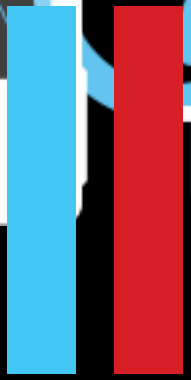

WAVETRONIX

More than a supplier

We are a partner

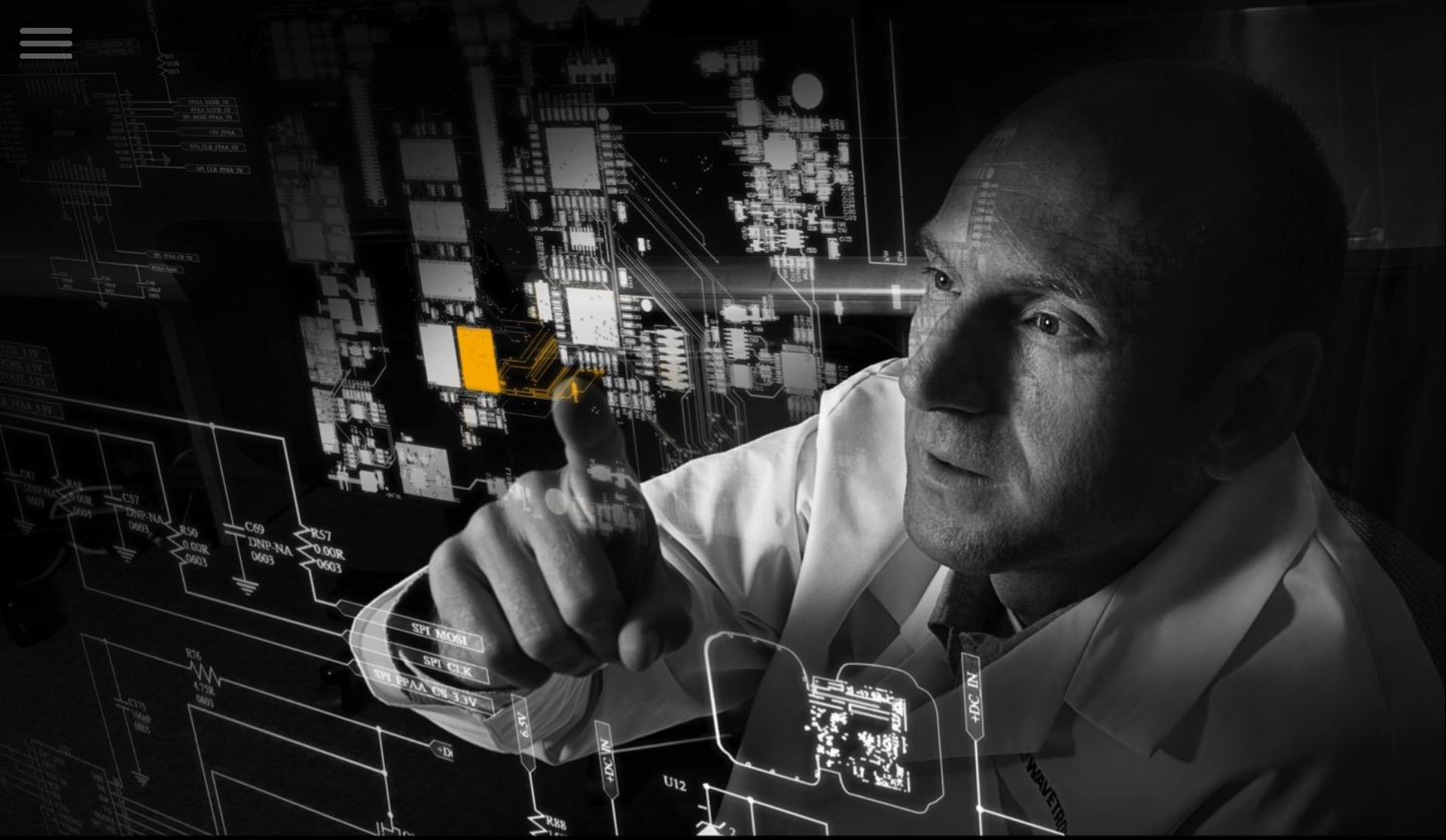
Non-intrusive Devices did not compare



ADS Technology

Need Better Tools

We could do Better



Custom Engineered

15 YEARS OF GROWTH

Driver Safety

Is the purpose

FAIL

Signal Performance Metrics

->Signal Metrics

Selected Signal

1645 SR46 OrangeBlvd

Signals

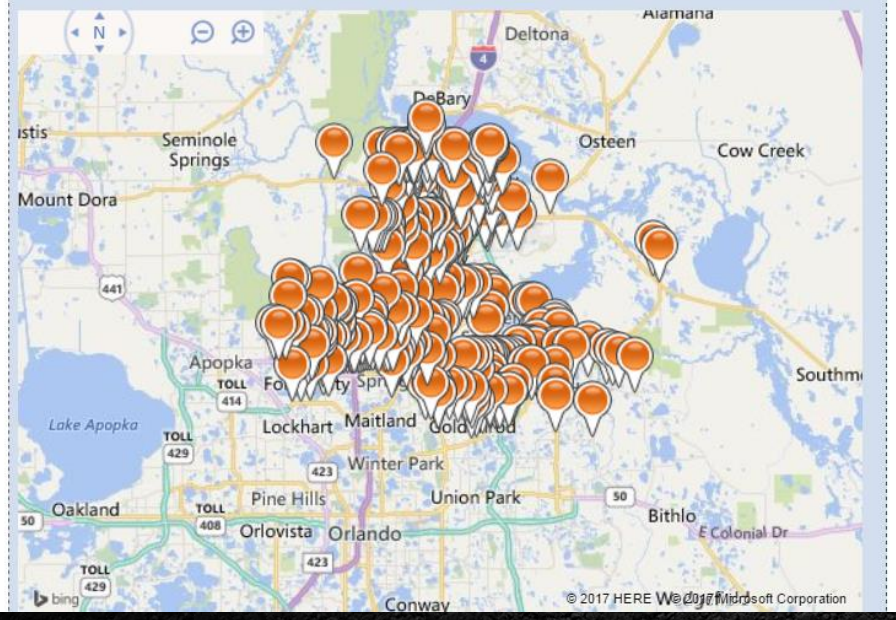
Region: All

Metric Type: All

Filter: Signal Id | Filter | Clear Filter

Signal List

Map



Metric Settings

Metric Type

- Approach Delay
- Approach Volume
- Arrivals On Red
- Purdue Coordination Diagram
- Purdue Phase Termination
- Split Monitor

