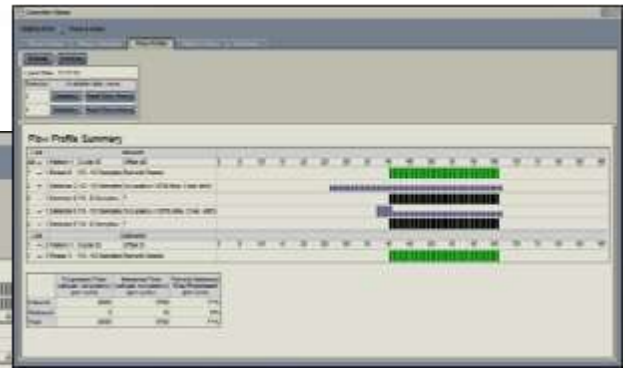
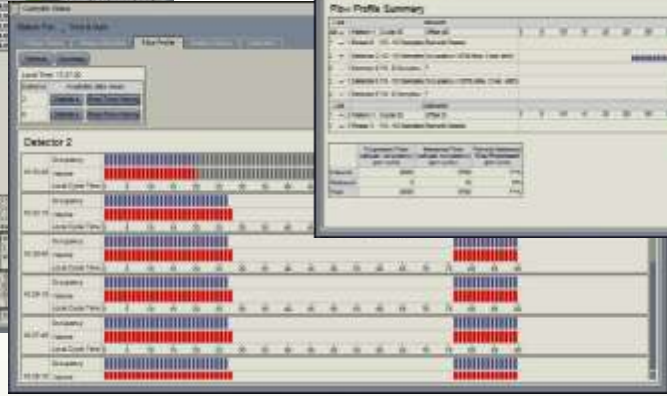


# ACS LITE

## Overview

ID	Name	LAM	Status	Latitude	Longitude	Altitude	Heading	Speed	Course	Time
1	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
2	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
3	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
4	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
5	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
6	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
7	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
8	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
9	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
10	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
11	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
12	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
13	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
14	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
15	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
16	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
17	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
18	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
19	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
20	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0

ID	Name	LAM	Status	Latitude	Longitude	Altitude	Heading	Speed	Course	Time
1	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
2	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
3	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
4	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
5	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
6	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
7	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
8	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
9	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
10	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
11	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
12	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
13	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
14	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
15	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
16	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
17	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
18	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
19	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0
20	100-1000 & Main	100	OK	37 30 00	122 45 00	0	0	0	0	0



# ACS LITE

## Outline

- *ACS Lite* Overview
- Detection Guidelines
- Getting Started
- Considerations
- Phase II Research
- Early Deployments



**ACS**LITE

# Overview



**ECONOLITE**

**Safetran**

**aegis**  
ITS

**California**  
**Chassis**



**ECONOLITE**  
Group, Inc.

# Why Adaptive?

- Fixed plan (TOD) systems don't respond well to traffic surges and unpredictable demands
- Limited resources lead to signals being retimed after long periods (3-5 years)
  - Outdated timing plans become inefficient due to changes in traffic demands or patterns
- Lack of ability to expand road networks to deal with increasing congestion



The image shows the cover of the 'National Traffic Signal Report Card 2007'. It features a blue background with a yellow horizontal band at the top and bottom. The title 'National Traffic Signal Report Card' is in white and blue, with '2007' in white. Below the title, there is a table of categories and their corresponding grades. The overall grade is 'D'.

Category	Grade
Management	D-
Signal Operation at Individual Intersections	C
Signal Operation in Coordinated Systems	D
Signal Timing Practices	C-
Traffic Monitoring and Data Collection	F
Maintenance	C-
<b>OVERALL</b>	<b>D</b>



# ACS Lite - Background



- FHWA Funded Research project (2002-2007)
  - Research, Development and Technology Traffic Operations Program
- Siemens was the prime contractor with support from a project team

# SIEMENS

The logo for ECONOLITE CONTROL PRODUCTS, INC., featuring a globe icon to the left of the text "ECONOLITE" and "CONTROL PRODUCTS, INC." below it.

The logo for McCain, featuring a stylized sunburst icon to the left of the text "McCain".

The logo for The University of Arizona, Tucson Arizona, featuring the text "THE UNIVERSITY OF ARIZONA." and "TUCSON ARIZONA." with a stylized "A" above the text.

The logo for Purdue University, featuring the text "PURDUE UNIVERSITY" with a stylized "P" above the text.

The logo for ITT Industries, featuring a stylized diamond icon to the left of the text "ITT Industries" and "Engineered for life" below it.

The logo for PEEK, featuring a stylized globe icon to the left of the text "PEEK".



The logo for ECONOLITE, featuring a globe icon to the left of the text "ECONOLITE".

The logo for Safetran, featuring the text "Safetran" in a stylized font.

The logo for aegis ITS, featuring the text "aegis" and "ITS" in a stylized font.

The logo for California Chassis, featuring the text "California Chassis" in a stylized font.

The logo for ECONOLITE Group, Inc., featuring a globe icon to the left of the text "ECONOLITE Group, Inc.".

# FHWA Goals for ACS Lite

- Advance adaptive control from state-of-the-art technology to state-of-the-practice technology that can be widely deployed
- Leverage existing infrastructure
  - Standard US-style actuated controllers and logic (rings, phases, splits, barriers, gap-out/extension, etc.)
  - Leverage existing stop bar and advance detection
  - Leverage existing closed-loop system communications - once per minute polling cycle
  - “Retro-fit” with major US signal system vendors
- Build a cost effective, easily deployable adaptive system
  - Most adaptive systems are complex to set up and require calibration to get good performance
- Make use of emerging NTCIP standards
- Focus on arterial networks



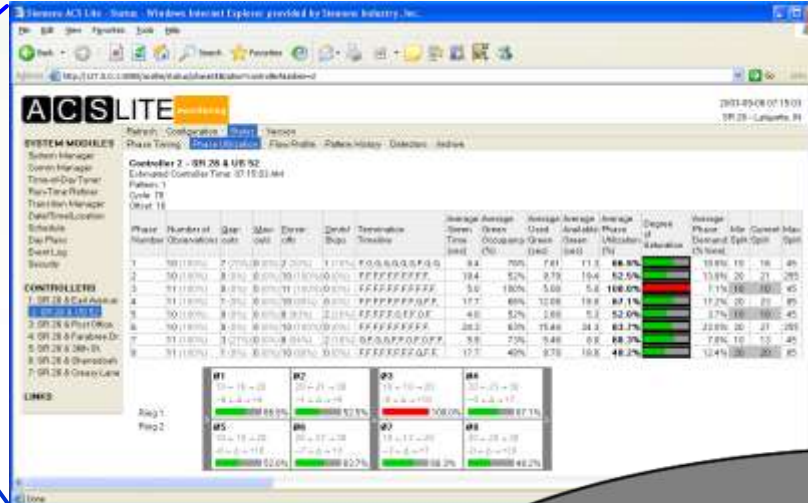
# ACS Lite Architecture

- Uses existing TOD or TR plan in effect and optimizes the splits and offsets based on current traffic demand - Helps fixed timing plans perform better
  - Cycle length remains constant but can change if the command source changes plan to one with a different cycle length
  - Small incremental changes made to split and offset (2-5 seconds per adjustment)
  - Phase status and detector data gathered once per minute
- Splits adjusted based on phase utilization
  - Unused split re-allocated to phases needing split
- Offset adjusted based on green arrival or flow profile
  - Offset adjusted to optimize vehicles arriving on green



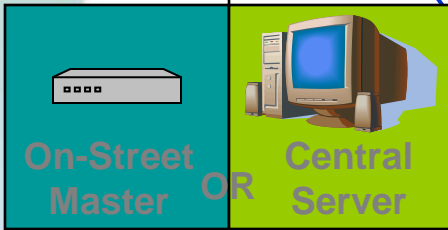
# ACS Lite System

Remote Laptop

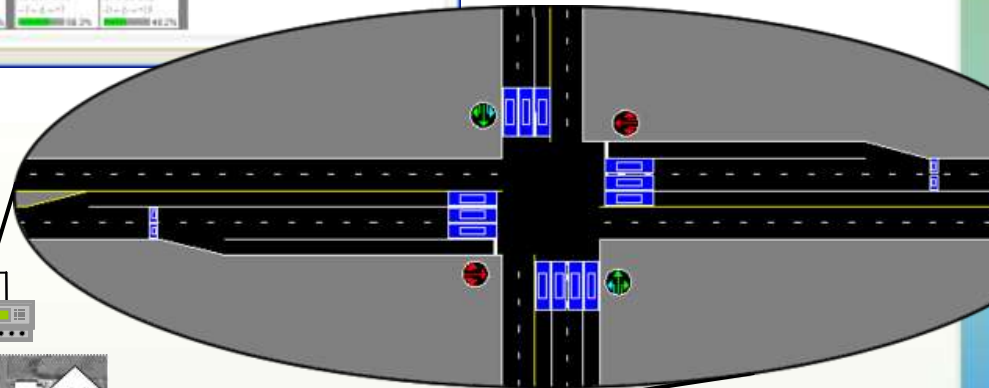


User Interface

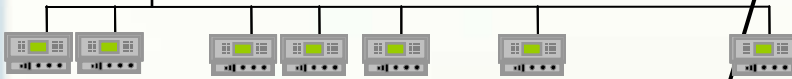
ACS Lite



Vehicle Detectors



Local Controllers





# Comparative Results

SYSTEM	BENEFITS (Percent change in)			INITIAL CAPITAL COST (per intersection)*
	Travel Time	Delays	Stops	
<i>ACS-Lite</i>	-12% to +7%	-38% to +2%	-35% to -28%	
<b>OPAC</b>	-26% to +10%	-	-55% to 0%	\$20,000 to \$50,000
<b>RHODES</b>	-7% to +4%	-19% to -2%	-	\$30,000 to \$50,000
<b>SCATS</b>	-20% to 0%	-19% to +3%	-24% to +5%	\$25,000 to \$30,000
<b>SCOOT</b>	-29% to -5%	-28% to -2%	-32% to -17%	\$30,000 to \$60,000

