

Tennessee Department of Transportation

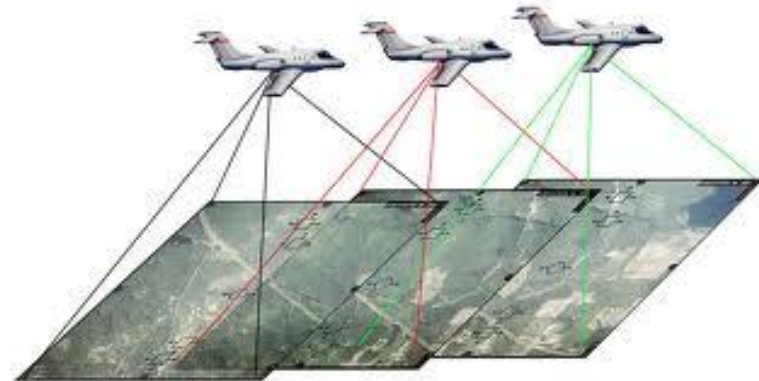
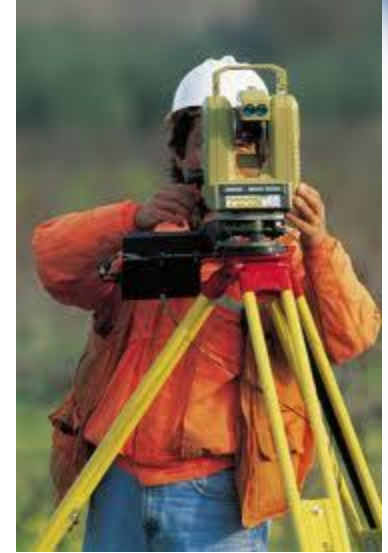


Field and Aerial Survey Initiatives

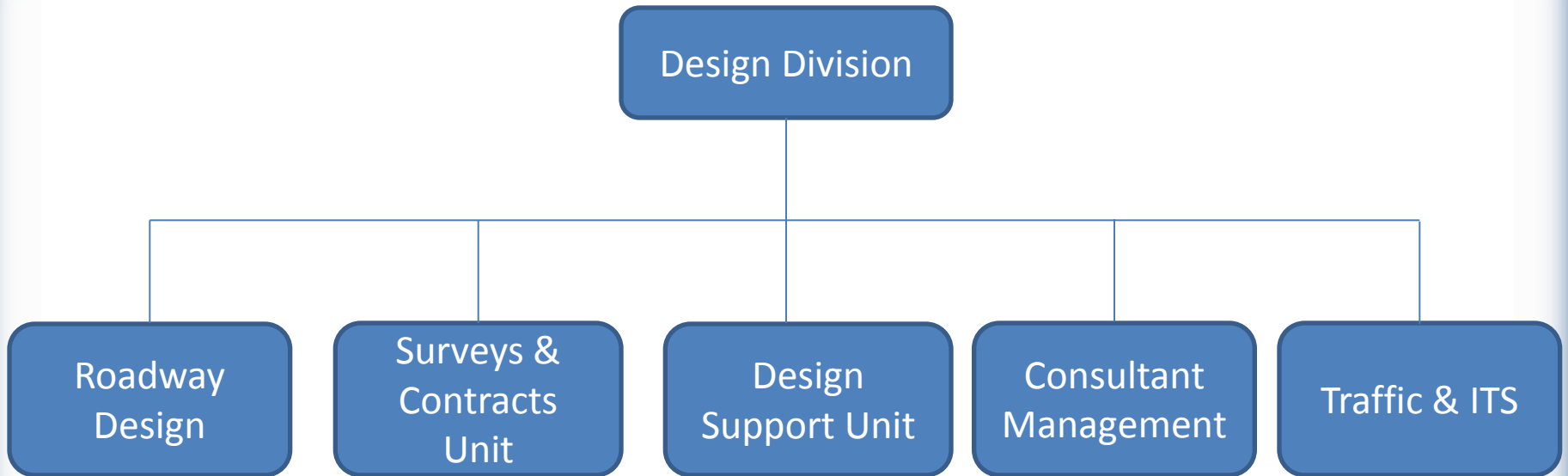
Jim Waters, PE, RLS
Assistant Director
Design Division

