THE PROBLEM OF RED LIGHT RUNNING

A Different Approach

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The RLR Epidemic!

Annual Statistics…

- *200,000 injured*
- *Over 1,000 deaths*
- *Cost estimates are more than $1-billion*

Traditional Remedies

- Engineering
- Education
- Enforcement - “Intuitive”

The Automated Enforcement Remedy

1. Detection Installed
2. Digital Images Recorded
3. Tickets Mailed to Violators

Our Different Approach

1. Identify candidate intersections
2. Install RLR monitoring equipment
3. Measure existing baseline compliance
4. Seek site-specific engineering solutions
5. Re-measure compliance rate

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A Different Approach (Cont'd)

6. Conduct selective enforcement & a media campaign
7. Use automated enforcement
8. Periodically monitor compliance rate

Some Underlying Causes

- Inadequate Capacity
- Inappropriate Signal Timing
- Overall intersection geometry
- Pedestrian issues
- Intersection speed
- Weather impacts
- Seasonal impacts
- Excessive number of Trucks

Our Goals

- Reduce High Intersection Crash
- Improve Red Light Compliance
- Increase Enforcement Effectiveness
- Develop a Performance Measure

Engineering Solutions

- "All Red" Intervals
- Strobe lights in the red lens
- Rumble strips on the approach lanes
- Frequent reevaluation of signal timing plans
- Dynamic Advance Warning Signs
- Corridor-wide Signal Synchronization
- Use of "Max Out" Capability
- Alternate Routes to Reduce Demand
- And more….

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SUMMARY of the PROCESS

1. Install RLR monitoring equipment.
2. Identify root causes
3. Implement countermeasures
4. Monitor performance after changes
5. Selective enforcement with media Campaign
6. Implement automated enforcement (a last resort)

Potential Research Scope Items

- Deploy at different intersection scenarios
- Create Implementation Guide & refine process
- Develop Countermeasures “Toolbox”
- Correlate violation rates to crash rates
- Identify the “normal” violation rate spectrum
- Pursue private sector interest in partnering
- Developing user-friendly in-vehicle equipment

