

Design Standards Letter

Letter Number: G-1961-61

Letter Date: 08/14/1961

Effective Date: 08/14/1961

Section/Plan No.: None

Subject: Vehicle Detectors

Body

TO ALL DIVISION, DISTRICT AND URBAN ENGINEERS:

The use of Ultra-Sonic and Infra-Red vehicle detectors will now be approved for use with traffic signals. The cost of these detectors is comparable with that of radar detectors. These detectors are not competitive, and the type must be specified. We do not propose to include their description or use in the Design Manual until we have more data. However, we are listing below our recommendations for the application of the various types of vehicle detectors now approved.

A. Auxiliary Left Turn Lane (no median divisional island)

- * 1. Six foot Directional Pressure-Sensitive
- 2. Compensated Magnetic

* Alternate choice would be either Ultra-Sonic or Infra-Red suspended overhead by means of mast arm or span wire.

B. Auxiliary Left Turn Lane (with median divisional island)

- 1. Side-fire Ultra Sonic, Infra-Red
- 2. Compensated Magnetic
- 3. Six foot Non-directional Pressure-Sensitive
- 4. Overhead Ultra-Sonic, Infra-Red, Radar

C. Multiple Lanes for through Traffic (Type F Controller)

- * 1. Non-compensated magnetic (3 lanes maximum, speeds over 12 mph)
- 2. Side-fire Ultra Sonic (2 lanes max.)
- 3. Side-fire Infra-Red (2 lanes max. - Type I, 80 feet max. - Type II)
- 4. Overhead Ultra Sonic (2 lanes max.)
- 5. Overhead Infra-Red (Type II)

6. Overhead Radar (3 lanes max.)

** 7. Compensated Magnetic (one each lane - where directional actuation is required)

* Alternate choice for two opposing through movements moving on same phase would be two Ultra-Sonic detector sensing units connected to a common transceiver.

** Directional actuation can also be obtained by two Ultra-Sonic sensing units mounted Side-fire.

D. Multiple Lanes for through Traffic (Type FD Controller)

1. Overhead Radar (2 lanes max.)

2. Overhead Ultra-Sonic, Infra-Red (1 each lane)

3. Compensated Magnetic (1 each lane)

E. Tee Intersections - Minor Street Approach

Two way, no median divisional island, separate right and left turn actuation)

Note: Where right turn is not signal controlled - See A above.

*1. Six-foot Directional Pressure-Sensitive (Left)

Right foot Non-directional Pressure-Sensitive (Right)

2. Compensated Magnetic (Left)

Non-Compensated Magnetic (Right)

*Alternate choice would be one Ultra-Sonic or Infra-Red per lane suspended overhead by means of mast arm or span wire.

(Two-way no median divisional island, no separate left and right turn actuation, i.e., anyway on green)

1. Side-fire Ultra-Sonic, Infra-Red

2. Directional Pressure-Sensitive, one, or as required.

(Two-way no median divisional island, separate left and right turn actuation)

1. Side-fire Ultra-Sonic, Infra-Red (one each lane)

2.. Six-foot Non-directional Pressure-Sensitive (Left)

Eight foot, Non-directional Pressure-Sensitive (Right)

(Two-way with median divisional island, no separate left and right turn actuation)

1. Side-fire Ultra-Sonic, Infra-Red (one)

F. One-Way Street or Ramp - Type F Controller)

1. Non-compensated magnetic (1 lane max.)

2. Side-fire Ultra-Sonic, Infra-Red (2 lane max.)

3. Overhead Radar (3 lanes max.)

Descriptions of the various detectors and factors which may influence the selection of a

specific detector for a specific application are as follows:

A. Positive Contact - Non-directional

1. Type: Pressure-Sensitive

Speed 0 to 60 mph

Area: 1' x 6' or 8' (over detector)

Comment: Affected by parked vehicle

Est. cost installed, including detector, detector base, conduit to adjacent handhole and the handhole - \$600 to \$800.

B. Positive Contact - Directional

1. Type: Pressure-Sensitive

Speed 0 to 30 mph

Area: 1' x 6' or 8' (over detector)

Comment: Affected by parked vehicle

Est. cost installed, including detector, detector base, conduit to adjacent handhole and the handhole - \$600 to \$800. (Same as above.)