Discussion Topics

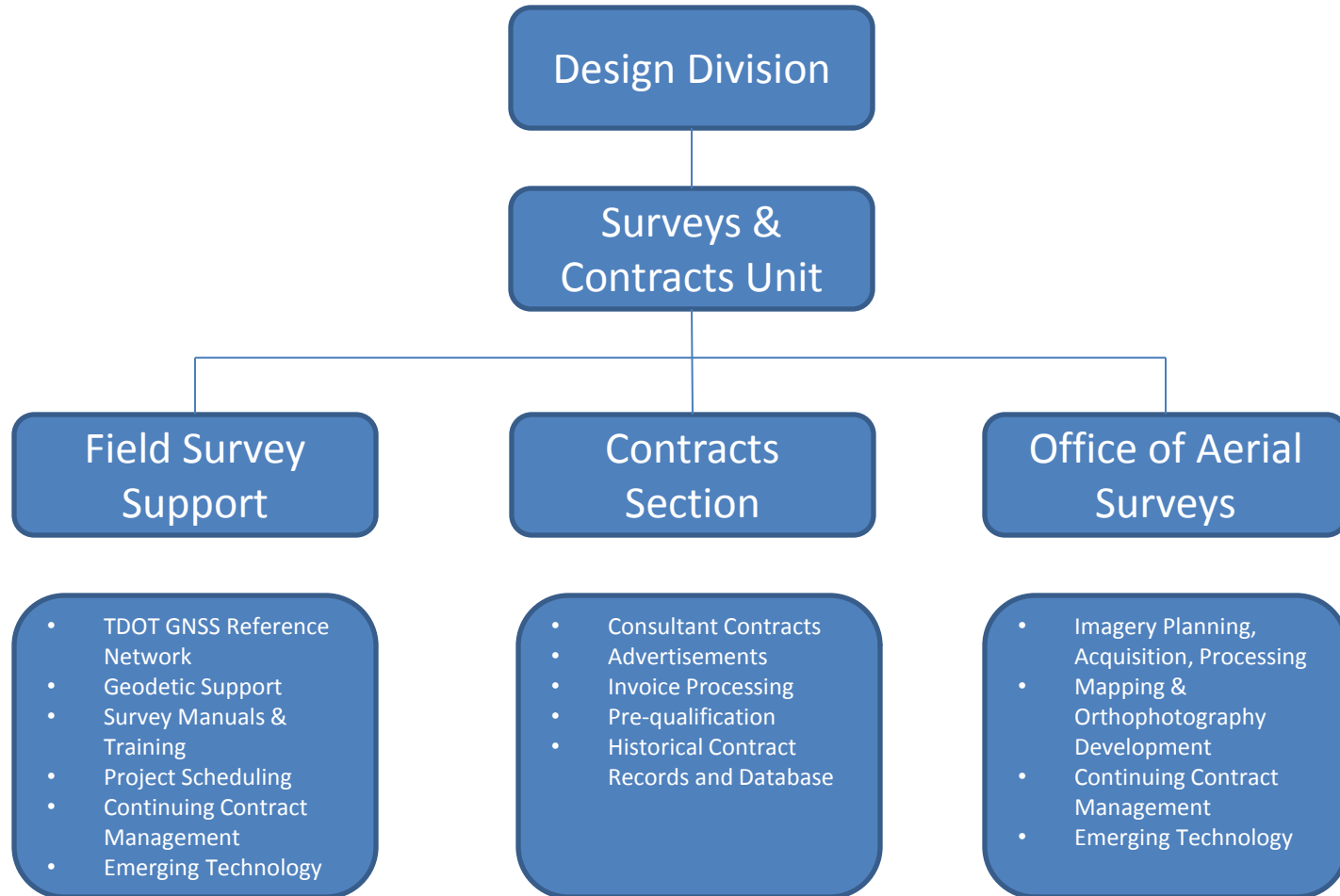
- Organization
- Survey Initiatives
- Aerial Survey Initiatives