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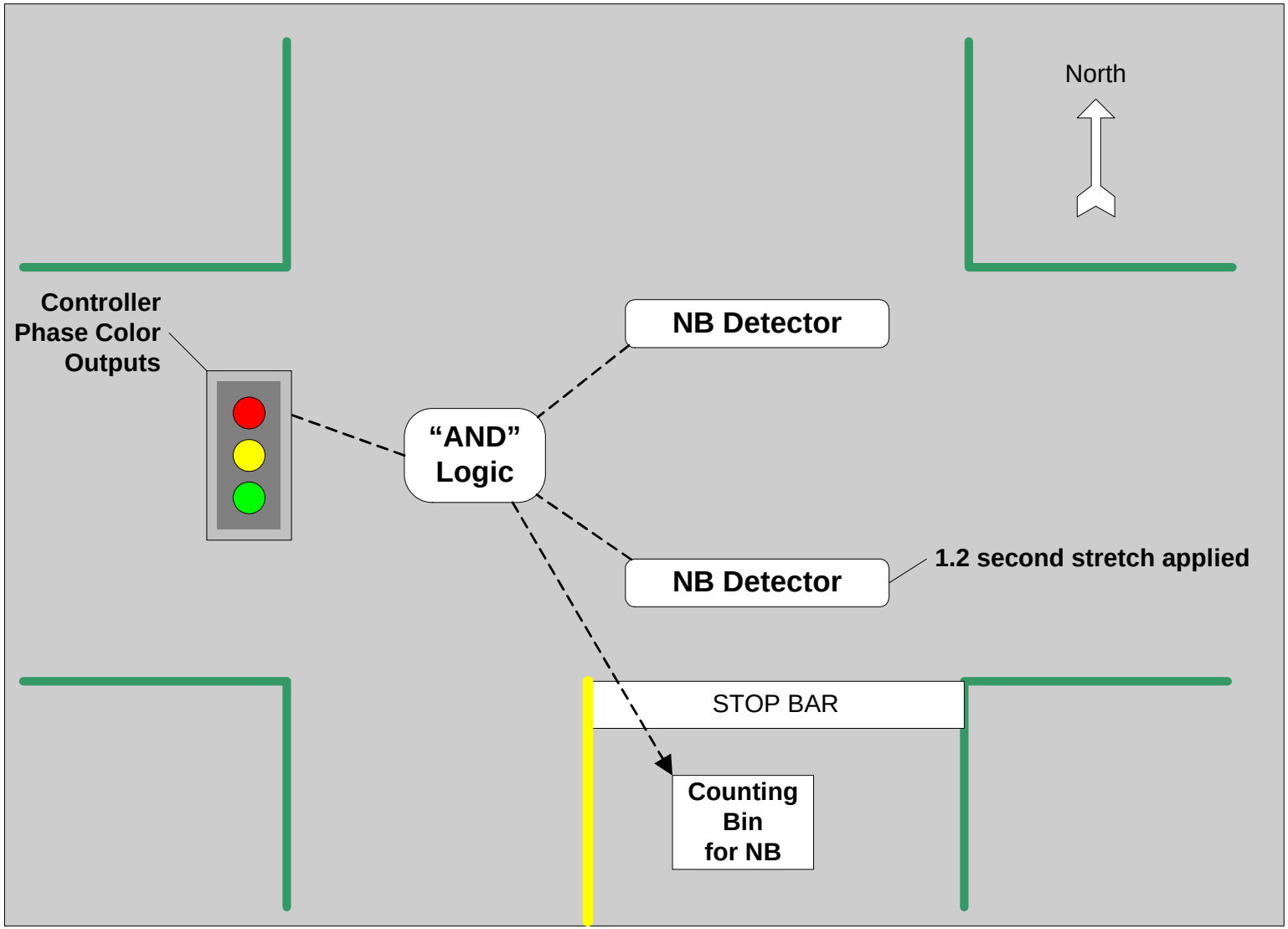