Time Y Axis Maximum: 270

Volume Y Axis Maximum: 2000

Volume Bin Size: 15

Dot Size: Small

- [x] Show Plan Statistics
- [x] Show Volumes
- [ ] Upload Current Data

Dates

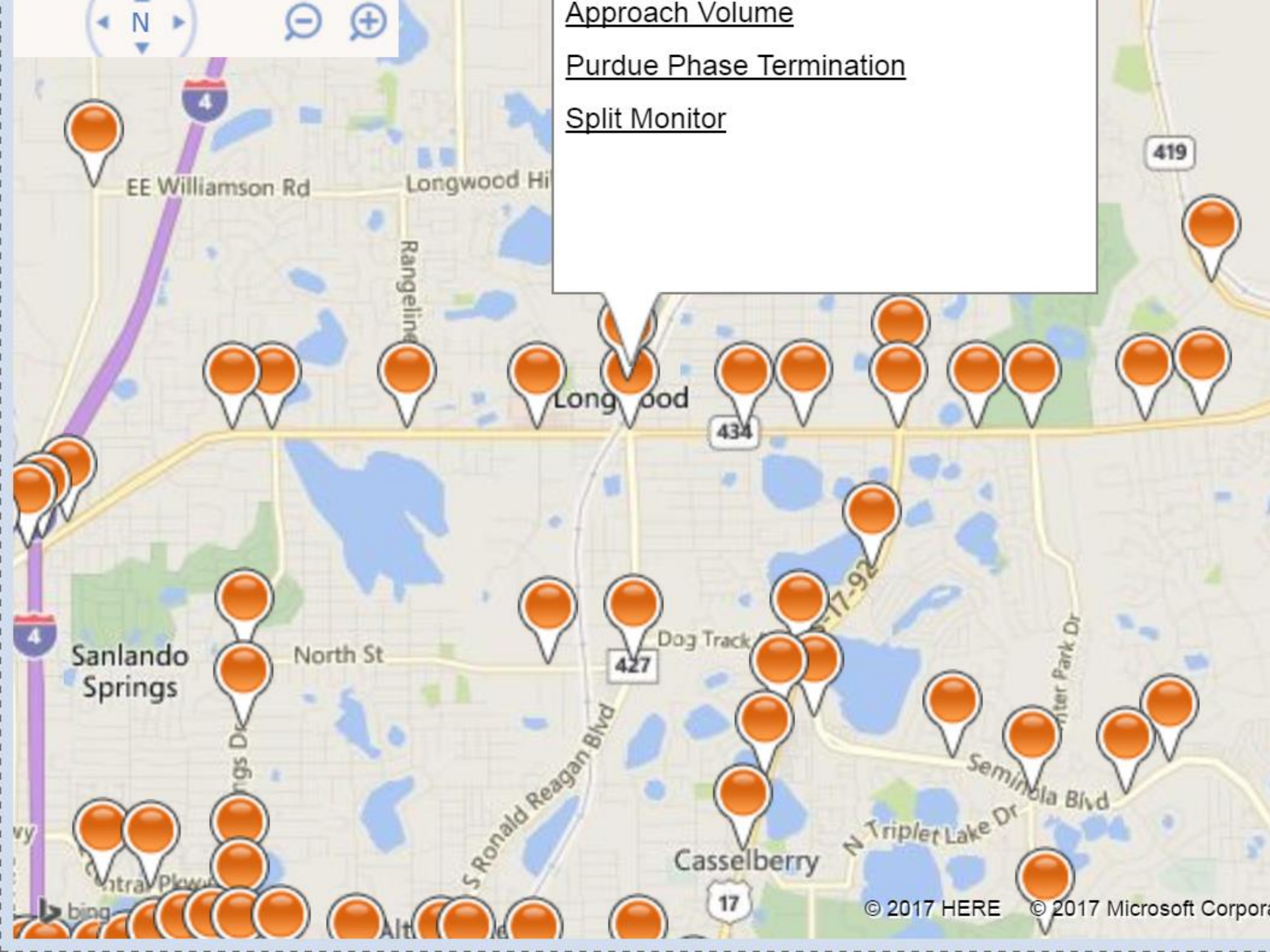
Start Date: 2/6/2017 ... 4 PM

End Date: 2/6/2017 ... 8 PM

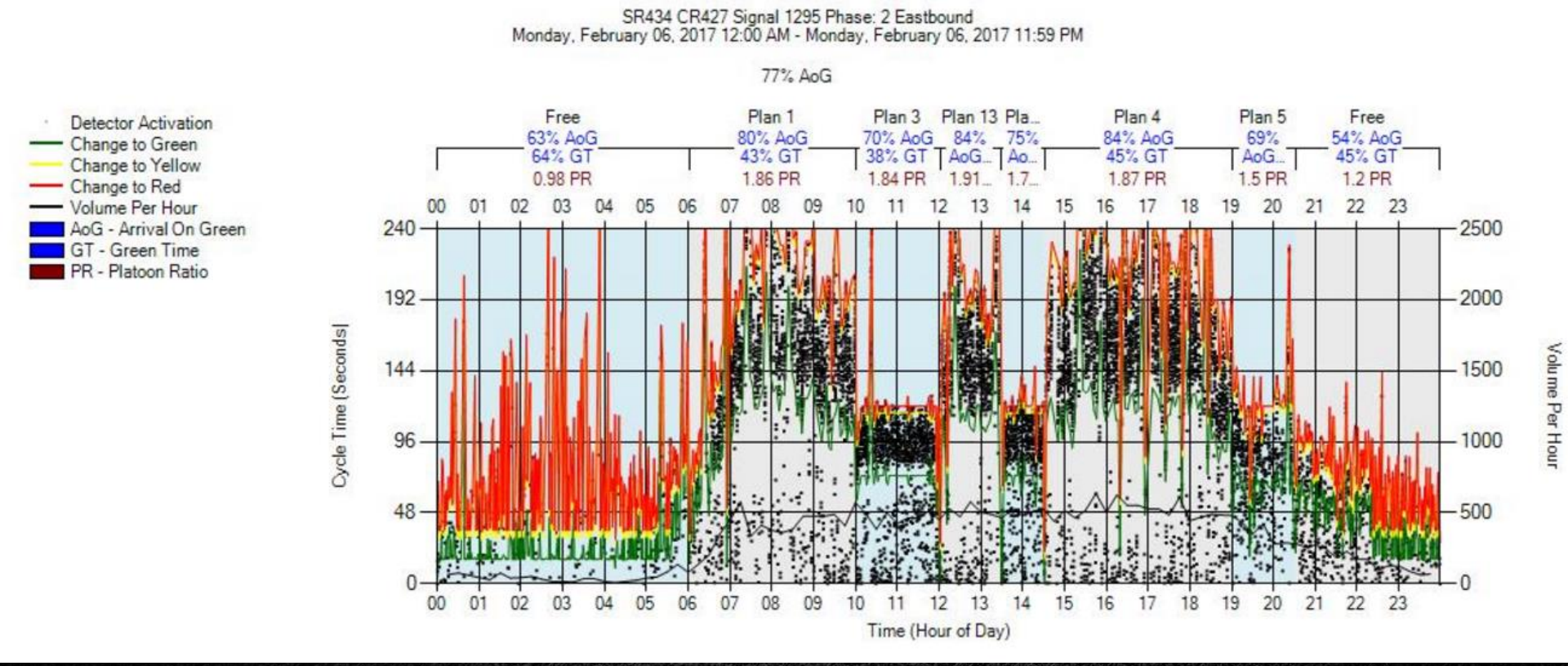
Reset Date

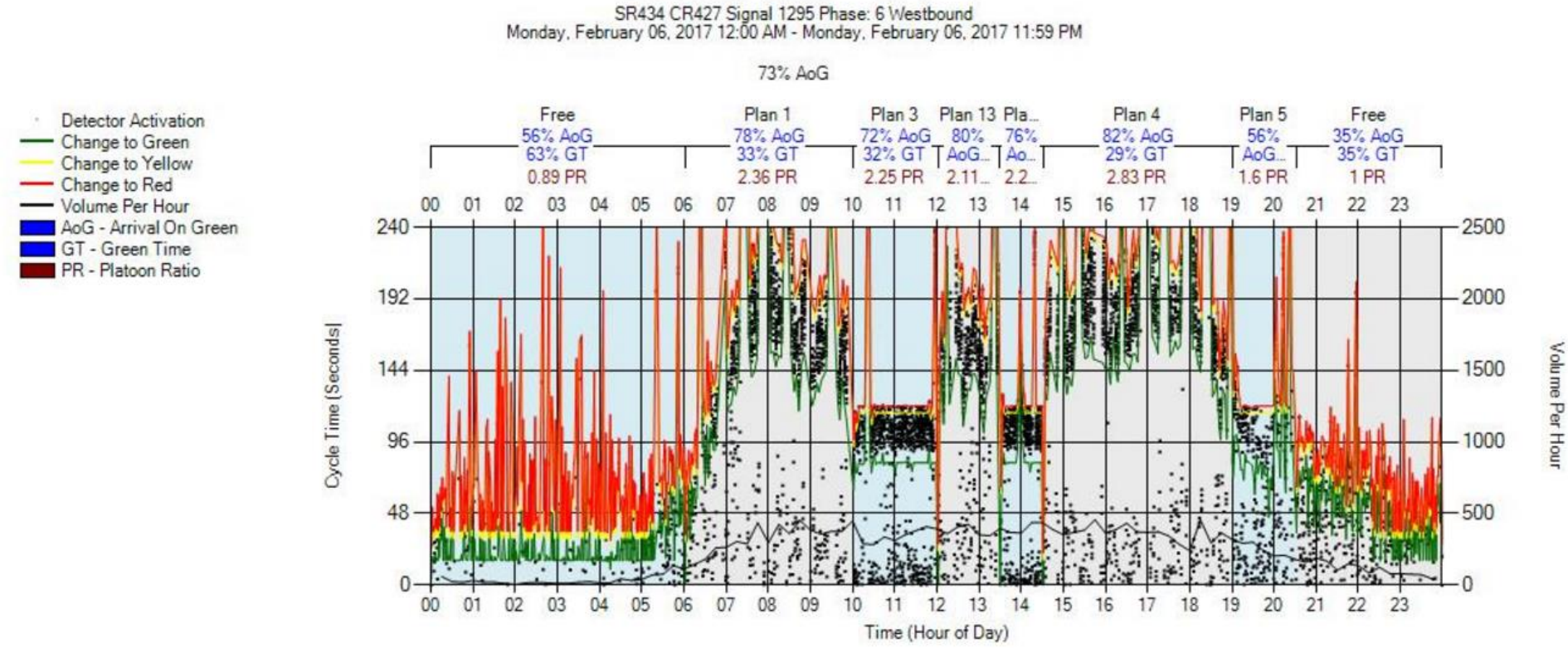
< February 2017 >

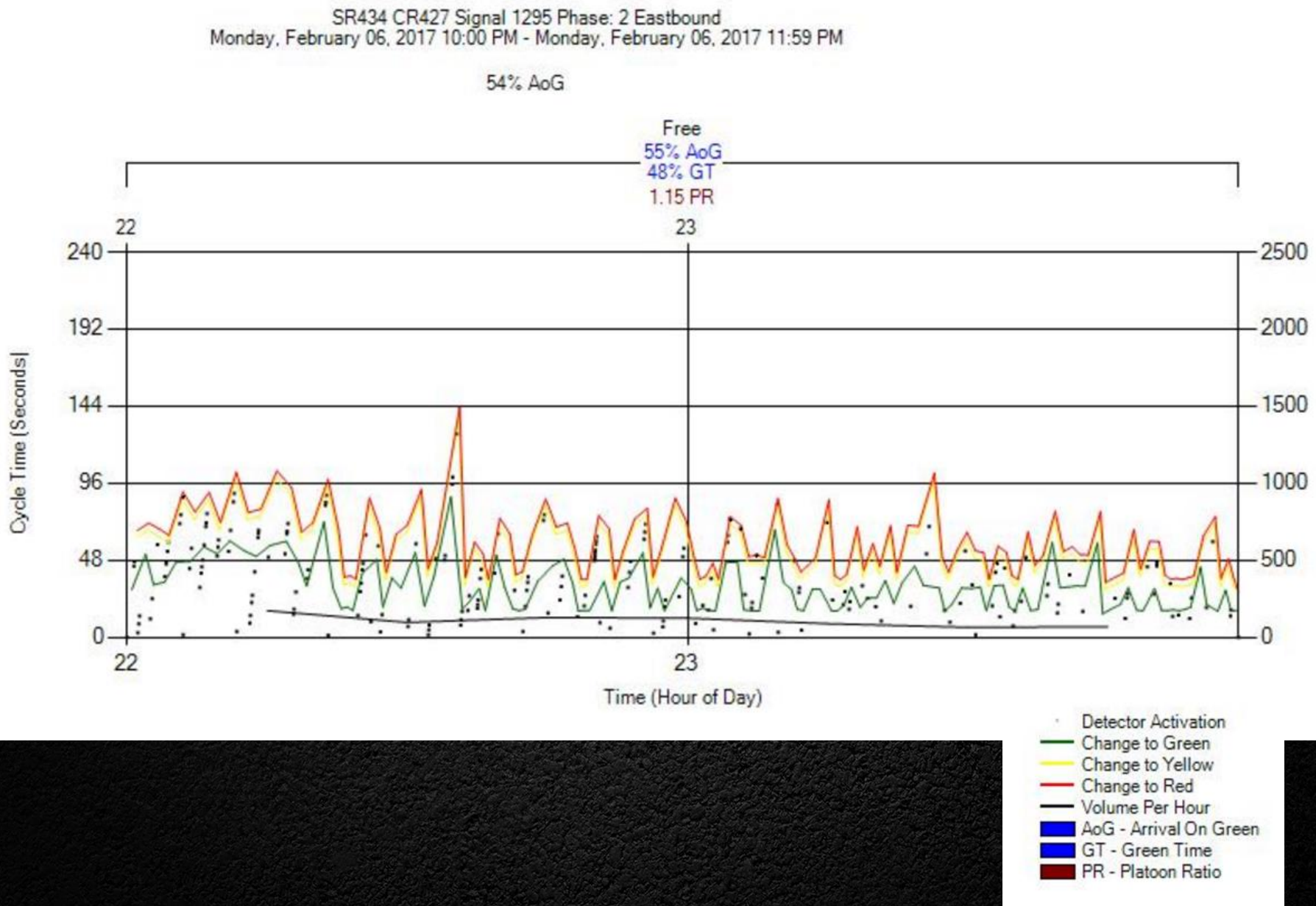
Sun	Mon	Tue	Wed	Thu	Fri	Sat
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	1	2	3	4
5	6	7	8	9	10	11

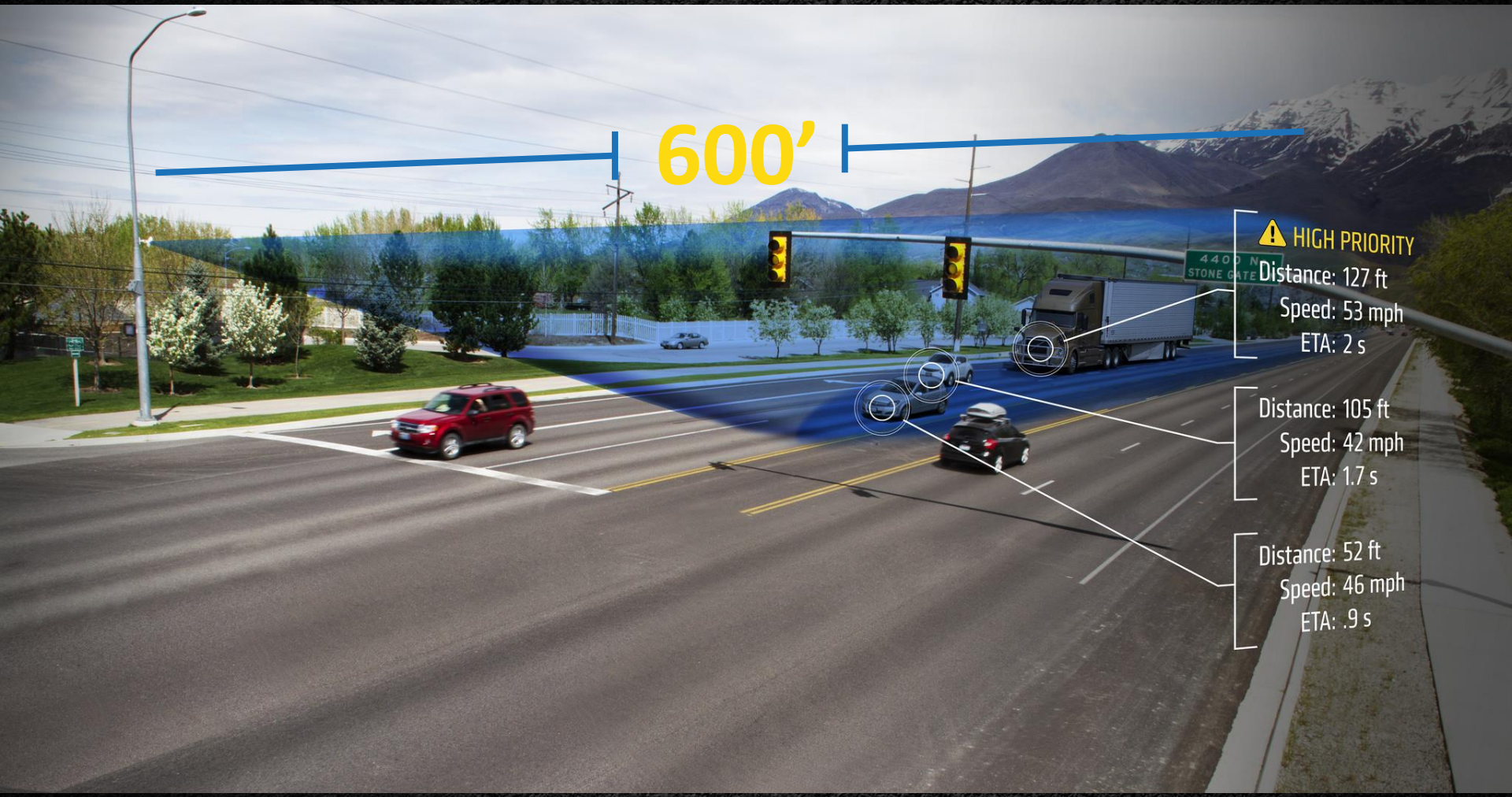

Approach Volume
Purdue Phase Termination
Split Monitor
EE Williamson Rd
Longwood Hi
Rangeline
Long ood
434
419
Sanlando Springs
North St
427
Dog Track
17-92
S Ronald Reagan Blvd
Seminola Blvd
N Triplet Lake Dr
Casselberry
17
© 2017 HERE
© 2017 Microsoft Corpora


W Pine Ave
N Ronald Reagan Blvd
W State Road 434
434 and Ronald Reagan Blvd
434
427
E State Road 434
© 2016 Google
1994


SR434 CR427 Signal 1295 Phase: 2 Eastbound
Monday, February 06, 2017 12:00 AM - Monday, February 06, 2017 11:59 PM
77% AoG
Detector Activation
Change to Green
Change to Yellow
Change to Red
Volume Per Hour
AoG - Arrival On Green
GT - Green Time
PR - Platoon Ratio
Free
63% AoG
64% GT
0.98 PR
Plan 1
80% AoG
43% GT
1.86 PR
Plan 3
70% AoG
38% GT
1.84 PR
Plan 13
84%
AoG...
1.91...
Pla...
75%
Ao...
1.7...
Plan 4
84% AoG
45% GT
1.87 PR
Plan 5
69%
AoG...
1.5 PR
Free
54% AoG
45% GT
1.2 PR
Cycle Time [Seconds]
Volume Per Hour
Time (Hour of Day)

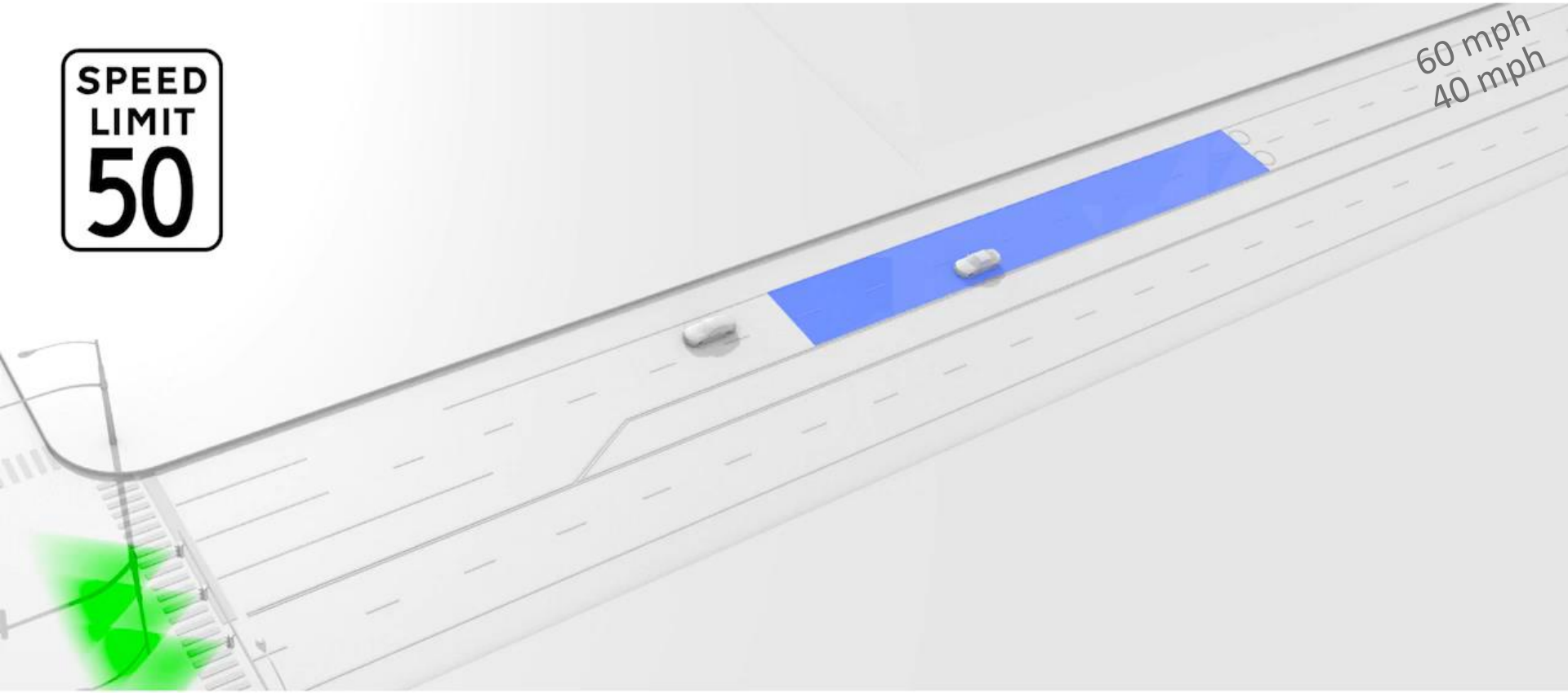

SR434 CR427 Signal 1295 Phase: 6 Westbound
Monday, February 06, 2017 12:00 AM - Monday, February 06, 2017 11:59 PM
73% AoG
Detector Activation
Change to Green
Change to Yellow
Change to Red
Volume Per Hour
AoG - Arrival On Green
GT - Green Time
PR - Platoon Ratio
Free
56% AoG
63% GT
0.89 PR
Plan 1
78% AoG
33% GT
2.36 PR
Plan 3
72% AoG
32% GT
2.25 PR
Plan 13
80%
AoG...
2.11...
Pla...
76%
Ao...
2.2...
Plan 4
82% AoG
29% GT
2.83 PR
Plan 5
56%
AoG...
1.6 PR
Free
35% AoG
35% GT
1 PR
Cycle Time (Seconds)
240
192
144
96
48
0
2500
2000
1500
1000
500
0
Volume Per Hour
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Time (Hour of Day)

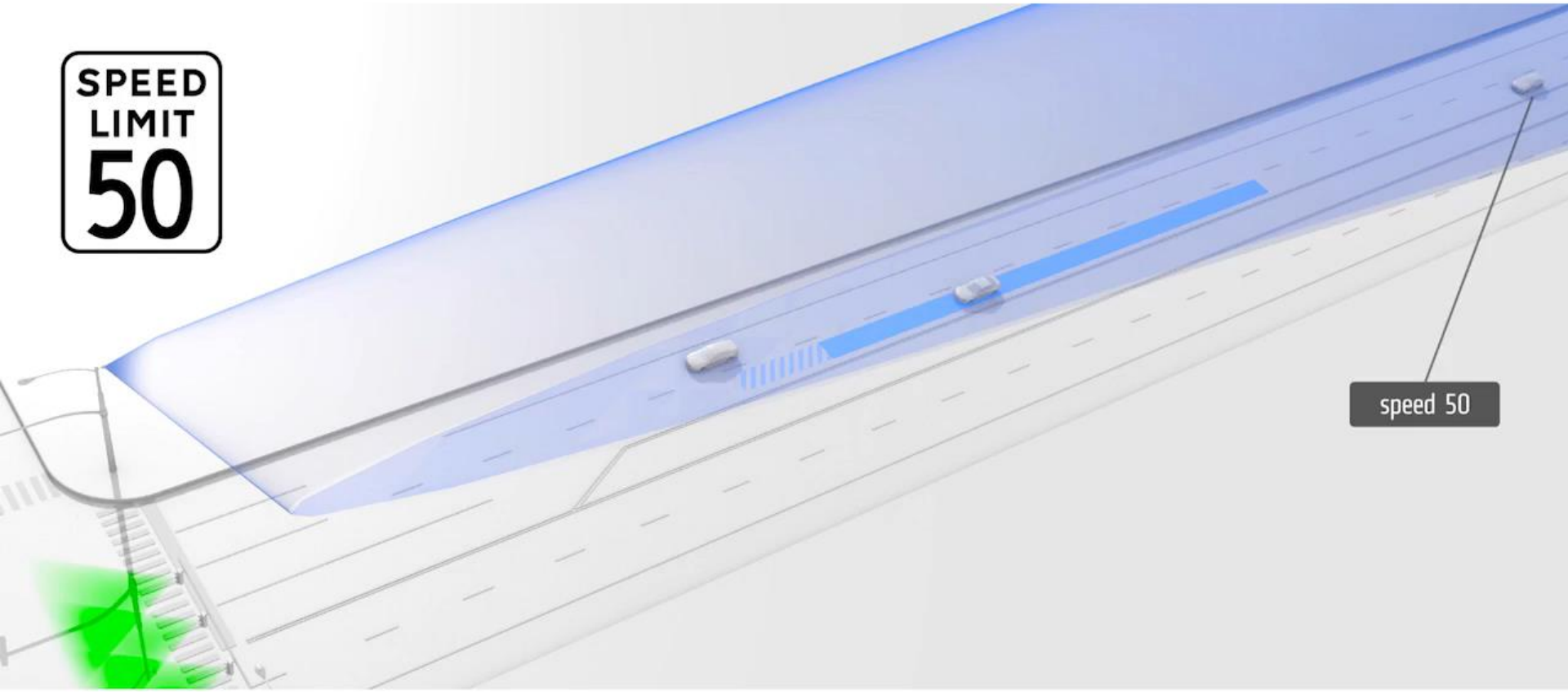

SR434 CR427 Signal 1295 Phase: 2 Eastbound
Monday, February 06, 2017 10:00 PM - Monday, February 06, 2017 11:59 PM
54% AoG
Free
55% AoG
48% GT
1.15 PR
22
23
240
192
144
96
48
0
2500
2000
1500
1000
500
0
Cycle Time [Seconds]
Time (Hour of Day)
Detector Activation
Change to Green
Change to Yellow
Change to Red
Volume Per Hour
AoG - Arrival On Green
GT - Green Time
PR - Platoon Ratio

