9

ESSENTIAL

SmartSensor Matrix Design Tips

The SmartSensor Matrix accurately detects vehicles at the stop bar, giving the controller the information it needs to keep your intersection running smoothly. Keep the following design tips in mind as you design your intersection detection.

1 Know your intersection

The first thing to decide is which of the approaches in the intersection need detection. There are three types of intersections you can have:
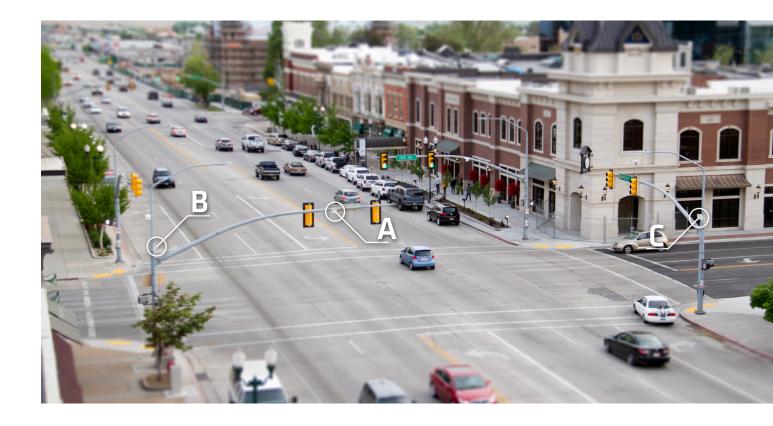
Pre-timed — This means the intersection is timed; the controller cycles through phases and changes the signal head after a specified amount of time, regardless of whether there are cars or pedestrians waiting.

Fully actuated — This means each approach of the intersection is actuated, or monitored by a detector.

Semi-actuated — In this kind of intersection, two of the approaches are timed and two are actuated.

Once you have determined how many of the approaches are actuated, you will need one sensor for each of these approaches.

2 Select the right mounting location

There are three possible mounting locations in a standard intersection, all of which will work. The one you choose for your sensors will depend on the layout of your intersection and the purpose behind your installation. The important thing to consider when selecting a location is that the closer the Matrix is to the lanes of interest, the better the sensor's performance will be.

Be aware that not every intersection looks like this. If your intersection has span wire instead of mast arms, you will have to mount in location B or C.

3 Avoid obstacles

Before you settle on any mounting location, make sure the sensor has a clear line of sight to the approach of interest, without being blocked by obstacles such as signs, signal heads or trees. Also, watch out for any signs directly behind the sensor; these can be a problem because reflections off the surface may cause false detections in the sensor. If one location has obstacles, move to another one.
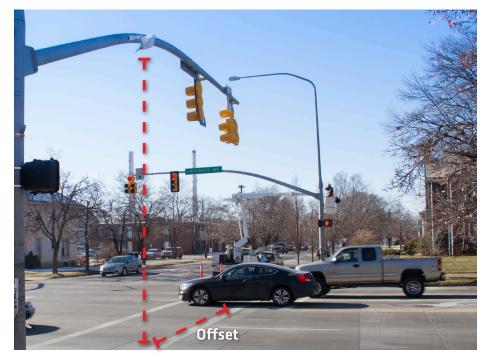
4 Consider left-turn lanes

If you have a separate zone in a left-turn lane—for example, if you have a protected left-turn phase—then you want to mount the sensor as close to that lane as possible. The best location is A (the back side of the mast arm). If the mast arm is not an option, location B is better than location C because you'll get the best detection if the left-turn lane is the first lane in the sensor's field of vision.

DID YOU KNOW?

The SmartSensor Matrix has a detection range of 140 feet, which is usually enough to cover your lanes of interest. However, if you need to cover more distance than that because you have a lot of lanes or you are forced to install your sensor far from your lanes of interest, you can use two sensors to make sure you cover all of the necessary area.
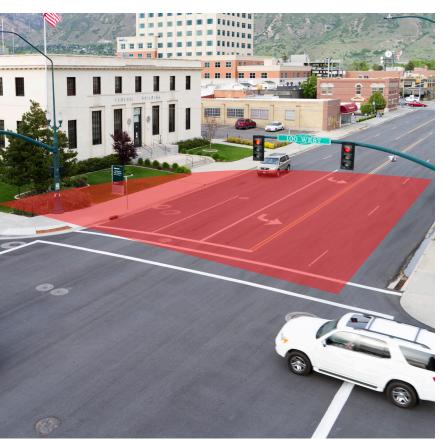
5 **Maintain an offset of 6 feet**
Because you are going to mount on existing poles, you don't have to worry much about where to place the sensor, but there are a few things to keep in mind:

- The sensor should be at least six feet from the first lane of interest, so if you're mounting on the mast arm, make sure it has a sufficient offset.
- If you have control over the height of the sensor, aim for about 20 feet.

6 **Know the sensor's detection area**
The SmartSensor Matrix has an arc-shaped radar footprint that reaches out 140 feet. You'll need to position the sensor in such a way that all lanes of interest fall in this footprint. Be aware that the sensor must see 15-20 feet of each lane in order to correctly detect traffic in that lane.

7 **Point the beam in front of the stop bar**
When you are aligning the sensor, be sure to position the sensor so that the front edge of the footprint falls a few feet beyond the stop bar to detect dissipating queues and any cars that creep past the stop bar.

8 **Use the alignment indicator**
Each SmartSensor Matrix has a small 90° indicator on the top of the case to help you with alignment. Once the sensor is on the pole, look over the top of the sensor to the detection area and use this indicator to help you visualize where the footprint of the radar will fall.

9 Streamline your cabinet
Streamline your traffic cabinet using the Wavetronix Click 650. The Click 650 is a cabinet interface that encapsulates power, surge protection, and contact closure outputs in one box. It includes an Ethernet port, an OLED panel for direct configuration, and an SDLC port for direct communication to the traffic controller (eliminating the need for contact closure cards). ∎