

Intersection: _____

Traffic Direction: NB SB EB WB

SELECT MOUNTING LOCATION

Mounting Height: Sensor should be mounted high enough to reduce occlusions from large vehicles and meet area minimum mounting height requirements, but low enough to achieve proper coverage while minimizing tilt angle for shorter distances to front of desired detection zone. Table 1 provides theoretical values of starting tilt angle (relative to road slope / grade) values based on mounting height and distance to front of zones. Table 2 illustrates the maximum detection distance in relation to mounting height and distance to front of zones, based on the tilt angles and mounting heights from Table 1¹.

Mast Arm Mounting: If a mast arm is available, the sensor can mount on the mast arm up to 10-feet from the support pole, or until the 1st signal light; whichever is shorter. See Figure 1.

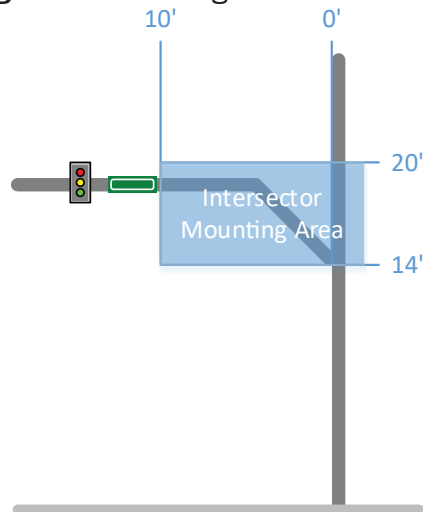
Table 1: Tilt Angle Starting Matrix

Tilt Ang (Deg.)	Dist. To Front of Zones (ft)					
	60	70	80	90	100	100+
14	-6	-3	-1	0	0	0
15	-7	-4	-1	0	0	0
16	-8	-5	-2	-1	0	0
17	-9	-6	-3	-1	0	0
18		-7	-4	-2	0	0
19		-8	-5	-3	-1	0
20		-8	-6	-3	-2	0

Table 2: View Distance based on Tilt Angles

View Dist (ft)	Dist. To Front of Zones (ft)					
	60	70	80	90	100	100+
14	133	267	600	600	600	600
15	122	215	600	600	600	600
16	114	183	458	600	600	600
17	107	162	324	600	600	600
18		147	257	515	600	600
19		135	217	363	600	600
20		142	190	382	573	600

Figure 1: Mounting Location Pictorial



Mounting Height: _____ Feet / Meters

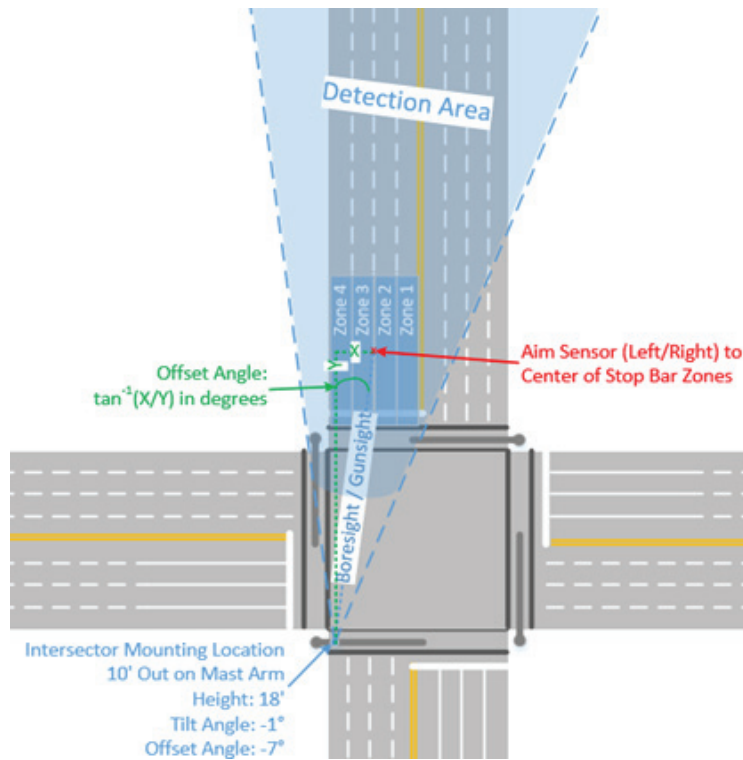
Tilt Angle: _____ Degrees

¹ Tilt angles provided in Table 1 are recommended starting values. Actual results will depend on the environment of the installation site, and may need to be adjusted during setup to optimize performance.

SENSOR ALIGNMENT

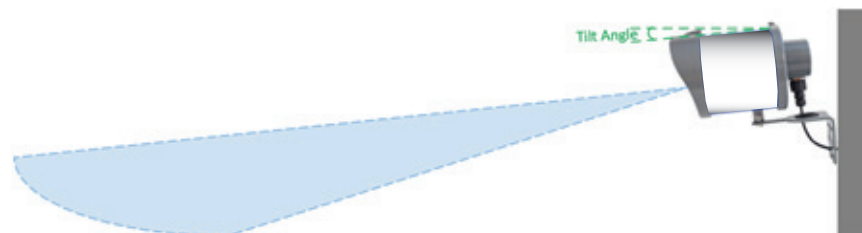
#1 Azimuth / Offset Angle: Visualize the stop bar zones. If unknown, assume they will be from the stop bar through approximately 3 to 4 car-lengths back. Using the gun site on the front of the sensor, aim the unit left/right until the center of the desired detection zones line up in the gun sites². See Figure 2.