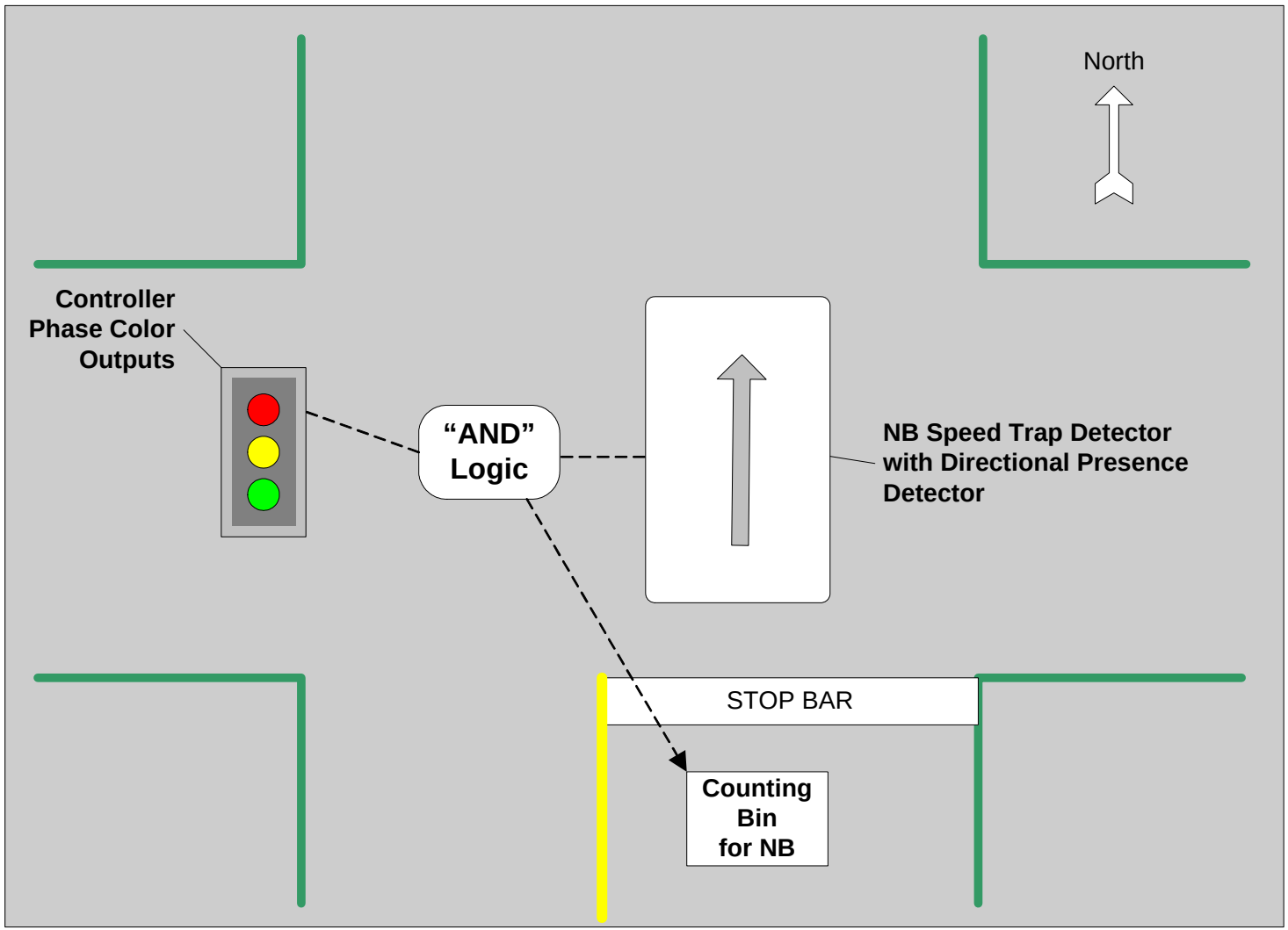
The “Nuts & Bolts”…