Based on FHWA data source – City of Starke, FL

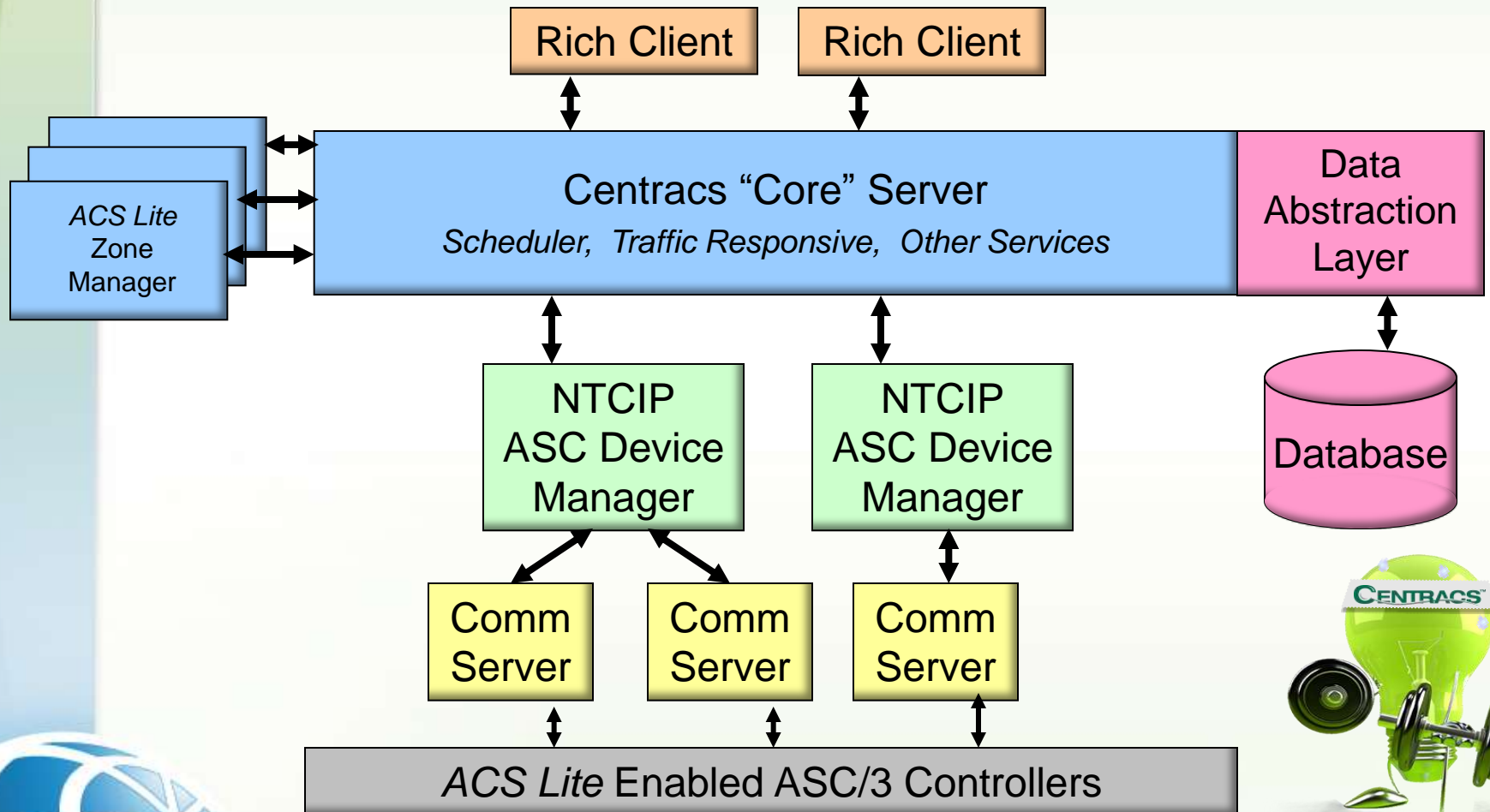


# ACS Lite In Centrac

- Eliminate need for on-street master by integrating *ACS Lite* algorithms into Centrac
- Leverages *Centrac* Communications/Comserver, Scheduler, Configuration tools, Alert Management, monitoring and other features
  - *Centrac* can run a section in TOD/Traffic Responsive or *ACS Lite* or switch on a TOD basis
  - Multiple *ACS Lite* solutions can be defined over the same corridor, using different combinations of intersections if needed. Up to 32 intersections can be supported per *ACS Lite* Zone
- Centralized database
  - Persists Controller and Detector Configurations
  - Data collection for other uses in Centrac



# Centracs + ACS Lite



# ACS Lite Split Tuning Process

## Splits adjusted based on phase utilization

- Phase Utilization determined from stop bar detector data
- Unused split re-allocated to phases needing split
- Step 1 - Collect occupancy data
- Step 2 - Correlate data to signal phasing
- Step 3 - Perform analysis to determine phase utilization
- Step 4 - Implement phase split adjustments to attempt to balance degree of saturation amongst all phases



# ACS Lite Offset Tuning Process

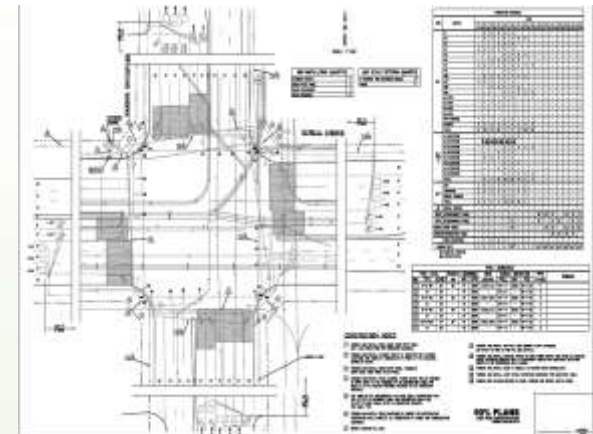
Offset adjusted based on green arrival or flow profile

- Flow Profile developed from advance detector data
  - Offset adjusted to optimize vehicles arriving on green
- 
- Step 1 - Collect data from advance detectors on coordinated approaches
  - Step 2 - Develop a Statistical Flow Profile correlated to the phase state
  - Step 3 - Perform analysis to capture the most arriving flow during the green interval
  - Step 4 - Implement offset adjustment



# ACSLITE

## Detection Guidelines

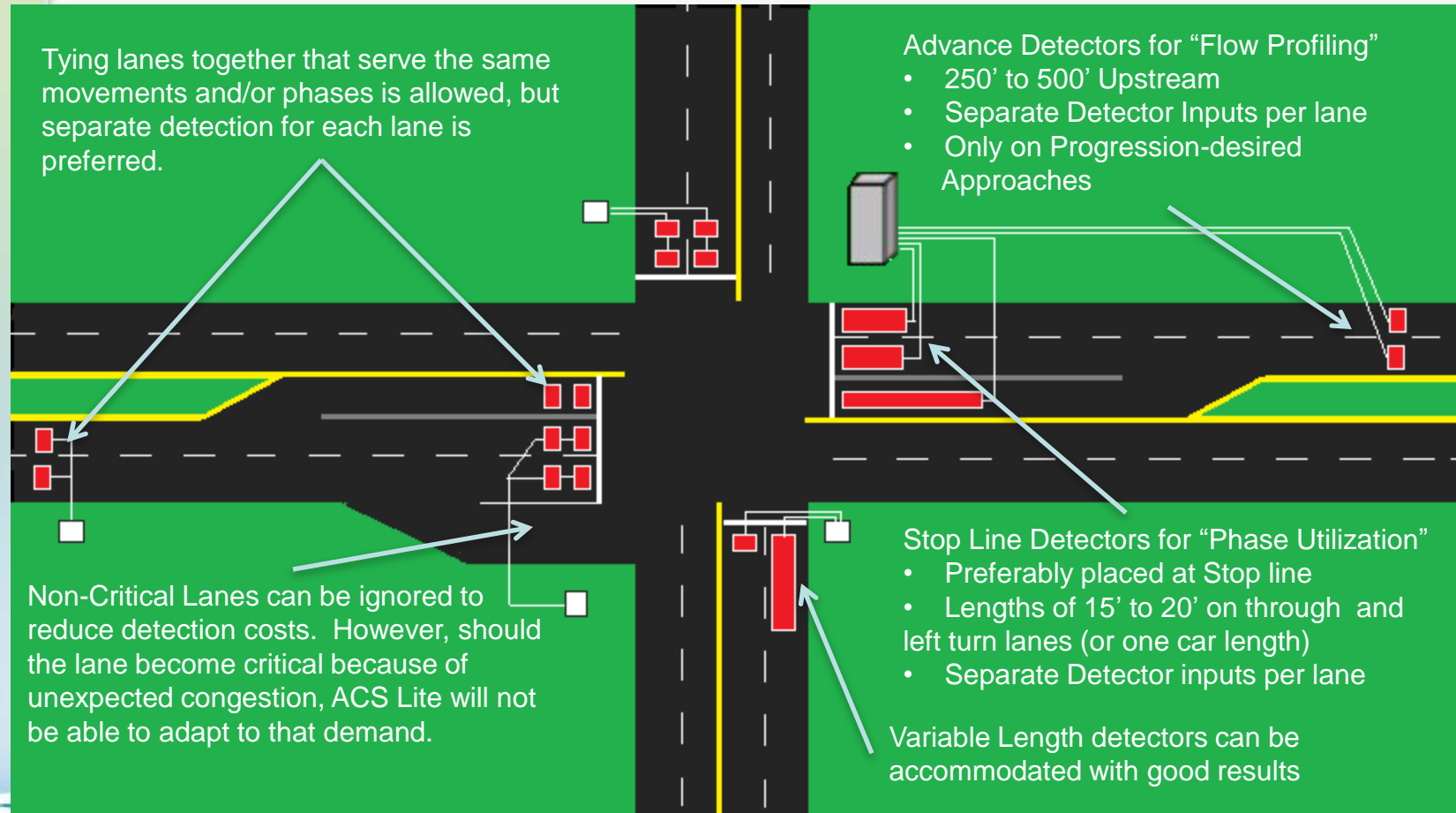


# ACS Lite Detection Guidelines

- Detector delays or extensions should be configured in the controller not in the detector
  - ACS Lite needs to know all timing that can affect phase duration
- Ideal detection zone sizes
  - Advance - 6x6
  - Stop Bar - 15 to 20 feet on through or left turn lanes (or about one car length)



# ACS Lite Detection Configurations





# ACS LITE

What's Needed  
To Get Started



ECONOLITE

Safetran

aegis  
ITS

California  
Chassis

ECONOLITE  
Group, Inc.

