

Mobile Counter Site Selection Best Practices Guide

Developed by the North Central Texas Council of Governments

Several issues should be considered when selecting an appropriate site to install mobile counters. The guidelines below are intended to assist with identifying a suitable location to installing the equipment and ensuring accurate data collection.

A. General Site Characteristics

1. Conduct a field visit of the proposed location to understand the nature of traffic and turning movements occurring in the area.
2. Avoid areas with poor drainage or the potential to be subject to storm water runoff. While the equipment is waterproof, there is the possibility of permanent damage to the inside of the pneumatic tube unit box when exposed to or submerged by heavy rainfall. Pooled water on roads or shared-use paths may distort traffic data by causing pedestrians and/or bicyclists to avoid the mobile counter's range of detection.
3. Avoid scheduling a mobile count when the lawn around the installed equipment will be mowed. Lawn mowers will damage the pneumatic tubes if they pass over the location where the tubes are placed.
4. Equipment installed on corridors under or along electric transmission lines or substations may experience interference and have difficulty transmitting traffic data. While traffic data will be collected, precautions need to be in place to ensure the equipment is actively working.

B. Counting Bicyclists On-Street

Site-Specific Best Practices:

1. On-street tube units are installed on both sides of the road. Choose a location where there are street lights, posts, or utility poles on both sides of the street in order to align the counters directly across from each other.
2. The count location must be along a straight segment of roadway. Avoid immediate curves and steep slopes. Tubes must be installed perpendicular to the flow of traffic.
3. Install tubes where there is a continual flow of traffic. Avoid locations near intersections or where cars may slow down and stop on the tubes (including on-street parking, heavily congested areas, and bus stops).
4. Prior to conducting mobile counts on a state roadway, cities must receive written approval from TxDOT.
5. NCTCOG developed bicycle/pedestrian [crash data heat maps](#) that can be used by cities to identify potential count locations along dangerous corridors. Collecting average daily bicycle traffic volume can provide insight into how dangerous a road may be (ex: a high crash corridor with low bicycle traffic volume indicates a potential area of high risk for bicyclists and may warrant an engineering study on safety countermeasures).

Installation-Specific Best Practices:

6. Tubes from a single unit do not stretch across the entire width of the street. Both sets of tubes on each side of the street are stretched and installed either to the middle or edge of the outside lane (please see "*Pneumatic Tube Installation Guide (Short Version)*" for diagrams).
7. If the roadway features a bike lane, extend tubes across the bike lane to the edge line (not into the travel lane).
8. Avoid on-street count locations along streets with decaying or poor pavement quality. Deteriorating pavement will not securely hold nails in place. A firm pavement surface will ensure that tubes and anchors will stay in place, won't require maintenance, and will accurately collect data.

9. Tubes should be tight when stretched across the street. Road tape should be applied to the tubes in order to help anchor them to the ground (please see “*Pneumatic Tube Installation Guide (Short Version)*” for diagrams). The tubes should be installed one foot (twelve inches) apart from each other.
10. If installing equipment among on-street parallel car parking spaces, select the middle of the parking space where car tires are unlikely to park on the tubes.
11. Cities can avoid making new trips to install on-street mobile counters by incorporating the installation with their regularly scheduled local motor vehicle traffic count program. For an archive of where motor vehicle traffic data has been collected in the past throughout the region, please visit the [NCTCOG historical motor vehicle traffic count data web map](#).

C. Counting Bicyclists and Pedestrians on Shared-Use Paths

Site-Specific Best Practices:

1. The count location must be along a straight segment of shared-use path. Avoid immediate curves and steep slopes. Tubes and infrared sensor must be installed perpendicular to the flow of traffic.
2. Install equipment where there is a continual flow of traffic. Avoid locations near intersections or where pedestrians may stop and block the infrared sensor or where bicyclists may slow down and stop on the tubes.
3. Avoid locations adjacent to destinations or furniture such as benches where people congregate or loiter, as this will skew pedestrian data.
4. Avoid installing mobile counters along a shared-use path with a parallel facility (such as a soft surface jogging path). Traffic data on the parallel facility will be outside the equipment’s range and will not be collected.
5. If interested in counting pedestrians on a sidewalk or sidepath parallel to a roadway, identify a post or pole in between the facility and the curb in order to orient the infrared sensor away from motor vehicle traffic.

Installation-Specific Best Practices:

6. Tubes should be tight when stretched across the shared-use path. Road tape should be applied to the tubes in order to help anchor them to the ground. The tubes should be installed one foot (twelve inches) apart from each other.
7. The infrared sensor must be installed 27 – 30 inches above the ground on a square or circular post or pole with a circumference between 6 – 35 inches. The popularly used u-channel post for traffic signs **cannot** be used to install mobile counters. Square and circular posts or poles are best. The infrared sensor can be attached to railings.
8. Avoid bent or crooked posts or poles. A straight post will allow the sensor to be level at hip height.
9. The range of the infrared sensor is 13 feet. Choose a post or pole at the edge of the shared-use path or sidewalk to ensure all pedestrians traveling the width of the facility are counted.
10. If no post or poles exist in the desired count area, cities may opt to install a temporary post.
11. Check to see if there is soil on both sides of the shared-use path to hammer spikes for anchoring tubes, otherwise local staff must drill nails into the pavement to anchor the tubes.
12. **Avoid** pointing the infrared sensor:
 - At objects that will generate heat (leaves, metallic surfaces, cars);
 - Where it will be affected by external interferences (such as overhanging branches continually passing in front of it);
 - At a reflective surface or metallic plate (including the surface of water that may reflect sunlight at a certain time of day.)

D. Other Considerations

1. Select locations, such as regionally significant corridors, that are suitable for reoccurring counts to track changes over time.
2. Schedule mobile counts during periods when no special events will occur.
3. A minimum of two- to three-week count periods are recommended.
4. Local staff is responsible for performing a recommended manual validation count to determine the equipment is properly functioning and evaluating its accuracy. The purpose of a validation count is to compare real-time observations to the data collected from the equipment.
5. Local staff is responsible for checking the equipment once a week to ensure there has been no tampering. NCTCOG receives daily updates alerting if the equipment collected a large increase or decrease of traffic data. In the event this occurs, NCTCOG will notify city staff. If the tubes become loose, city staff will be responsible for re-installing the equipment as quickly as possible to resume data collection.
6. Local staff are encouraged to notify their local police department of where the equipment will be installed and the anticipated duration it will be out. Citizens may call the police if they don't understand the purpose of the equipment.



**North Central Texas
Council of Governments**