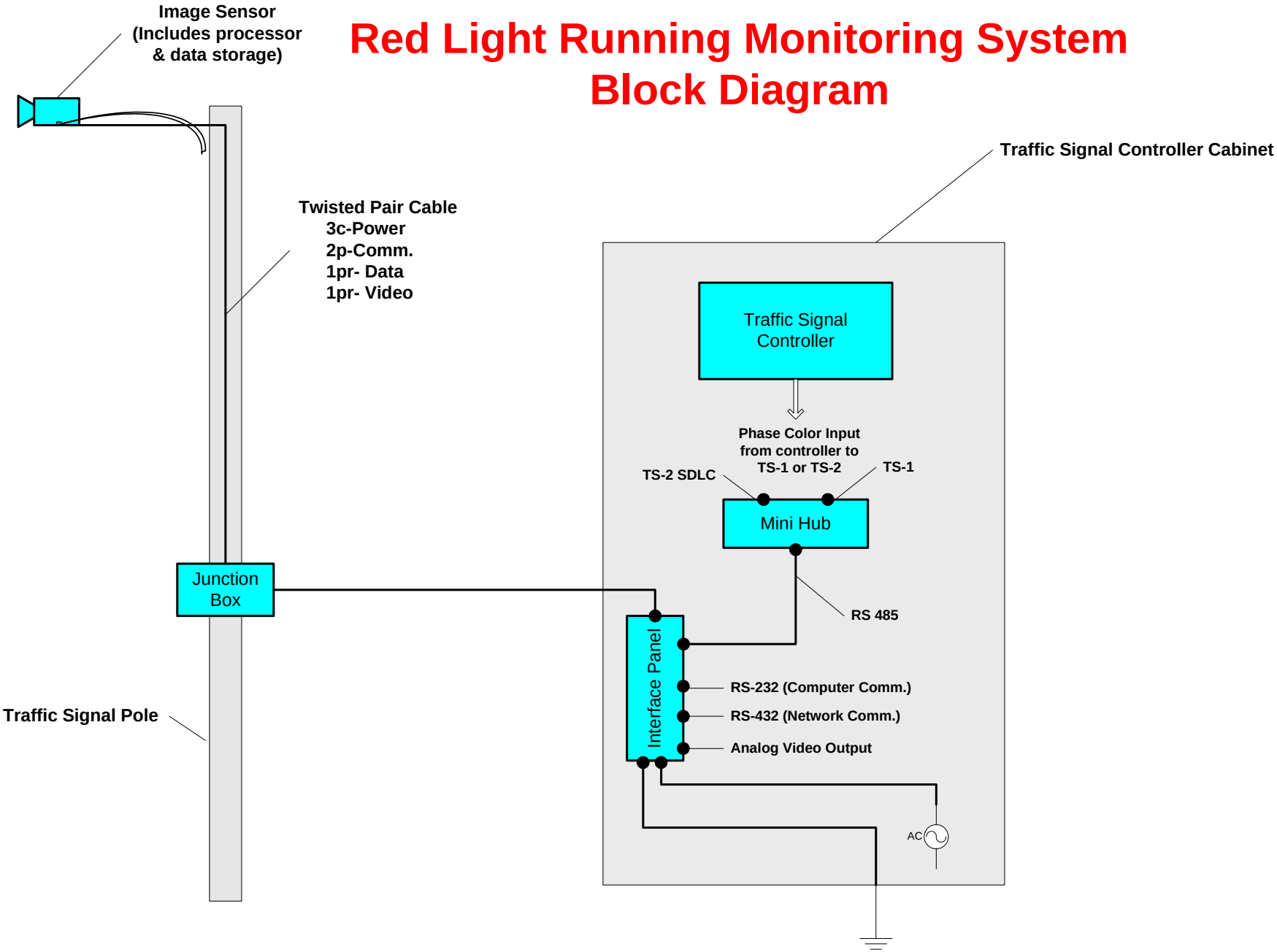
Red Light Running Monitoring System
Logic Diagram
(Autoscope 2004)



