOD Off None 0 2 2 2 3 None None Both C No
COMMANDED:		RATE (veh/min)	Metering Mode
Time-of-Day Rat	e:	Off	
SWARM1 (Netwo	ork) Rate:	30	SWARM 1 Details
SWARM2a (Head SWARM2b (Stora	iway) Rate: age) Rate:	30 30	SWARM 2a Details
Absolute Minimu	ım Rate:	6	SWARM 2b Details
Absolute Maximu	um Rate:	30	
		ок	



Configure controller memory

Config	gure Controller Memory 🛛 🔀
	Memory Pages
	O TOD Tables
	O TOD Holiday
	O CRVOL Plans
	O Platooning Plans
	ок



Slide # 68

Memory page

Send

Poll

🕾 All Memory						
Device ID: MS ID:	717590 1213					
County:	Los Angeles					
Location:	SR134 W			La	st Download	at:
Postmile:	8.76			Op	erator ID:	
Cross Street:	HARVEY					
LDS ID:	715473					
Status:	All Loops Good					
	Memory Page 0 🗸	Prop	osed	Most Rec Date: Unk	ently Polled nown	
		Address	Contents	Address	Contents	
		0000	00	0000	00	~
		0001	00	0001	00	
		0002	00	0002	00	1
		0003	00	0003	00	
		0004	00	0004	00	
	Edd	0005	00	0005	00	
		0006	00	0006	00	
	Revert	0007	00	0007	00	
		0008	00	0008	00	
		0009	00	0009	00	
		000A	00	000A	00	
		000B	00	000B	00	L.
		000⊂	00	000C	00	
		000D	00	000D	00	
		000E	00	000E	00	
All M	emory Pages	000F	00	000F	00	
0,	1, 2, and 3	0010	00	0010	00	

Caltrans

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Unknown

Slide # 69

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0012

0013

TOD Tables

Gį	TOD	Table																												X
F N (L F () L	RMS IE AS ID: County Costin Costm Cross DS ID Status): r: on: ile: Street:): :	716612 1288 Los Ang 1210 W 40.26 CITRUS 715515 Good	jeles	5	-		Edit			olot	. (Pov	A F A F L C	leteri Ramp IOV L Ieter Platoc Jast D Opera	ng Lar Lanes ane Lo Head I on Mete Iownlo tor ID:	ies: :: .ocation .ocatio er Ram ad at:	2 2 : None on: Both p: No Feb 1	9, 2	0021	16:3	6								
					pen	_							11011		_															
		Time	Dete		п	Pro	pos	sed Noo	~		Des		Plat	CDVO			Ti	Most Rec	enti	y Pol	lied	Date	e: Apr	15	, 201	US 18 Dov. 1	0.37 ON E	Diat	CEMOL	
	Intv	of Day	Kate Veh/Min	M	т	ays W	Th	F	n S	Su	1	2	A/B	A/B		Intv	of Day	Kate Veh/Min	M	т	W	Th	F	S	Su .	1 2		A/B	A/B	
	01	0400	12										A	A		01	0400	12										A	A	
	02	1100	00	 Image: A start of the start of	 Image: A start of the start of	V	 Image: A start of the start of	~					А	А		02	1100	00	 Image: A start of the start of	~	~	 Image: A start of the start of						A	А	
																														~
		Send	#Poll TOD T	able 1	and 2	2							Plat Plan	Doning S	Veh/ Cycle	Max Green	1			Critic Volui	:al me P	lans	Criti Volu	cal ime	Crit Occ	ical cupan	су			
		S	end	Р	oll								PI	an A	1	20				P	lan.	A	6	5	19.	.1 %	6			
													PI	an B	0	0				P	lan	В	()	0.0	0 %	b			
	ОК																													



TOD Holiday Tables

🥌 TOD Holiday So	chedule	×				
RMS ID: MS ID: County: Location: Postmile: Cross Street: LDS ID: Status:	716612Metering Lanes:21288Ramp Lanes:2Los AngelesHOV Lane Location:None1210 WMeter Head Location:Both40.26Platoon Meter Ramp:NoCITRUSLast Download at:Feb 19, 2002715515Operator ID:	216:36				
Insert Append Edit Delete Revert	Proposed Most Recently Polled Intv Month Date Date: Apr 15, 2005 18:37 01 JAN 01 01 JAN 01 Send					
ОК						
	ОК					