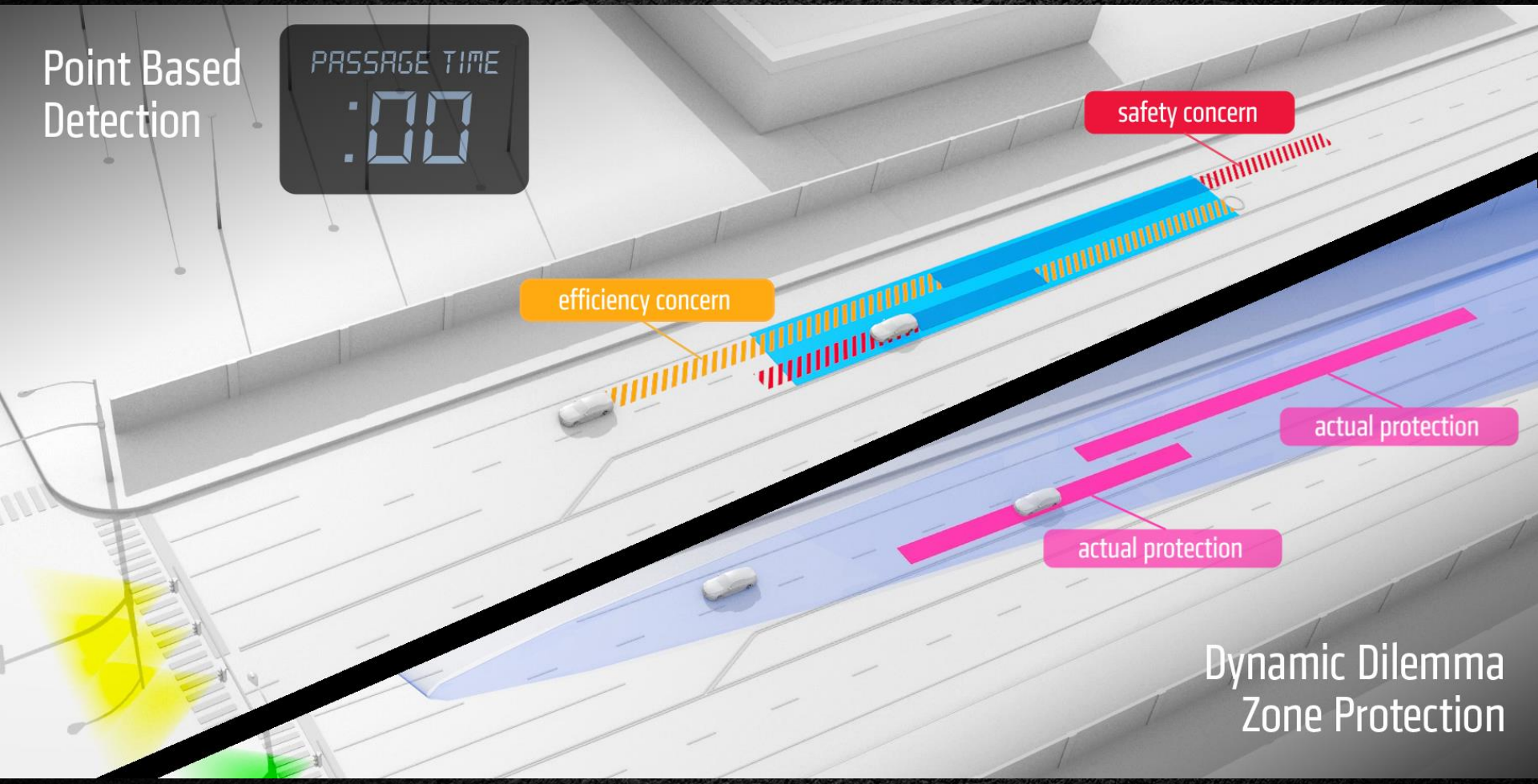

600’
HIGH PRIORITY
Distance: 127 ft
Speed: 53 mph
ETA: 2 s
Distance: 105 ft
Speed: 42 mph
ETA: 1.7 s
Distance: 52 ft
Speed: 46 mph
ETA: .9 s

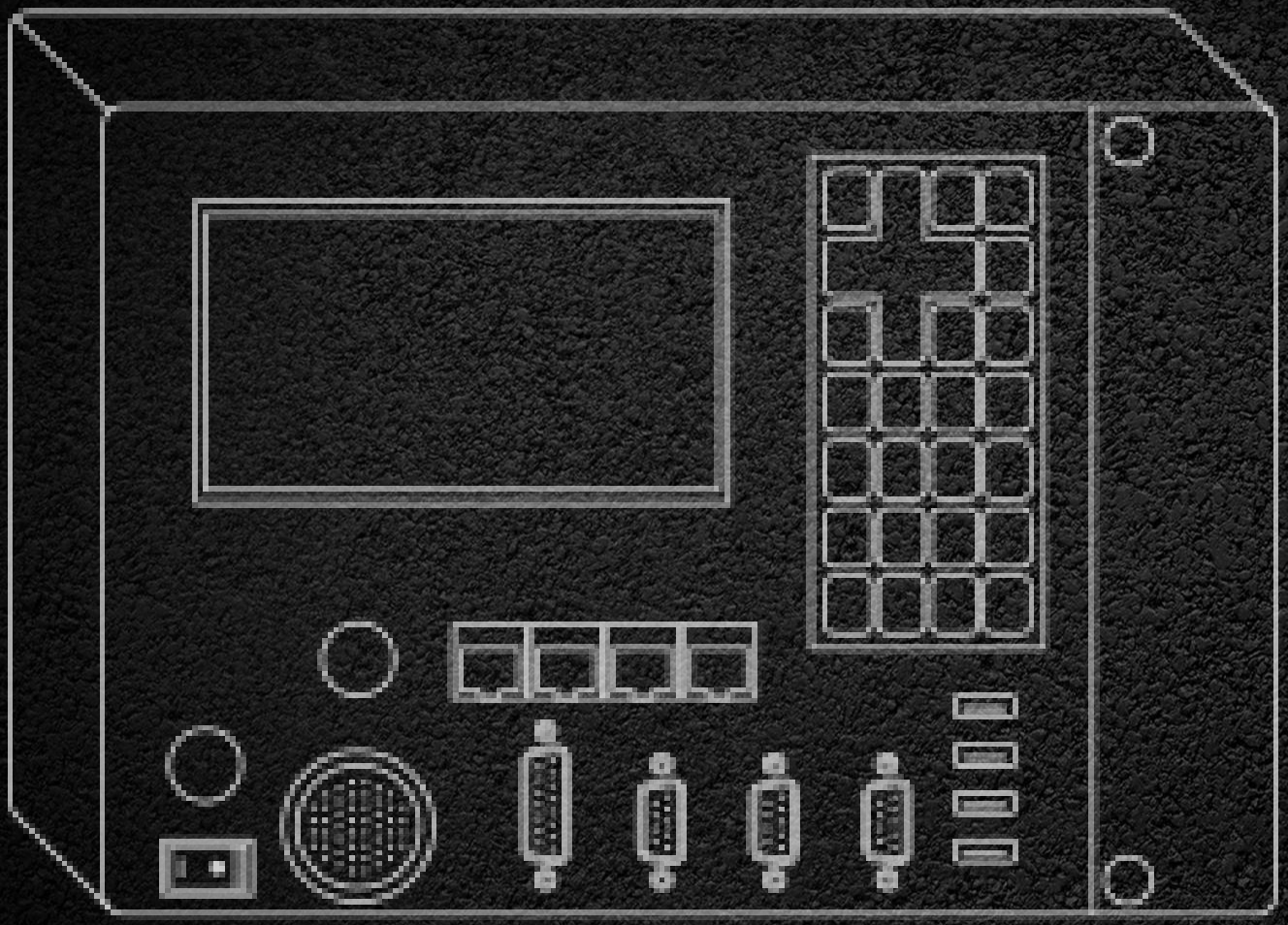

900’
HIGH PRIORITY
Distance: 127 ft
Speed: 53 mph
ETA: 2 s
Distance: 105 ft
Speed: 42 mph
ETA: 1.7 s
Distance: 52 ft
Speed: 46 mph
ETA: .9 s

Wide Area Detectors


SPEED
LIMIT
50
60 mph
40 mph


SPEED
LIMIT
50
speed 50


Point Based Detection
PASSAGE TIME
:00
safety concern
efficiency concern
actual protection
actual protection
Dynamic Dilemma Zone Protection

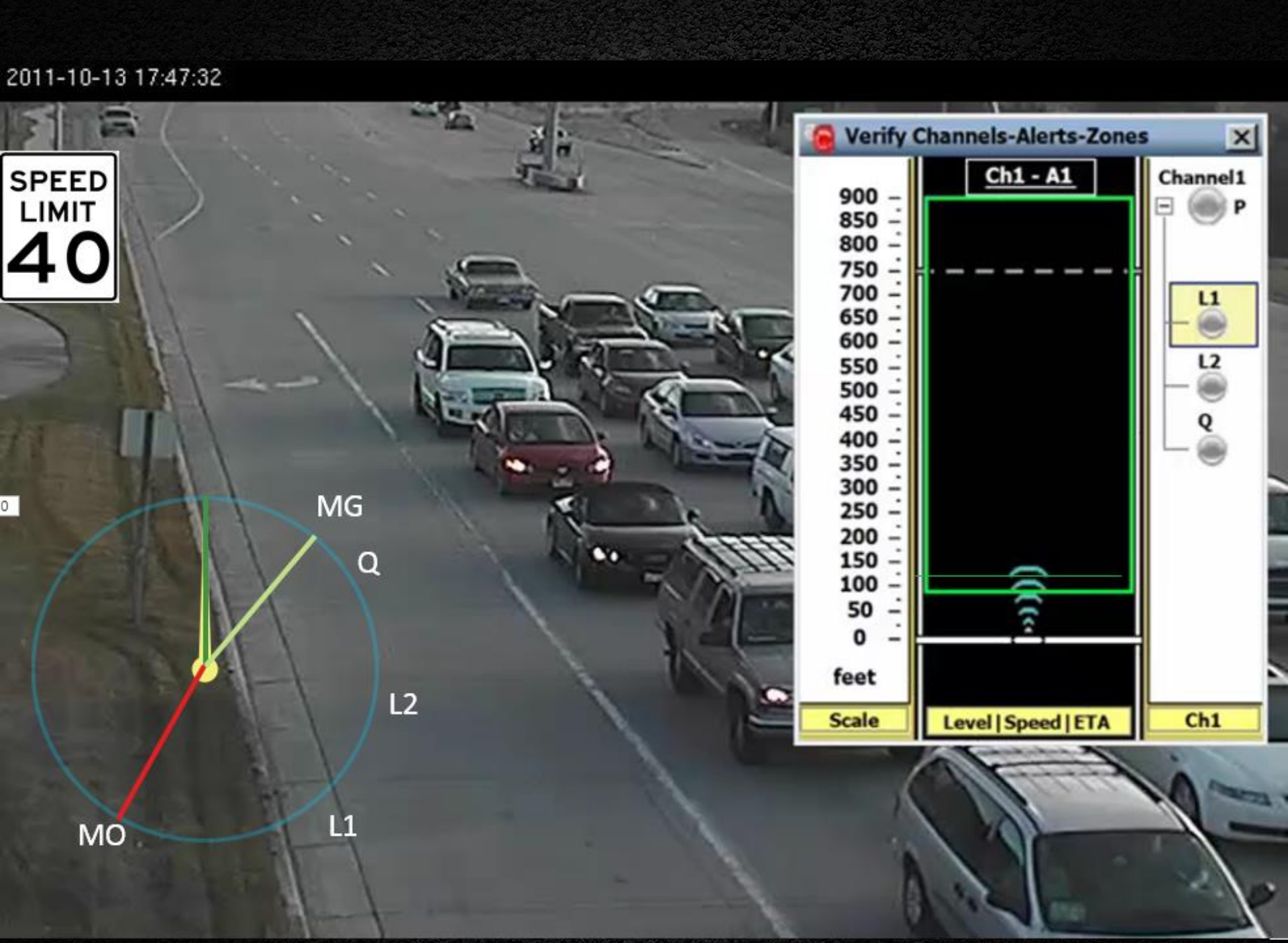


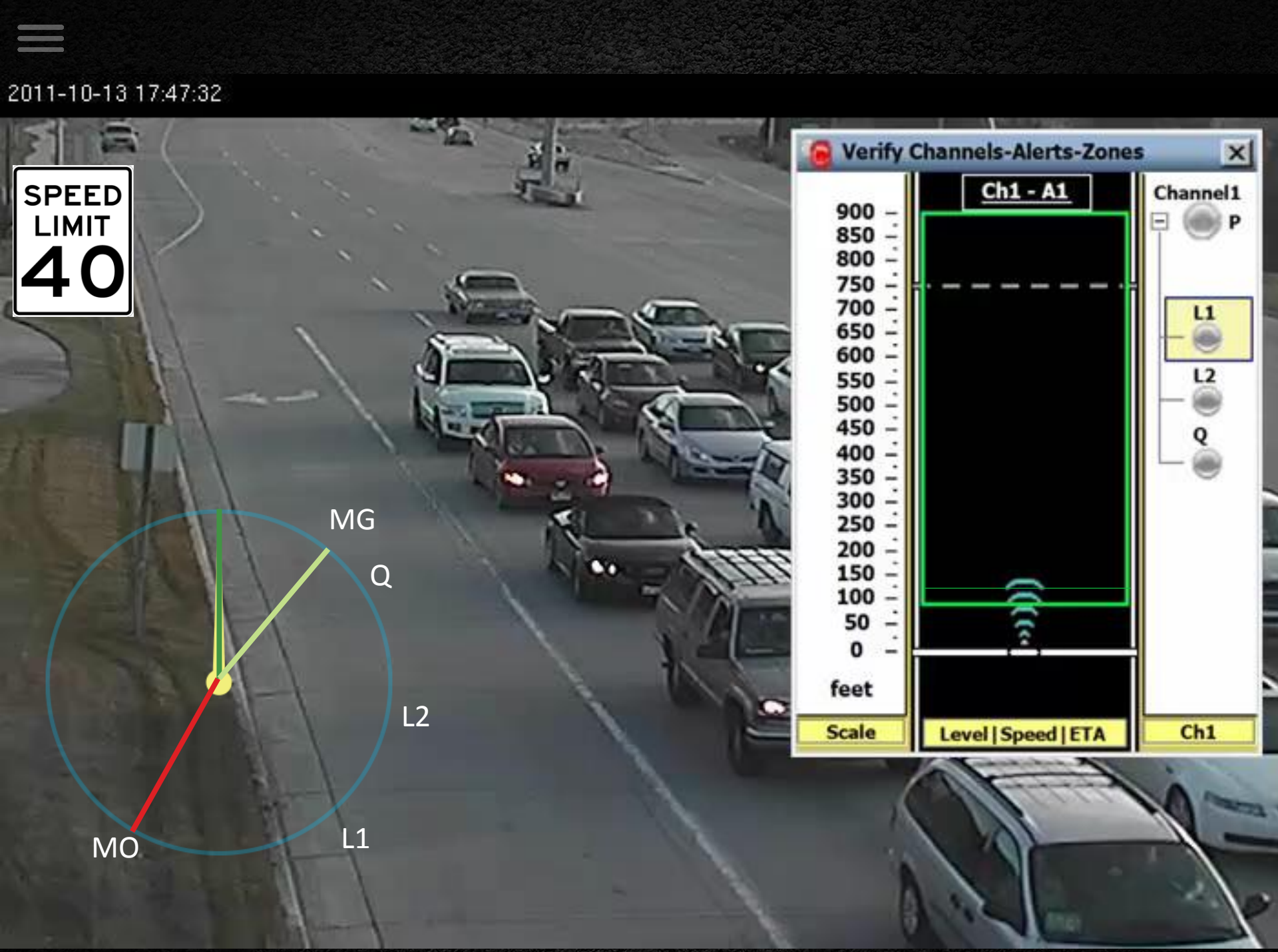
Passage Time

About 1 Second

3 Seconds


Passage Time

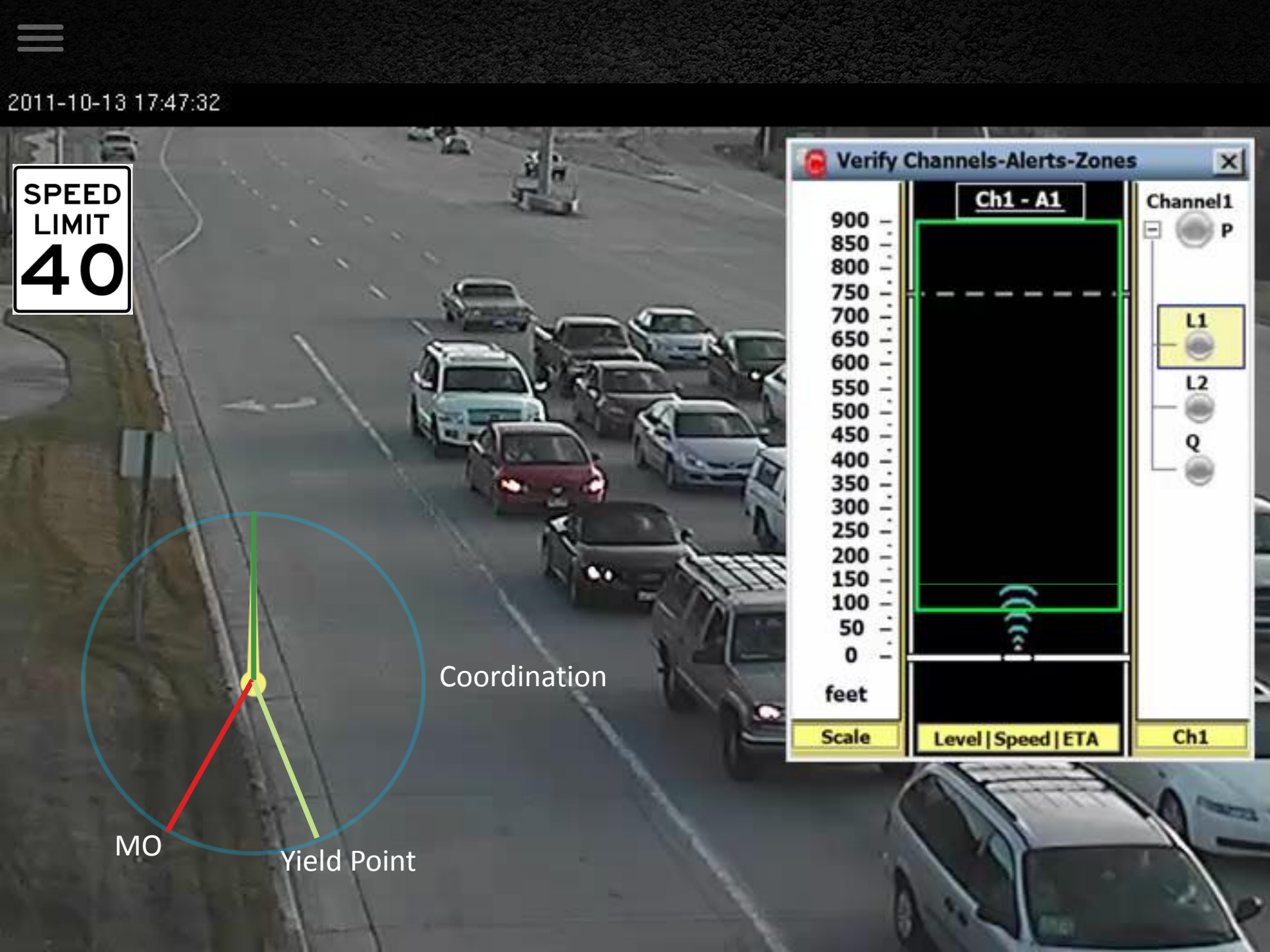

2011-10-13 17:47:32
SPEED LIMIT 40
MG
Q
L2
L1
MO
Verify Channels-Alerts-Zones
Ch1 - A1
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
feet
Scale
Level | Speed | ETA
Channel1
P
L1
L2
Q
Ch1