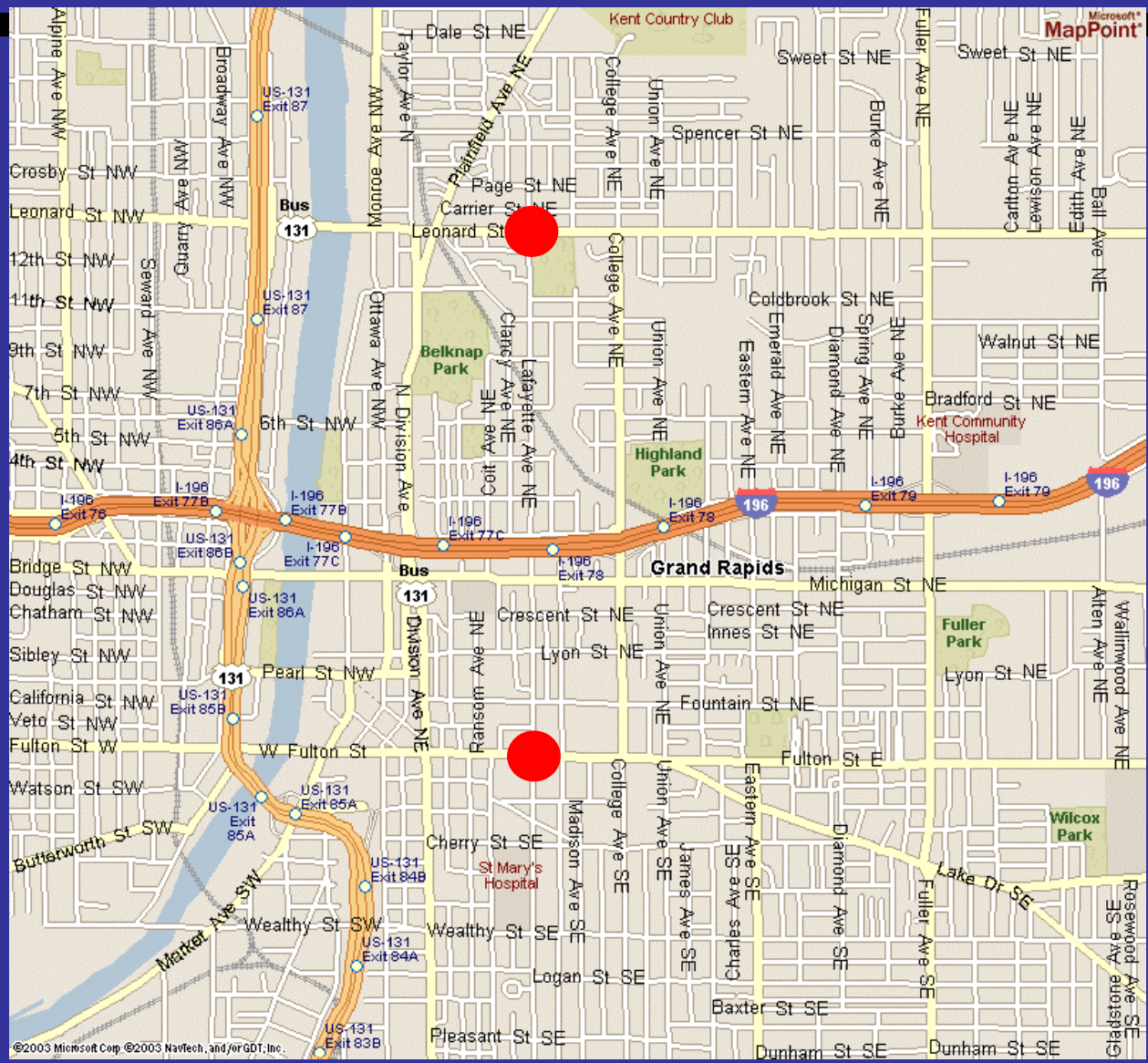
Red Light Running Monitoring System
Logic Diagram
(Solo Pro II)



