ANNUAL DBE WORKSHOP & Networking Summit 2025

January 29-30, 2025

Construction Technology

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Wisconsin Department of Transportation

Agenda

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- Innovation
- Field Data Collection Tools
- Electronic Ticketing
- OnStation
- Unmanned Aircraft System (UAS, aka Drones)
- As-built, RW Plats Soils
- Geographical Information System (GIS)
- Artificial Intelligence

Highway Construction Technology and Innovation

Every year, highway construction technology progresses, fueled by the pursuit of greater efficiency, precision, data integration, and sustainability. Innovations such as geospatial technologies, drones, and smart materials continuously enhance the speed and accuracy of construction projects. These advancements are revolutionizing highway construction methods and setting the stage for a more interconnected and resilient infrastructure.

FHWA Every Day Counts (EDC)

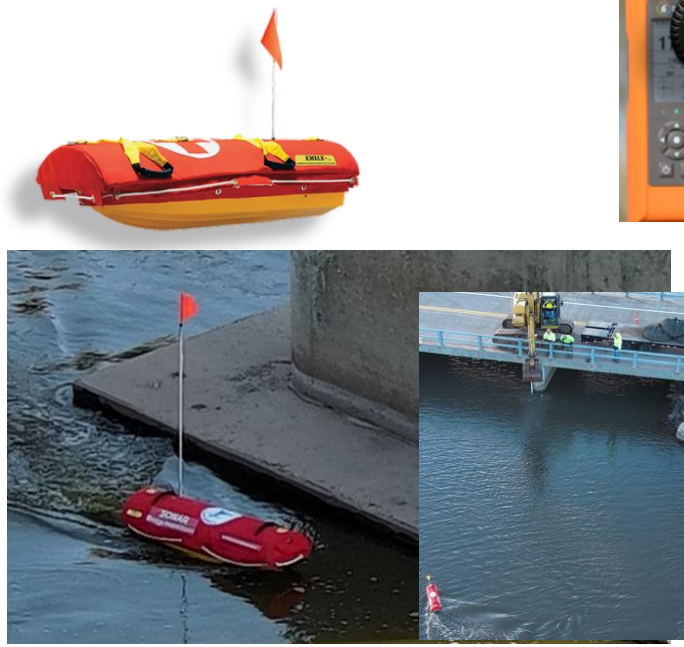
The Federal Highway Administration's (FHWA) Every Day Counts (EDC) initiative is designed to identify and rapidly deploy proven, yet underutilized innovation that make our transportation system more adaptable, sustainable, equitable, and safer for all. By promoting these innovations, EDC aims to enhance efficiency at the state, local and tribal levels, saving time money, and resources to ensure our infrastructure is built better, faster, and smarter

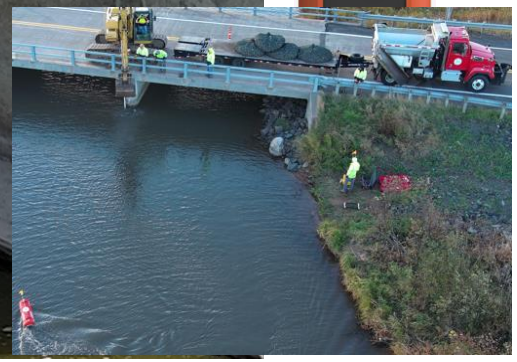
- EDC – 7
  - Nighttime Visibility for Safety
  - Next Generation TIM: Technology for Saving Lives
  - Integration GHG Assessment and Reduction Targets in Transportation Planning
  - Enhancing Performance with Internally Cured Concrete (EPIC2)
  - EPDs for Sustainable Project Delivery
  - Rethinking DBE for Design-Build
  - Strategic Workforce Development

Field Data Collection Tools

Field Data Collection Tools

- State Transportation Innovation Council Grant.
  - 360 cameras
  - GNSS devices
  - Craddlepoint
  - Pipe Trekker
  - Emily Boat
  - Drones (US)





Field technology apps

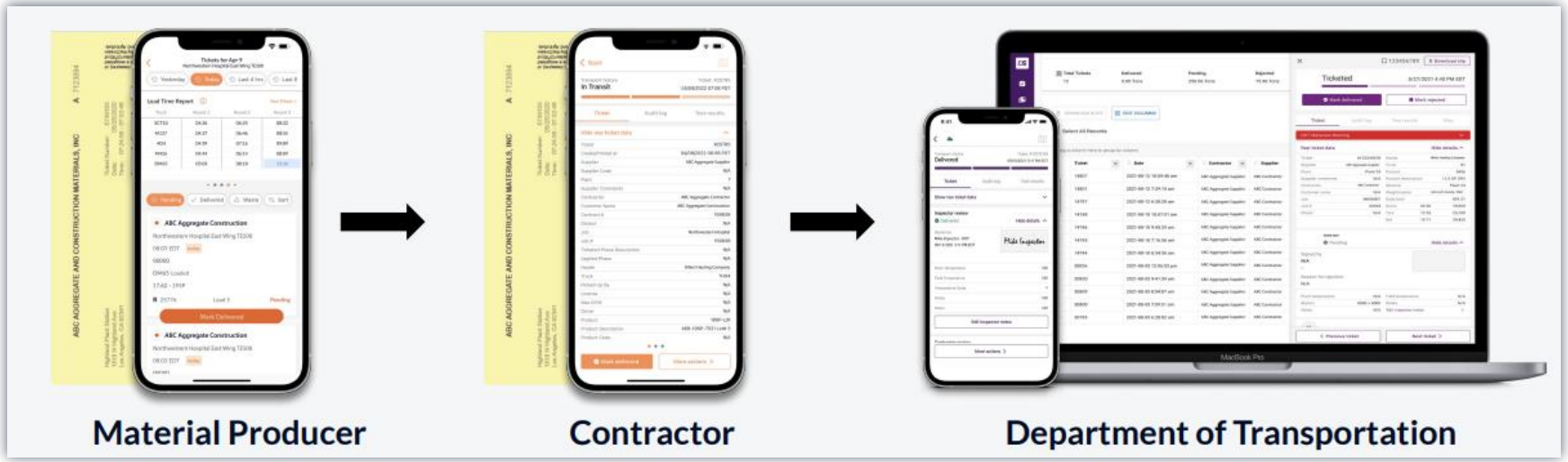
- e-Ticketing (AWP/HaulHub WisDOT Portal)
- OnStation
- Mobile Inspector
- Trimble Mobile Measure Service