# Information Needed

Successful *ACS Lite* deployments are dependent on having upfront information

- System Information
  - Location, arterials, intersections
  - Controller ID, phasing, intersection to intersection spacing, and posted/prevaling speeds
  - Links and Upstream-Downstream relationship of intersections
    - Traffic always flows from the Upstream intersection towards the Downstream intersection (traffic always flows downstream)
  - Intersection layout, including number of lanes on each and movements allowed per lane
  - Major and Cross street movements and phase assignment



# Information Needed

- Controller timing and configuration
  - Note any special operation, phasing or advanced features being used
    - Protected-Permissive LT, Overlaps on major movements, preemption-EVP-TSP
- Detection details
  - Detector number (at the controller) and use (Phase Utilization or Flow Profile)
  - Lane assignment
    - Or Lanes if multilane detectors are used
  - Stop Bar Detector length
  - Advance detector distance from stop bar





Monongalia

Star City

Granville

(Future)

(New)

Westover

Image © 2010 DigitalGlobe  
Image © 2010 USA Farm Service Agency

© 2010 Google

39°39'18.73" N 79°55'14.34" W elev. 0 ft

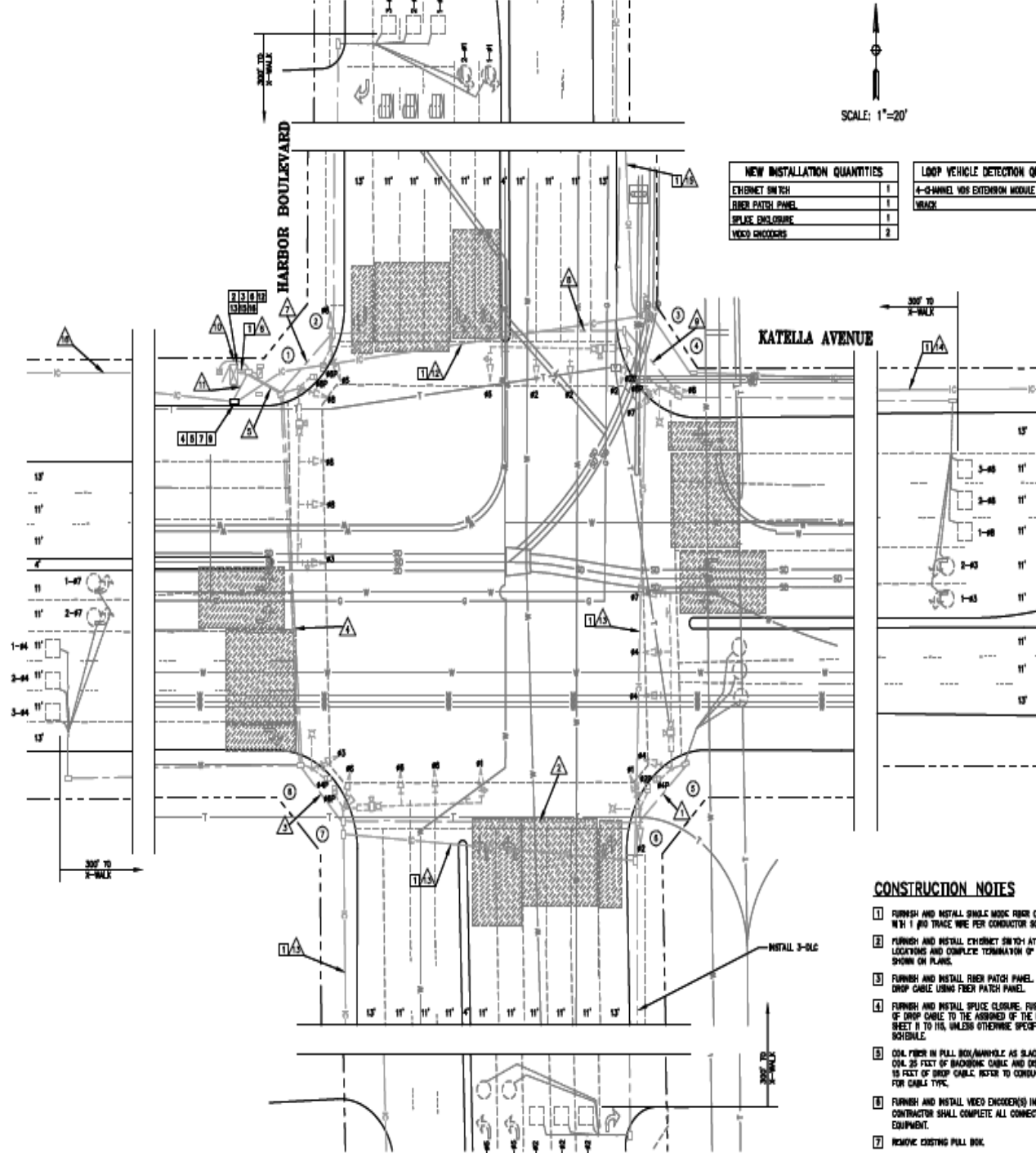
© 2009 Google

Eye alt 22995 ft

Imagery Dates: Sep 22, 2002 - Aug 25, 2007



SCALE: 1"=20'



NEW INSTALLATION QUANTITIES	
ETHERNET SWITCH	1
FIBER PATCH PANEL	1
SPlice ENCLOSURE	1
VIDEO ENCODERS	2

LOOP VEHICLE DETECTION QUANTITIES	
4-CHANNEL VDS EXTENSION MODULE	3
TRACK	1

CIRCUIT	CONDUCTOR SCHEDULE															
	RUN															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
#1	-	3	3	3	3	3	3	3	3	-	-	-	-	-	-	-
#2	-	3	3	3	3	3	3	3	3	-	-	-	-	-	-	-
#3	-	-	-	-	-	-	-	-	-	3	3	3	3	3	3	3
#4	3	3	3	3	3	3	3	3	3	-	-	-	-	-	-	-
#5	-	-	-	-	-	8	8	8	8	3	-	-	-	-	-	-
#6	-	-	-	-	-	3	3	3	3	3	-	-	-	-	-	-
#7	3	3	3	3	3	3	3	3	3	3	3	-	-	-	-	-
#8	-	-	-	-	-	3	3	3	3	-	-	-	-	-	-	-
#9	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-
#10	-	2	2	2	2	2	2	2	2	2	-	-	-	-	-	-
#11	-	-	-	-	-	4	4	4	4	2	2	-	-	-	-	-
#12	1	1	1	1	1	2	2	2	2	1	1	-	-	-	-	-
#13	-	1	1	1	1	1	1	1	1	-	-	-	-	-	-	-
#14	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-
#15	-	-	-	-	-	1	1	1	1	1	1	-	-	-	-	-
#16	1	1	1	1	1	2	2	2	2	1	1	-	-	-	-	-
#17	1	1	1	1	1	2	2	2	2	1	1	-	-	-	-	-
#18	3	3	3	3	3	6	6	6	6	3	3	-	-	-	-	-
#19	3	3	3	3	3	6	6	6	6	3	3	-	-	-	-	-
TOTAL	13	23	23	23	23	71	71	71	71	22	10	-	-	-	-	-

CIRCUIT	POLE SCHEDULE															
	REMARK															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
#1 DETECTOR	-	-	-	-	-	2	2	2	2	-	-	-	-	-	-	-
#2 DETECTOR	-	-	-	-	-	2	2	2	2	2	-	-	-	-	-	-
#3 DETECTOR	-	-	-	-	-	2	2	2	2	2	-	-	-	-	-	-
#4 DETECTOR	-	-	-	-	-	3	3	3	3	-	-	-	-	-	-	-
#5 DETECTOR	-	-	-	-	-	3	3	3	3	-	-	-	-	-	-	-
#6 DETECTOR	-	-	-	-	-	3	3	3	3	-	-	-	-	-	-	-
#7 DETECTOR	-	-	-	-	-	2	2	2	2	-	-	-	-	-	-	-
#8 DETECTOR	-	-	-	-	-	3	3	3	3	3	-	-	-	-	-	-
#9 DETECTOR	-	-	-	-	-	3	3	3	3	3	-	-	-	-	-	-
TOTAL	-	5	5	5	5	20	20	20	20	10	5	-	-	-	-	-
#20	2	2	2	2	2	4	4	4	4	2	2	-	-	-	-	-
LUMINAIRE	2	2	2	2	2	4	4	4	4	2	2	-	-	-	-	-
SIGNAL COMMON	1	1	1	1	1	2	2	2	2	1	1	-	-	-	-	-
TOTAL	5	5	5	5	5	10	10	10	10	5	-	-	-	-	-	-
#21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20PR INTERCONNECT CABLE	-	-	-	-	-	-	-	-	-	2E	2E	1E	1E	1E	1E	1E
10PR INTERCONNECT CABLE	-	-	-	-	-	-	-	-	-	1E	-	-	1E	1E	1E	1E
30MFD DROP CABLE	-	-	-	-	-	1N	-	-	-	1N	2K	2K	2K	2K	2K	2K
30MFD DISTRIBUTION CABLE	-	-	-	-	-	-	-	-	-	-	3N	1N	1N	1N	-	-
VIDEO DETECTION	1	1	2	2	4	1	1	1	1	-	-	-	-	-	-	-
CONDUIT SIZE	E	E	E	E	E	2.5"	E	E	E	2.5"	2.5"	2.5"	2.5"	2.5"	2.5"	2.5"