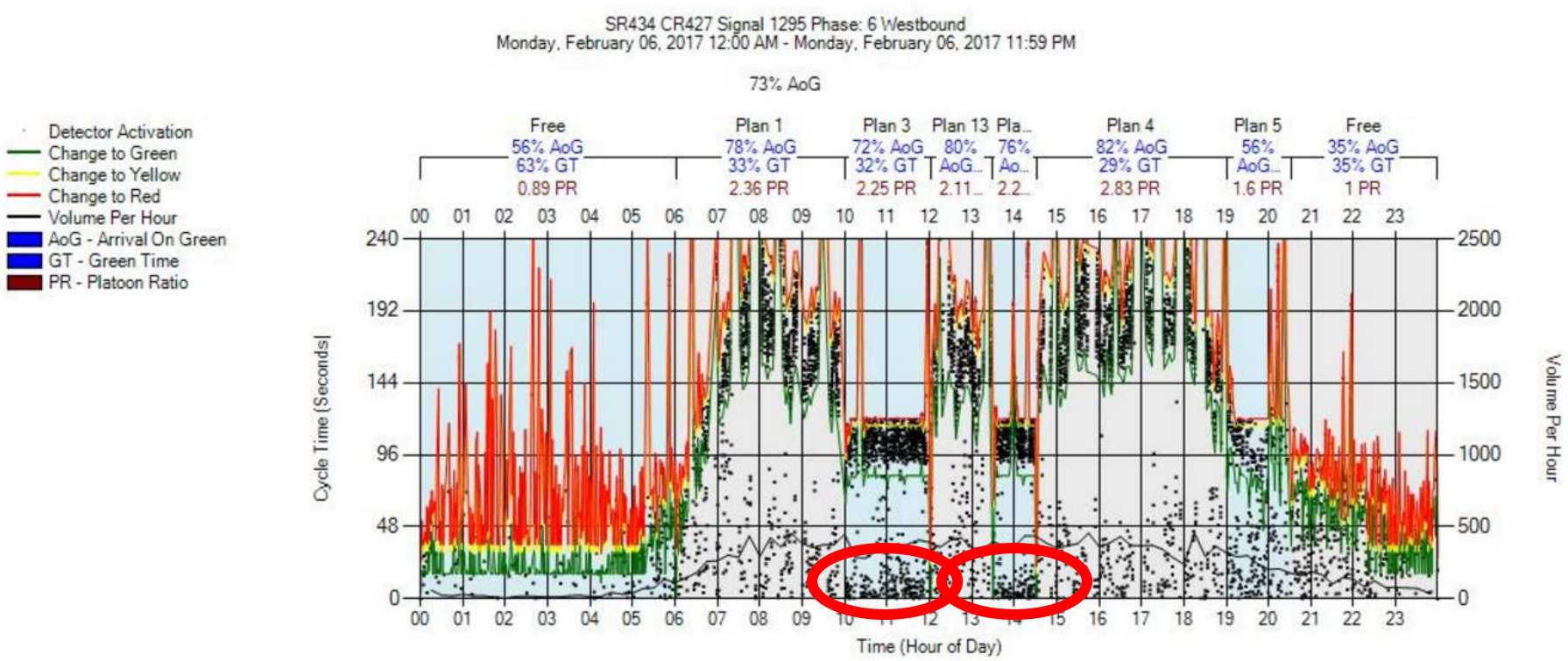

2011-10-13 17:47:32
SPEED LIMIT 40
MG
Q
L2
L1
MO
Verify Channels-Alerts-Zones
Ch1 - A1
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
feet
Scale
Level | Speed | ETA
Channel1
P
L1
L2
Q
Ch1

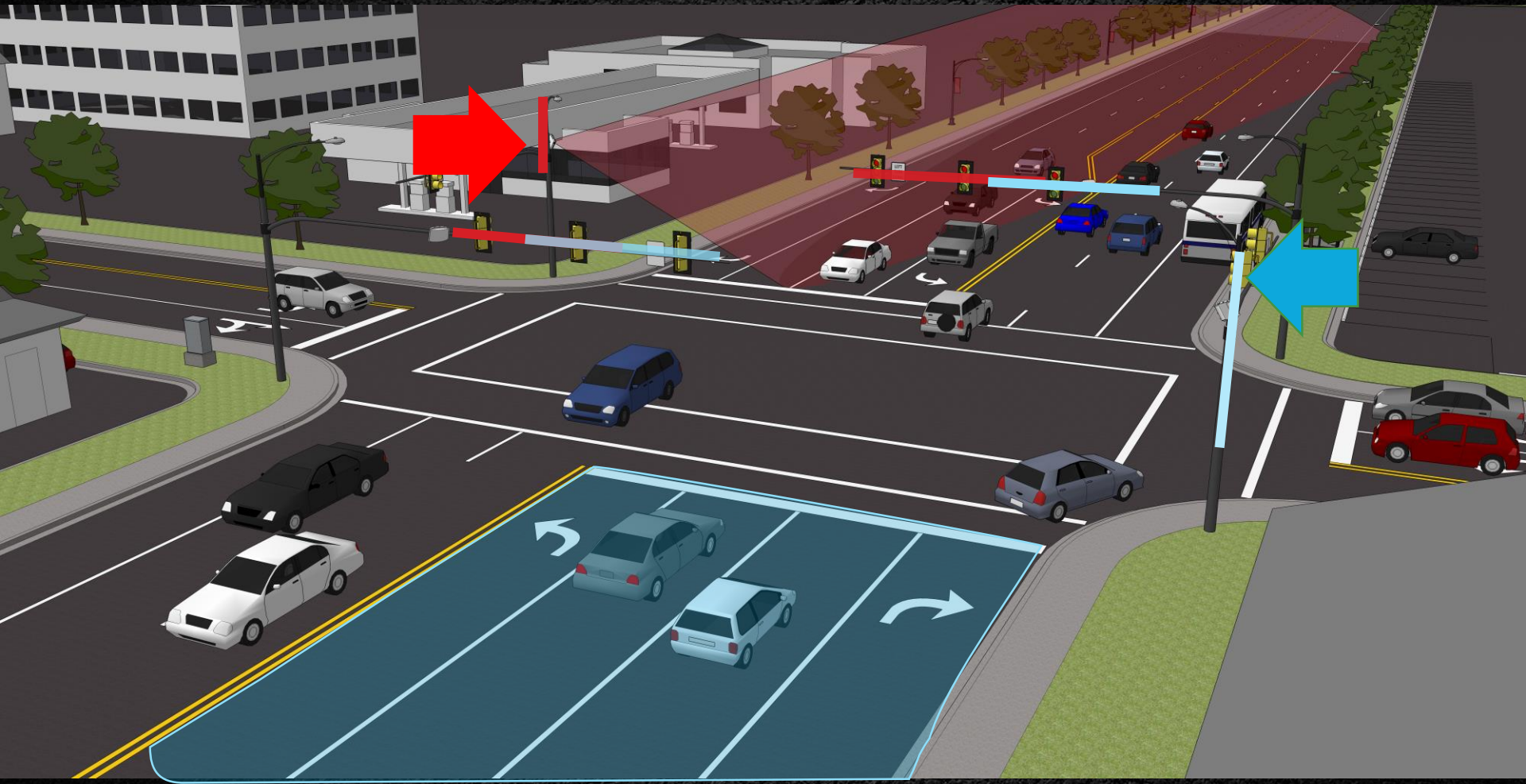
Red Light Reduction

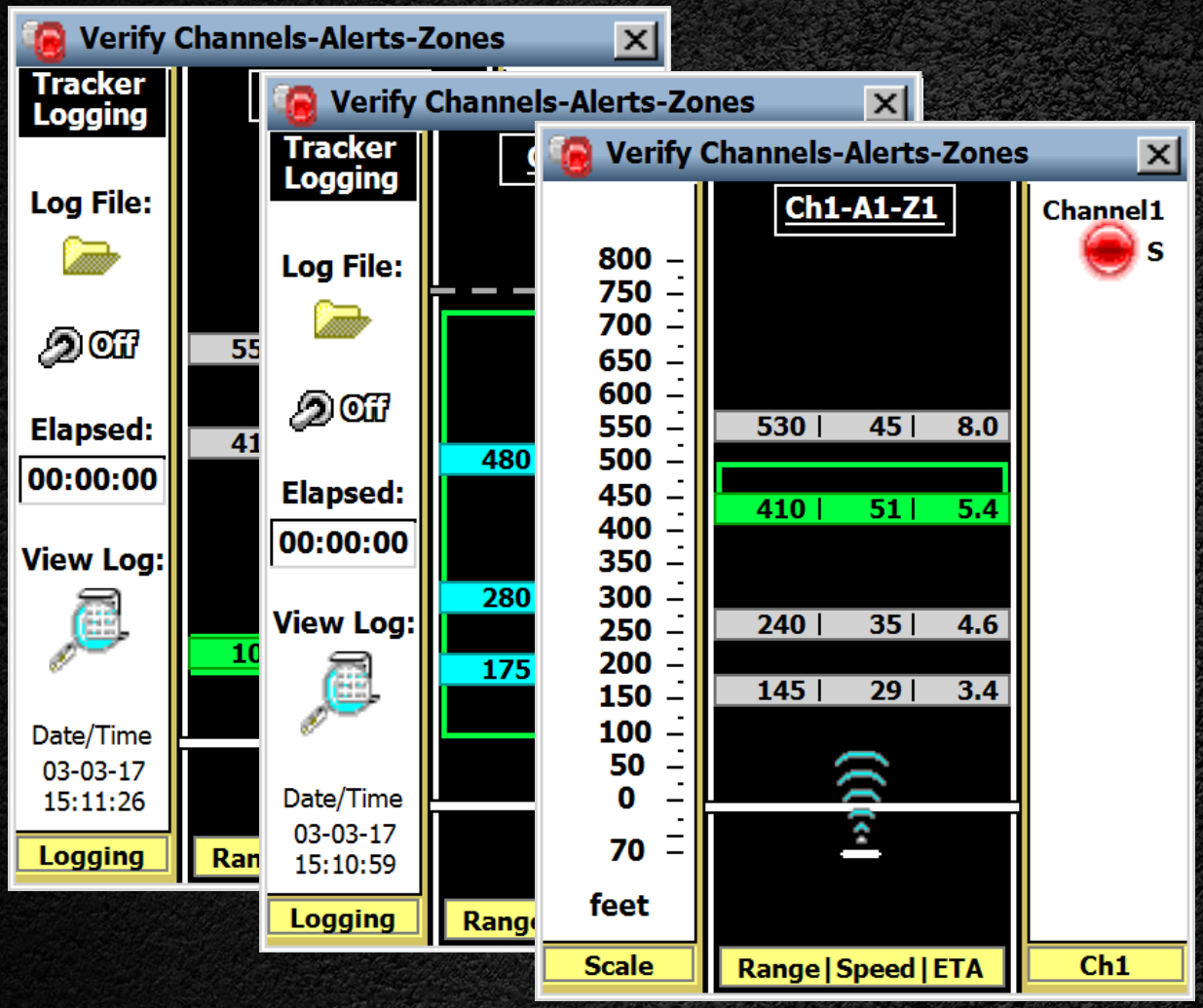
Bradley University Study

Ohio DOT Study


2011-10-13 17:47:32
SPEED LIMIT 40
Verify Channels-Alerts-Zones
Ch1 - A1
900
850
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
feet
Channel1
P
L1
L2
Q
Scale
Level|Speed|ETA
Ch1
Coordination
MO
Yield Point


SR434 CR427 Signal 1295 Phase: 6 Westbound
Monday, February 06, 2017 12:00 AM - Monday, February 06, 2017 11:59 PM
73% AoG
Detector Activation
Change to Green
Change to Yellow
Change to Red
Volume Per Hour
AoG - Arrival On Green
GT - Green Time
PR - Platoon Ratio
Free
56% AoG
63% GT
0.89 PR
Plan 1
78% AoG
33% GT
2.36 PR
Plan 3
72% AoG
32% GT
2.25 PR
Plan 13
80%
AoG...
2.11...
Pla...
76%
Ao...
2.2...
Plan 4
82% AoG
29% GT
2.83 PR
Plan 5
56%
AoG...
1.6 PR
Free
35% AoG
35% GT
1 PR
Cycle Time (Seconds)
240
192
144
96
48
0
2500
2000
1500
1000
500
0
Volume Per Hour
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Time (Hour of Day)




Verify Channels-Alerts-Zones
Tracker Logging
Log File:
Off
Elapsed:
00:00:00
View Log:
Date/Time
03-03-17
15:11:26
Logging
Verify Channels-Alerts-Zones
Tracker Logging
Log File:
Off
Elapsed:
00:00:00
View Log:
Date/Time
03-03-17
15:10:59
Logging
480
280
175
Verify Channels-Alerts-Zones
Ch1-A1-Z1
800
750
700
650
600
550
500
450
400
350
300
250
200
150
100
50
0
70
feet
530 | 45 | 8.0
410 | 51 | 5.4
240 | 35 | 4.6
145 | 29 | 3.4
Channel1
S
Scale
Range | Speed | ETA
Ch1

COST EFFECTIVE

R[illegible]

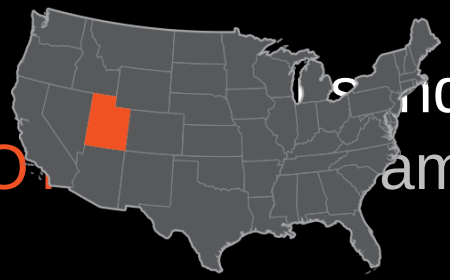
Proj[illegible]CTO

Florida

Routine Maintenance

Simple

NO Routine Maintenance



– nd

UDO am

Only use

The policy was

SmartSensor changed

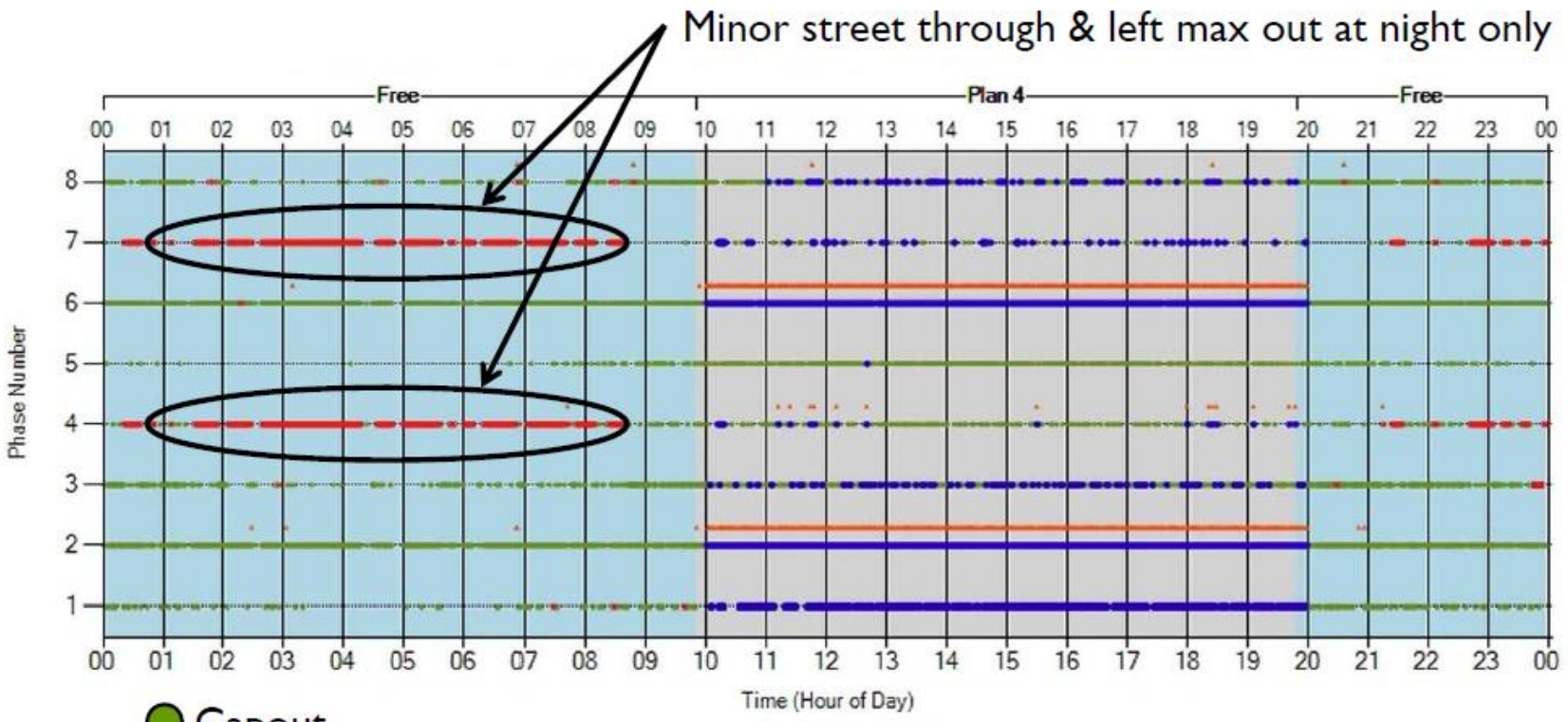
Advance

Agency Efficiency

Requires Trustworthy Detection Systems


SPEED
LIMIT
70
SPEED
LIMIT
45

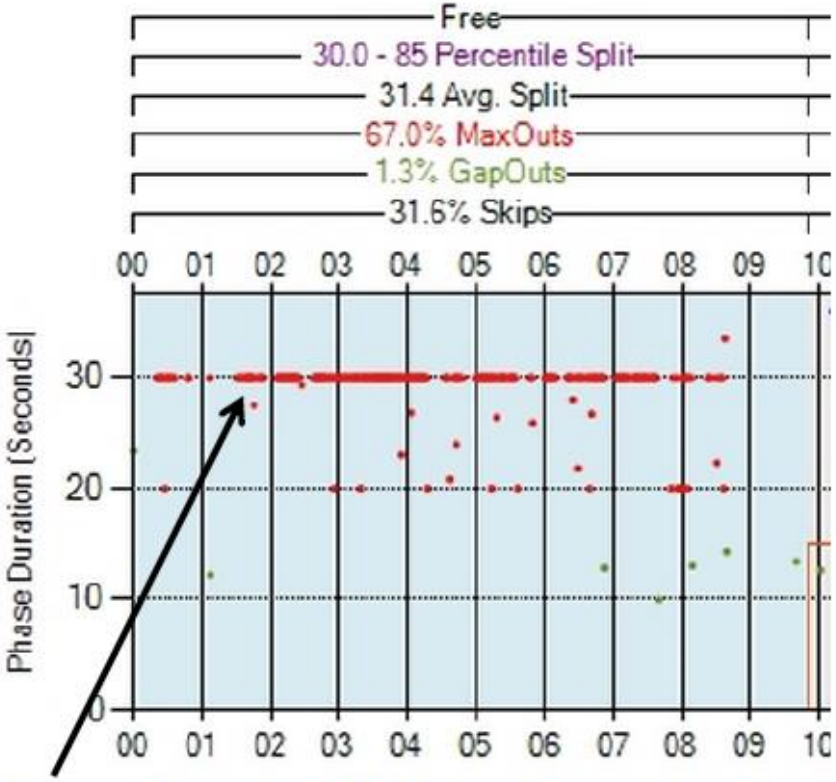
Metric: Phase Termination



- Gapout
- Max out
- Force off
- Pedestrian activation (shown above phase line)
- Skip

