APPENDIX A

TECHNICAL INFORMATION ON
RECOMMENDED ITS EQUIPMENT

• LICENSE PLATE READERS

• FLASHING BEACONS

• VARIABLE MESSAGE SIGNS

• NON-INVASIVE QUEUE DETECTORS
License Plate Readers –
Example: High-Tech Solutions

SeeTraffic - High-Speed LPR system

- Recognition speed 2-3 vehicles per second
- Vehicle traffic speeds: up to 160KMH
- Single or double cameras per lane
- Number of lanes: 1-4
- Typical applications: Traffic surveillance and enforcement systems, average-speed violation systems, security and toll-road installations

Features:
- Image Capture: Capture and illumination profiles are optimized for each event
- Identification: analyzes the images, detects the plate, recognizes the plate number, and verifies the results
- Dynamic database vehicle list matching and/or management
- Images: can save images of vehicles; images are stored as BMP or compressed JPG files
- Display: displays last “best” image per lane, lists a history of recognition results and system status
- Interface: reports results using inter-application DDE messages for logging and further processing
- Communication: a flexible formatted string that can be transmitted on RS232 for serial interface
Typical Flashing Beacon Set-up (With Solar Power)

Carmanah – Model R 247

FEATURES

- MUTCD compliant
- ITE Compliant signal head
- Peak intensity of 400 candela
- Available in amber or red color with 8" or 12" lens
- 55 flashes per minute (0.55 seconds on / 0.55 seconds off)
- Designed to operate reliably in harshest of environmental conditions
- Installation takes minutes and requires minimal technical expertise
- Vandal-resistant integrated design
Variable Message Signs - Equipment Examples

Ledstar (Application Shown – NYSDOT, Binghampton, NY)
- 6 high resolution line matrix LED VMS.
- Integrated truss walk in enclosure.
- Dimensions 26' x 10' x 6'
- Ledmaster NTCIP compliant VMS
- Central Control software.

Daktronics (Application Shown – I-80 NJDOT)
- Daktronics Galaxy® X-1000 series LED display
- Designed to NEMA (National Electrical Manufacturers Association) 4 standards
Non-Invasive Queue Detection Equipment Example

SmartSensor™ by Wavetronixs

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Frequency</td>
<td>10.525 GHz (X-band)</td>
</tr>
<tr>
<td>Detection Zones</td>
<td>Up to 8 traffic lanes simultaneously</td>
</tr>
<tr>
<td>Detection Range</td>
<td>60 m</td>
</tr>
<tr>
<td>Measured Quantities</td>
<td>Speed, occupancy, volume, presence</td>
</tr>
<tr>
<td>Communications</td>
<td>Wireless modem or RS-485 connection</td>
</tr>
<tr>
<td>Power</td>
<td>6 watts @ 9-36 VDC</td>
</tr>
<tr>
<td>Weight</td>
<td>5 lbs.</td>
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<tr>
<td>Physical Dimensions</td>
<td>32 cm. H x 23 cm W x 7.6 cm D</td>
</tr>
<tr>
<td>Zone Resolution</td>
<td>3 m</td>
</tr>
<tr>
<td>Time Resolution</td>
<td>2.5mSec</td>
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<tr>
<td>Ambient Operating Temp</td>
<td>-40C to +50C</td>
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<tr>
<td>Humidity</td>
<td>Up to 95% RH</td>
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<tr>
<td>Shock</td>
<td>10 g 10ms half sine wave</td>
</tr>
<tr>
<td>Elevation Angle</td>
<td>15 to 45 degrees</td>
</tr>
<tr>
<td>Azimuth</td>
<td>12 degrees</td>
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<tr>
<td>Transmitted Power at 3m</td>
<td>&lt;100dBuV/m @ 10.525Ghz</td>
</tr>
</tbody>
</table>

Side Fire Application

Forward Fire Application