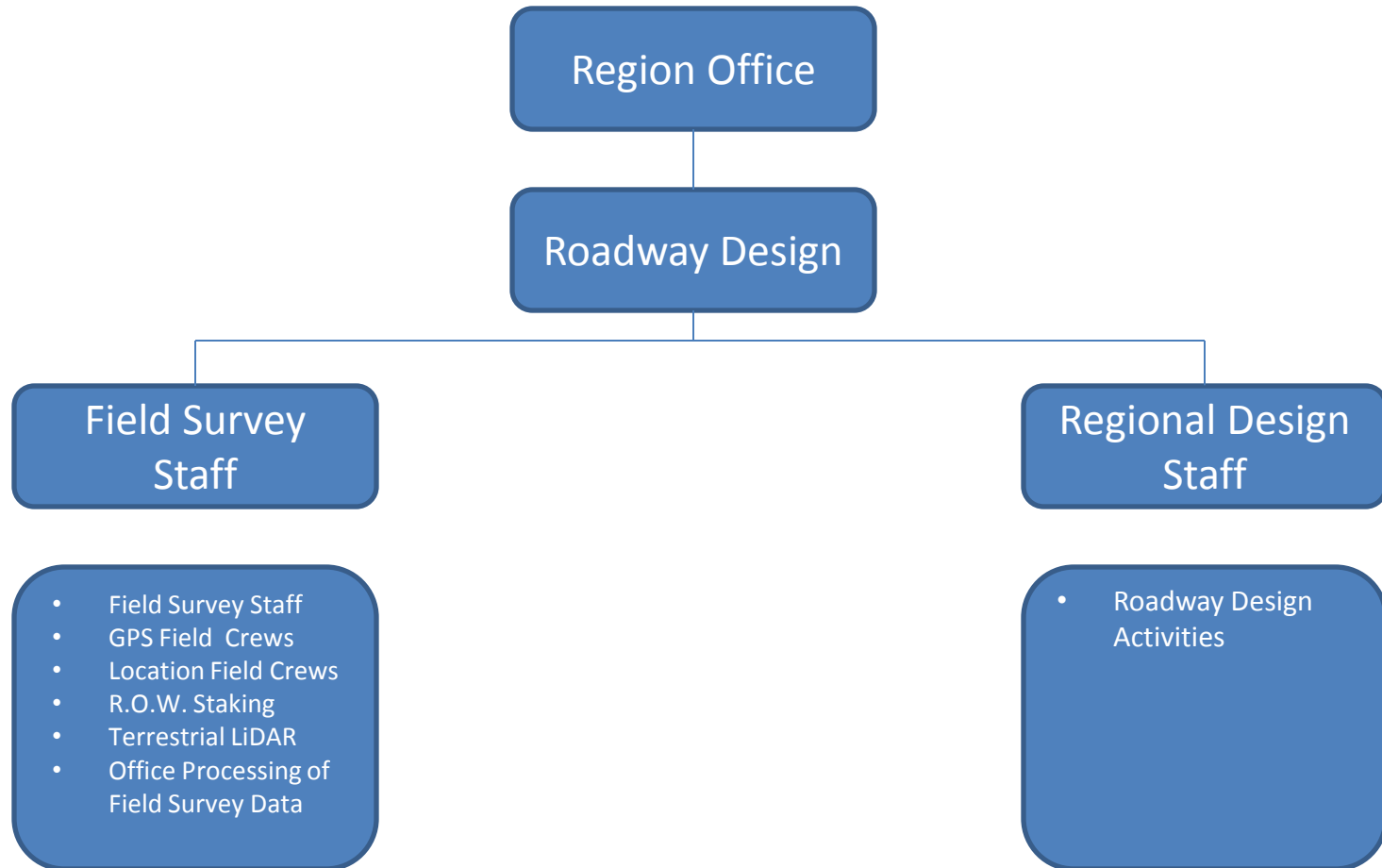
Organization



Headquarters



Field Staff Organization



Survey Initiatives



TDOT GNSS Reference Network



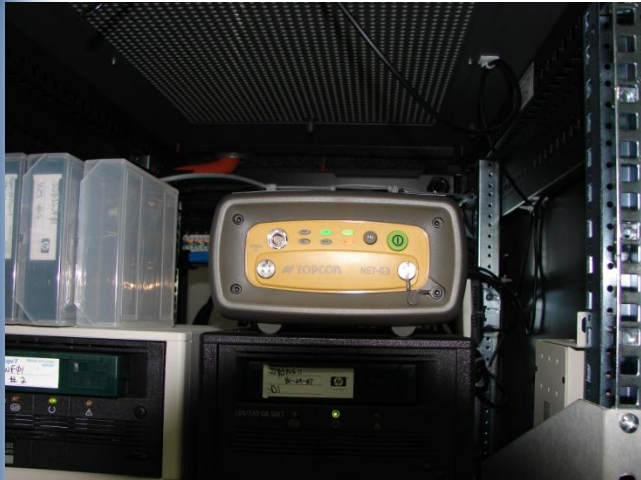
TDOT GNSS Reference Network

- 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

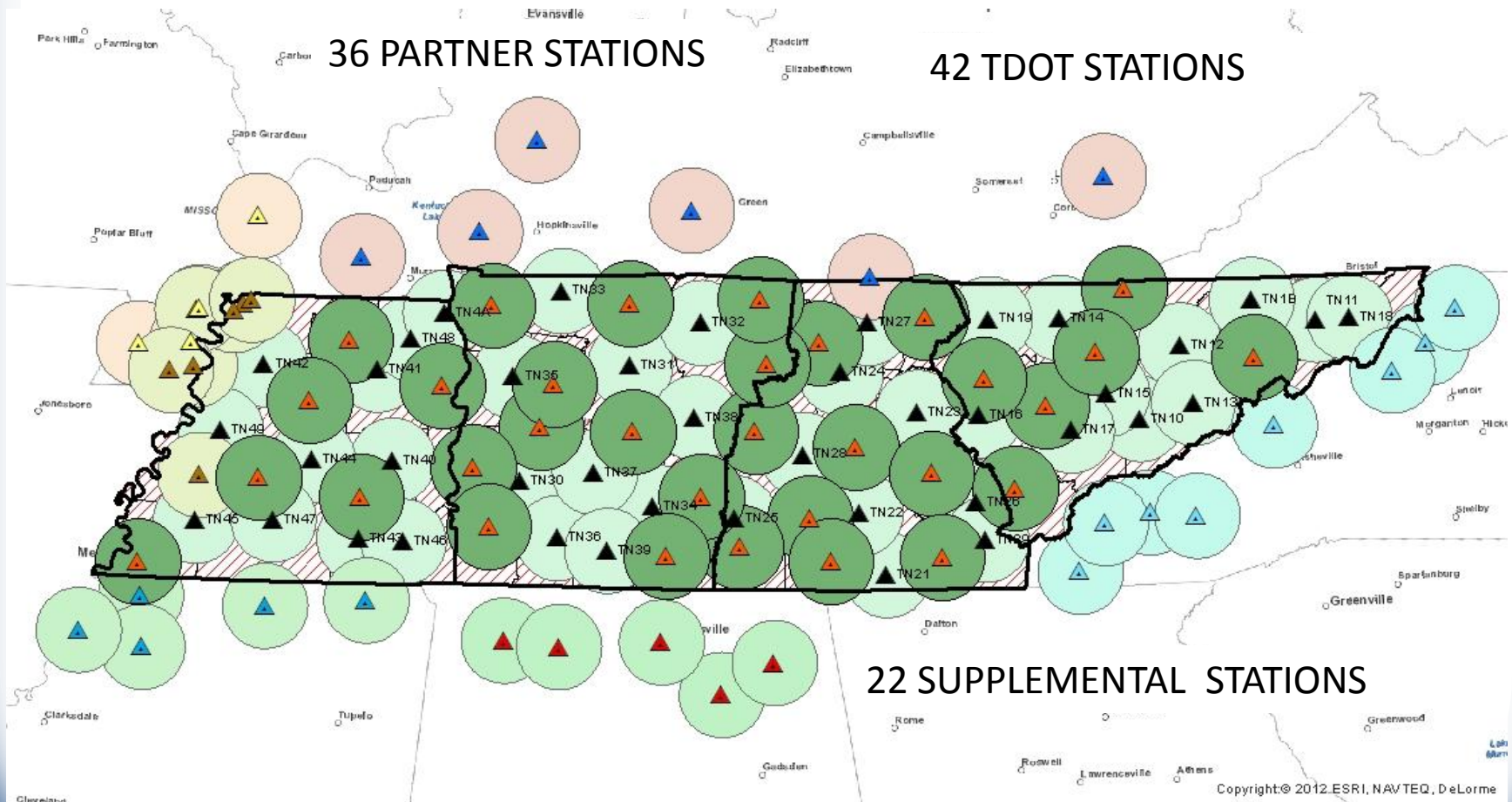
79 Stations
- 22 Supplemental Stations Planned



