RTK TOPO
Florida Department of Transportation Standards

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Central Office Surveying and Mapping

RT or RTN SURVEYS

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CHECK IN POINTS

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- Every project using RT or RTN methods will have a minimum of two check-in points established. The points will be within the limits of the RT survey and can be one and the same as the Project Network Control points. (See **ESTABLISHMENT OF CHECK-IN POINTS**).

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- Every project using RT or RTN methods will check into check-in points before beginning each day's data collection, at a minimum of every two (2) hours thereafter and after completion of the day's data collection.

RT or RTN SURVEYS

OBSERVATIONS

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- Low precision observations require a single observation.
- Higher precision observations require at least two observations taken at a minimum of 30 minutes apart.

RT or RTN SURVEYS

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- Transformation should be constrained by a minimum of three (3) horizontal and three (3) vertical stations (a station can represent both a horizontal and vertical constraint) in the project vicinity with published coordinate values in the project specified system

RTN SURVEYS

NETWORK CORRECTORS

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NETWORK CORRECTORS

- Every project using RTN methods will use the FKP, VRS, iMAC (iMAX), or MAC (MAX) correctors broadcast by the FPRN for collecting data.

RT or RTN SURVEYS

DELIVERABLES

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  - **SURVEYOR'S REPORT**

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- Raw data file converted to RINEX format and delivered in electronic form for each session.
  - **SURVEYOR'S REPORT**
    - If localizing, a transformation report must be supplied.
    - If using RTN methods, the Surveyor's Report must state which network corrector was used during the data collection.

RT or RTN SURVEYS

PRECISION AND ACCURACY REQUIREMENTS

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- GDOP – less than or equal to 5

RTN SURVEYS

PRECISION AND ACCURACY REQUIREMENTS

- Accuracy – 0.07 ft. horizontal, 0.10 ft. vertical to base
- Occupation – 2 check-in locations, 2 hour differential (See **CHECK-IN POINTS**)
- GDOP – less than or equal to 5
- Satellites – 5 or greater

ESTABLISHMENT OF CHECK-IN POINTS

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  - **ACCURACY**
    - The minimum accuracy requirements at the 95% confidence level are:
      - 0.05 ft. horizontal

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REQUIREMENTS

- Check in points should be established with the following requirements:
  - **ACCURACY**
    - The minimum accuracy requirements at the 95% confidence level are:
      - 0.05 ft. horizontal
      - 0.08 ft. vertical

ESTABLISHMENT OF CHECK-IN POINTS

REQUIREMENTS

- Check in points should be established with the following requirements:
- **REDUNDANCY**

ESTABLISHMENT OF CHECK-IN POINTS

REQUIREMENTS

- Check in points should be established with the following requirements:
- **REDUNDANCY**
  - One per mile of corridor length with a minimum of two.

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REQUIREMENTS

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- **RMS**

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REQUIREMENTS

- Check in points should be established with the following requirements:
- **RMS**
  - The RMS value of the observations should be less than 0.05 ft.

ESTABLISHMENT OF CHECK-IN POINTS

REQUIREMENTS

- Check in points should be established with the following requirements:
- **INTERVAL**

ESTABLISHMENT OF CHECK-IN POINTS

REQUIREMENTS

- Check in points should be established with the following requirements:
- **INTERVAL**
  - A minimum of 30 minute RS observations with 30 second epochs should be observed during establishment of these points.

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- **SATELLITES**

ESTABLISHMENT OF CHECK-IN POINTS

REQUIREMENTS

- Check in points should be established with the following requirements:
- **SATELLITES**
  - At least 5 satellites should be visible and above the 15 degree elevation mask.

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All observations shall not exceed the maximum allowable tolerance of 0.07 ft. horizontally (2D) and 0.10 ft. vertically (1D).

The user must check into known control or check-in points at least once every 2 hours when using RT or RTN methods.

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FDOT has a Feature Code list that works with the Leica System Viva.

We are working on a method to use the Code list with Leica System 1200 units.

We are also currently working with other manufactures to help develop FDOT feature codes that will work with their collection software and still meet FDOT requirements.

RTK TOPO FILES

The export will be a LandXML file that will meet FDOT standards to be imported on to either MicroStation or Civil 3D.

RTK TOPO CLEAN UP

Topo clean up can take place either on the collector, in the manufactures desktop software or in the CADD package that your delivery is to be made in.

RTK TOPO

Florida DOT will soon prepared to accept GNSS Real Time Data on its future projects. The standard discussed on this presentation have been developed for use in all the Districts.

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