NO.	TYPE	HEIGHT	MA	MA	RIPS	ISNS	SIGNAL	LUMINAIRE	POLE	MA	PEE	PFB	PHASE	REMARK
1	01-5-80	30'	80'	15'	200W	Katella Ave	SP-1-T	3MAS	SP-1-CS	8				
2	15	30'	-	15'	200W	-	SP-2-T	-	SP-1-CS	8				
3	01-5-80	30'	80'	15'	200W	Harbor Blvd	SP-1-T	3MAS	SP-1-CS	8				
4	15	30'	-	15'	200W	-	SP-2-T	-	SP-1-CS	2				
5	01-5-80	30'	80'	15'	200W	Katella Ave	SP-1-T	3MAS	SP-1-CS	2				
6	15	30'	-	15'	200W	-	SP-2-T	-	SP-1-CS	4				
7	CTCY POLE	40'	80'	15'	200W	Harbor Blvd	SP-1-T	3MAS	SP-1-CS	4				
8	15	30'	-	15'	200W	-	SP-1-T	-	SP-1-CS	8				

**CONSTRUCTION NOTES**

- FURNISH AND INSTALL SINGLE MODE FIBER OPTIC CABLE N x 1 (NO TRACE WIRE PER CONDUCTOR SCHEDULE).
- FURNISH AND INSTALL ETHERNET SWITCH-1 AT IDENTIFIED FIELD ELEMENT LOCATIONS AND COMPLETE TERMINATION OF POWER AT THE LOCATIONS SHOWN ON PLANS.
- FURNISH AND INSTALL FIBER PATCH PANEL TERMINATE DROP CABLE USING FIBER PATCH PANEL.
- FURNISH AND INSTALL SPlice ENCLOSURE. FURNISH SPlice TWO (2) STRANDS OF DROP CABLE TO THE ASSIGNED OF THE DISTRIBUTION CABLE PER SHEET # 110, UNLESS OTHERWISE SPECIFIED ON THE CONDUCTOR SCHEDULE.
- CON. FIBER IN PULL BOX/WHOLE AS SLACK CABLE. CONTRACTOR SHALL CON. 25 FEET OF BACKBONE CABLE AND DISTRIBUTION CABLE AND 15 FEET OF DROP CABLE. REFER TO CONDUCTOR SCHEDULE FOR CABLE TYPE.
- FURNISH AND INSTALL VIDEO ENCODER(S) IN CABINET PER SPECIFICATION. CONTRACTOR SHALL COMPLETE ALL CONNECTIONS TO POWER AND COMMUNICATION EQUIPMENT.
- REMOVE EXISTING PULL BOX.
- FURNISH AND INSTALL NEW PULL BOX NUMBER 8 WITH EXTENSION. SEE SHEET 10 AND 11 FOR PULL BOX DETAILS.
- FURNISH AND INSTALL WATTAGE TRACK 10 WITH POWER SUPPLY AND FOUR (4) WATTAGE CROSSE EXTENSION MODULES AND ALL NECESSARY CABLES FOR ADD SIGNAL DETECTION INPUTS TO THE CONTROLLER VIA D-PANEL.
- FURNISH AND INSTALL 2070-10 MODULE TO EXISTING 2070 CONTROLLERS.
- FURNISH AND INSTALL LOOP VEHICLE DETECTION EQUIPMENT PER QUANTITIES TABLE.
- REMOVE AND SALVAGE EXISTING D-PANEL. FURNISH AND INSTALL NEW D-PANEL.

**90% PLANS**  
NOT FOR CONSTRUCTION  
SUBMITTALS ONLY

# ACSLITE

## What You Need To Consider



ECONOLITE

Safetran

aegis  
ITS

California  
Chassis

ECONOLITE  
Group, Inc.

# ACS Lite Considerations

- Timing
  - *ACS Lite* starts from the existing coordination plans - good starting plans help
    - No benefit during free operation
    - Limited value where traffic is predictable and not expected to change - easily addressed by TOD
      - May be a rare case!
  - Mismatched clearance times
    - Clearance times in a concurrent group should be within one second. If the difference is greater than one second *ACS Lite* may assume a failure and stop adjustments.
    - Adjust clearance times or turn off split adjustments for the affected concurrent group



# ACS Lite Considerations

- Timing (continued)
  - Cycle lengths across the *ACS Lite* Zone must be the same for the plan in effect
    - Sub-Groups are not supported - all intersections in the *ACS Lite* Zone should run the same TOD plans and schedule
    - Double cycling can be supported at low demand intersections but offset adjustments cannot be made
- Phasing
  - Currently only two ring operation is supported
  - Overlaps - *ACS Lite* is only aware of phases - problems may occur if a major movement is driven by an overlap
    - Watch out for interchanges, T-intersections, FLTA
    - Texas Diamond NOT supported



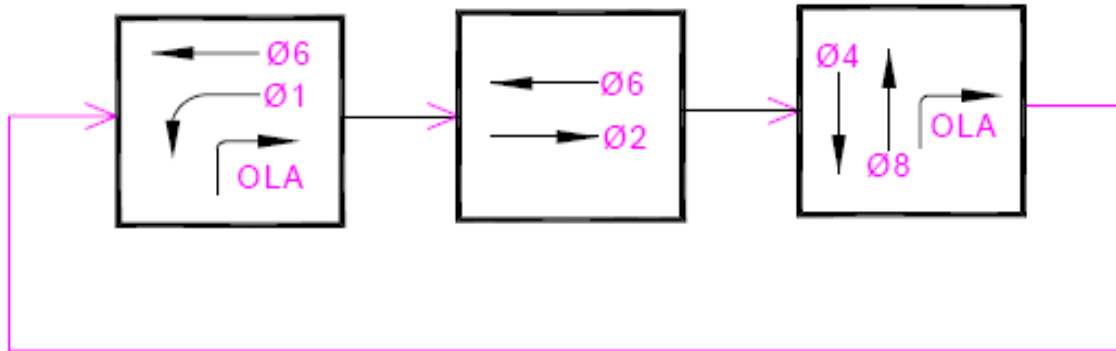


# ACS Lite Considerations

- Phasing (continued)
  - Split adjustments during permitted movements can be challenging
- Advanced Controller Features
  - Some advanced controller features aren't supported
    - Such as Early/Advanced Walk, Ped Clear Thru Yel, Ped Clr Extension, Reservice during coordination
  - Controller features that attempt to modify splits might conflict with *ASC Lite*
    - Includes TSP, Unused Split Allocation, Coordinated Phase Split Extension

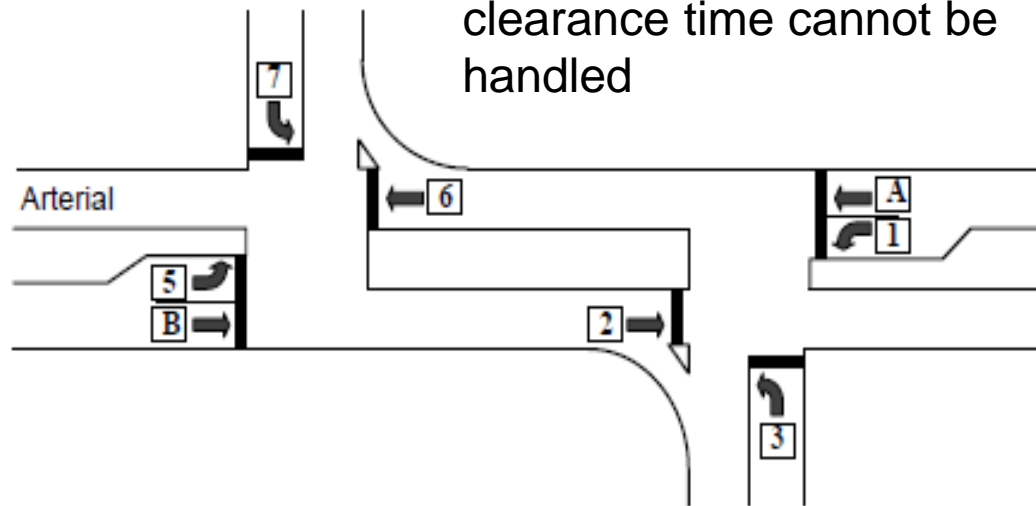


Simple overlaps  
can be handled



$$OLA = 1 + 8$$

Overlaps that serve as a major movement or have their own clearance time cannot be handled



$$\text{Overlap A} = 1 + 2 \quad \text{B} = 5 + 6$$



# ACS Lite Considerations

- Communications
  - Only Ethernet is supported with *Centracs*
    - Serial data rates are too slow to support both *Centracs* and *ACS Lite* data packet needs
    - No specific *ACS Lite* communications setup required in *Centracs*
  - Always get communicates working under normal *Centracs* control before attempting to bring *ACS Lite* online
- Controllers
  - Only ASC/3s or 2070s running ASC/3 2070 software are currently supported. Must be updated to latest release. License key required.
    - 2070s must be compliant to TEES 2002 or later



# ACS Lite Considerations

- Expectations
  - Successful adaptive system deployments are dependent on meeting expectations
  - Need to manage expectations up front - agencies often have unreasonable expectations based on misleading information they have heard
  - Avoid hype and over claiming *ACS Lite* improvements - customers appreciate honesty