Typical Reference Station Equipment



TDOT GNSS Reference Network



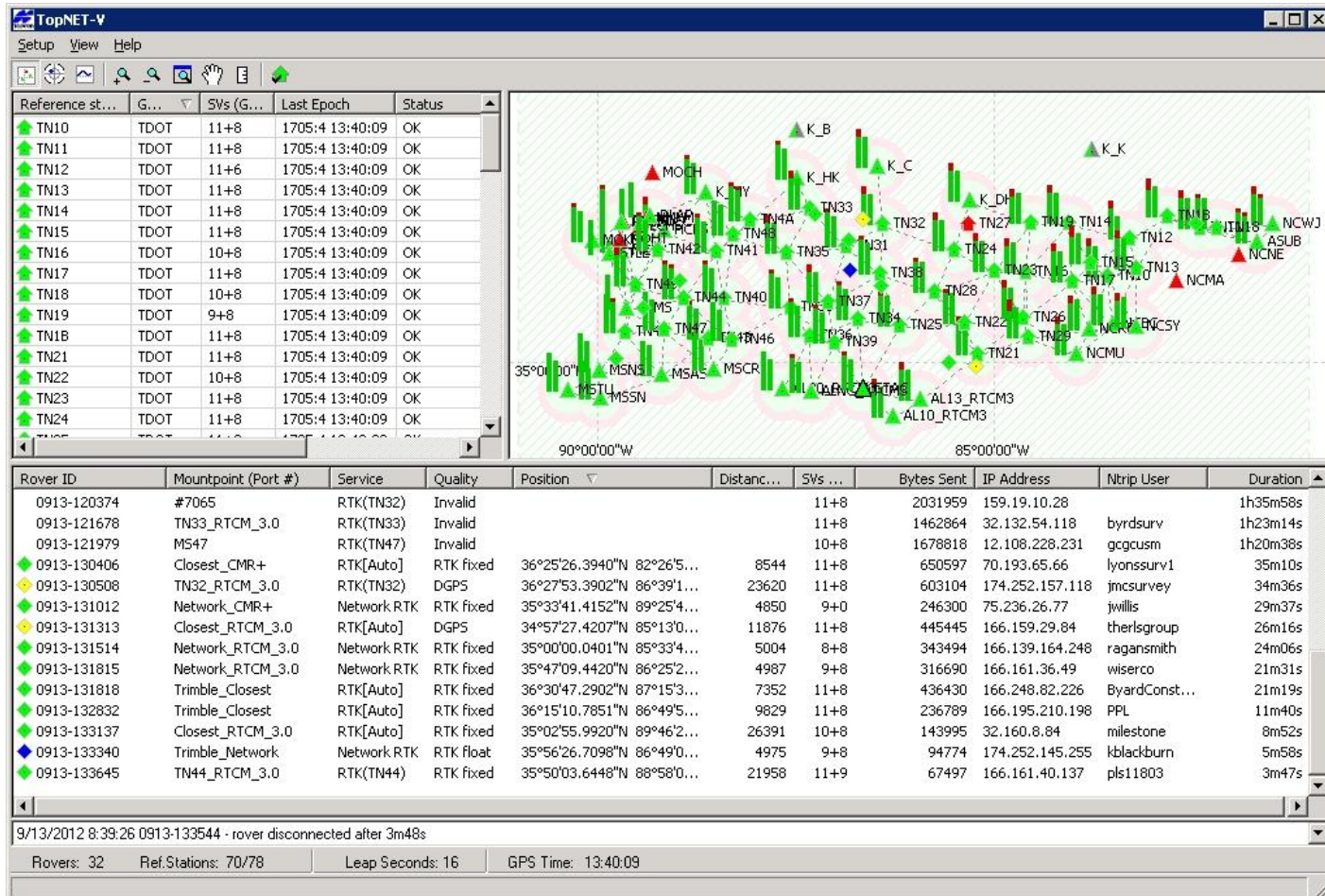
TDOT GNSS Reference Network

- 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

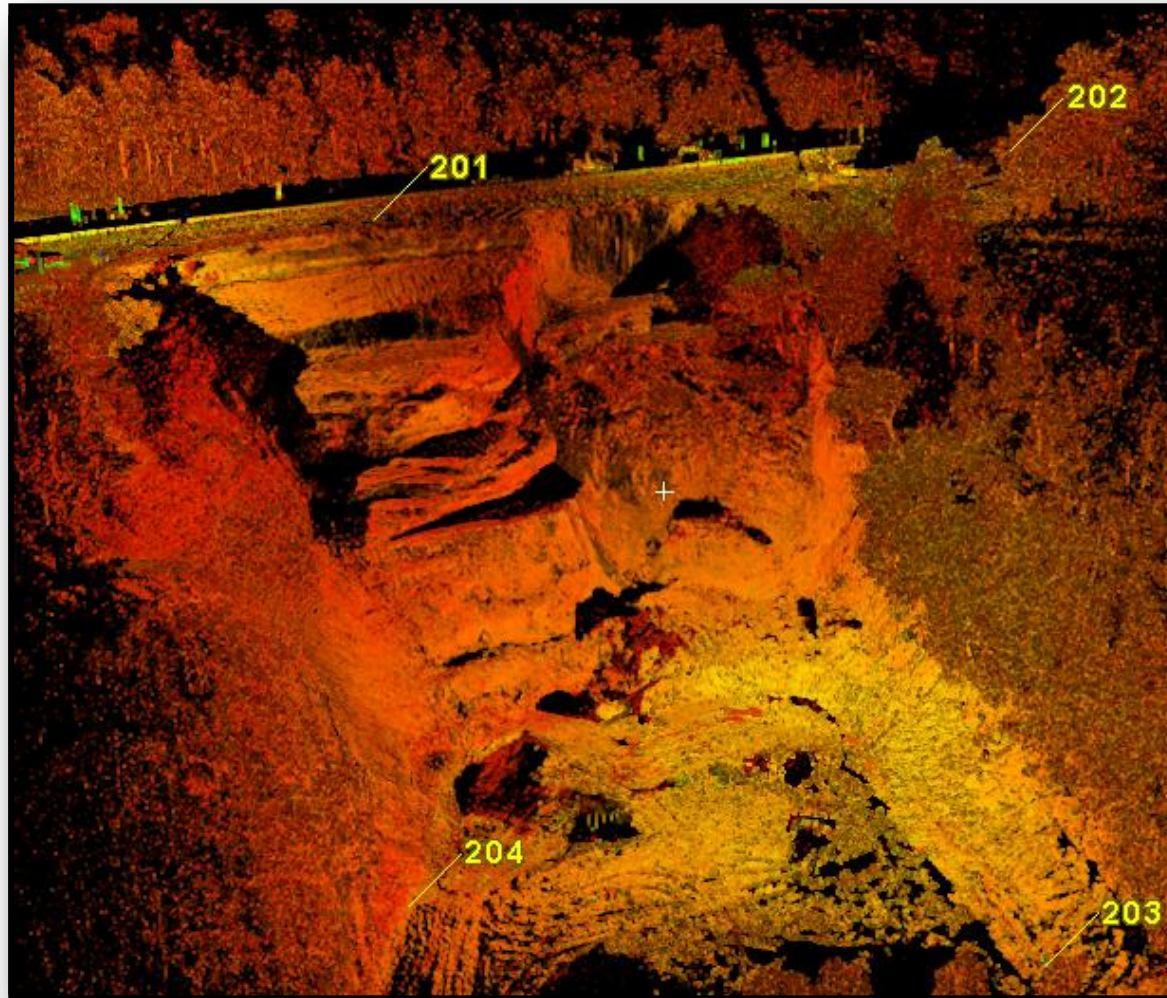


TDOT GNSS Reference Network

