Freeway Adaptive system

IH 10

TxDOT HOU
• Help alleviate freeway traffic through signalized intersections when adjacent freeway’s level of service is worsen.
CONCEPT

- Adapting same concept as truck rollover technology.

- Using the Wavetronix HD Radar sensor for freeway detection.

- Detecting vehicle speed, volume, and occupancy.
• Use contact closure to send contact signals to traffic signal cabinet.

• Using two contact inputs to generate 3 timing plan.

• Ex: on-off plan 1, off-on plan 2, and on-on plan 3.
DESIGN

• Sensors monitor freeway condition
• Sensor output contact when condition met
• Sending information to intersections
• Intersection receiving information
• Intersection reacts to the input
DESIGN
DESIGN

The diagram shows a traffic control system with sensors and control units. The sensors detect traffic flow and send signals to the control units, which then adjust the traffic lights accordingly. The system includes sensors for both northbound (NB) and southbound (SB) traffic. The control units manage traffic flow at different intersections, ensuring smooth traffic movement. The diagram also includes a legend for the different components and their functions.
• Wavetronix HD Sensor with Criteria Signaling feature
• Click! 513 contact closure
• Intuicom 900 MHz radio with I/O contact closure
• Updated version of traffic signal controller firmware
INSTALLATION

- Using existing freeway sensors
- Additional equipment for adaptive system
- Communication equipment
INSTALLATION
INSTALLATION
INSTALLATION
INSTALLATION
• Sensor setup – how many lanes and directions
• Contact closure setup - send an output signal base on interval criteria, speed, volume and/or occupancy.
• Connect radio for inbound and outbound directions. (Sensor and traffic signal cabinet)
• Connect the radio output at the intersection to designated terminal base on controller used.
### SETUP/OPERATION

#### Lane Configuration

<table>
<thead>
<tr>
<th>LANE_08</th>
<th>LANE_07</th>
<th>LANE_06</th>
<th>LANE_05</th>
<th>LANE_04</th>
<th>LANE_03</th>
<th>LANE_02</th>
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</table>

- TXDOT_03
- TXDOT_02
- TXDOT_01

**Sensor Location:**

- Sensor 1
- Sensor 2

**Buttons:**

- OK
- Cancel
SETUP/OPERATION

Approaches

Approach Name: 1

LANE_01
LANE_02
LANE_03
LANE_04
LANE_05
LANE_06
LANE_07

1

TXDOT_01
TXDOT_02
TXDOT_03

Approach Name: 2

LANE_03
LANE_04
LANE_05
LANE_06

TXDOT_01
TXDOT_02
TXDOT_03

LANE_01
LANE_02
LANE_07

OK  Undo  Cancel

OK  Undo  Cancel
SETUP/OPERATION

Enable Approach 1
- Over Speed: 50
- Under Speed: 20
- Over Occupancy: 80
- Under Occupancy: 80
- Over Volume: 2
- Under Volume: 10

Sensor ID: 7005
Interval Horizon: 10
Interval Threshold: 10
Logic: AND
Interval: 30
Poll Interval (ms): 1000
## SETUP/OPERATION

### Intuscom CommPro 1.1.1.4 - [Intuscom Configuration]

<table>
<thead>
<tr>
<th>Applications</th>
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<th>Help</th>
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<td>Read Config</td>
<td>Program Radio</td>
<td>Factory Defaults</td>
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### Setup/Operation Table

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<th>Remote Unit ID</th>
<th>Remote Input #</th>
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<th>Turn Off Delay (ms)</th>
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### Key Parameters

- **Selected Port**: COM1
- **Radio Type**: DIO Transceiver (all Models)
• Program the controller for the system.

• Siemens uses Traffic Responsive system feature

• Econolite, Naztec, Intelite, 2070 Next Phase used logic input and/or statement.
SETUP/OPERATION
• IF:
  • IF CIB CODE ON 160
  • AND CIB CODE OFF 161
  • THEN:
  • SET ACTION PLAN ON 10

• ELSE:

• IF:
  • IF CIB CODE OFF 160
  • AND CIB CODE ON 161
  • THEN:
  • SET ACTION PLAN ON 11

• ELSE:
IF:

IF CIB CODE ON160
AND CIB CODE ON161

THEN:
SET ACTION PLAN ON12

ELSE:
SETUP/OPERATION
COST

- HD SENSOR - 1
- POWER SUPPLY - 1
- CLICK! 513 - 1
- I/O RADIO - 2
- ANTENNA - 2

- Total: approx. $11,000.00/ location
- Additional intersection: $3500.00
IMPROVEMENT

- Ability to adjust threshold and interval input base on time of day.
- Use of existing Ethernet network for contact closure.
- Incorporate adaptive software for timing adjustment.
• Every extra second we provided is an extra second they would not have gotten if this system is not in placed.