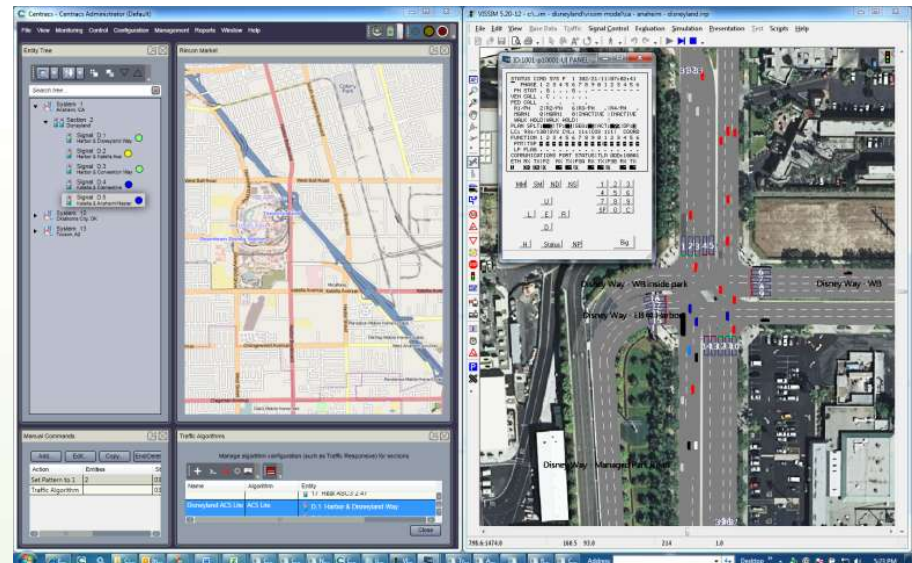
# ACSLITE

## Phase II Research

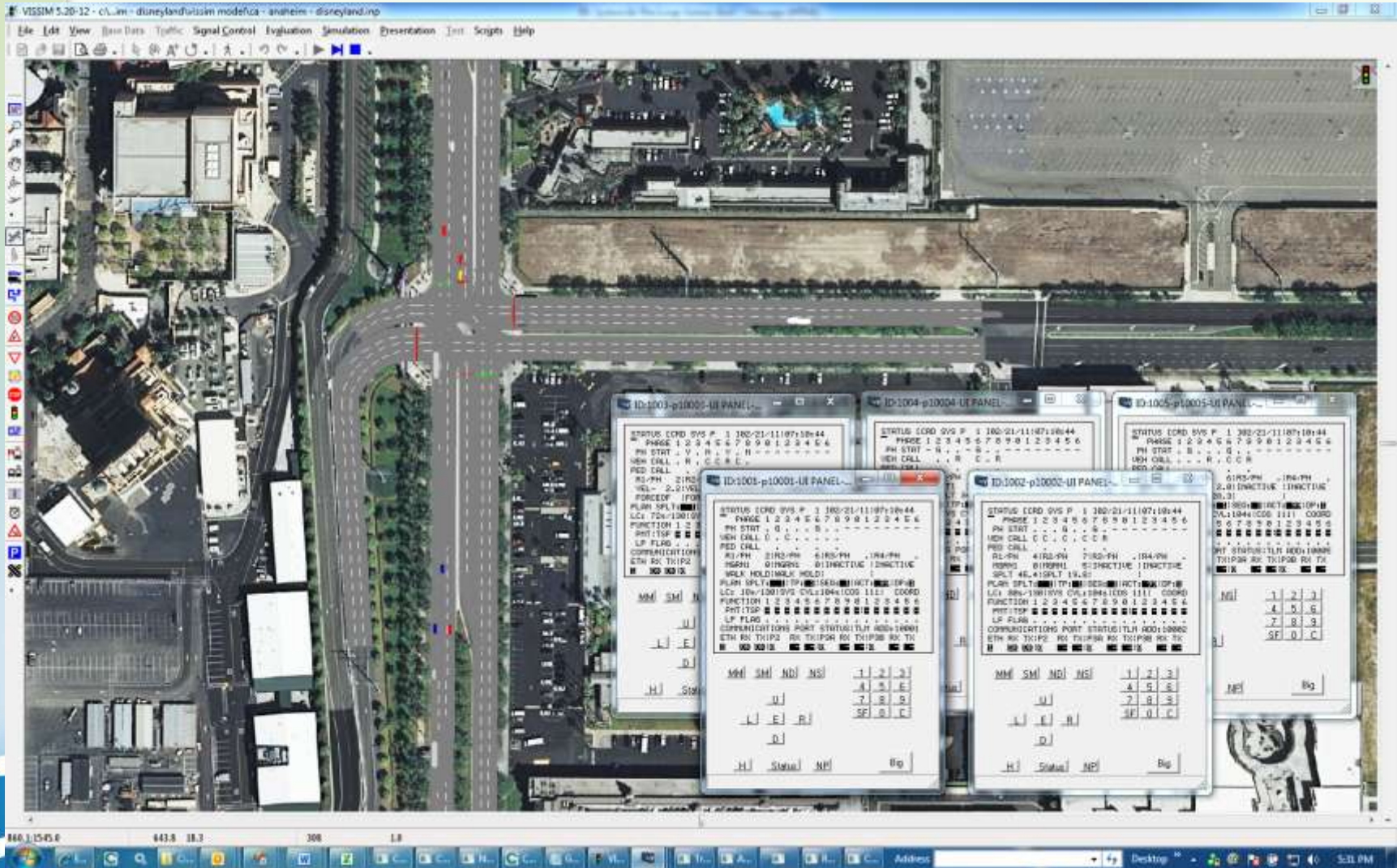


# System-In-The-Loop

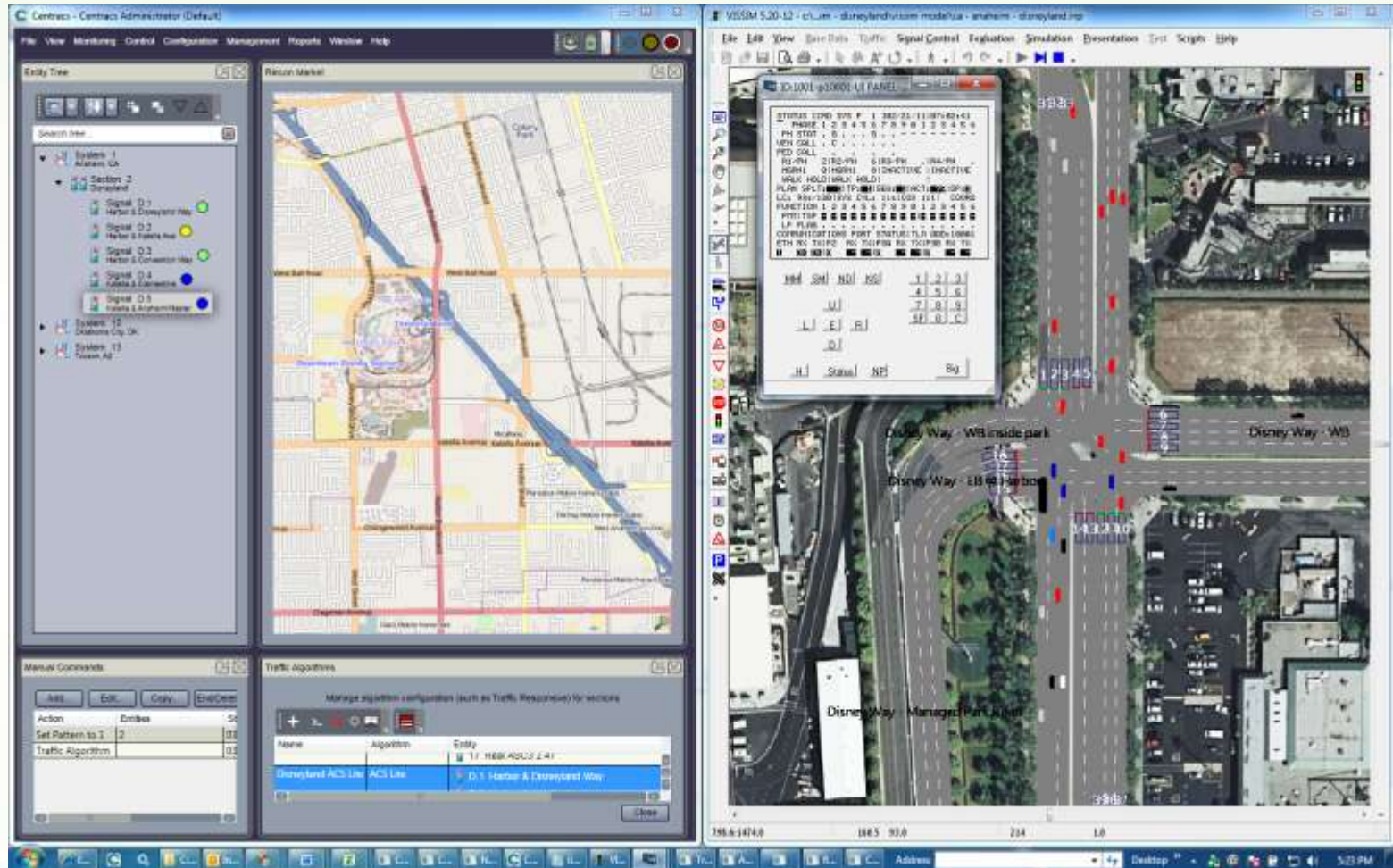
- System simulation before deployment
  - Allows validating adaptive performance and expectations prior to deployment
  - System-In-The-Loop simulation
    - VISSIM
    - Centrac - *ACS Lite*
    - ASC/3 SIL