- 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

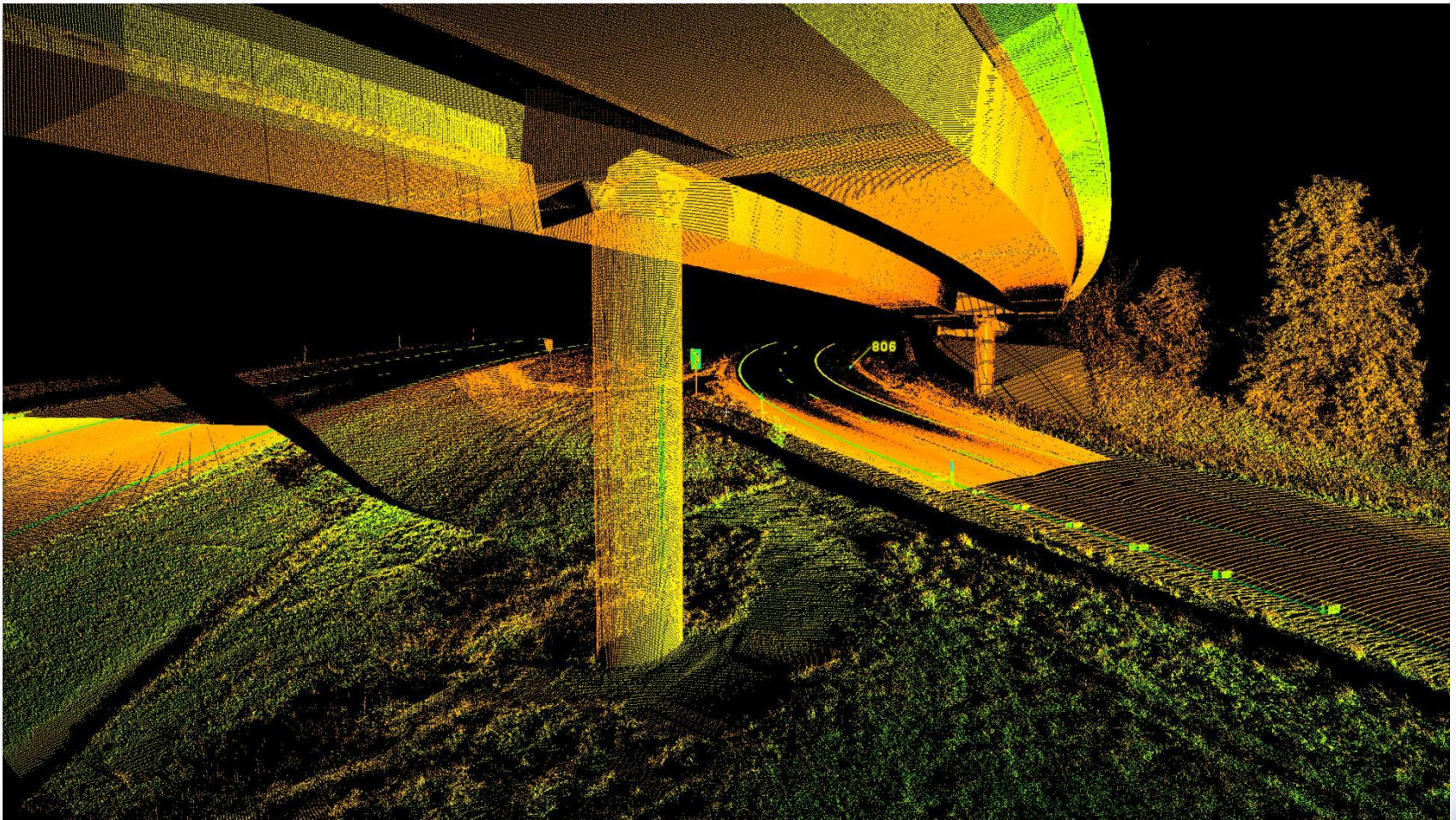


I-75 Slide in East Tennessee

High Definition Scanning

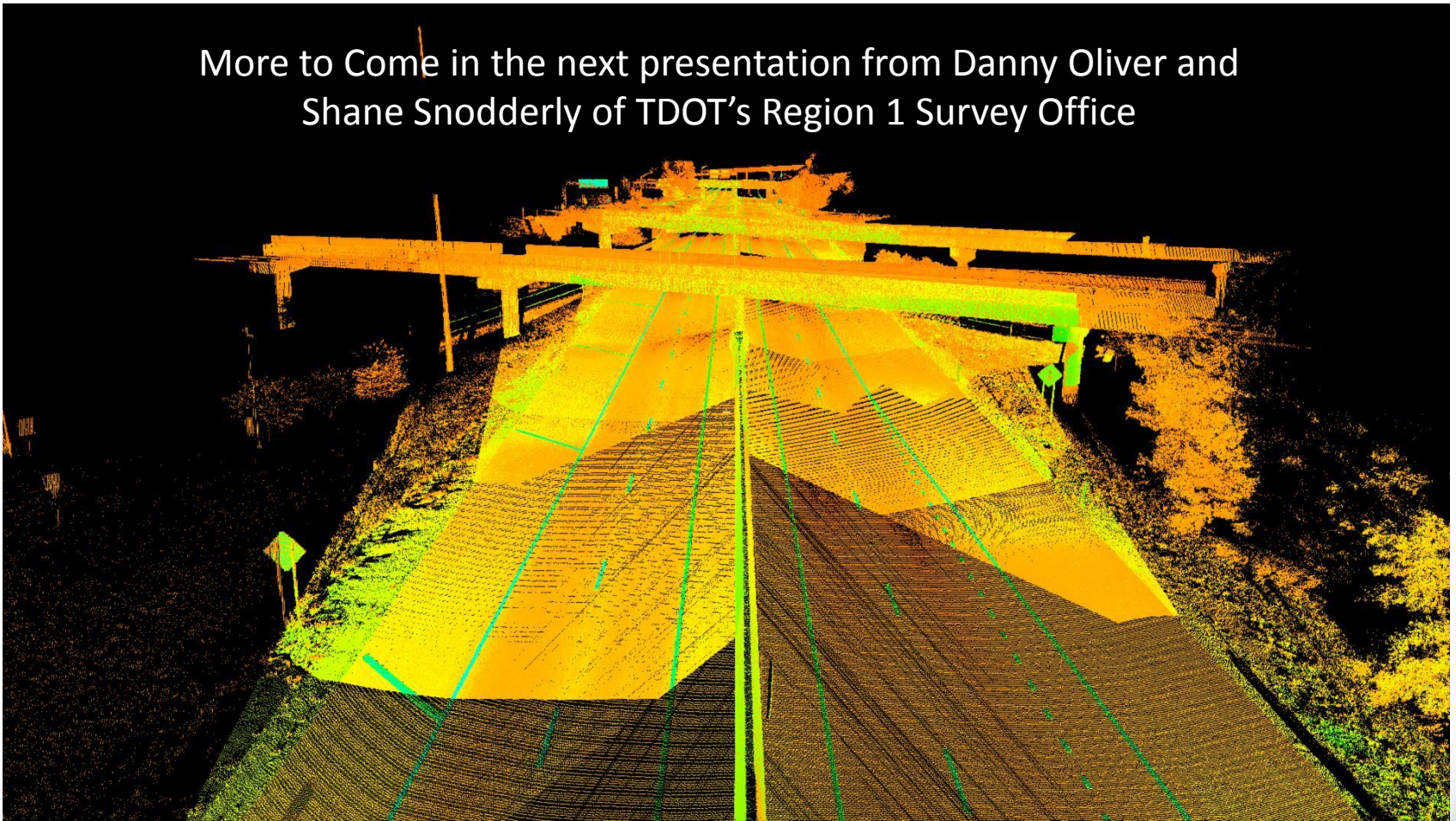
- 3 – Leica Scan Station C10 Scanners Deployed
 - 2 In East TN
 - 1 in West TN
- Collects Up to 50,000 points per second
- Up to 300 mm range
- 360 degree Horizontal Field of View
- 270 degree Vertical Field of View

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
 - Cesna Grand Caravan (2004)
 - 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