Figure 2: Offset Angle Pictorial



#2 Tilt Angle: After setting the Offset / Azimuth Angle, set the tilt angle of the unit using an angle-meter to the value determined in Table 1 + natural road slope / grade. Note: If bicycle detection is necessary, increase the tilt angle by -2° to -3°.

Figure 3: Tilt Angle Pictorial



² This alignment of offset / azimuth angle is a recommended starting position. Actual results will depend on the environment of the installation site, and may need to be adjusted during setup to optimize performance.

MOUNTING EXAMPLES

The subsections below provide guidance for common installation applications for the TC-CK1-VMS. Note that the guidelines stated above should be followed. These examples are meant to be guidelines and for reference only.

Mounting Example 1: Stop Bar Detection / Advanced Detection: The first example in the figure below demonstrates the scenario where advanced detection is used and stop bar detection is required. The TC-CK1-VMS is mounted such that the vehicles are approaching it with a minimum offset angle, and the front of the stop bar zone(s) are at least 60 feet from the sensor. Note that the TC-CK1-VMS unit is a motion-only sensor, unlike the TC-CK1-SBE that is the motion and presence sensor in the Intersector product line. In this type of configuration where the TC-CK1-VMS provides detection at the stop bar, the setup of the controller should be such that the VMS is only providing green phase extension and/or the phase the TC-CK1-VMS is servicing is “locked” such that detections made during the red phase will place a call to service the approach on the next service cycle.

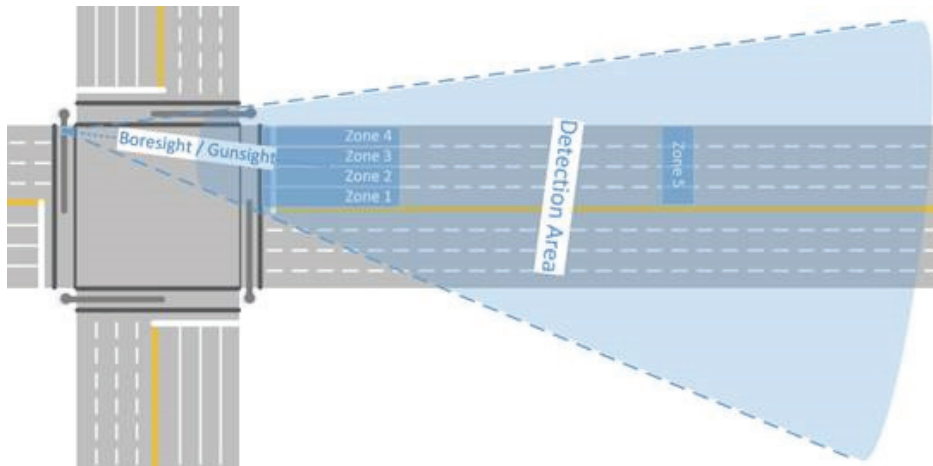


Figure 4: Stop Bar Detection with Advanced Detection

Mounting Example 2: Advanced Only Detection: The next example in the figure below demonstrates the scenario where detection is set back from the stop bar by at least 60 feet, and the region of interest is on the approach with typical traffic going toward the intersection. The most common application for this is advance detection on a main street. In this scenario, the sensor is mounted on the “back side” of the intersection to limit the potential for occlusions. This location also reduces the distance needed for detection farther down the approach.

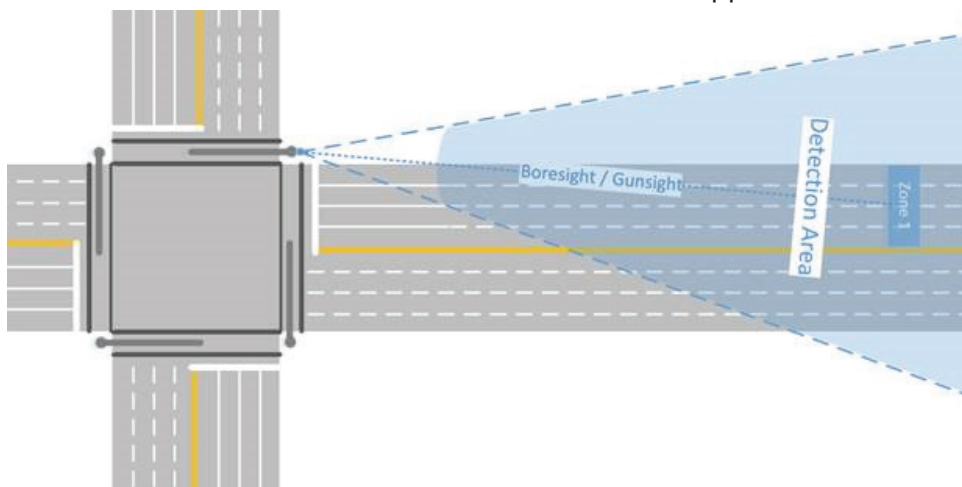


Figure 5: Advanced Only Detection