INDOT Land & Aerial Surveys
Products and Services

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Presented By:

INDOT Land and Aerial Survey Office
Construction Management & District Support
Indiana Department of Transportation
120 South Shortridge Road
Indianapolis, Indiana  46219-6705
Goals for Today

- INDOT Profile
- Introduce the Land and Aerial Survey Office
- Aerial Survey
- Indiana Statewide Imagery
- InCORS
- Questions
INDOT Profile

- Six district offices
- 3,395 employees
- $1 billion/annual capital expenditures
- 28,400 total roadway lane miles
- 5,600 INDOT-owned bridges
- Assists 42 railroads in planning & development of more than 3,880 miles of active rail lines
- Supports 69 Indiana State Aviation System Plan airports
INDOT Land & Aerial Survey Office (LASO)

- Eric Banschbach, PLS – Manager, Land and Aerial Survey Office
- James D. Campbell II, CP – Aerial Survey Coordinator
- Mark Shambaugh – Aerial Imaging Technician
- Jonathan Schiemann – Stereoplotting Technician
WHAT WE DO

Aerial Photography Services

- Preliminary Engineering/Planning Photography
- Design Scale Photography
- Oblique Photography
- Digital Imaging
Aerial Photography Services

Preliminary Engineering/Planning
Aerial Photography Services

Design Scale Photography
Aerial Photography Services

Oblique Photography
Aerial Photography Services

Digital Imaging
WHAT WE DO

Photogrammetric Processes

- Aerial Triangulation
- Digital Stereo Compilation
- Digital Terrain Models
- Cartographic Editing
Photogrammetric Processes

Aerial Triangulation
Photogrammetric Processes

Digital Stereo Compilation
Photogrammetric Processes

Digital Terrain Models
Photogrammetric Processes

Cartographic Editing
Products and services
Aerial Equipment/ software
The central column of Indiana counties will be included in the spring 2016 acquisition, with plans for the east tier in 2017 and west tier in 2018. The base product is 12-inch resolution, 4-band, leaf-off ortho imagery. This base product will be delivered at no cost to each Indiana County that agrees to a new 3-year "IndianaMap Data Sharing Agreement" with the Indiana Geographic Information Office. The dollar value of the ortho imagery based on the terms of the state’s current contract is a little more than $18,000. In addition, the product delivery includes a quality review by INDOT Photogrammetrist at no additional cost to the county.
Edit Calls found during Imagery QA/QC Process
INDOT Land & Aerial Survey
YOU FOUND WHAT???
InCORS Network
What is the InCORS Network?

**In**diana **C**ontinuously **O**perating **R**eference **S**tation Network

- Network of 45 geodetic quality GPS (GNSS) receivers and antennas, permanently installed, located across the state - INDOT & ISP sites
- Continuously collects GPS data
- Transmits thru Internet to central servers
- Data archived for future use, available for download by users
- Data processed by server software to generate network corrections-available via internet in real-time
Components for InCORS Network
InCORS Components

4 main parts:
- GNSS Hardware
- GNSS Software
- Monumentation
- Communication

- GNSS Spider
- Software

- Communication
- Data Links

- Monumentation
- Installation
GNSS Hardware is the key component for functionality in communication, interface with Server Software, Satellite Constellation, Receiver Clock, and Flexibility for remote communications.

1202 GG Leica Antenna

GRX1200GG PRO Leica Receiver
InCORS Software

• Leica SpiderNet
• Modular and fully scalable
• For single and multiple stations
  • INDOT 45 stations
  • MDOT, KYTC & Noble Co. 13 stations
  • Room to grow to 60
• For small and large networks
• For Post-Processed and RTK Networks
• For all types of GPS receivers
  • Leica, Trimble, Ashtech, TopCon….
• For all communication methods
INDOT Operated Station Monuments

- 3 Concrete Monuments - permanent
- 42 Building Mounts – semi-permanent
- 37 stations have been accepted as National CORS thus far (NGS monitored)
InCORS Communication

- GPS Signals
- GSM/GPRS Repeaters
- MiFi Device
- Cell Phones w/ data plan
- GSM/GPRS & CDMA Modems
- IOT Network
- Cellular Network
- Cellular Receiver
- END User

Communication Data Links
InCORS Network Details
InCORS Network Details

- DOT-Owned and Managed
  - Land & Aerial Survey Office (LASO)
- Utilizes state IOT Communications Network
- Utilizes state IOT Server Facility
- Free Access to Public & Private Sector
- Statewide Coverage
- Open Architecture
  - (RTCM 2.3,3.1,CMR,CMR+)
- Base Station Redundancy
- Public use started on February 1, 2010
- Currently have created over 2000 accounts
Questions???

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THANK YOU!!!