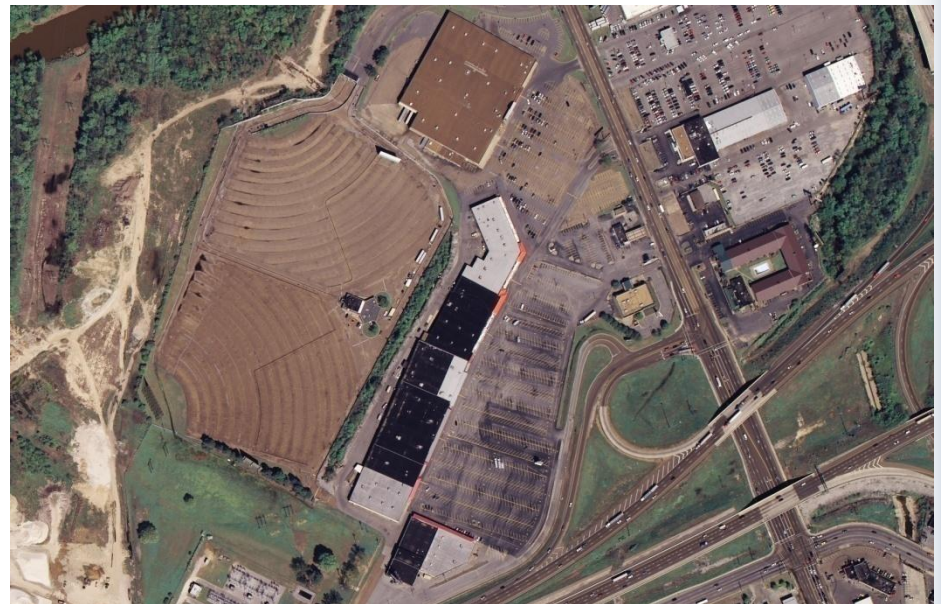
- Digital Transition
 - Photogrammetry Staff has been using Soft Copy for years.
 - Imagery Acquisition has been film based since inception.
 - Imagery Acquisition began transition to digital in 2008.
- Digital benefits
 - Saves Time
 - Fly, Download, Begin Working (No film developing)
 - Saves Space
 - 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)**