# VISSIM with Software In The Loop Controllers

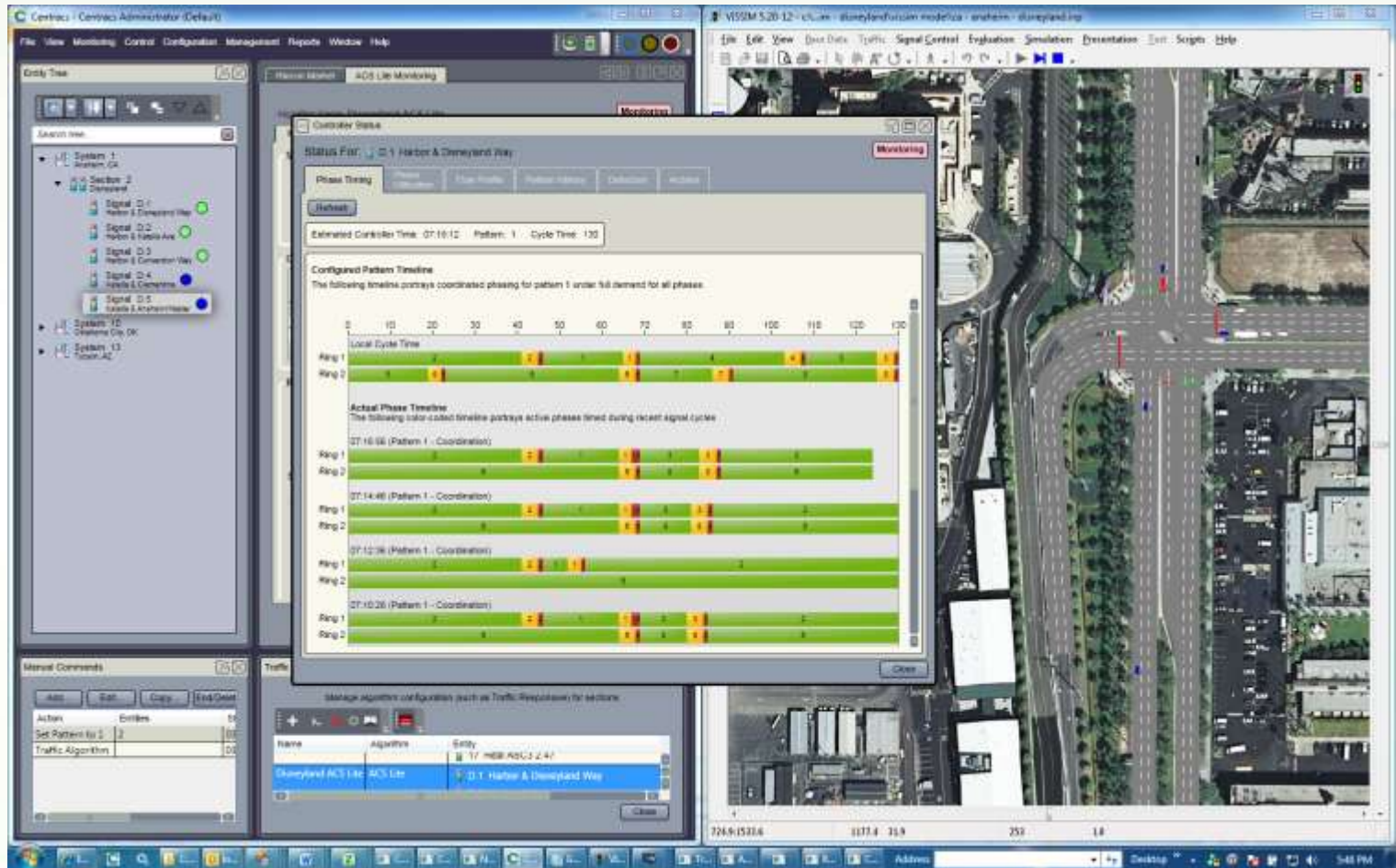


# Centracs Fully Integrated with VISSIM Controllers





# ACS Lite Status During Simulation Run



# Phase II *ASC Lite* Research

- Develop capability to adjust cycle lengths as warranted by changing traffic flow
  - In negotiation with FHWA to complete this work at Econolite
- During a detector fault, allow the affected phase to revert to its historical activity based on time-of-day
  - Current version has limited response to detector failures and depends on local detector diagnostics
- Develop/document a means to allow a daily log of adaptive timing adjustments and data to be automatically backed up to a central server each night



# Phase II ACS Lite Research

- Hide more advanced user interface display data within optional/alternative "advanced" screens, to provide simplified "basic" screens by default.
- Provide an option to display split durations as a percentage of the cycle length in addition to seconds.



