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## VI. CONTINUOUS MONITORING PROGRAM

The Continuous Monitoring Program is operated by the Central Office. Data from these continuous monitoring sites are collected daily and are used to produce AADT and K, D, and T factors. Continuous count data is also used to develop seasonal adjustment factors, and the continuous class data is used to develop axle adjustment factors. FDOT has more than 300 Continuous Monitoring Sites located throughout the State that are used to collect vehicle volume, speed, classification and truck weight data.

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### VOLUME MONITORING SITES



All of Florida's continuous traffic monitoring sites are capable of collecting traffic volume data. The data is collected for each lane, and usually for one-hour intervals, although the intervals can be varied as needed (any period that divides evenly into 60 minutes). The most common type of sensor used to collect volume data at a continuous traffic monitoring site is a single inductive loop. Several volume-monitoring-only sites have been built using microwave radar sensors, generally in locations where the highway geometry or traffic volume make it difficult to install loops. Other types of continuous traffic monitoring sites are often set to collect volume-only data when some of their sensors have failed and are awaiting replacement.

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### SPEED MONITORING SITES



Most of the continuous traffic monitoring sites are capable of collecting vehicle speed data. Since 1995 all such sites have been routinely programmed to collect this data in binned files. Florida currently bins the speed data into 15 categories:  $\leq 20$ mph, 21-25mph, 26-30mph, 31-35mph, 36-40mph, 41-45mph, 46-50mph, 51-55mph, 56-60mph, 61-65mph, 66-70mph, 71-75mph, 76-80mph, 81-85mph, and  $\geq 86$ mph. The speed data is collected by lane for each recording interval. Only in rare cases are the speed data collected by class of vehicles, because these types of data files grow extremely large.

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### CLASSIFICATION MONITORING SITES



The majority of Florida's continuous traffic monitoring sites are built to collect vehicle classification and speed data. Florida collects axle class data according the FHWA Scheme "F" standard. The most typical sensor configuration used to collect vehicle class data consists of a loop-piezo-loop array, although there are a couple of piezo-loop-piezo sites, and even an experimental Idris loop classification site.

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## WEIGH-IN-MOTION SITES

Florida has been collecting truck weight data through the use of weigh-in-motion equipment since 1974. Beginning in 1988, permanent weight sensors and electronics have been installed in selected locations, and the systems are monitored continuously. The weigh-in-motion equipment collects the speed, vehicle classification, axle weights, and axle spacings of every vehicle that passes over the sensors. The vehicle class and speed data are binned similarly to the continuous speed and classification sites. The vehicle weight and axle spacing data are only saved for vehicle classes 4 and higher, in order to conserve memory in the counters. These are the classes of vehicles that exert the most force on the pavement structures, and are used for pavement design and analysis.

### Types of weigh-in-motion sensors

#### Bending Plates



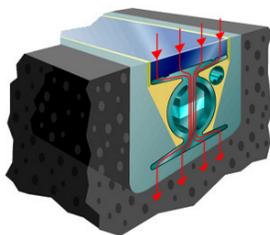
Typically used in one of two configurations, either a pair of bending plates placed adjacent to each other (one in each wheelpath) located between a pair of inductive loops, or a single bending plate placed in one wheelpath located between a pair of inductive loops. The two plates provide a more accurate weight than a single plate, but at twice the expense. The dual bending plate systems have been installed in high-speed, high-volume highways, in concrete pavements, so as to minimize the chance they may break out of the road. Single bending plate sensors have been placed in several flexible pavements that experience low to moderate truck volumes.

#### Piezoelectric Sensors



Piezoelectric axle sensors that generate a uniform signal along their length are designated as Class II sensors. These Class II piezo sensors are used in several different configurations to weigh vehicles. The most commonly used configurations in Florida are: leading right piezo, leading loop, leading left piezo, trailing right piezo, trailing loop, trailing left piezo; and leading piezo, loop, trailing piezo. The piezo sensors have been placed in flexible pavements, where their design allows them to be mounted flush with the pavement's surface.

#### Quartz piezoelectric sensors



Florida has installed quartz piezoelectric axle sensors at a couple of locations. These sensors are reputed to be unaffected by temperature, and to provide weight data comparable to bending plate sensors (at about the same cost as bending plate sensors). However, since the quartz sensors are about the same size as the regular piezoelectric sensors, they can be installed in flexible pavements with little danger to the motoring public. The typical quartz sensor configuration is a leading sensor in the right wheelpath, a loop, and a trailing sensor in the left wheelpath.