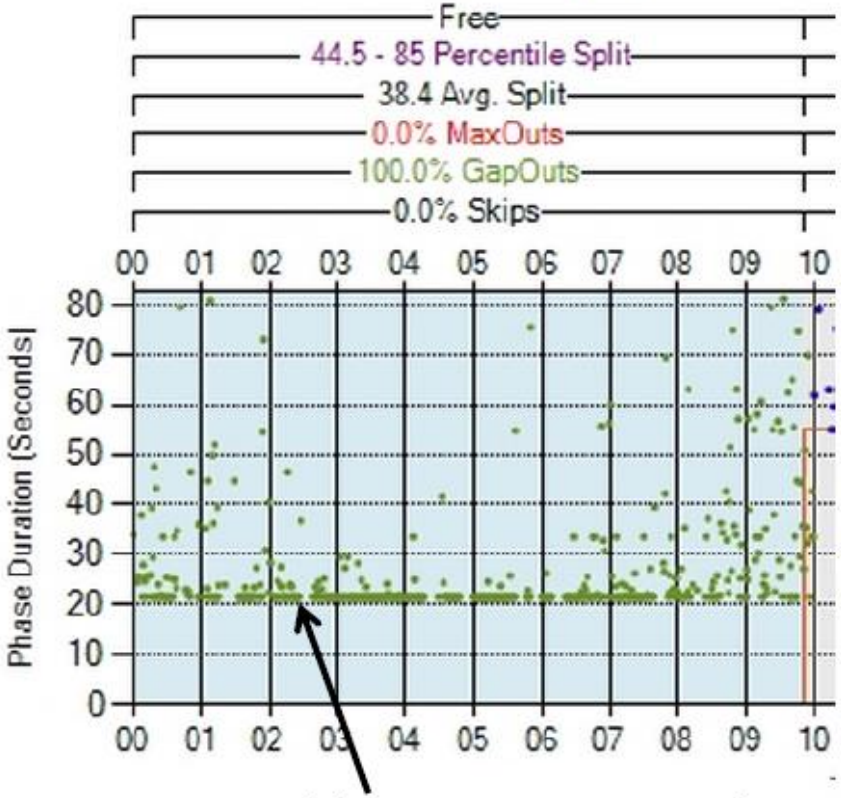
Metric: Split Monitor

Northbound Left (Minor)



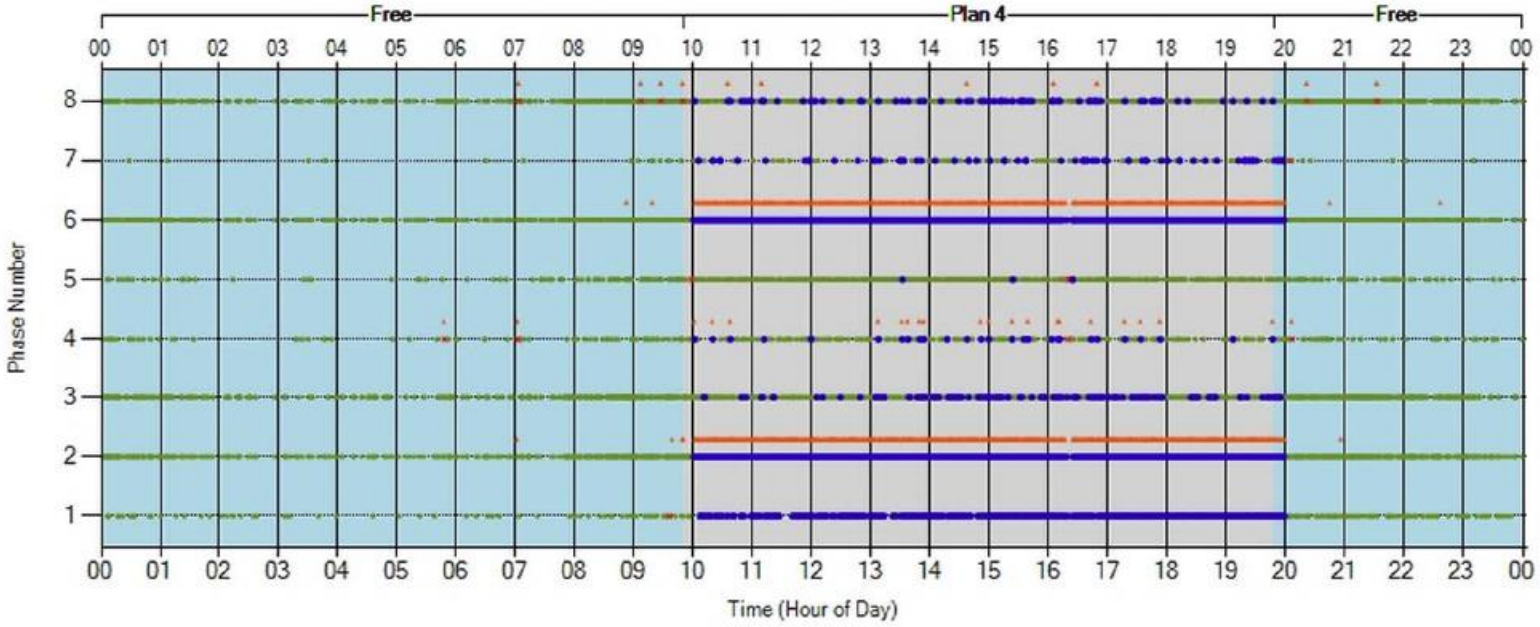
Minor side street left turn maxes out during the middle of the night.
Green for about 30 seconds.

Westbound Through (Major)



Major movement only green for 20 seconds.

Metric: Phase Termination



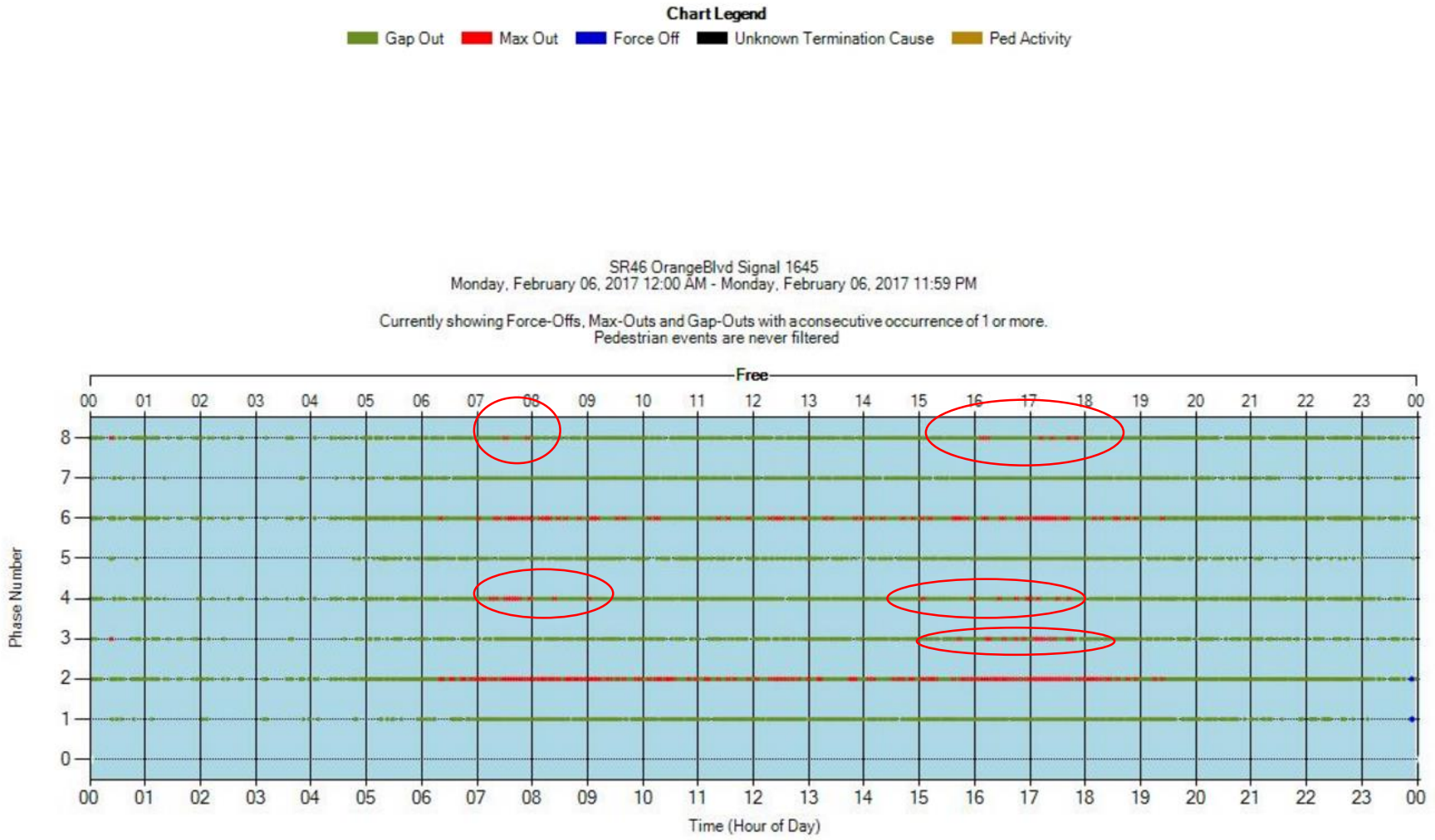
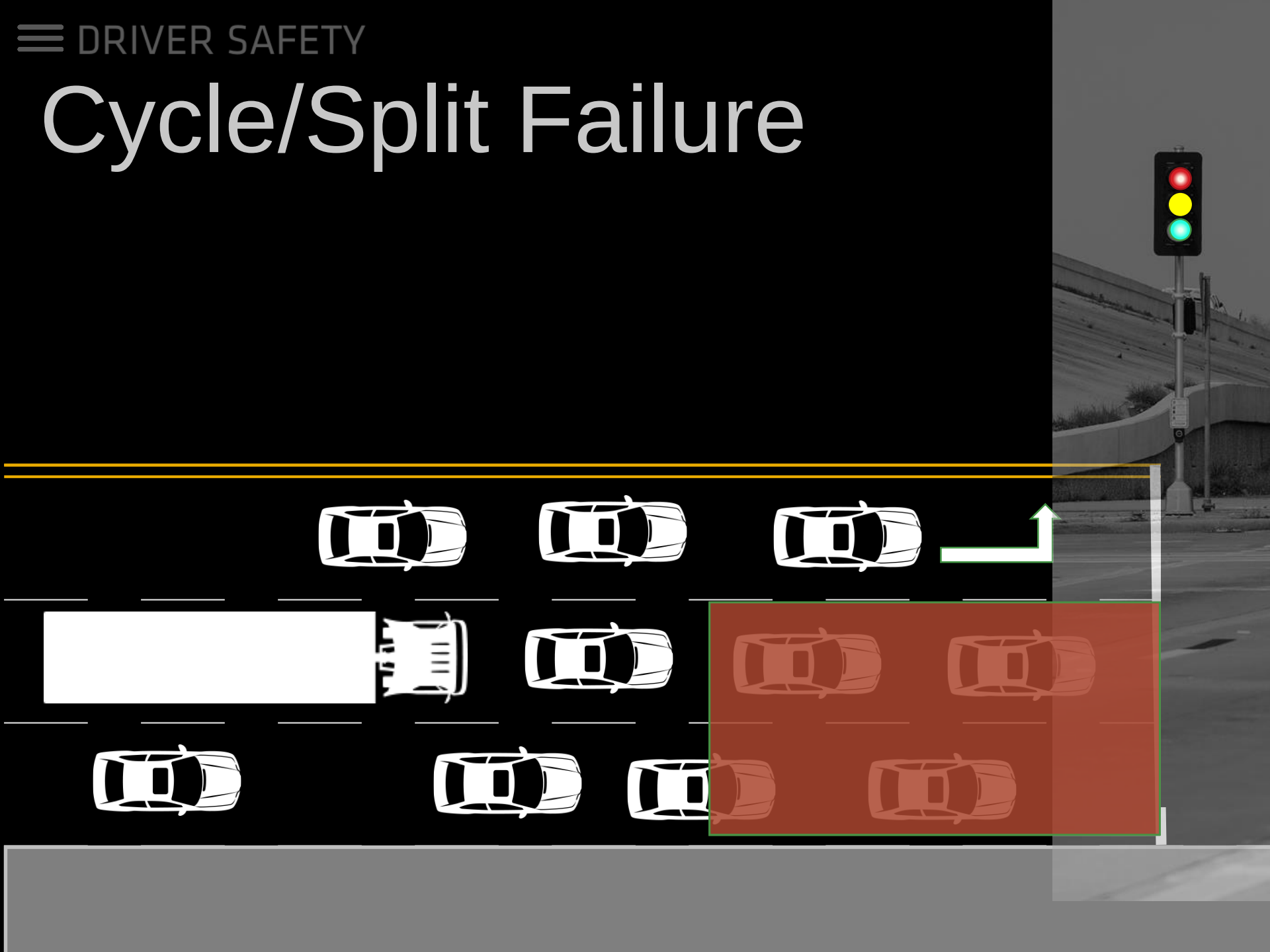
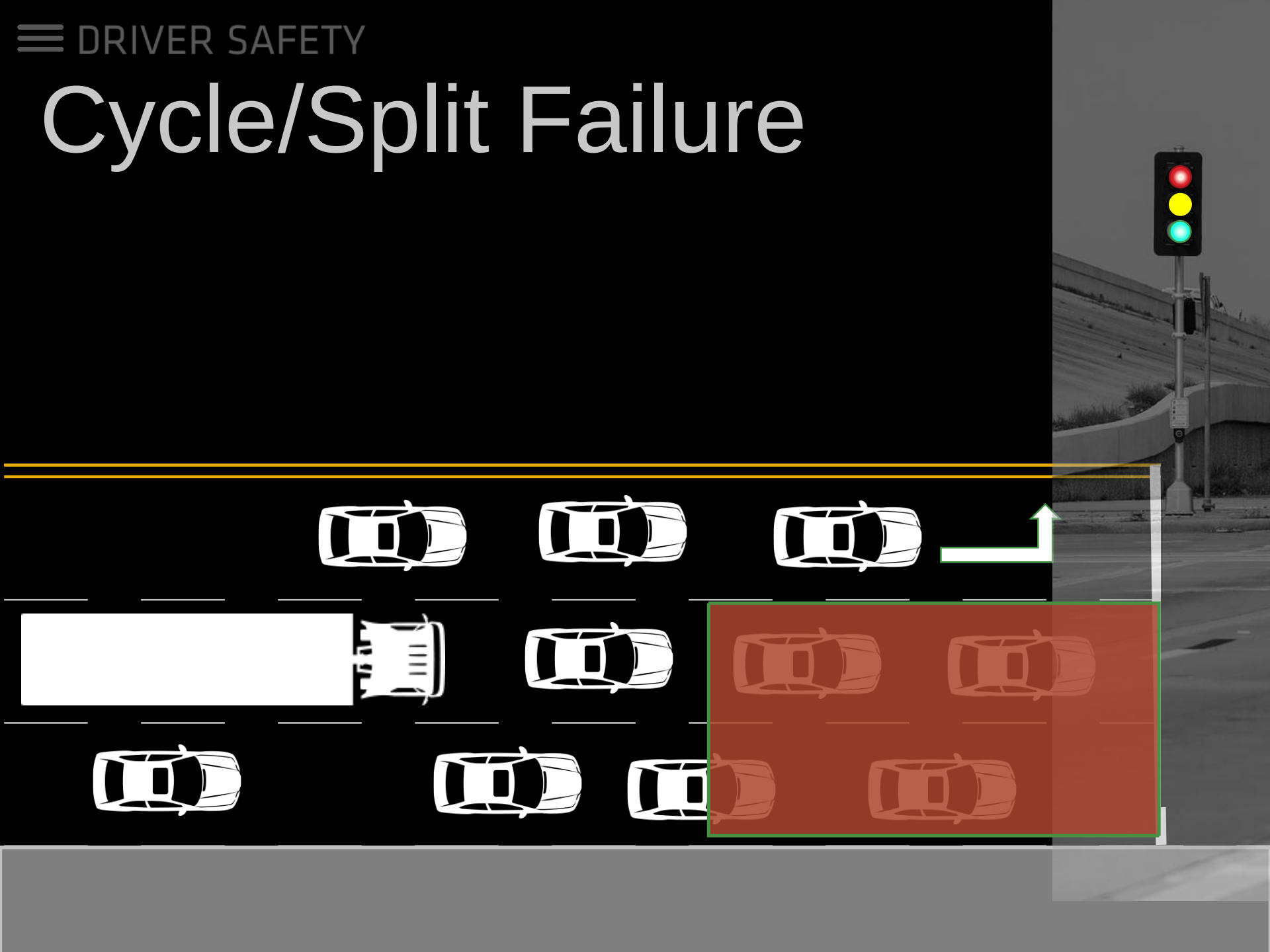


Chart Legend
Gap Out
Max Out
Force Off
Unknown Termination Cause
Ped Activity
SR46 OrangeBlvd Signal 1645
Monday, February 06, 2017 12:00 AM - Monday, February 06, 2017 11:59 PM
Currently showing Force-Offs, Max-Outs and Gap-Outs with a consecutive occurrence of 1 or more.
Pedestrian events are never filtered
Free
Phase Number
Time (Hour of Day)

Cycle/Split Failure



Cycle/Split Failure



Long Detector zones reduce delay

Signal Timing Manual

$$PT = MAH - \frac{Lv + Ld}{1.47\,Va}$$

PT = Passage Time

MAH = Maximum allowable headway

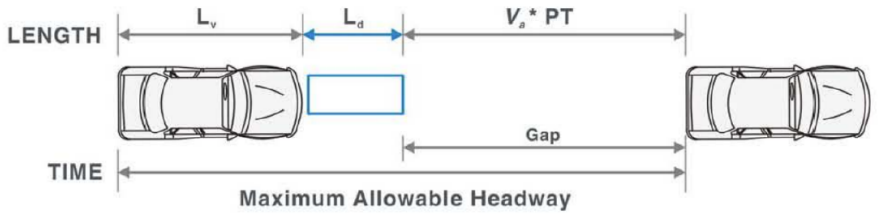
Va = average speed, mph

Lv = Length of Vehicle

Ld = length of the detection zone, ft.