**ACS**LITE

# Early Projects



**ECONOLITE**

**Safetran**

**aeGIS**  
ITS

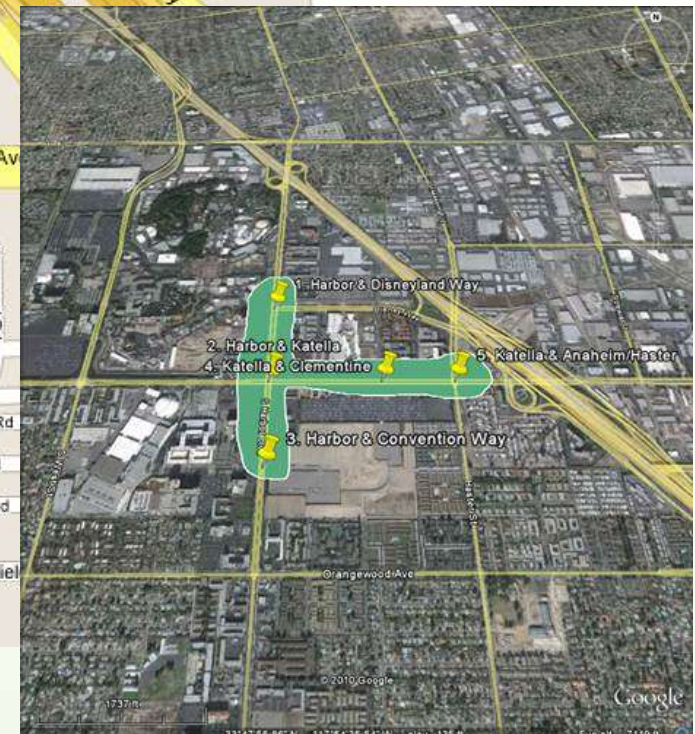
**California**  
**Chassis**



**ECONOLITE**  
Group, Inc.

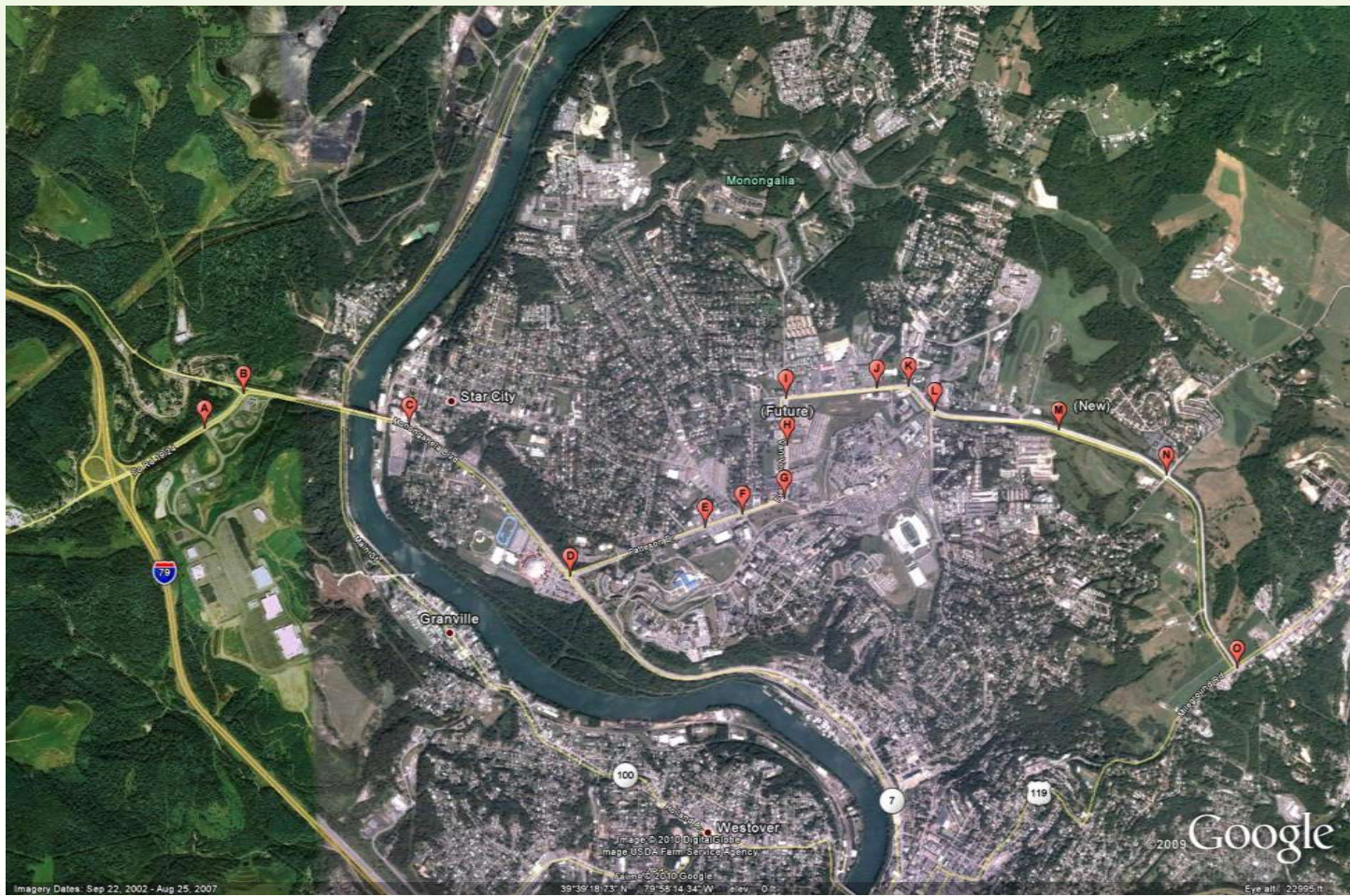


Anaheim  
5 Intersections  
Harbor & Katella  
near  
Disneyland



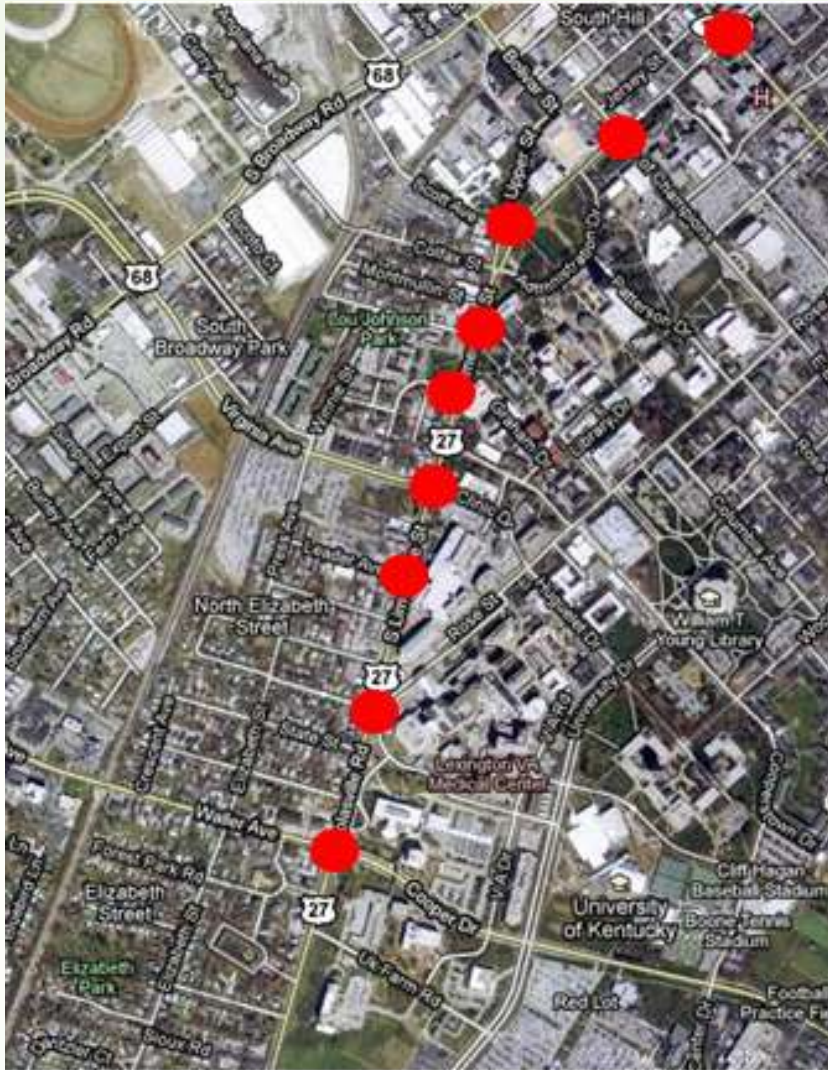
FHWA ACS Lite Evaluation Site





## Morgantown, West Virginia 15 Intersections around West Virginia University





Lexington, KY  
9 Intersections  
Nicholasville Rd./US 27  
near  
University of Kentucky



# Questions





# ACS LITE

## Configuring *ACS Lite* in *Centracs*



# Setup ACS Lite Zone

Algorithm Configuration

Select algorithm type and entity to run the algorithm on

Name:

Algorithm: ACS Lite

Entities:

Traffic Algorithms

Manage algorithm configuration (such as Traffic Responsive) for sections

Name	Algorithm	Entity	Configuration State	Enabled
Zayed bin Sultan St. City Center	ACS Lite	3 IP 109 Shake Salama Jn.	Not Configured	No
		4 IP 110 Al Ain Flyover Jn.		
		5 IP112 Al Murabba Jn.		

Close



# ACS Lite Controller Settings

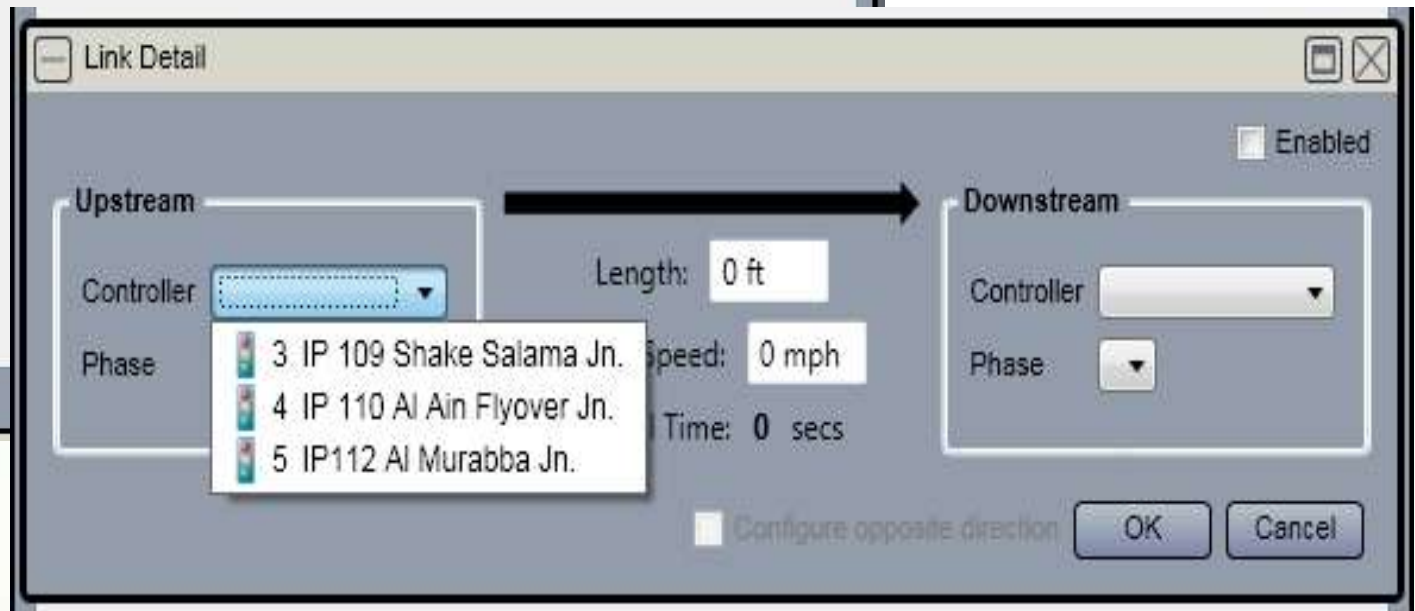
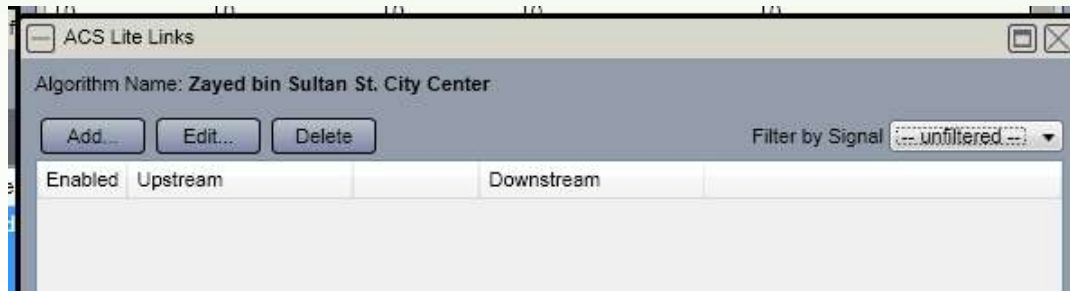
The screenshot displays the ACS Lite Controller Settings application with three overlapping windows:

- ACS Lite Controller Settings (Main):**
  - Algorithm Name: Zayed bin Sultan St. City Center
  - Algorithm Enabled:  Runtime Refiner... Links...
  - Signal Controller: 3
  - Configuration | Detectors
  - Options:
    - Controller Enabled
    - Adjust Offset
    - Oversize Peds
  - Split Adjustment:
    - Phase 1 2 3 4
    - Timing
    - Biasing
  - Upload:
    - Upload Cancel
    - Last Sync Time: 7/21/2010 3:24:24 PM
    - Db Sync Sta
    - Db Version
- ACS Lite Controller Settings (Detectors):**
  - Signal Controller: Third & Main
  - Enabled:
  - Configuration | Detectors
  - Detector Configuration:
    - Download Detector configuration to controller:
      - Download:
      - Last Result: Last Time:
      - Download: DownloadResult LastDownloadTime
      - Sync: False LastSyncTime
  - Table:

Detector Number	Description	Call Phase	Phase Utilization	Flow Profiling	Direction 1 Flow	Direction
1		1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2		2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3		3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4		4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5		5	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6		6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7		7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8		8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9		9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10		10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
  - Unit Coord Parameters | Patterns | Phases | Phase Compatibility | Ring Sequence
  - Unit Coordination Parameters:
    - Pattern Table Type: Patterns
    - Transition Mode: Smooth
    - Maximum Mode: MaxInhibit
    - Force Mode: Floating
    - Offset Reference Point: StartLeadGreen
- ACS Lite Runtime Refiner:**
  - Algorithm Name: Zayed bin Sultan St. City C
  - Runtime Refiner Settings:
    - Max Offset Increment (secs): 2
    - Max Offset Deviation (secs): 10
    - Max Split Increment (secs): 4
    - Max Split Deviation (secs): 10
    - Adjustment Interval (mins): 5
    - Min Offset Duration (secs): 15
  - OK Cancel



# ACS Lite Link Setup



# Schedule ACS Lite

New Schedule Entry

Entry Name: City Center ACS Lite

Action

Traffic Algorithm:  Enabled  Run Conditionally

Algorithm: Zayed bin Sultan St. City

Type: ACS Lite

Operational Mode:  Control  Analysis  Monitoring

Signals: 3 IP 109 Shake Salama Jn., 4 IP 110 Al Ain Flyover Jn., 5 IP112 Al Murabba Jn.