Slide # 71

CRVOL plan

Critical Volume Plans	Critical Volume	Critical Occupar	icy
Plan A	85	19.1	%
Plan B	0	0.0	%



Slide # 72

Platooning Parameters

Platooning Plans	Veh/ Cycle	Max Green
Plan A	1	50
Dise D		



Automatic Incident Detection

- Uses APID: All Purpose Incident Detection algorithm
- Algorithm considers Prevailing Congestion Levels
- Algorithm Tuned for Each Mainline VDS
- Operator "Alarmed" for Potential Incident



APID

- Compare upstream and downstream stations for differences in occupancy
- Test individual stations for rates of increase and decrease in occupancy
- Test upstream stations for extraordinary increases in occupancy



lak

Typical Event Management Process





Event Details

🍄 Event 97171		
Jul 7, 2005		5:48 PM
Event ID:97171Event Type:IncidentCounty:LARoute:2 EAt:R18.91Roadway Type:MLEvent State:Confirme	HOLLY DR	Last Update at: 07/07 17:48
Placement/Confirmation Monit	oring Details Response Plan Comments	
BACKGROUND INFORMA	Operator/CCTV	CAD #:
Weather Condition:	No Factor	CAD Code:
Field Command Post:		
Field CP Phone Numb	er:	
Incident Type c	ollision.	Construction Zone
Vehicles 2	: passenger car.	🗌 Major Media Coverage
Injuries 0	l:	Politically Sensitive
Fatalities	I:	Evacuate Area
Caltrans Property D	amage	Gawking Opposite Side V
Lane Type: LS	MAINLINE	RS Clear
Lane Status:		Blocked
Apply	Cancel	Terminate

Caltrans

Slide # 78

Response Plan Generation

- Expert System Generated
 - Rules-based system for generating responses to a complex set of conditions
 - Provides a scaleable, adaptable solution
 - Developed utilizing agency expertise for operational responses
 - Aids operators in management of complex events
 - Standardized responses
- Operator Scripted


Response Plan Elements



Expert System Response Plan Generation

Operator-Input Details

- Location
- Time
- Event Type
- Details
 - Blockage Pattern
 - # of Vehicles
 - # of Injuries/ Fatalities
 - Other attributes

System-Generated Properties

- Time of Day
- Clearance Time
 - Traffic Impact
 - High
 - Medium
 - Low

Response Plan



Traffic Impact: Peak Period





Slide # 82

Automated CHP Event Interface



Caltrans

Slide # 83

CHP Functionality

Event Summary
 CAD Code Field
 CAD # Field
 CHP Events

CHP Events

- Unconfirmed events
- Located on map if valid coordinates
- Listed in CHP section of Event Summary window



CHP Functionality

• CHP Events

- Unconfirmed events
- ATMS Operator to confirm location/event
- Icon changes to ATMS red confirmed icon
- CHP CAD Comments continue to populate



CHP Functionality

- CHP Events
 - Comments continue from CAD log.

🥸 Create CHP	Event	
Jun 23, 2008		2:16 P
Event ID: Event Type: County: Route: At: Roadway Type Event State:	0 CHP SR60 S HACIENDA BLVD Unconfirmed	Last Update at: N/A
Placement/Conf	irmation Monitoring Details Response Plan Comments	
History		
06/23/08 06/23/08 06/23/08 06/23/08 CD	12:15:00: FSP ON RS REQ & BRK WB JWO AZUSA 12:14:03: CHP Unit Assigned 12:10:01: PLS ROLL BEAT 20 IF AVAIL 12:02:02: 3 VEHS-RED HOND, BLU TOYT, GRY VE	THS, VEHS ARE IN
New		Adid
Apply	Cancel	Terminate