Red Light Running Monitoring System Block Diagram



Grand Rapids, Michigan Site Map



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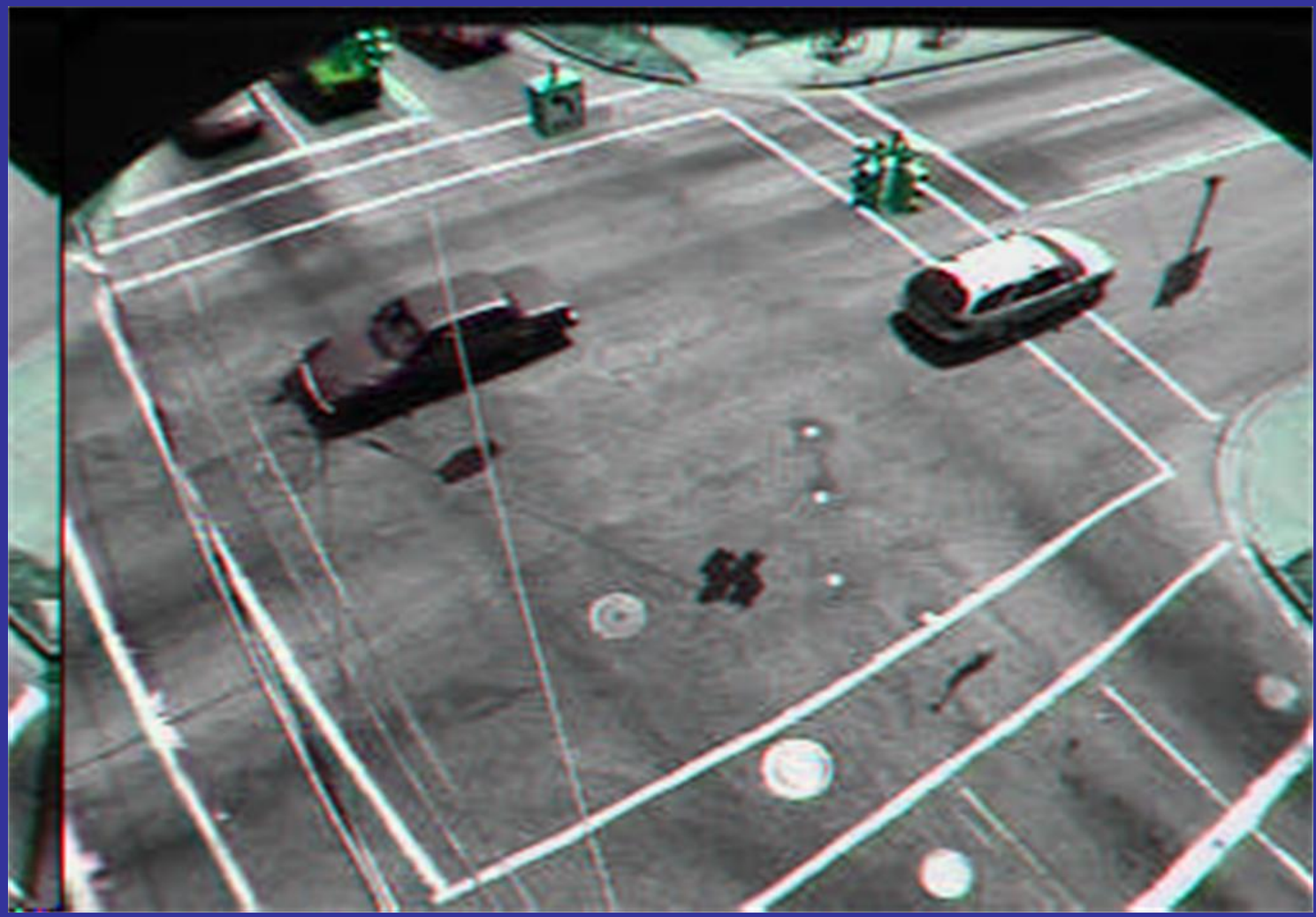
Lafayette at Fulton in G.R., MI

