Discussion Topics

• Organization
• Survey Initiatives
• Aerial Survey Initiatives
Organization

Design Division

Roadway Design

Surveys & Contracts Unit

Design Support Unit

Consultant Management

Traffic & ITS
Headquarters

Design Division

Surveys & Contracts Unit

Field Survey Support
- TDOT GNSS Reference Network
- Geodetic Support
- Survey Manuals & Training
- Project Scheduling
- Continuing Contract Management
- Emerging Technology

Contracts Section
- Consultant Contracts
- Advertisements
- Invoice Processing
- Pre-qualification
- Historical Contract Records and Database

Office of Aerial Surveys
- Imagery Planning, Acquisition, Processing
- Mapping & Orthophotography Development
- Continuing Contract Management
- Emerging Technology
Field Staff Organization

Region Office

Roadway Design

Field Survey Staff
- Field Survey Staff
- GPS Field Crews
- Location Field Crews
- R.O.W. Staking
- Terrestrial LiDAR
- Office Processing of Field Survey Data

Regional Design Staff
- Roadway Design Activities
Survey Initiatives
TDOT
GNSS Reference Network
TDOT GNSS Reference Network

• Installation Began in January 2007
• Reference Stations
  – 42 TDOT Owned Stations
  – 5 ALDOT Stations
  – 9 CERI Stations
  – 6 KYTC Stations
  – 4 MODOT Stations
  – 8 NCDENR Stations
  – 5 USM Stations

79 Stations

• 22 Supplemental Stations Planned
Typical Reference Station Equipment
TDOT GNSS Reference Network

36 PARTNER STATIONS

42 TDOT STATIONS

22 SUPPLEMENTAL STATIONS
TDOT GNSS Reference Network

• User Information
  – 154 Contracts in Place
  – 233 Private Rovers
  – 50 TDOT Rovers
  – 283 Potential Rovers

• Contract Fees
  – $150 Application Fee
  – $25 Per Rover/Per Mo.

• Types of Users
  – Surveying and Engineering Companies
  – Local, State, & Federal Government
  – Equipment Vendors
  – Agricultural Users
  – Utility Companies
  – Construction Contractors
  – Universities
  – Law Enforcement
  – Cemetery
  – Real Estate
TDOT GNSS Reference Network
TDOT GNSS Reference Network

• Benefits
  – Ability to do more with less.
    • Real Time Survey Capabilities
    • Post Processing with fewer field staff
  – Others can use network
  – Some Maintenance costs recovered
High Definition Scanning

I-75 Slide in East Tennessee
High Definition Scanning

• 3 – Leica Scan Station C10 Scanners Deployed
  – 2 In East TN
  – 1 in West TN
• Collects Up to 50,000 points per second
• Up to 300 mm range
• 360 degree Horizontal Field of View
• 270 degree Vertical Field of View
HDS Example: I-640 Knoxville
HDS Example: I-640 Knoxville

More to Come in the next presentation from Danny Oliver and Shane Snodderly of TDOT’s Region 1 Survey Office
High Definition Scanning

• Benefits
  – Safety
  – Quick Collection
  – Ability to “Mine the Cloud”
  – Collects the Entire Existing Condition
  – As-Builts
  – Safety
Office of Aerial Surveys Initiatives
Office of Aerial Surveys

- Established in 1973
- Responsibilities
  - Collection of Aerial Imagery
  - Processing for Design Scale Mapping
  - Processing for Orthophotography
- Equipment
  - Microsoft Vexcel Ultracam X (2008)
  - Intergraph Photogrammetry Software
Office of Aerial Surveys

- Three Primary Services
  - Flight Acquisition Services
  - Photogrammetry Applications
  - Historical Imagery Support
Office of Aerial Surveys

• Digital Transition
  – Photogrammetry Staff has been using Soft Copy for years.
  – Imagery Acquisition has been film based since inception.

• Digital benefits
  – Saves Time
    • Fly, Download, Begin Working (No film developing)
  – Saves Space
    • Large Photo Lab Equipment not required
  – Image Quality
    • Photogrammetrists can see in shadows
  – More Environmentally Friendly
    • Photo Lab Chemicals are eliminated
Office of Aerial Surveys

TDOT’s 1st Image

Original Analog Image

2008 Orthophotography
Office of Aerial Surveys

Black and White Film
(10,000 Feet AGL)

Digital Color
(10,000 Feet AGL)
Office of Aerial Surveys
Office of Aerial Surveys
Office of Aerial Surveys
52nd Meeting of the Civil GPS Service Interface Committee
September 17, 2012

Analog vs. Digital
Office of Aerial Surveys

• Tennessee Base Mapping Project (TNBMP)
  – Statewide Imagery managed by the TN Department of Finance & Administration (F&A)
  – Historical Imagery Acquired on a county by county basis since 1997, with no plan for maintenance.
  – In 2007, TDOT and F&A developed an agreement where TDOT provides maintenance of TNBMP imagery.
  – One TDOT Administrative Region is collected Annually and processed by TDOT.
TNBMP Schedules

REGION 4
- Orthophotography: Delivered in 2009 & Planned Update Delivery in 2012

REGION 3
- Acquisition 2008-2009
- Orthophotography: Delivered in 2010

REGION 2
- Acquisition 2009-2010
- Orthophotography: Delivered in 2012

REGION 1
- Acquisition 2010-2011
- Orthophotography
- Planned Delivery 2012
TNBMP Example Image
Questions

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