Signal Timing Manual Figure 5-4

Figure 5-4 Relationship between passage time, gap, and maximum allowable headway



***** The larger the detection zone, the smaller the passage time which reduces vehicle delay.**

Signal Timing Manual – Table 5-10

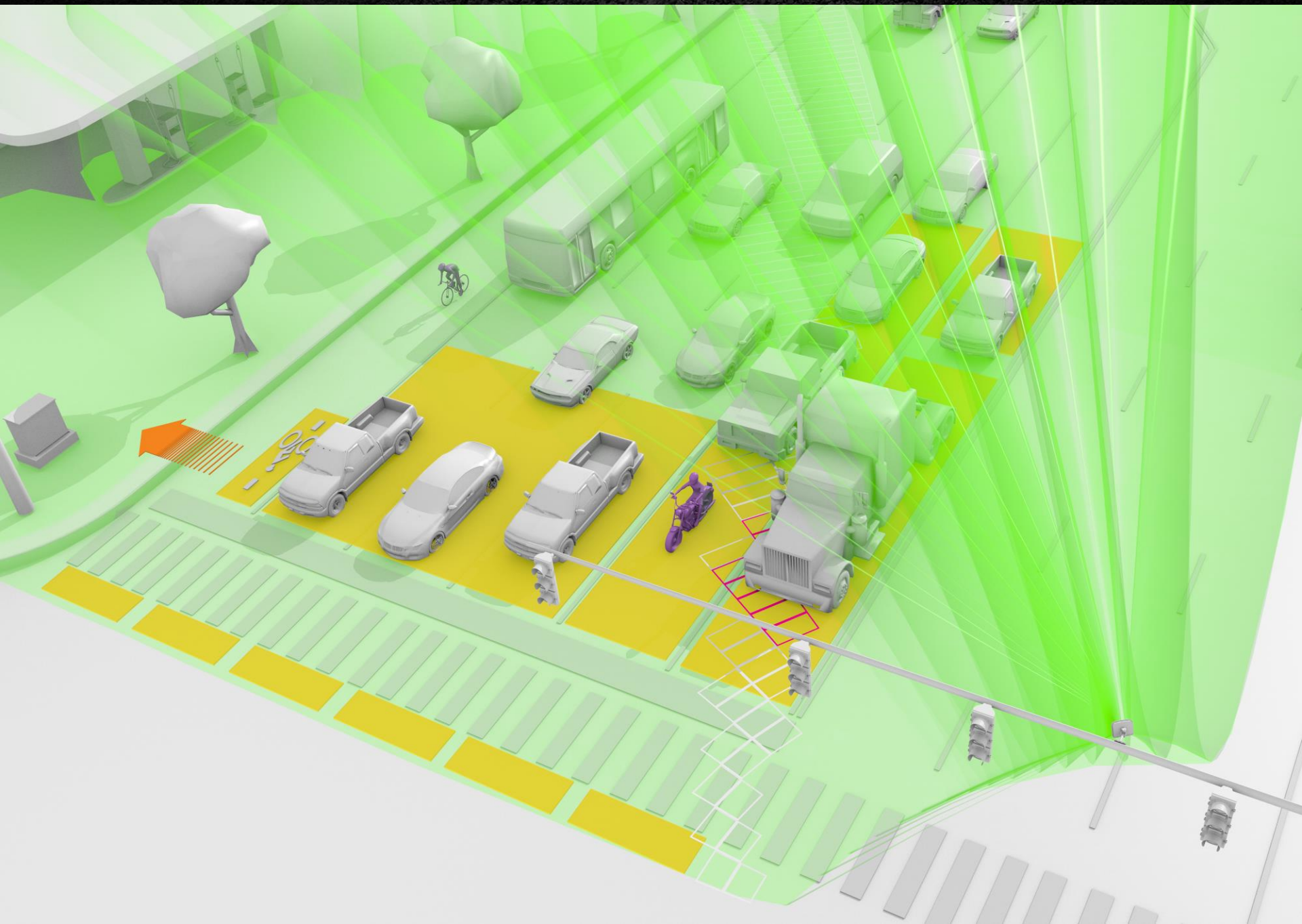
Table 5-10 Passage time duration for presence mode detection

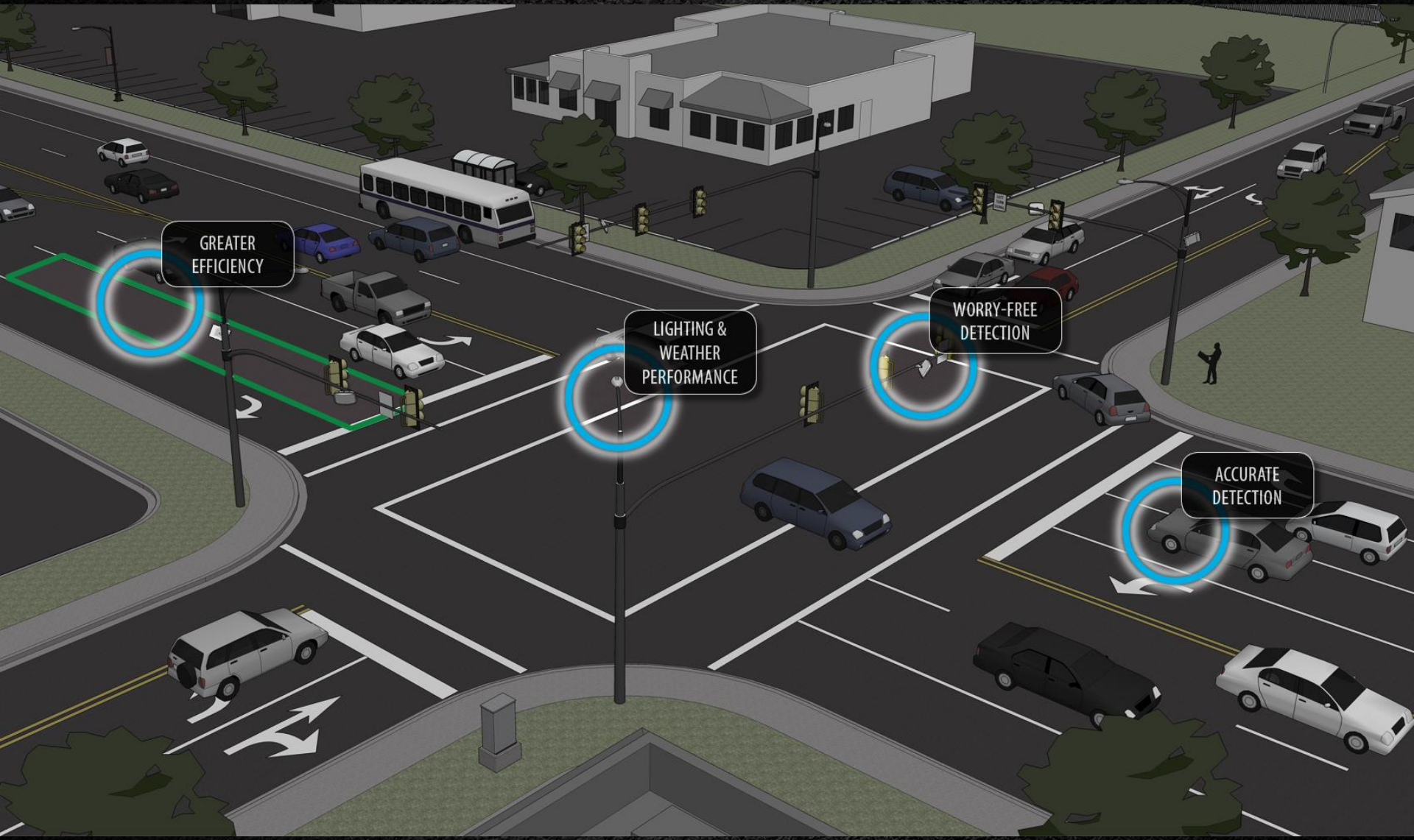
Maximum Allowable Headway, s	Detection Zone Length, ft	85th Percentile Approach Speed, mph [1]				
		25	30	35	40	45
		Passage Time (*PT*), s				
3.0	6	2.2	2.3	2.4	2.5	2.6
	15	1.9	2.1	2.2	2.3	2.4
	25	1.6	1.8	2.0	2.1	2.2
	35	1.3	1.6	1.8	1.9	2.1
	45	1.0	1.3	1.6	1.7	1.9
	55	0.7	1.1	1.3	1.6	1.7
	65	0.4	0.8	1.1	1.4	1.5
	75	0.1	0.6	0.9	1.2	1.4

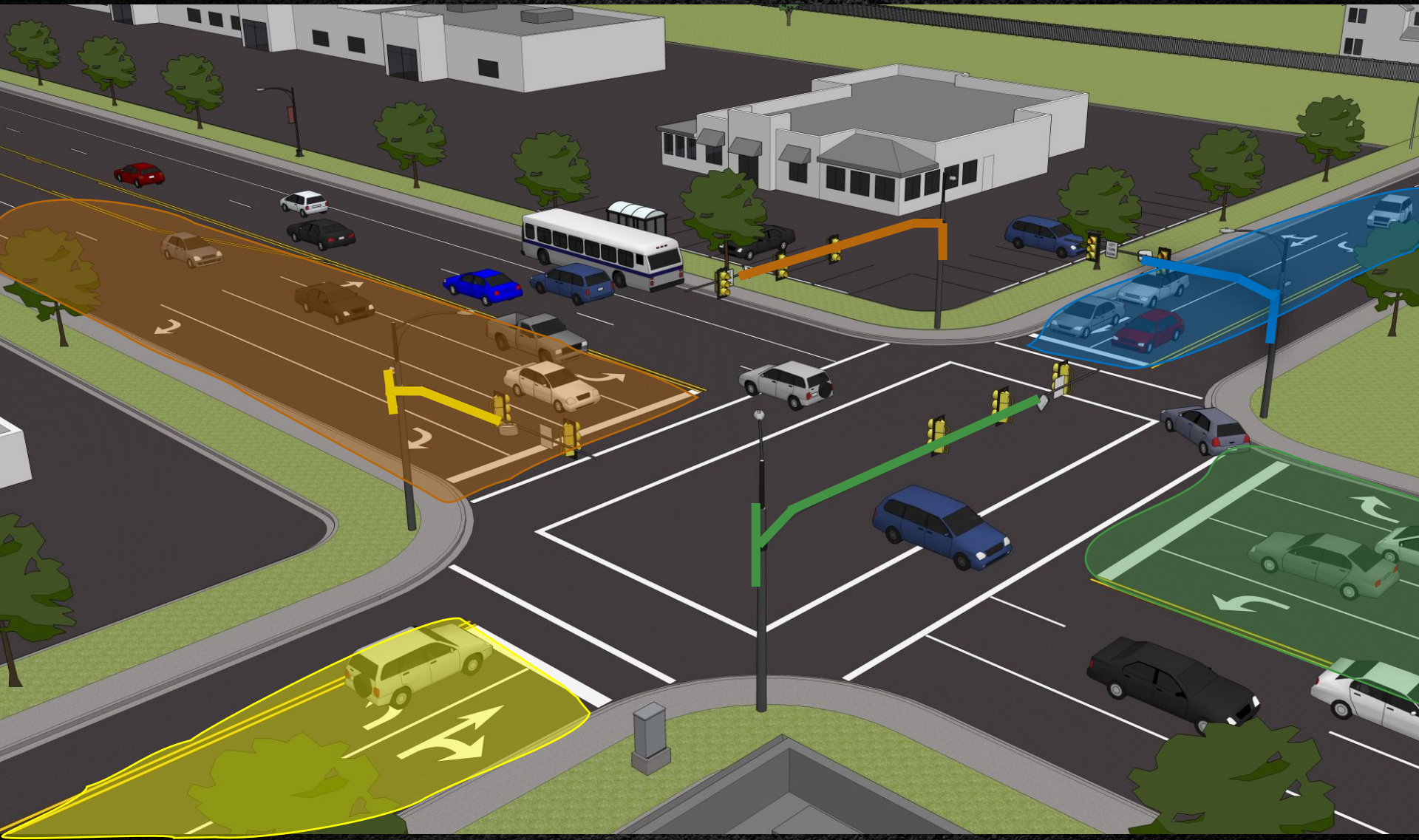
25 mph: 2.2 - .4 = 1.8 s.
30 mph: 2.3 - .8 = 1.5 s.
35 mph: 2.4 – 1.1 = 1.3 s.

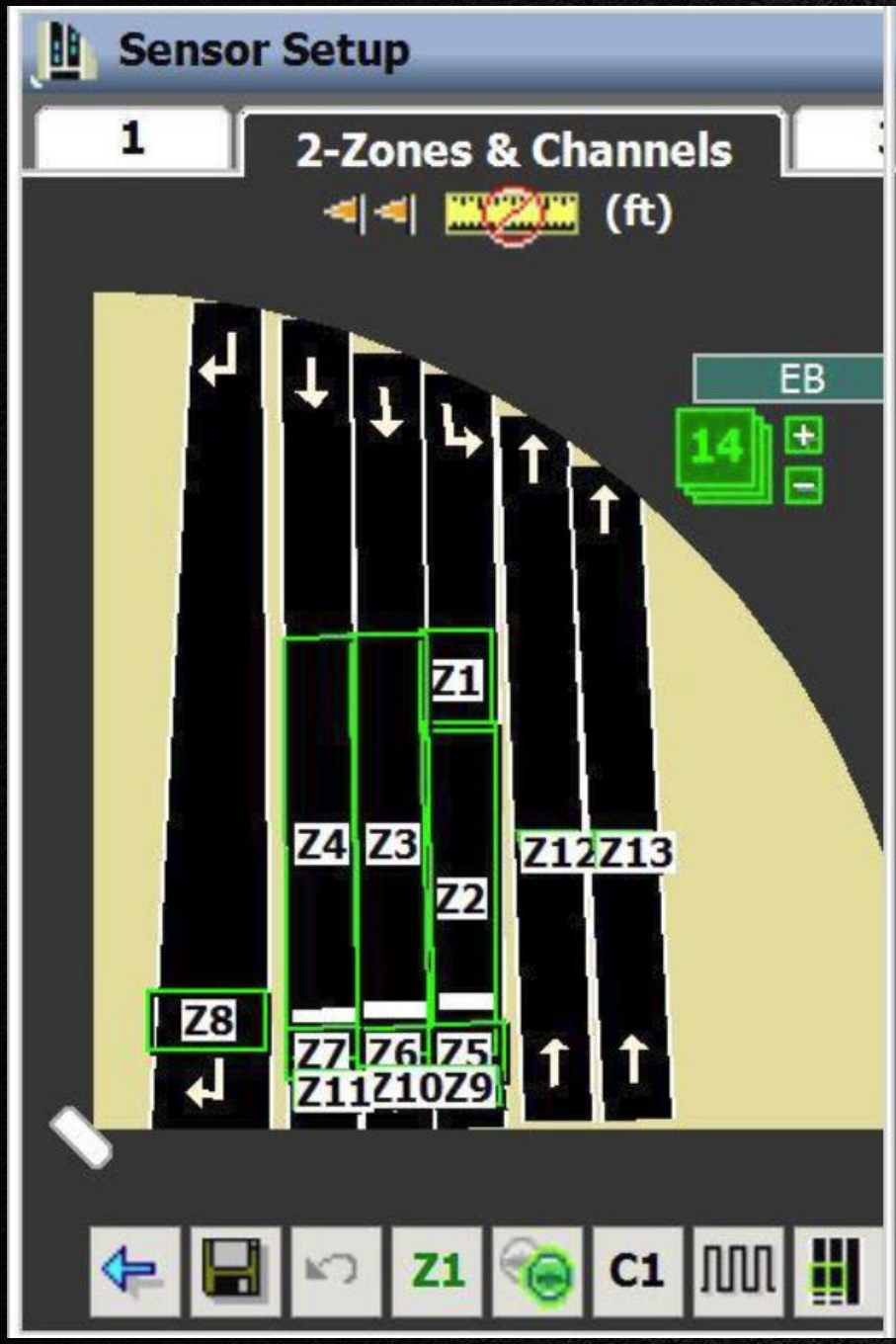
40 mph: 2.5 – 1.4 = 1.1 s.
45 mph: 2.6 – 1.5 = 1.1 s.