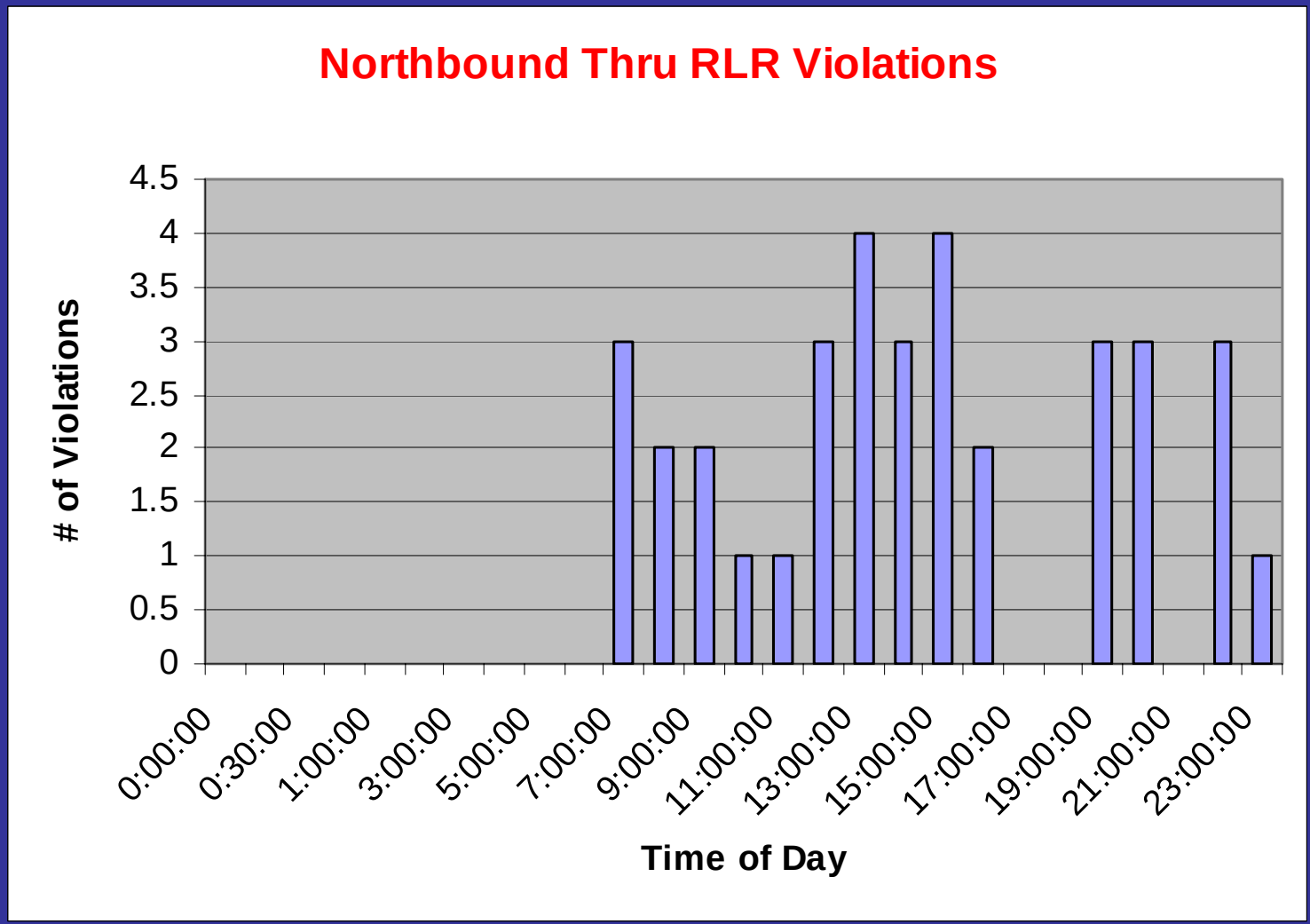
Lafayette at Leonard in G.R., MI

Typical Camera View – No Detectors



Sample Detector Display

Sample Data


Northbound Thru RLR Violations
# of Violations
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0:00:00
0:30:00
1:00:00
3:00:00
5:00:00
7:00:00
9:00:00
11:00:00
13:00:00
15:00:00
17:00:00
19:00:00
21:00:00
23:00:00
Time of Day

Sample Scheduling Report for Local Police

Worst Hours for Red Light Running Last 3 Weeks							
At the corner of Main and Jefferson Street							
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1:00 AM							
2:00 AM							
3:00 AM							
4:00 AM							
5:00 AM							
6:00 AM		X				X	
7:00 AM							
8:00 AM							
9:00 AM							
10:00 AM							
11:00 AM							X
12:00 PM							X
1:00 PM							
2:00 PM							
3:00 PM		X	X	X	X	X	
4:00 PM		X				X	
5:00 PM							
6:00 PM							
7:00 PM							
8:00 PM							
9:00 PM							
10:00 PM							
11:00 PM							
12:00 AM							

Lessons Learned

- Use 2 Image Sensors per intersection
- Junction box on pole simplifies cable routing
- Fabricate a “Y” cable for controller connection
- Strap a flasher cabinet to the side of the cabinet
- Hourly counts are recommended over 15 min.