Priority:  Normal  High

Range: Start: 08/13/2010 End:  No end  Repeat every year

Times: Start: 10:33 End: 11:03

Recurrence

None  Daily  Weekly  Monthly  Yearly

Recurs every week on the following days:  Sunday  Monday  Tuesday  Wednesday  Thursday  Friday  Saturday

All Days Weekdays Weekends Clear All

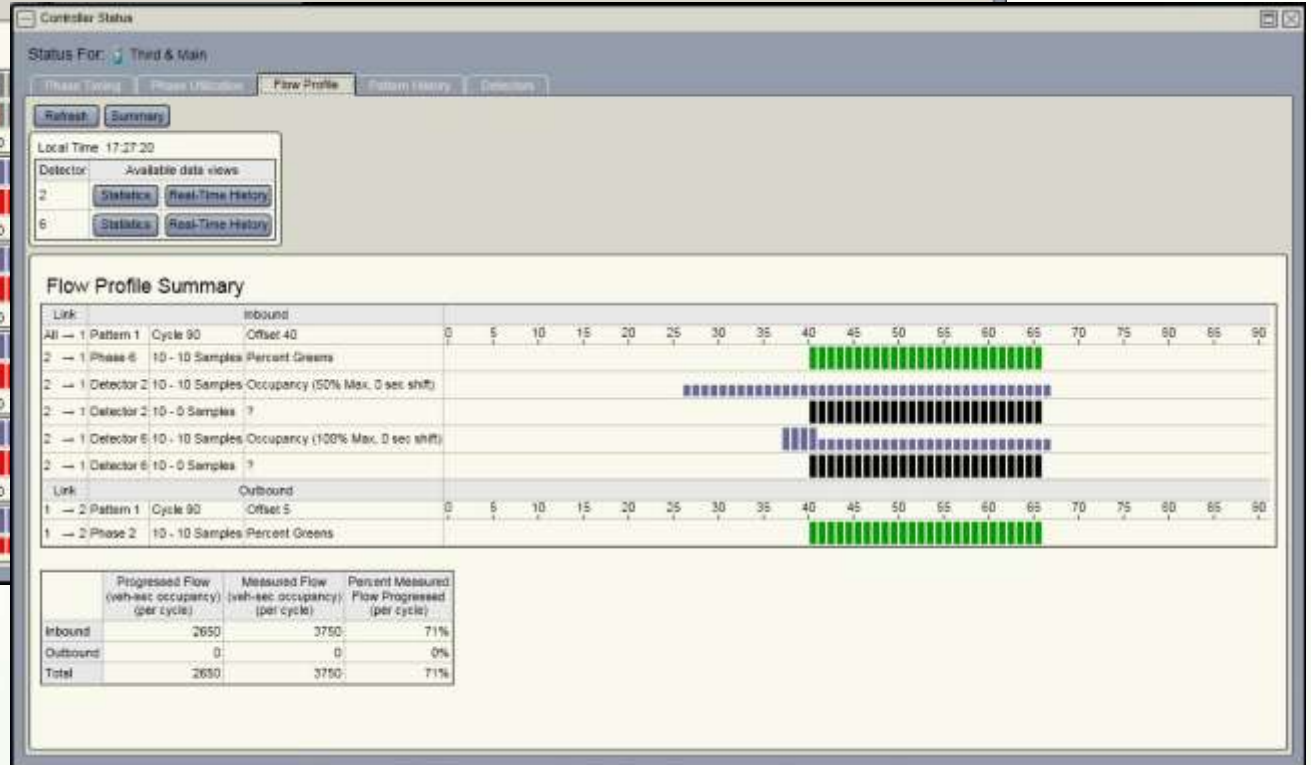
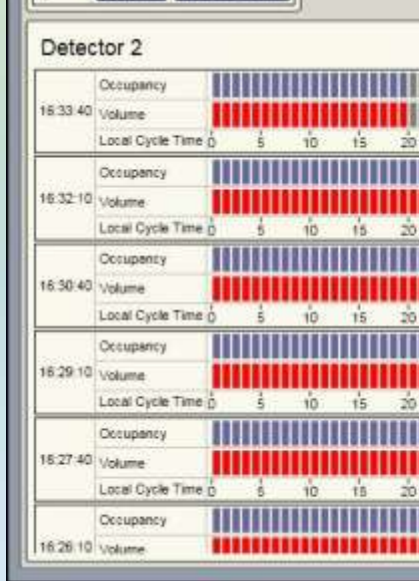
Recurs every week, running continuously throughout the following period:  Start Day: Sunday End Day: Saturday

Exceptions

OK Cancel Help



# Controller Status



# Controller Status

Phase Timing | **Phase Utilization** | Flow Profile | Pattern History | Detectors

Refresh

Estimated Controller Time: 17:27:20 Pattern: 1

Phase Number	Number of Observations	Gap-outs	Max-outs	Force-offs	Omit Skips	Termination Timeline	Average Green Time (sec)	Average Green Occupancy (%)	Average Used Green (sec)	Average Available Green (sec)	Average Phase Utilization (%)	Degree of Saturation	Average Phase Demand (% time)	Min Split	Current Split	Max Split
1	9 (100%)	0	0	0	9 (100%)	0,0,0,0,0,0,0,0,0	0.0	0%	0.0	5.0	0.0%	0.0	0.0%	10	10	255
2	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	41.0	48%	0.0	5.0	0.0%	0.0	10	10	255	
3	9 (100%)	9 (100%)	0	0	0	G,G,G,G,G,G,G,G	5.0	20%	0.0	5.0	0.0%	0.0	10	10	255	
4	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	32.0	48%	0.0	5.0	0.0%	0.0	10	10	255	
5	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	11.0	45%	0.0	5.0	0.0%	0.0	10	10	255	
6	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	26.0	51%	0.0	5.0	0.0%	0.0	10	10	255	
7	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	11.0	54%	0.0	5.0	0.0%	0.0	10	10	255	
8	9 (100%)	0	0	9 (100%)	0	F,F,F,F,F,F,F,F	26.0	48%	0.0	5.0	0.0%	0.0	10	10	255	

Ring	Q1	Q2	Q3	Q4
Ring 1	30 ← 15 → 21 -5 ← Δ → +6 43.0%	30 ← 30 → 41 -0 ← Δ → +11 9.0%	9 ← 15 → 20 -6 ← Δ → +5 9.0%	30 ← 30 → 41 -0 ← Δ → +11 48.0%
Ring 2	9 ← 15 → 21 -6 ← Δ → +6 45.0%	30 ← 30 → 42 -0 ← Δ → +12 51.0%	9 ← 15 → 20 -6 ← Δ → +5 94.0%	30 ← 30 → 41 -0 ← Δ → +11 43.0%
Ring 1	40 ← 45 → 51 -5 ← Δ → +6	39 ← 45 → 50 -6 ← Δ → +5		
Ring 2	39 ← 45 → 51 -6 ← Δ → +6	39 ← 45 → 50 -6 ← Δ → +5		
Barrier Groups	40 ← 45 → 51 -5 ← Δ → +6	39 ← 45 → 50 -6 ← Δ → +5		

Phase	green	yellow	red	termination	omit/skip	omit/skip	omit/skip	omit/skip	omit/skip	omit/skip
Phase 1	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%	0/11 D-1.0%
Phase 2	41/41 D-2.48%	3/ D-2.16%	46 D-2.0%	force-off	40/41 D-2.48%	3/ D-2.16%	46 D-2.0%	force-off	40/41 D-2.48%	3/ D-2.16%
Phase 3	5/11 D-3.20%	3/ D-3.0%	82 D-3.23%	gap-out	5/11 D-3.20%	3/ D-3.0%	82 D-3.23%	gap-out	5/11 D-3.20%	3/ D-3.0%

Controller Status

Status For: Third & Main

Phase Timing | Phase Utilization | Flow Profile | Pattern History | **Detectors**

Refresh

Estimated Controller Time: 01:39:34

Detector	Call Phase	Link	Current Status	Update Time	Minutes of Data	Minutes No Faults	Volume (Veh/Hr)	Occupancy	Utilized Occupancy
1	1	N/A→Sixth & Main	OK	01:39:00	7	7	0	0	30
2	2	N/A→Sixth & Main	OK	01:39:00	6	6	1920	26	26
3	3	N/A→Sixth & Main	OK	01:39:00	6	6	60	25	25
4	4	N/A→Sixth & Main	OK	01:39:00	6	6	1080	15	15
5	5	N/A→Sixth & Main	OK	01:39:00	6	6	480	7	7
6	6	N/A→Sixth & Main	OK	01:39:00	6	6	1260	23	23
7	7	N/A→Sixth & Main	OK	01:39:00	6	6	480	31	31
8	8	N/A→Sixth & Main	OK	01:39:00	6	6	840	11	11
17	0	N/A→N/A	OK	01:39:00	6	6	0	0	0
18	0	N/A→N/A	OK	01:39:00	6	6	0	0	0
19	0	N/A→N/A	OK	01:39:00	6	6	0	0	0
20	0	N/A→N/A	OK	01:39:00	6	6	0	0	0

Detector 8

Time	Status	Volume (Veh/Min)	Occupancy	Utilized Occupancy
01:38:00 - 01:39:00	OK	4	3	3
01:37:00 - 01:38:00	OK	26	22	22
01:36:00 - 01:37:00	OK	22	18	18
01:35:00 - 01:36:00	OK	4	3	3
01:34:00 - 01:35:00	NoData	0	0	0
01:33:00 - 01:34:00	OK	22	18	18
01:32:00 - 01:33:00	OK	4	3	3
01:31:00 - 01:32:00	NoData	0	0	0
01:30:00 - 01:31:00	NoData	0	0	0
01:29:00 - 01:30:00	NoData	0	0	0



# ACS Lite Monitoring

ACS Lite Monitoring

Algorithm Name: Zayed bin Sultan St. City Center

Monitoring

**System Manager Status**

Command Mode: Monitoring  
 Desired Mode: Synchronization  
 Current Mode: Synchronization

**Controller Manager Status**

Controller: Conn. Status Control Mode Op  
 3 Not Responding Unknown Unk  
 4 Not Responding Unknown Unk  
 5 Not Responding Unknown Unk

**RTR Status**

Current Time: 10:39:00  
 Last Analysis Time: 00:00:00  
 Next Analysis Time: 00:00:00  
 Controller Pattern Cycle Offset

**Detail**

Module	Heartbeat	Desired Mode	Current Mode
SystemManager	True	Synchronization	Synchronization
ControllerManager	True	Synchronization	Synchronization
AnalysisEngine	True	Synchronization	Synchronization

ACS Lite Monitoring

Algorithm Name: Zayed bin Sultan St. City Center

Monitoring Logs

View the top: 100 rows.

Type	Time	Source	Detail
Error	8/13/2010 10:38:12 AM	3	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:38:12 AM	3	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:38:07 AM	5	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:38:07 AM	5	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:38:03 AM	4	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:38:03 AM	4	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:58 AM	3	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:58 AM	3	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:54 AM	5	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:54 AM	5	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:50 AM	4	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:50 AM	4	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:45 AM	3	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:45 AM	3	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:41 AM	5	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:41 AM	5	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:36 AM	4	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:36 AM	4	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:32 AM	3	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:32 AM	3	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:28 AM	5	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".
Error	8/13/2010 10:37:28 AM	5	performing detector configuration operation timed out before receiving response to request with 1 variable binding(s)
Error	8/13/2010 10:37:23 AM	4	timed out message with OID #1: "acsLiteVolumeOccupancyDetectors.1".

Close