From the toolbar, launch the general Duty Page

- General Paging
- Scheduling
- Predefined Messages
- History



- General Paging
 - Able to select Recipients/Groups
 - Able to select predefined messages
 - Able to enter message
 - Tally of number of characters
 - Able to schedule messages



- General Paging History
 - Recently sent pages.
 Includes all pages, whethe event or general

History	
Refresh History	
Message	Time
 Testing Initial Messagevlee : NB 101. #1, #3 lanes blocked. Motorc	6/24/08 10:11 AM
Testing Initial Messagevlee : NB 57. All lanes open. Earthquake, Spi	6/24/08 2:07 PM
Update message testingvlee : NB 57, #1 lane blocked. Earthquake,	6/24/08 2:08 PM
Update message testingvlee : NB 57, #1 lane blocked. Earthquake,	6/24/08 2:09 PM

Event Duty Page

3 types

- Initial (only one)
- Update (multiple)
- Final (only one)
- Response Plan element
- Duty Page Officer automatically assigned



AMBER alert

🚭 CI	IS Con	rol							
<u>Jul 7, 3</u>	2005								5:32 PM
• M	ultiple	CMS 🔿	Single CMS	Detail					
	1								
			Prop	osed Mess	age	Current M	lessage		-View
	CMS	Sch	Phas	se1	Phase2	Phase1	Phase2	Sched.	🔿 Summary
	1					TESTING Amber Alert		^	Msg Details
	2					TESTING AMBER ALERT			🔿 Schedule
	з					TESTING Amber Alert			Add
	4					TESTING Amber Alert			Add All
	5					TESTING AMBER ALERT			Add Active
						TESTING			Delete
	6					AMBER ALERT			Select All
	7					AMBER ALERT			Deselect All
	8					TESTING Amber Alert			Send
	9					TESTING AMBER ALERT			Blank
	10					TESTING Amber Alert		✓	Reset
-EDIT									
© Di ©) 2 Pha splay 1) Imme	se 🔾 1 P "ime: 2 Sec diate 🔿 S	hase onds 💙 Schedule	Phase A	e1 TESTING MBER ALERT	Phase 2			Preview Clear History Library
						ок			

Can select all signs and send messages with single mouse click





Map Overview

Traffic Data

Field Device Control

Travel Time

Advanced Management Functions

Reports

Browse Edit

Regional Integration

Types of Reports (36 total reports)

- Traffic Data Reports
- Traffic Data Plots
- System Performance Reports
- Special Applications Reports
- Ramp Metering Reports



New Reports (Crystal)



New Reports (Crystal)