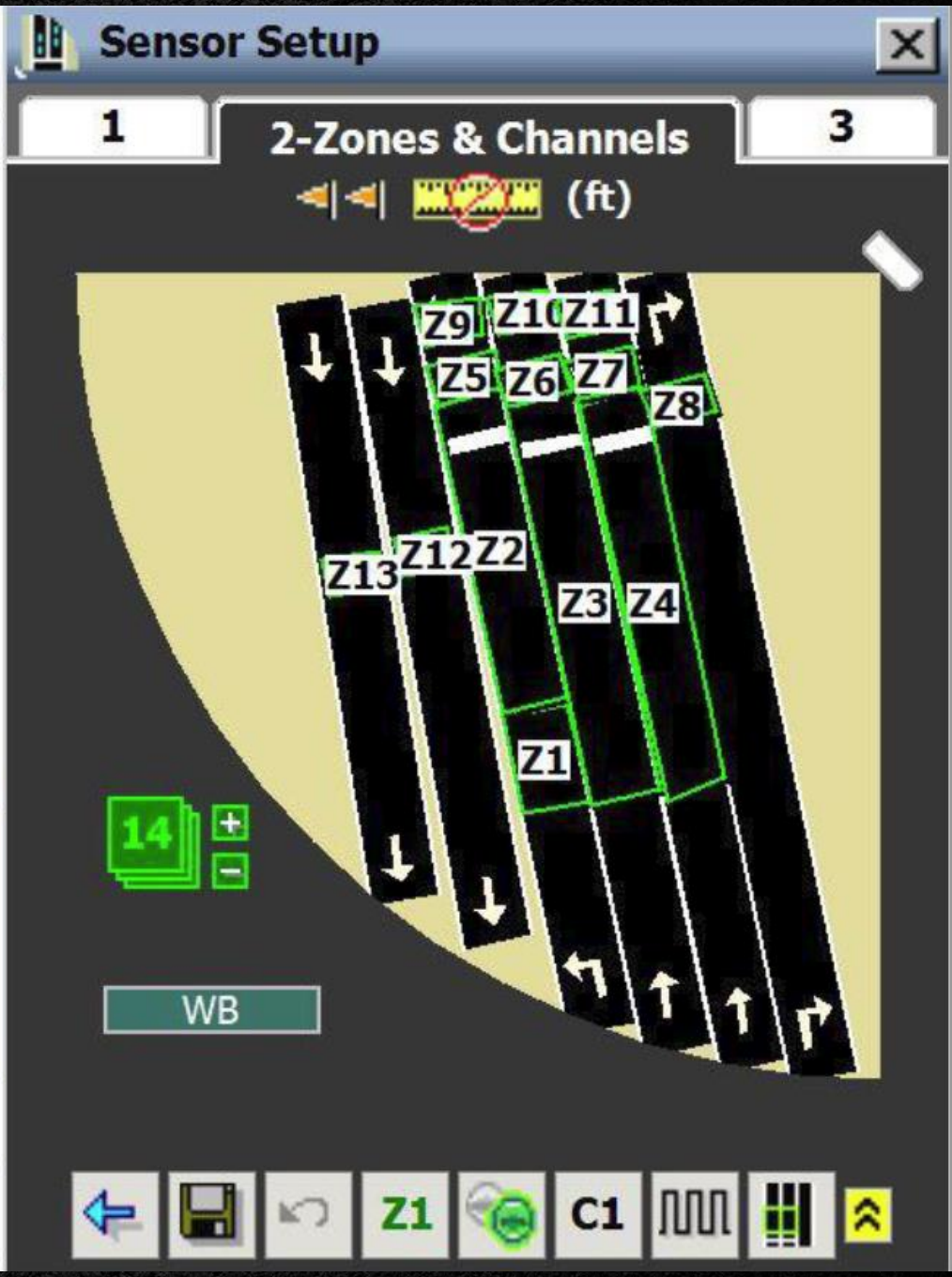

PORT TAMPA BAY



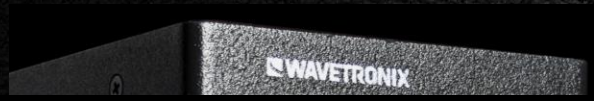

GREATER EFFICIENCY
LIGHTING & WEATHER PERFORMANCE
WORRY-FREE DETECTION
ACCURATE DETECTION

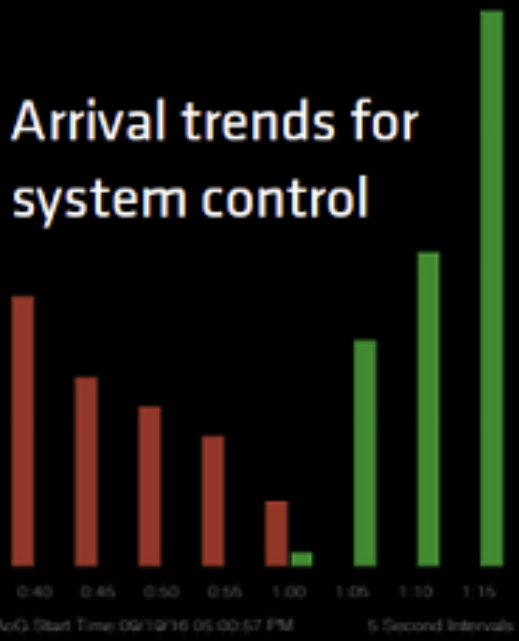


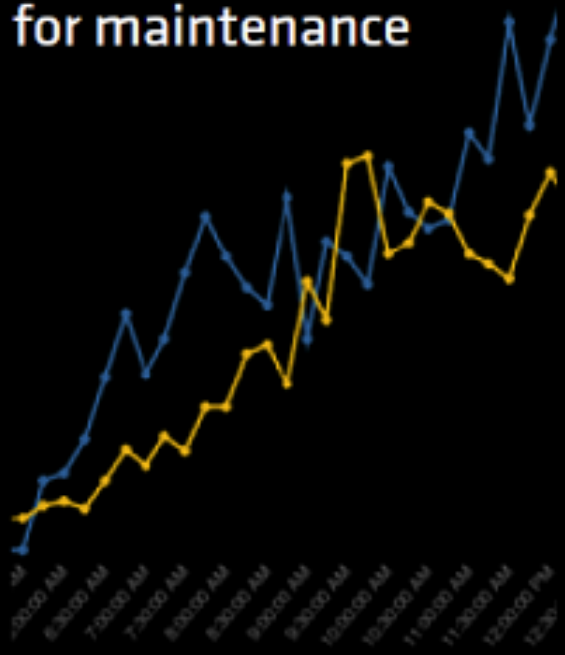

Sensor Setup
1
2-Zones & Channels
(ft)
EB
14
Z1
Z4
Z3
Z2
Z12
Z13
Z8
Z7
Z6
Z5
Z11
Z10
Z9
Z1
C1

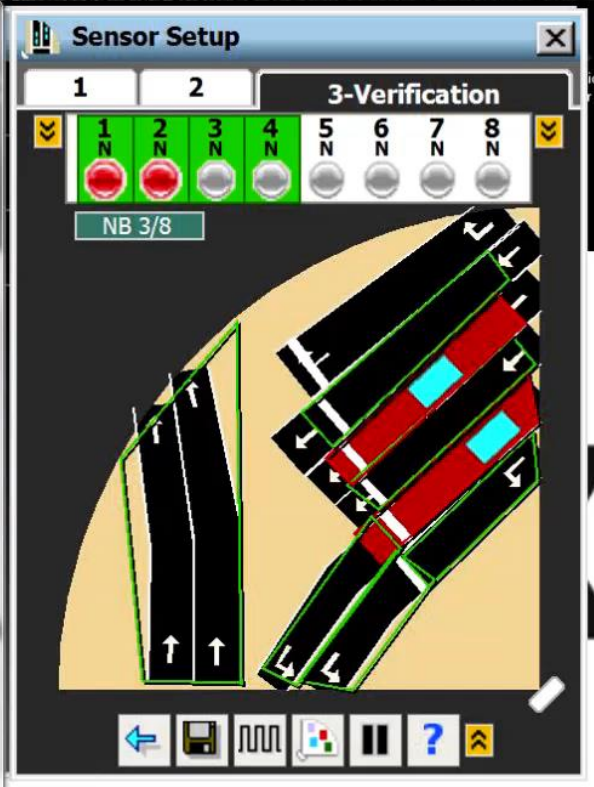

Sensor Setup
1
2-Zones & Channels
3
(ft)
Z9
Z10
Z11
Z5
Z6
Z7
Z8
Z13
Z12
Z2
Z3
Z4
Z1
14
WB
Z1
C1

Click 650/6 vs 1.1.0









SSM Matrix v1.4.3

TinyTake

COST EFFECTIVE

“With Matrix, we really are getting more for each taxpayer dollar”

Richard DiCesare
Greenville Traffic Engineer
North Carolina

Reliable

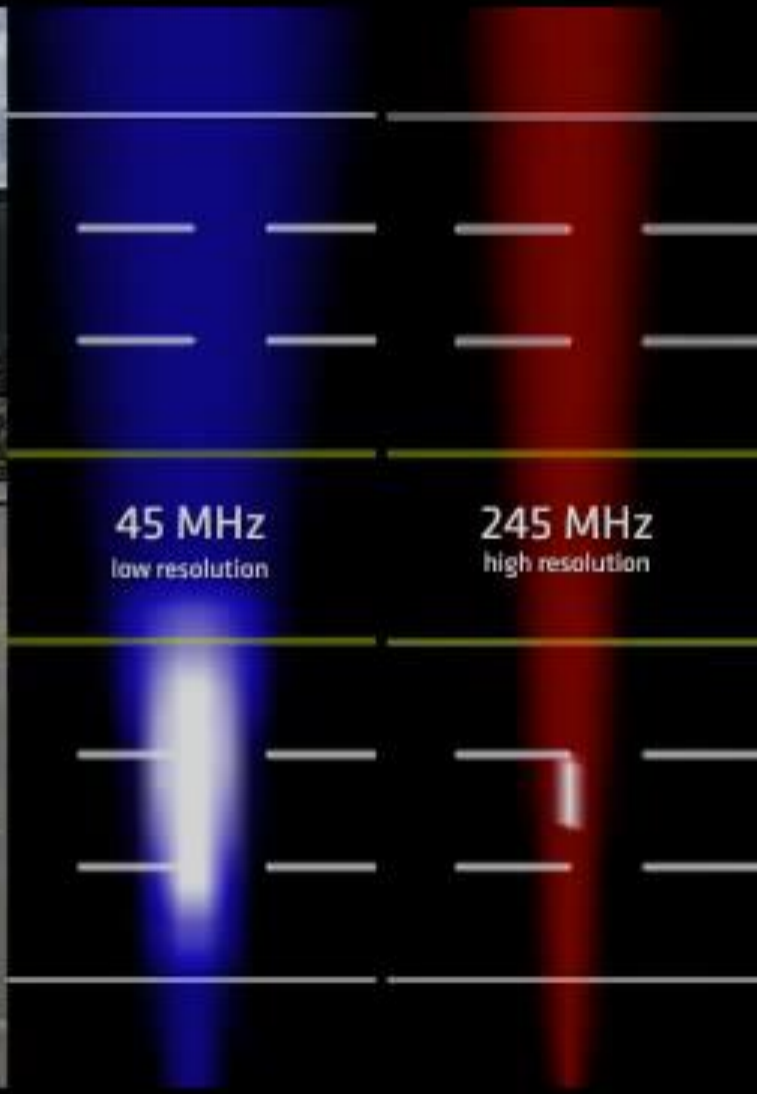
Every Time.

All the Time.

Real-Time Data

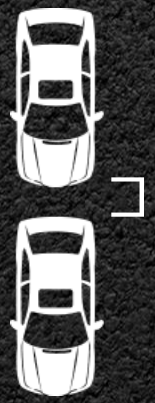
SmartSensor HD | SPEED CALCULATION

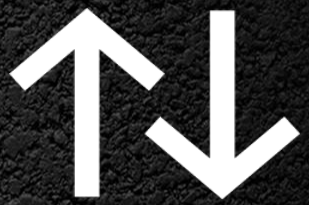
SmartSensor HD is the only side-fire traffic


45 MHz
low resolution
245 MHz
high resolution

HD

85th





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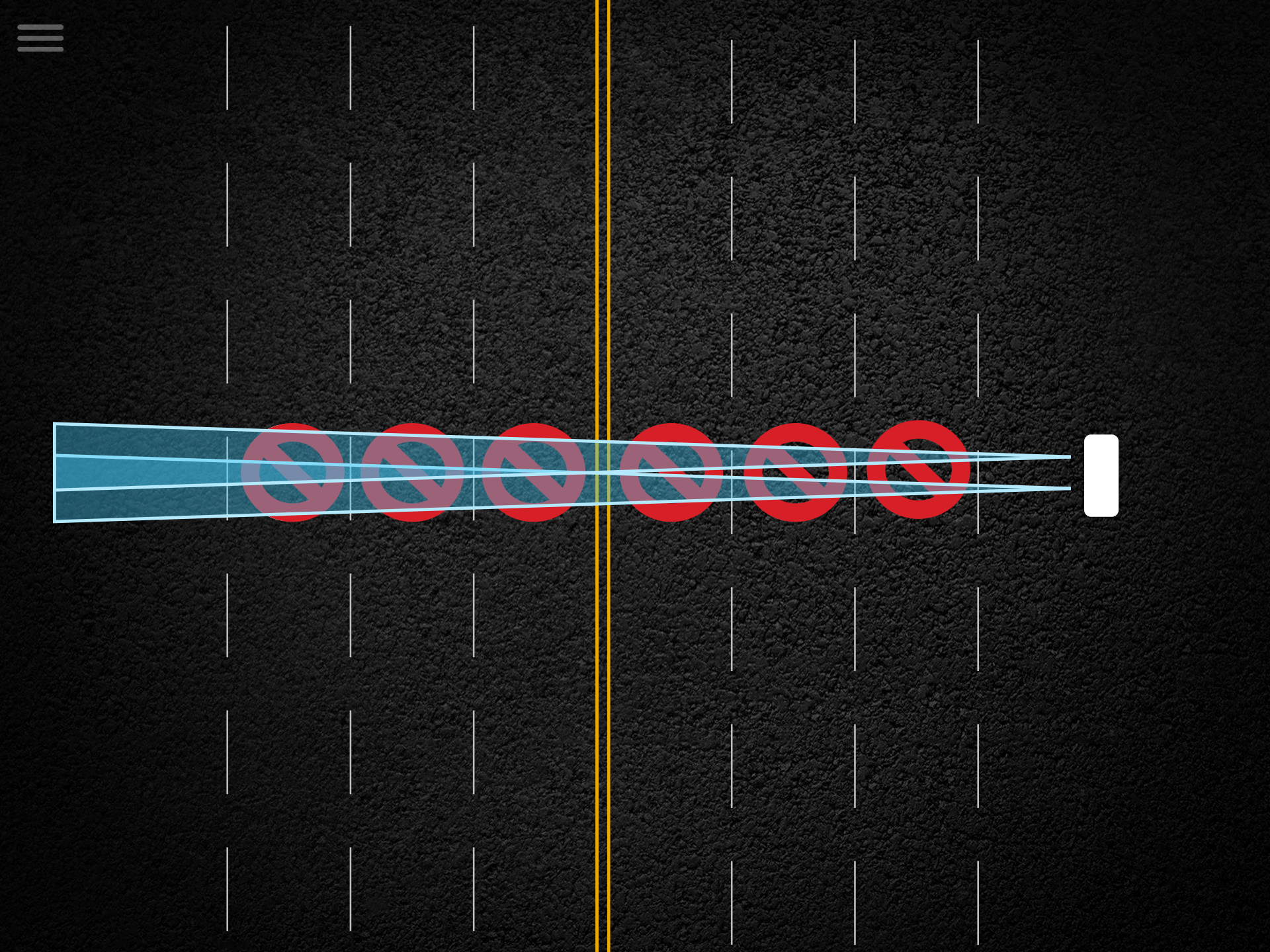
FirmwareVersion=DSP: 2016-09-08 HW v4.0 Debug=False, Algo: 2016-05-05 Diagnostic=False, FPGA: 2013-02 Build# 0, FPAA: 2001-03-20

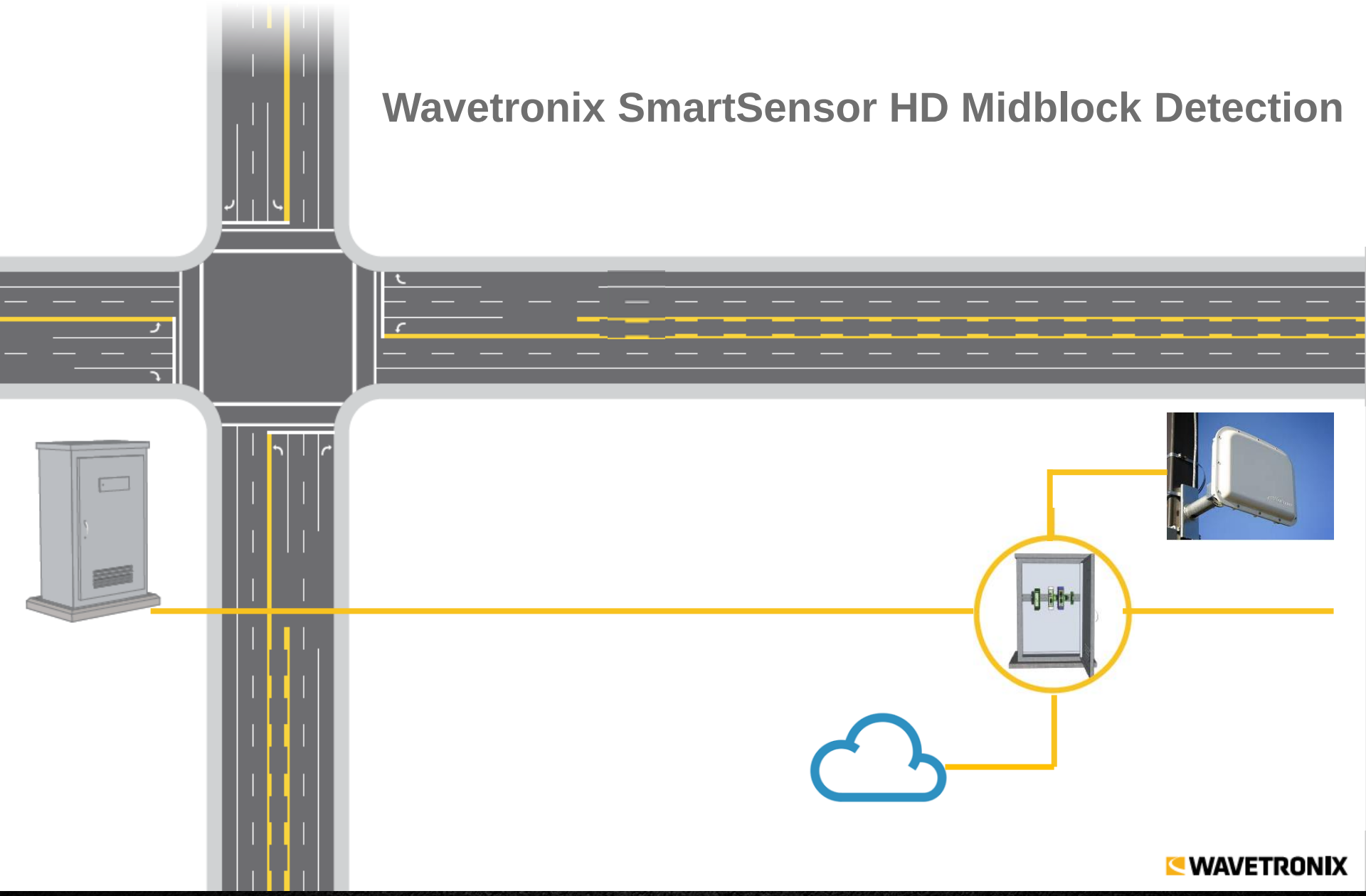
```
#
#                       DATE         : January 31, 2017
#                       SERIALNUMBER : 1010403AB0003605
#                       DESCRIPTION  : SS126 ITS Radar
#                       LOCATION     : current sensor
#                       ORIENTATION  : Unknown
#                       NOTES        :
#                       TIMESTAMP    : End
#                       FORMAT       : By Lane and Approach
#
```

