



10.7.1 As-Builts

The Bureau of Highway Operations is responsible for maintaining all Traffic Operation ITS equipment and fiber optic network (ITSNET) on the state system. A comprehensive statewide as-built can be found at <http://transportal.cee.wisc.edu/>. A password for the TransPortal system can be obtained by following the instructions on the TransPortal webpage.

10.7.2 Geographic Information Requirements for As-Builts

The contractor shall collect geographic information for all Intelligent Transportation Systems (ITS) and Fiber Optic infrastructure installed in the project, hereafter referred to as "GPS data points". The characteristics of the data points are outlined below along with acceptable procedures for collection and documentation of the data.

Data Formats

Physical

Data points will be delivered to the Engineer in an archival physical media format such as CD-ROM or DVD-ROM. Data may also be delivered as a download (FTP or HTTP) or through e-mail attachment, however physical media must be provided as part of as-built documentation.

Electronic

- Data points shall be submitted as a comma or tab delimited ASCII text file.
- Each data point shall be a single line in the text file.
- Each line shall be one data record containing the following fields:
 - Latitude (Y-coordinate) in decimal degrees
 - Longitude (X-coordinate) in decimal degrees
 - Altitude (Z-coordinate) in feet
 - Date (day, month, year) of point collection
 - Time (24 hour format) of point collection
 - Initials of field personnel collecting data points
 - Abbreviation for Element Type (see table of elements below)
 - Location description (for example, street and cross street)
 - WisDOT-assigned system ID number (when available)

Data Properties

The GPS data points shall be collected with the precision and accuracy requirements listed below. GIS quality equipment is typically needed to meet these requirements. For example, the Trimble GeoXT GPS unit meets these requirements.

Precision

- Degree coordinates shall be expressed using five decimal places of precision (1.2 meter precision)
- Altitude shall be expressed to the nearest whole foot
- Time/date information shall be expressed to the nearest minute

Accuracy

- Data points shall have a lateral accuracy of 1 meter for 95% of collected points
- Data points shall have a vertical (z-coordinate) accuracy of three (3) meters.
- Post-processing of collected points is permitted provided the contractor delivers a report containing meta-data describing the processing method, data sources, and expected accuracy.

Data Types

Data points shall be collected for each of the ITS and Fiber Optic infrastructure listed in the table below (if present) within the project area. The points shall be coded according to the abbreviation provided in the table.

Relevant Elements

Abbreviation	Description
CAM	CCTV poles (capture point at pole location)
CAB	Field equipment cabinets (unless attached to pole that is already being located)
PB	Pull boxes (when used with a fiber optic infrastructure installation, or when connected to in-pavement loops)
MH	Manholes (when part of fiber infrastructure)
JB	Junction boxes (such as on a bridge)
CV	Communication vaults (when part of fiber infrastructure)
MBP	Meter breaker pedestals
HUT	Equipment shelters (i.e. fiber optic communication huts)
ANT	Antenna poles (capture point at pole location)
OHS	Dynamic message signs (capture at base of sign support with connections to power and/or communications)
YF	Yellow Flashers (ramp metered when flashing signs)
HAR	Highway advisory radio transmitters (at antenna location)
SGN	Highway advisory radio signs (at sign location)
RMS	Ramp meters (capture point at pole location)
RWIS	RWIS sites (including tower, pull boxes and meter breaker pedestal)
GTE	Ramp closure gates
PG	Point Generic (fiber access/splice locations and other infrastructure not described above)
MD	Microwave detectors/detector poles (capture point at pole location)

10.7.3 Documentation

A listing of all the devices installed and the associated serial numbers, as-built CAD files, and testing and calibration results should be provided to BHO-STOC.

The following fields are used in the ITS inventory system. This data should be provided to the BHO-STOC as soon as it is available. The data must be provided before the equipment is accepted.

CartêGraph ITS Inventory Database Fields General:

- ID
- TOC Location Description
- Installation Address
- Installation Phone Number
- Service Provider
- Service Provider Utility Account
- TOC Monitor ID
- Region
- TOC Type
- Maintaining Authority
- Maintaining Authority Contact
- Service Provider

Details:

- Events – Lists work orders and other events
- Detectors:
 - ID
 - Detector Number
 - Description
 - Loop Location
- Aux Equip:

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- ID
 - Serial Number
 - Description
 - Manufacturer
 - Model
- Cabinets:
- ID
 - Serial Number
 - Description
- Supports:
- Bolt circle
 - Height
 - Lowering system

10.7.4 Deployment Inventory

An inventory of all ITS equipment and fiber optic network components is maintained at the BHO-STOC. The software CarteGraph is described in Chapter 60 ITS Software.