C. Motion - Non-directional

1. Type: Non-compensated magnetic

Speed 4, 8 or 12 to 60 mph (depends on area)

Area: 10', 20' or 30' diameter, respectively

Comment: Not affected by parked vehicle

Est. cost installed, including detector, conduit and adjacent handhole - \$300 to \$400.

2. Type: Radar, overhead Mounting (14' 6" to 17' 0")

Speed 2 to 70 mph

Area: 9 to 30' diameter

Comment: Not affected by parked vehicle. High winds can cause false actuation.

Est. cost installed, including detector, A-5 base and Steel Post with 6' MA \$700 to \$950 with 25' MA \$800 to \$1050

D. Motion - Highly Directional

1. Type: Compensated Magnetic

Speed 4 to 60 mph

Area: 1' x 6' (over detector)

Comment: Not affected by parked vehicle

Est. cost installed, including detector, detector base, conduit to adjacent handhole and the handhole - \$675 to \$950.

E. Presence - Non-directional

1. Type: Ultra-Sonic, Overhead Mounting (12' to 18')
Speed 0 to 80 mph
Area: 4' diam. or 3' x 22' oblong
Comment: Affected by parked vehicles and Pedestrians

Est. cost installed, including detector, A-5 base and Steel Post with 6' MA \$700 to \$950 with 25' MA \$800 to \$1050. (Same as Radar)

2. Type: Ultra-Sonic, Side-fire Mounting (8')
Speed 0 to 80 mph
Area: 7' to 25' laterally from detector
Comment: Same as 1 above.

Est. cost installed, including detector, 8' Post & Pedestal, & Type A-3 Base - \$650 to \$800

3. Type: Infra Red, overhead Mounting (Type I-Eagle) (15' to 19')
Speed 0 to 80 mph
Area: Oblong 18" x 6', 15' 0" below detector
Comment: Affected by parked vehicles and pedestrians

Est. cost installed, including detector, A-5 base and Steel Post with 6' MA \$700 to \$950 with 25' MA \$800 to \$1050. (Same as Radar)

4. Type: Infra-Red, Side-fire Mounting (Type I-Eagle) (8')
Speed 0 to 80 mph
Area: 2 lanes (8' headway at 60 mph)
Comment: Affected by parked vehicles and pedestrians. (Same as 3 above)

Est. cost installed, including detector, 8' Post & Pedestal, & Type A-3 Base - \$650 to \$800 (Same as Ultra-Sonic Side-Fire)

5. Type: Infra Red, overhead Mounting (Type II MH) (Range 80')
Speed 0 to 70 mph
Area: 4' diam. (18' mounting height)
Comment: Affected by parked vehicles pedestrians and sudden changes in ambient light (snowfall), but will automatically resume normal operation after being affected by parked vehicle or ambient light

Est. cost installed, including detector, A-5 base and Steel Post with 6' MA \$700 to \$950 with 25' MA \$800 to \$1050. (Same as Radar.).

6. Type: Infra-Red, Side-fire Mounting (Type II MH) (Range 80')

Speed 0 to 70 mph

Area: 2 lanes

Comment: Affected by parked vehicles pedestrians and sudden changes in ambient light (snowfall), but will automatically resume normal operation after being affected by parked vehicle or ambient light (Same as 5 above)

Est. cost installed, including detector, 8' Post & Pedestal, & Type A-3 Base - \$650 to \$800 (Same as Ultra-Sonic Side-Fire)

F. Presence - Directional

1. Type: Ultra-Sonic, Side-fire Mounting (8')

Speed 0 to 80 mph

Area: 7' to 25' laterally from detector

Comment: Affected by parked vehicles and pedestrians

Detector consists of two sensing units spread 7' apart laterally parallel to traffic lanes on a common post with a common transceiver unit.

Est. cost installed, including 2 sensing units, post with spreaders, & Type A-3 base - \$850 to \$1050

Details for the installation of the Ultra-Sonic and Infra-Red detectors will be made available to you in the near future. Specifications for these detectors will be prepared by this office and inserted in the contract proposal for any project where they are specified.

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