SYSTEM PERFORMANCE REPORT



Caltrans

Sample Report Output

			-					
suntime:	07-19-2005, 1	0:45		TRAFI 30	FIC DATA	A REPORT		sTATUS: 1=000d, 2=Suspect, 3=Soft Failed, 4=Sard Failed, 5=So mesponse,6=Disabled, o=Unknown
			ŀ	FROM: 07-19- 09:00:	2005	TO: 07-19-20 09:30:00)05)	A = Adjusted , ND = NO Data, NA = NOt applicable All values are suspect until verified by Engineer
VDS DESCRIP	TION: LA-91-9	4, PH:R.1	9.40 SEOWNAKER		M21	n Line / HOV		VDG ID: 766555
JUL-19-2005	807 1	ML 1	ML 2	ML 3	ML 4	ML STATION	s	
TURSDAY	VOL OCC SPD S	T VOL OCC SPD :	ST VOL OCC SPD ST	VOL OCC SPD ST	VOL OCC SPD S	T TOT AVG VOL OCC	est SPD	
09:00:30	9 4.3 72 3	1 19 9.9 66	1 13 6.3 70 1	9 11.3 33 1	12 6.9 83	1 53 8.6	45	
09:01:00	4 1.5 69 3	1 36 20.4 60	2 6 2.7 76 1	7 6.9 41 1	5 2.6 66	1 54 8.2	62	
09:01:30	1 26.5 1 2	L 0 0.0 NA	2 0 0.0 NA 2	0 47.8 NA 2	1 27.6 2	1 1 18.9	2	
09:02:00	9 15.5 20 1	1 15 7.3 70	1 15 7.1 72 1	11 11.5 39 1	6 3.7 78	1 47 7.4	45	
09:02:30	5 3.3 51 3	27 14.3 64	2 16 7.0 78 1	6 7.0 35 1	6 8.0 36	1 55 9.1	62	
09:03:00	6 5.3 39 3	1 10 5.2 65	1 12 5.9 69 1	8 8.0 41 1	12 8.8 65	1 42 7.0	62	
09:03:30	6 29.9 7 3	1 12 6.5 63	1 14 6.9 70 1	11 12.2 37 1	4 2.5 76	1 41 7.0	59	
09:04:00	0 69.8 NA 3	2 25 14.4 59	2 15 7.2 71 1	8 6.4 51 1	7 4.1 81	1 55 8.0	64	
09:04:30	0 69.8 NA 3	36 24.1 51	2 9 3.8 80 1	10 9.4 43 1	6 4.6 79	1 63 10.5	58	
09:05:00	0 69.8 NA 3	2 19 9.0 72	1 17 7.9 73 1	13 10.3 52 1	10 7.0 68	1 59 8.6	67	
Sat	40	199	117	83	71	470		
09:05:30	0 69.8 NA 3	2 9 4.5 65	1 9 4.4 69 1	6 7.8 31 1	7 4.3 78	1 31 5.2	64	
09:06:00	0 69.8 NA 3	17 7.7 75	1 16 7.2 75 1	10 10.1 40 1	5 5.9 41	1 48 7.7	64	
09:06:30	ND ND NA NI	D ND ND NA S	D ND ND NA ND	ND ND NA ND	ND ND NA N	D ND ND	SIA.	
89:07:00	0 69.8 NA 3	14 17.1 28	1 12 5.1 60 1	9 8.7 42 1	6 5.7 50	1 41 9.2	50	
09:07:30	0 69.8 NA 3	3 32 25.2 43	2 11 5.6 67 1	9 9.1 40 1	11 6.9 76	1 63 11.7	53	
09:08:00	0 69.8 NA 3	3 0 0.0 NA	2 0 0.0 NA 2	1 29.2 1 1	1 24.9 2	1 2 13.5	2	
09:08:30	0 69.8 NA 3	3 26 15.3 56	2 12 5.8 71 1	11 11.9 38 1	11 8.1 65	1 60 10.3	58	
09:09:00	0 69.8 NA	3 21 9.4 76	1 12 5.6 73 1	10 11.5 36 1	7 4.9 68	1 50 7.8	66	
09:09:30	2 60.8 NA 3	3 32 16.9 56	2 17 8.1 72 1	9 6.6 43 1	5 6.3 36	1 63 10.5	58	
09:10:00	15 12.5 NA .	1043	1 10 4.6 75 1	11 7.5 60 1	11 10.0 53	47 7.5	63	
50.0	0.4	1044	110A	84A	718	449		
09:10:30	• •.• •.•	3 29 16.9 56	2 17 8.5 68 1	14 12.3 47 1	10 0.2 50	1 70 11.5	58	
09:11:00	0 0 0 00 0		2 0 0 0 0 0 2	10 9.2 44 1	7 6.0 56	44 7.6	56	
09.12.00	3 3 3 55 3	14 6 7 71	1 11 7 0 63 1	7 10 9 00 1	6 1 2 80	1 1.0	2	
09.12.30	10 6 0 57 1			17 10 7 30 1	10 8 1 40	• •0 7.5		
09-13-00	4 18 7 7 1	17 8 6 67	1 15 7 1 70 1	12 14 0 35 1	7 6 6 51	- 64 11.4		
09:13:30	7 68 9 3 3		2 13 7 6 83 3	3 8 7 43 1	10 6 8 70		41	
09:14:00	0 69.4 84	1 15.2 5	1 0 0.0 %	1 21.7 2 1	3 47.0 3	1 1 10 -		
09:14:30	0 69.8 NA	2 29 15.9 62	2 13 6.8 65 1	8 9.3 35 1	4 5.1 35	- 520.0 1 82 33		
09:15:00	0 69.8 NA	17 7.6 76	1 13 6.4 69 1	7 7.5 36 1	7 8.1 41	1 44 7 4	63	
Sat	24A	174	110	80	65	429		
15mt.	93 A	558A	337 A	247A	207A	1349		

zage:

1



Sample Special Applications Report: CMS Message Approval

Runtime:	11-14-2005, 18:27	7		SPECIAL CMS Mess	APPLIC age Appro	CATION REPORT			Page: 65
			L	PROM: 07-0 00:0	0:00	18:26:30			
CMS ID	DATE	ACTIVATION TIME	DEACTIVATION TIME	N MESSAGE DURATION	1 2	MESSAGE APPROVED	TIME DISPLAYED	EVENT ID	OPERATOR ID
74	07-02-2005	14:32:06	15:04:54	00:32:48	LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 6	S 605 CARPOOL LN CLSD AT PECK		97244	shollo
94	07-02-2005	14:32:06	15:04:54	00:32:48	LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 6	S 605 CARPOOL LN CLSD AT PECK		97244	shollo
74	07-02-2005	15:04:54	09:00:51	17:55:57	LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 6	ARRIVE ALIVE DON'T DRINK AND DRIVE			shollo
94	07-02-2005	15:04:54	09:00:37	17:55:43	LINE 1 LINE 2 LINE 3 LINE 4 LINE 5 LINE 6	ARRIVE ALIVE DON'T DRINK AND DRIVE			shollo





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Browser and Editor

Eile Edit Configu	ration <u>P</u> a	arameter	Prefere	nces Wind	ow				ORACLE
🧓 VDS BROWSE						-0-0-0-0-0-			>>>>> <u>×</u> ≚ >
Update	Record		E	quipment ID	71589	8	MSI	D 2029 (
Name	PHOEE	E							
Description									
Date Created Active	12/19/1 Y	995 1					Last Modified	01/15/1996	
0t-							Latitude	33.880012	
Route	5						Longitude	-118.021667	
Direction	S	740					State Plane	e Coordinates	
ABS Dostmile	710						X (Easting)	6555.2	
City	LAMIR	ADA					Y (Northing)	1778.7	
VDS Type	ML		High	Offpeak Sta	art ()	,	Assoc HOV VDS		
Speed Static	m N		High	Offpeak Sto	op 🛛	י 🛄	lumber Of Loop	s <u>3</u>	
Peak Start		_	Low	Offpeak Sta	nt () on ()	'	Physical Lanes	3	
	<u> </u>		LUN	r onpean or	<u> </u>	 i	OSD Map ID	463	
Logical	Loop	Lane	Actino		Reports Volume		Descript	ion	
	ML 1	staneu	Y	715668	Flag		beautific		
2	VIL 2	2	Y	715668		<u> </u>			4
3	VIL (3		Y	715668					Ĩ
	Į]		ļ					וון
╽╽╻┝──┿				ļ	ļ	ļ			
				J	I	L			
Re Sea Sor	rch Criteria t Order Spe	1 of 152 Used: ^Y cified: ^N	9 Es 10	.< .<	>>	>>	New Query	Go	
								Dism	iss

Slide # 99

- Allows user to view information from the database
- Filters can be used to narrow the number of records to be viewed

 Users with proper access privileges may edit information



Travel Time Failure Management

Oracle9iAS Forms Services - Mic	rosoft Internet Explorer	
Eile Eulit Configuration Parameter CALTRANS ATMS DAT. APID Color Map Eailure Ma Data Norm Bamp Met Congestio	Preferences Window OR DR	
	Oracle9iAS Forms Services - Microsoft Internet Explorer FAILURE MANAGEMENT SAMADOD SA	
taltrai	Segment Travel Time Calculations: Where a VDS has missing data, data from the nearest "good" upstream VDS and the nearest "good" downstream VDS will be used to estimate a speed for the "bad" VDS, provided that the maximum span distance between the "good" VDSs does not exceed:	1.5 (0.0 - 6.0) miles
	Section Travel Time Calculations: Travel time calculations are not available if the contiguous distance within a section with "bad" or missing data equals or exceeds:	3 (0.5 - 10.0) miles
	Travel time calculations are not available if the ratio of "good" segment lengths to overall section length is less than:	.66 (0.1 - 0.9)
Applet started.	Revert	Save Dismiss
	Applet started.	Cocal intranet