# NAME	VOLUME	Occupancy (%)	Speed (MPH)	85% Speed (MPH)	Class Count (bin lengths in feet) C1 10	C2 25	C3 50	C4 60	C5 85	C6 110	C7 120	C8	HEADWAY	GAP	SENSOR TIME YYYY-MM-DD HH:MM:SS	Interval (sec)
LANE_01	51	6.9	69.6	73	1	29	8	1	12	0	0	-	5.9	5.5	2017-01-26 13:55:00	300
LANE_02	76	7.5	73	77.4	1	60	6	1	4	3	1	-	3.9	3.7	2017-01-26 13:55:00	300
LANE_03	51	3.8	77.2	80.8	0	46	3	1	0	1	0	-	5.9	5.7	2017-01-26 13:55:00	300
LANE_04	27	2.8	78.5	84.5	0	21	2	0	3	0	1	-	11.1	10.8	2017-01-26 13:55:00	300
LANE_05	15	1.1	72.7	78	1	12	2	0	0	0	0	-	20	19.8	2017-01-26 13:55:00	300
LANE_06	48	3.7	80.4	84	1	40	5	0	1	1	0	-	6.3	6	2017-01-26 13:55:00	300
LANE_07	74	6.3	74.2	79.5	11	48	9	0	5	1	0	-	4.1	3.8	2017-01-26 13:55:00	300
LANE_08	61	5.8	72.3	77	3	50	1	0	6	1	0	-	4.9	4.6	2017-01-26 13:55:00	300
LANE_09	26	3.2	66.2	72	2	16	3	0	5	0	0	-	11.5	11.2	2017-01-26 13:55:00	300
LANE_10	30	2.9	64.8	70	1	23	6	0	0	0	0	-	10	9.7	2017-01-26 13:55:00	300
LANE_01	48	4.7	71.1	76	0	39	5	0	4	0	0	-	6.3	6	2017-01-26 14:00:00	300
LANE_02	55	4.7	73.4	77.7	2	46	5	0	2	0	0	-	5.5	5.2	2017-01-26 14:00:00	300
LANE_03	35	2.3	77.4	81	1	31	3	0	0	0	0	-	8.6	8.4	2017-01-26 14:00:00	300
LANE_04	17	1.4	76.7	79	0	16	0	0	0	1	0	-	17.6	17.4	2017-01-26 14:00:00	300
LANE_05	22	1.6	78.5	84	2	19	1	0	0	0	0	-	13.6	13.4	2017-01-26 14:00:00	300
LANE_06	61	4.6	79.2	83.3	0	48	11	1	1	0	0	-	4.9	4.7	2017-01-26 14:00:00	300
LANE_07	69	6.6	73.9	78.6	2	53	5	0	9	0	0	-	4.3	4.1	2017-01-26 14:00:00	300
LANE_08	58	6.5	71.5	77.3	2	37	10	0	6	3	0	-	5.2	4.8	2017-01-26 14:00:00	300
LANE_09	33	4	67	70.8	1	23	3	0	6	0	0	-	9.1	8.7	2017-01-26 14:00:00	300
LANE_10	32	3.9	60.8	68	0	21	8	1	2	0	0	-	9.4	9	2017-01-26 14:00:00	300
LANE_01	51	5.7	70.3	73.5	0	36	7	1	5	2	0	-	5.9	5.5	2017-01-26 14:05:00	300
LANE_02	65	6.7	73.3	77.8	2	47	7	0	8	1	0	-	4.6	4.3	2017-01-26 14:05:00	300
LANE_03	44	3.3	77.2	83	0	37	5	2	0	0	0	-	6.8	6.6	2017-01-26 14:05:00	300
LANE_04	12	1	75.8	79	0	10	1	0	0	1	0	-	25	24.7	2017-01-26 14:05:00	300
LANE_05	19	1.4	78.4	83	1	17	1	0	0	0	0	-	15.8	15.6	2017-01-26 14:05:00	300
LANE_06	71	5.2	78.6	82.8	2	61	6	2	0	0	0	-	4.2	4	2017-01-26 14:05:00	300
LANE_07	85	8.2	73.8	78.3	7	56	12	1	8	1	0	-	3.5	3.2	2017-01-26 14:05:00	300
LANE_08	67	8.2	70.3	75	6	38	7	0	14	2	0	-	4.5	4.1	2017-01-26 14:05:00	300
LANE_09	31	4.4	65.9	70.5	0	16	6	1	7	1	0	-	9.7	9.3	2017-01-26 14:05:00	300
LANE_10	34	4.1	58.3	65	1	22	9	1	1	0	0	-	8.8	8.5	2017-01-26 14:05:00	300

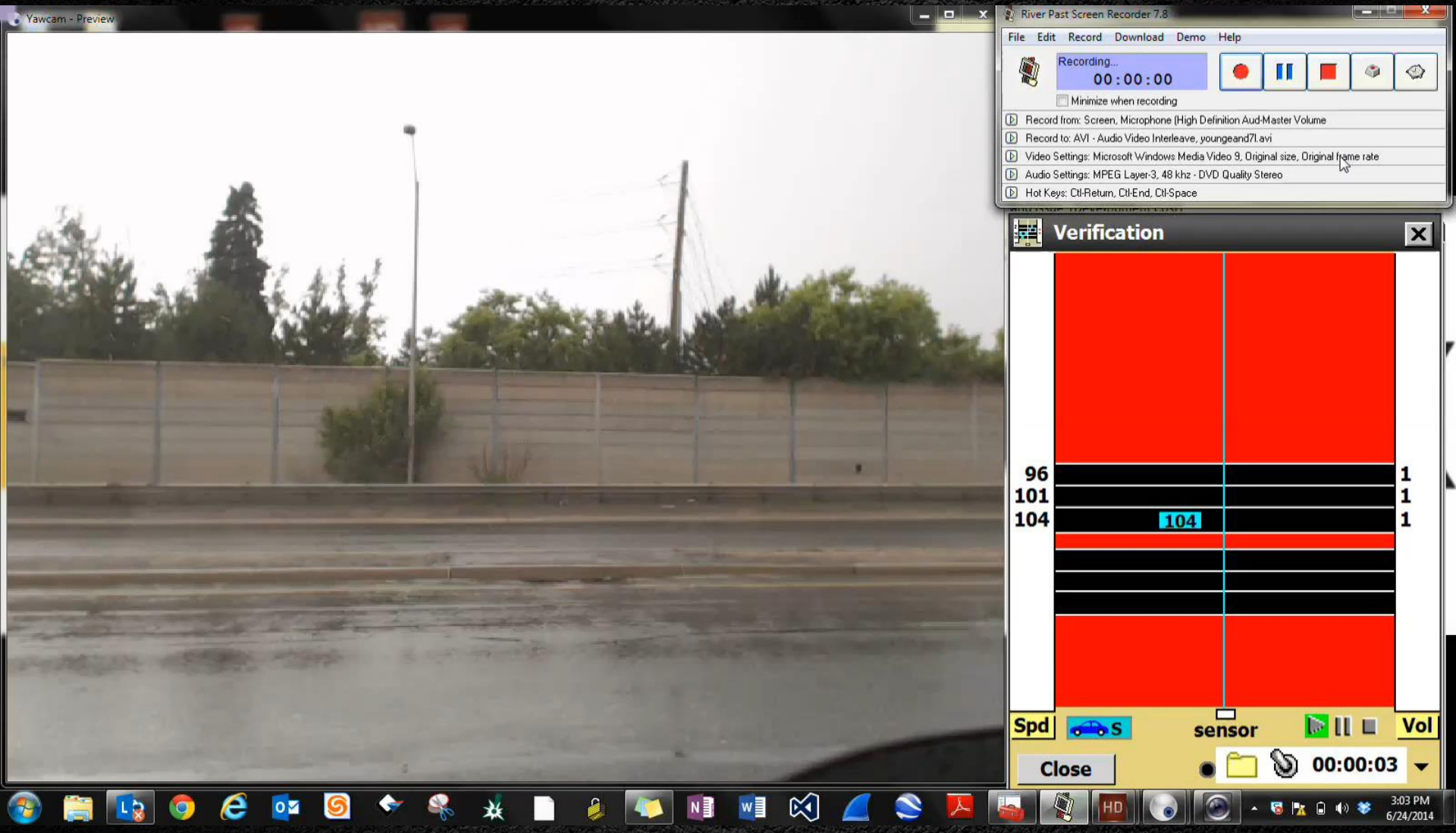
Interval	Lanes & Approaches	Class Bins	Speed Bins	Onboard Storage Capacity
20 sec	4	4	0	17 days
20 sec	12	4	0	6 days
20 sec	12	4	10	3 days
15 min	4	4	0	25 months 29 days
15 min	12	4	0	9 months 26 days
15 min	12	4	10	5 months 3 days
1 hour	4	4	0	103 months 29 days
1 hour	12	4	0	39 months 15 days
1 hour	12	4	10	20 months 13 days



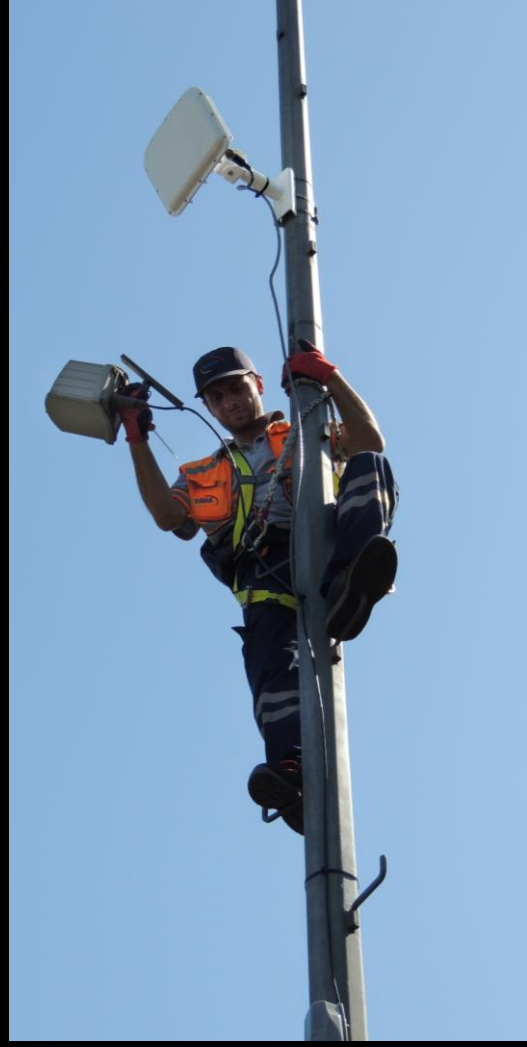
Wavetronix SmartSensor HD Midblock Detection



WAVETRONIX


Yawcam - Preview
River Past Screen Recorder 7.8
File Edit Record Download Demo Help
Recording...
00:00:00
Minimize when recording
Record from: Screen, Microphone (High Definition Aud-Master Volume
Record to: AVI - Audio Video Interleave, youngeand7l.avi
Video Settings: Microsoft Windows Media Video 9, Original size, Original frame rate
Audio Settings: MPEG Layer-3, 48 khz - DVD Quality Stereo
Hot Keys: Ctl-Return, Ctl-End, Ctl-Space
Verification
96
101
104
104
1
1
1
Spd
S
sensor
Vol
Close
00:00:03
3:03 PM
6/24/2014


Otogar
Atatürk Havalimanı
Edirne
Asiantepe Stadı
Ayazağa
Beşiktaş
Sarıyer



Agency Efficiency

Don’t be held back

EASY

&

ROUTINE

Support


1st


2nd


3rd

Thank You!

Have a Project?

We can come meet with you one on one.

WAVETRONIX

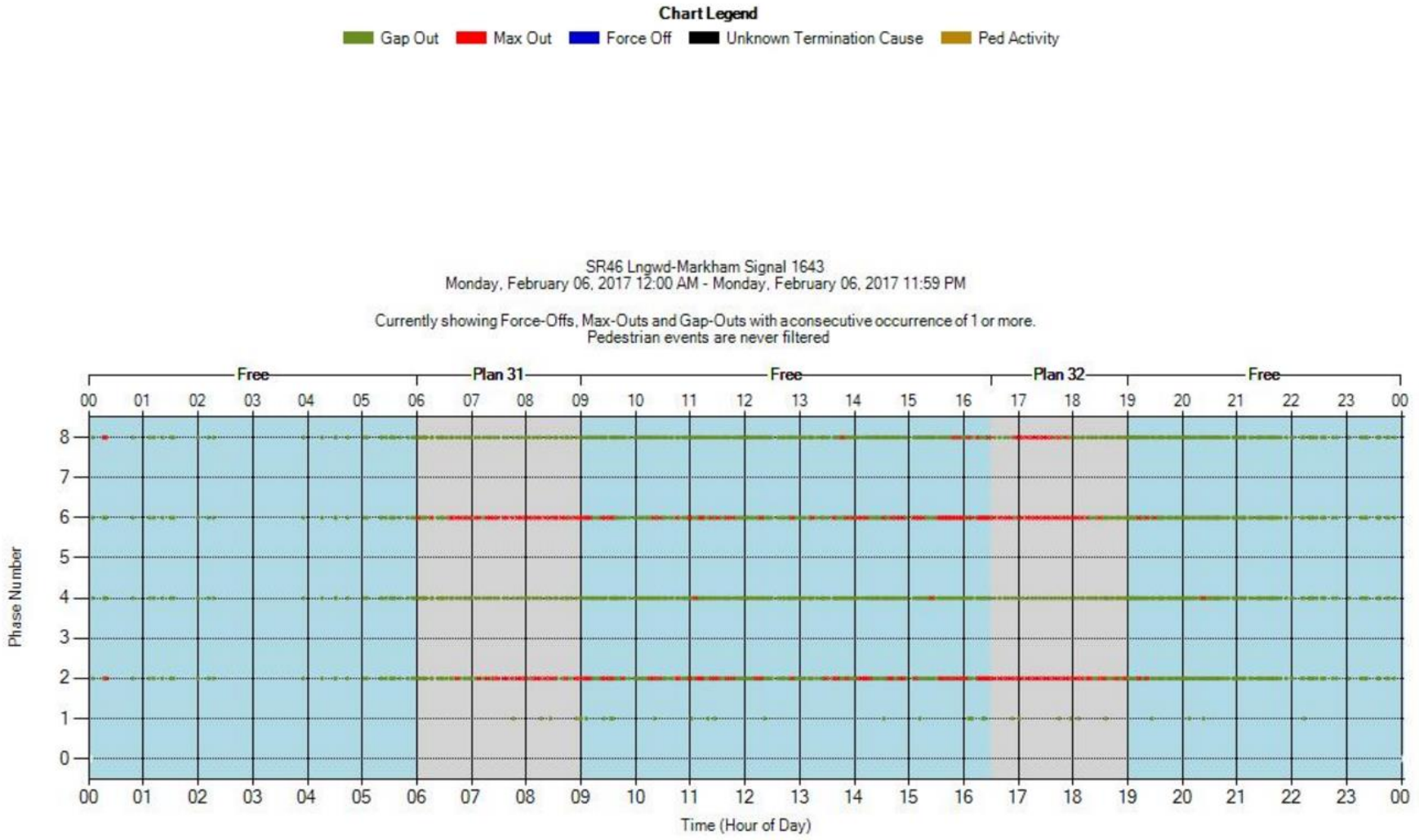
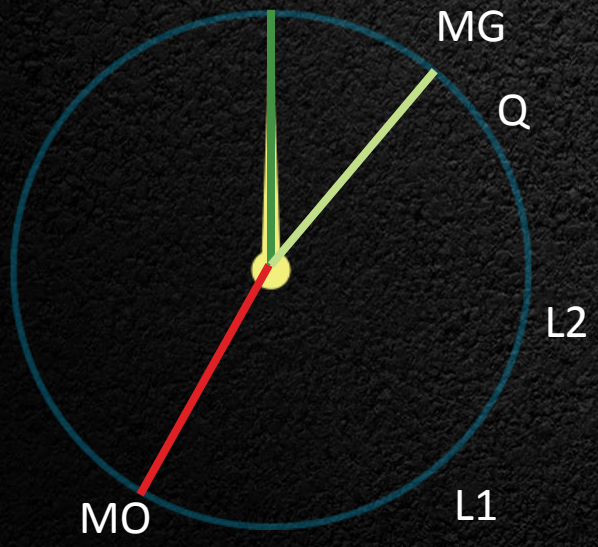


Chart Legend
Gap Out
Max Out
Force Off
Unknown Termination Cause
Ped Activity
SR46 Lngwd-Markham Signal 1643
Monday, February 06, 2017 12:00 AM - Monday, February 06, 2017 11:59 PM
Currently showing Force-Offs, Max-Outs and Gap-Outs with a consecutive occurrence of 1 or more.
Pedestrian events are never filtered
Free
Plan 31
Free
Plan 32
Free
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 17 18 19 20 21 22 23 00
Phase Number
8
7
6
5
4
3
2
1
0
Time (Hour of Day)


MG
Q
L2
L1
MO

Cycle/Split Failure