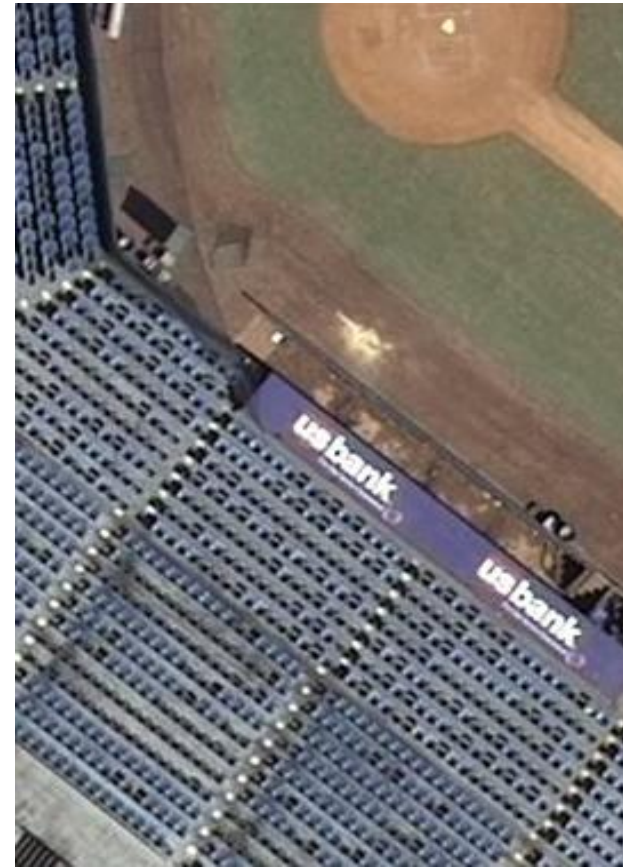


**Digital Color
(10,000 Feet AGL)**

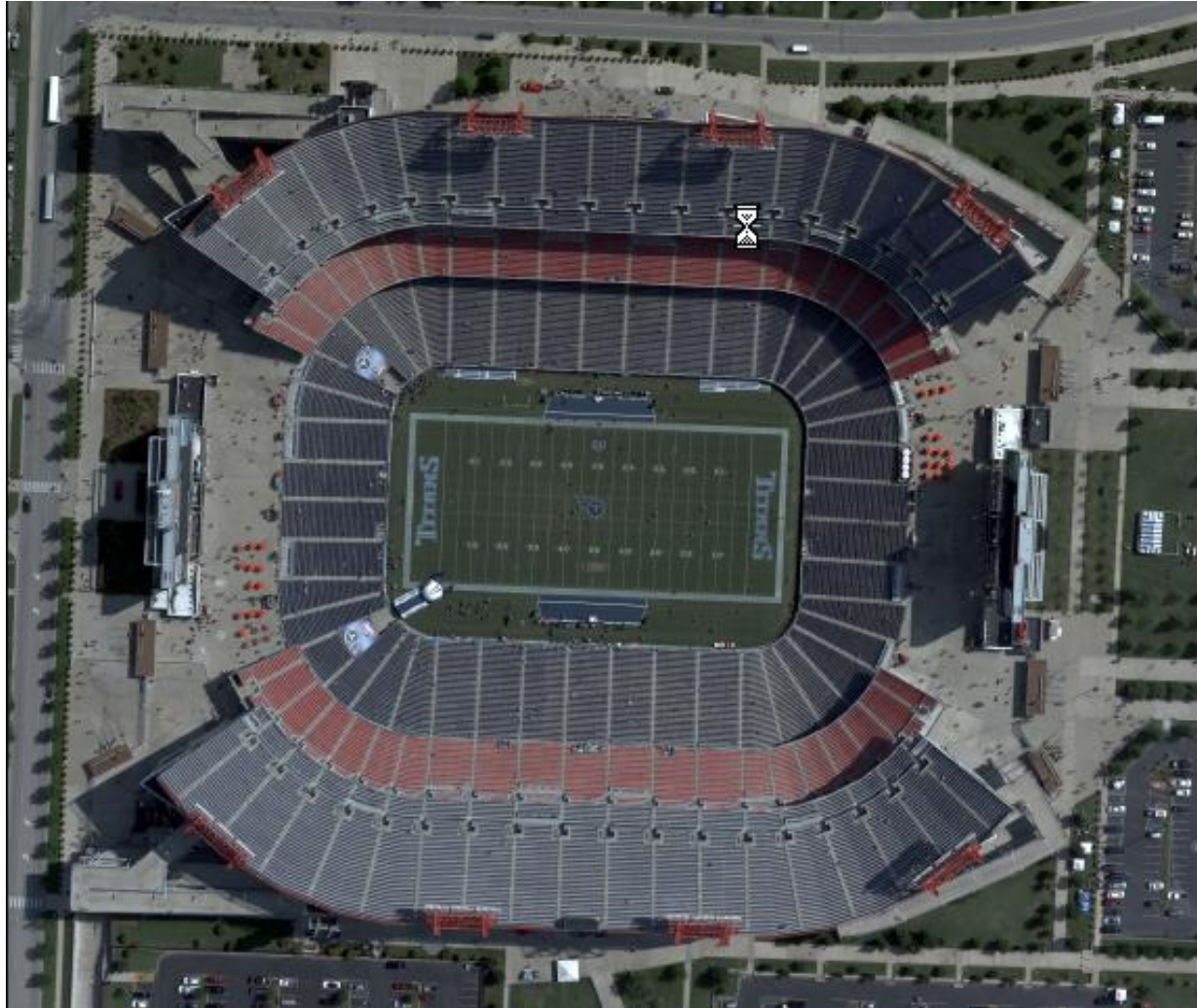
Office of Aerial Surveys



Office of Aerial Surveys



Office of Aerial Surveys





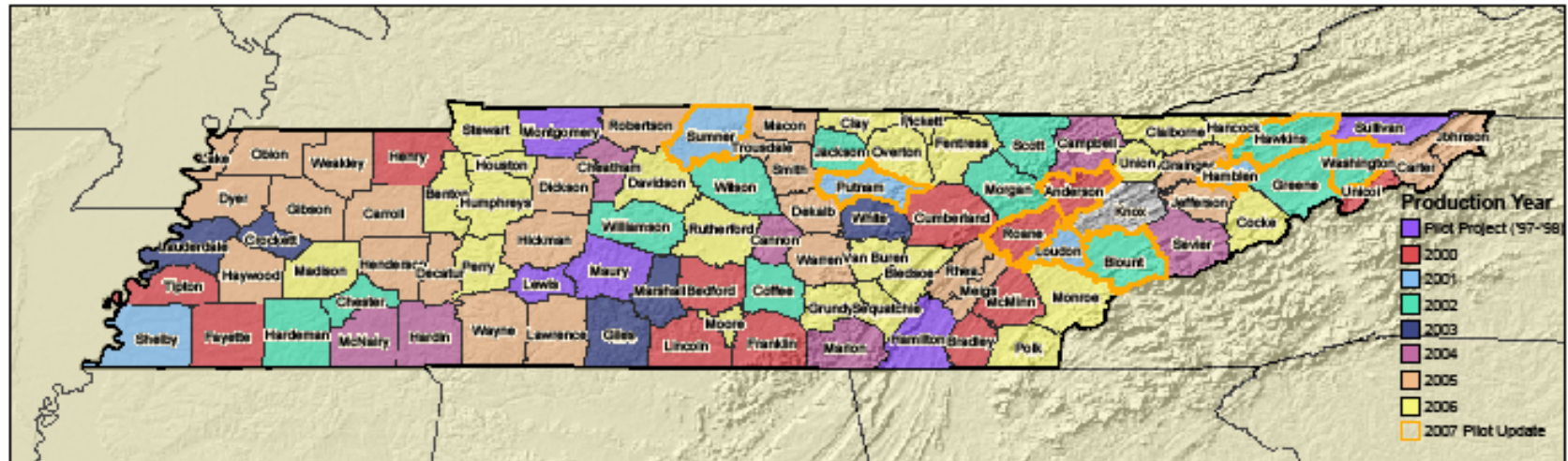
Office of Aerial Surveys

- 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.



Tennessee Base Mapping Program

By Production Year



Tennessee Counties

By Production Year

Pilot Project: ('97-'98)	2000:	2001:	2002:	2003:	2004:	2005: (*Fall '04 flying)	2006: (*Fall '05 flying)	2007 Pilot Update:	
Hamilton	Anderson	Sumner	Blount	Crockett	Hardin	*Haywood	Weakley	*Madison	Clay
Lewis	Bedford	Putnam	Chester	Giles	Cheatham	*Henderson	Gibson	*Benton	Overton
Maury	Bradley	Loudon	Hardeman	Lauderdale	Campbell	*Decatur	Carroll	*Stewart	Pickett
Montgomery	Cumberland	Hamblen	Hawkins	Marshall	Sevier	*Wayne	Warren	*Perry	Fentress
Sullivan	Fayette	Shelby	Morgan	White	McNairy	*Lawrence	Obion	*Houston	Polk
	Franklin		Scott		Cannon	Dyer	Trousdale	*Humphreys	Monroe
	Henry		Coffee		Marion	Lake	DeKalb	Rutherford	Union
	Lincoln		Greene			Robertson	Macon	Moore	Claiborne
	McMinn		Jackson			Jefferson	Rhea	Grundy	Hancock
	Roane		Williamson			Meigs	Smith	Davidson	Cocke
	Tipton		Wilson			Hickman	Dickson	Sequatchie	
	Unicoi		Washington			Grainger	Johnson	Van Buren	
						Carter	Bledsoe		

TNBMP Schedules



TNBMP Example Image



Questions

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