Slide # 100

Latrans

Defining Travel Time Targets



Caltrans

Configure Travel Time Calculation

Oracle9iAS Forms Services	Microsoft Internet Explorer	
Eile Edit Configuration Para	neter Preferences Window	ORACLE
CALTRANS ATMS DAT. APID Colo Eailu Data Ram Con	Mapping re Management Normalization p Metering Travel Time Calculations Target VDS Definition	
	Image: Constant of the second seco	
	Travel Time Calculations Target VDS Definition Segment Travel Time Calculations: (0 - 10) mph	
	Maximum segment speed used: 75 (55 - 90) mp Section Travel Time Calculations:	h
	Maximum section speed used: Data Aggregation Calculations: Number of 30 sec polls of data to aggregate for Travel Time data: 10 (2 - 20) Percentage of "good" samples to compute an average sample speed: [.5 (0.3 - 0.9)	
	Minimum value of Station Status (number of good lanes / total lanes) [.2] (0.1 - 0.8) for the station data to be included: [.1] (1 - 10) min	
	Rounding Table Calculations: (0, 5, 10, or 15) Calculated travel time is rounded up to the specified interval. 0 - 14 mins: 0 45 - 59 mins: 5 90 - 104 mins: 10	
	15 - 29 mins: U 60 - 74 mins: 5 105 - 119 mins: 10 30 - 44 mins: 0 75 - 89 mins: 5 120 + mins: 15	
Applet started.	Revert Save Dismiss	

Caltrans

Agenda

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Slide # 104

Caltrans

RIITS



Slide 🏄 start

Caltrans Freeway Data Set

Freeway Congestion Data:

- o Route
- o Cross street
- o Direction
- o Lane Count
- o ID
- o Geo-location (lat/long)
- o Occupancy Value (average of all mixed-flow lanes)
- o Volume Value (average of all mixed-flow lanes)
- o Speed Value (average of all mixed-flow lanes)
- o Speed Value (HOV lane)

Freeway Changeable Message Sign Data:

- o Route
- o Cross Street
- o ID
- o Geo-location (lat/long)
- o Display Content
- o Operational Status
- o Travel Times



Caltrans Freeway Data Set

Event Data:

- o ID
- o Route
- o Cross Street 1
- o Cross Street 2
- o Direction
- o City
- o Event Type
- o Vehicle Type
- o Vehicle Count
- o Injury Level
- o Contact Name
- o Contact Phone Number
- o Event Responders (highway patrol, county fire, hazmat, etc.)
- o Severity
- o Start Date
- o Start Time
- o Clear Date
- o Clear Time
- o Event Status

Freeway CCTV Data:

- o ID
- o Route
- o Cross Street
- o Geo-location (lat/long)
- o Snapshot image file name
- o Streaming Video



Current Information Service Providers

- ClearChannel (Airwatch)
- Eeminder
- Fox-TV
- Inrix
- KABC-TV
- KKTV Fox-11
- KCOP UPN-13
- Mobility Technologies (traffic.com)

- Jaytu Technolgies (sigalert.com)
- Traveler Advisory News Network
- TrafficGauge, Inc.
- Westwood One



CCTV to Cell Phones

3rd Dimension (<u>www.freetrafficcams.com</u>)





Slide # 109

Coming Soon

- Work Zone TMS Features
- Dynamic Lane Management



Slide # 110

Variable Speed Limit Signing

When variable speed limit signs such as this are used to alert motorists to slowed or stopped traffic, the incidence of rear-end collisions occurring in work zones is reduced.









Dynamic Lane Management



Caltrans

Dynamic Lane Management



Questions



Slide # 114