e-Ticketing using AWP and HaulHub

HAULHUB TECHNOLOGIES

- HaulHub's WisDOT Portal is used to streamline e-Ticketing process for any asphalt, concrete or aggregate producer in the state.
  - The process works regardless of the ticketing solution used at the plant or job site.
  - Free for contractors and subcontractors.
- HaulHub's WisDOT Portal interfaces with AWP Construction.
  - Eliminate the need for inspectors to collect physical tickets on job sites.
  - Eliminate the need for field staff to manually enter ticket data into AASHTOWare Project or other systems.

HaulHub's WisDOT Portal



AASHTOWare™ PROJECT CONSTRUCTION & MATERIALS

Vendor
eTicketing Software

HaulHub WisDOT
Portal

2025 Standard Specifications

- 109.1.4.3 Electronic Load Tickets
  https://wisconsindot.gov/rdwy/stndspec/ss-01-09.pdf
  - (1) Electronic load tickets may be provided as a substitute for printed tickets. Include the information as specified in 109.1.4.2 on each electronic ticket.
  - (2) Automatically generate electronic tickets using a system that is fully integrated with the load-out scale system being used to weigh the material. Ensure data input cannot be altered and provide offline capabilities to prevent data loss.
  - (3) Provide electronic tickets in real-time by allowing the department access to the tickets utilizing a web based or app-based system compatible with iOS and Android.
  - (4) Provide the capability to record information and comments on each ticket.
  - (5) For each project ID and bid item, submit an electronic daily summary of the individual tickets daily as work is completed. In the daily summary, include the unique information for each individual load ticket. Provide the daily summary data in an importable format, such as comma separated values (.csv).

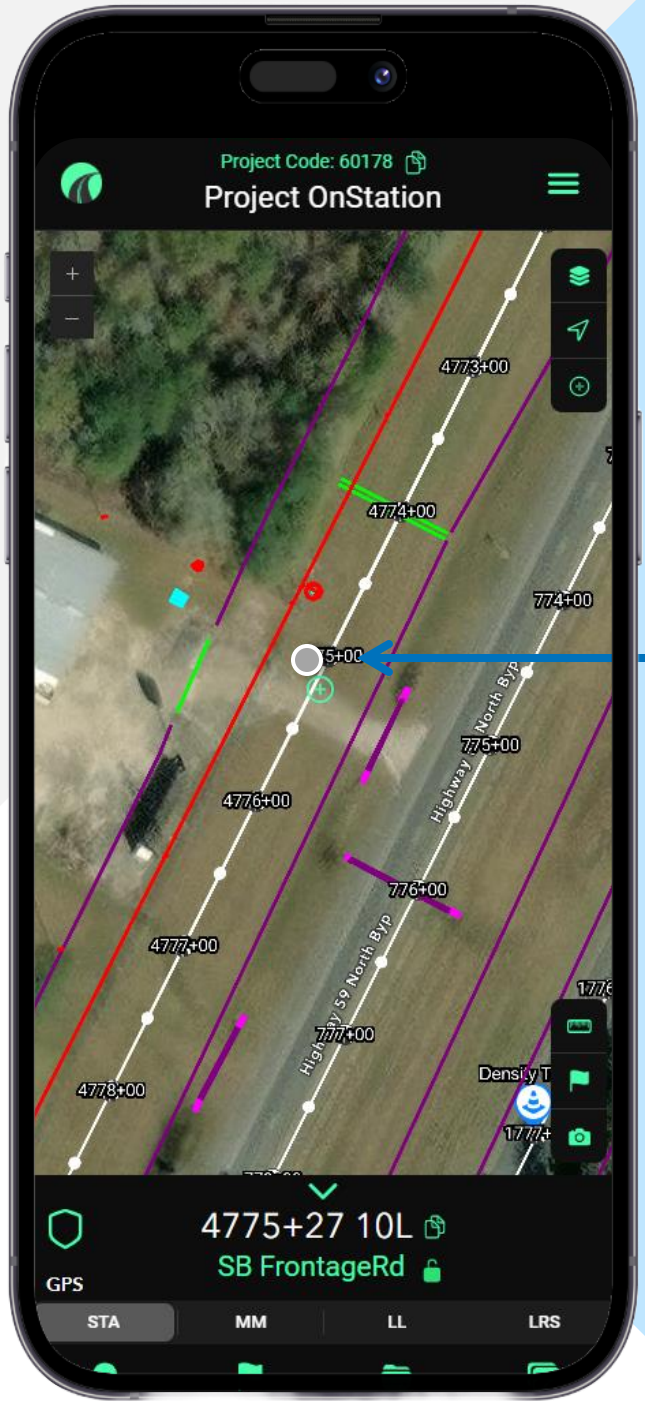
OnStation

- Developed by OnStation.
- See your location and station on the plan.
- WisDOT contract plans >$1 mil preloaded.
- WisDOT Nuclear Density form available.
- Potential for integration with AWP Construction

OnStation
The Leading Digital Stationing Platform

Find your station

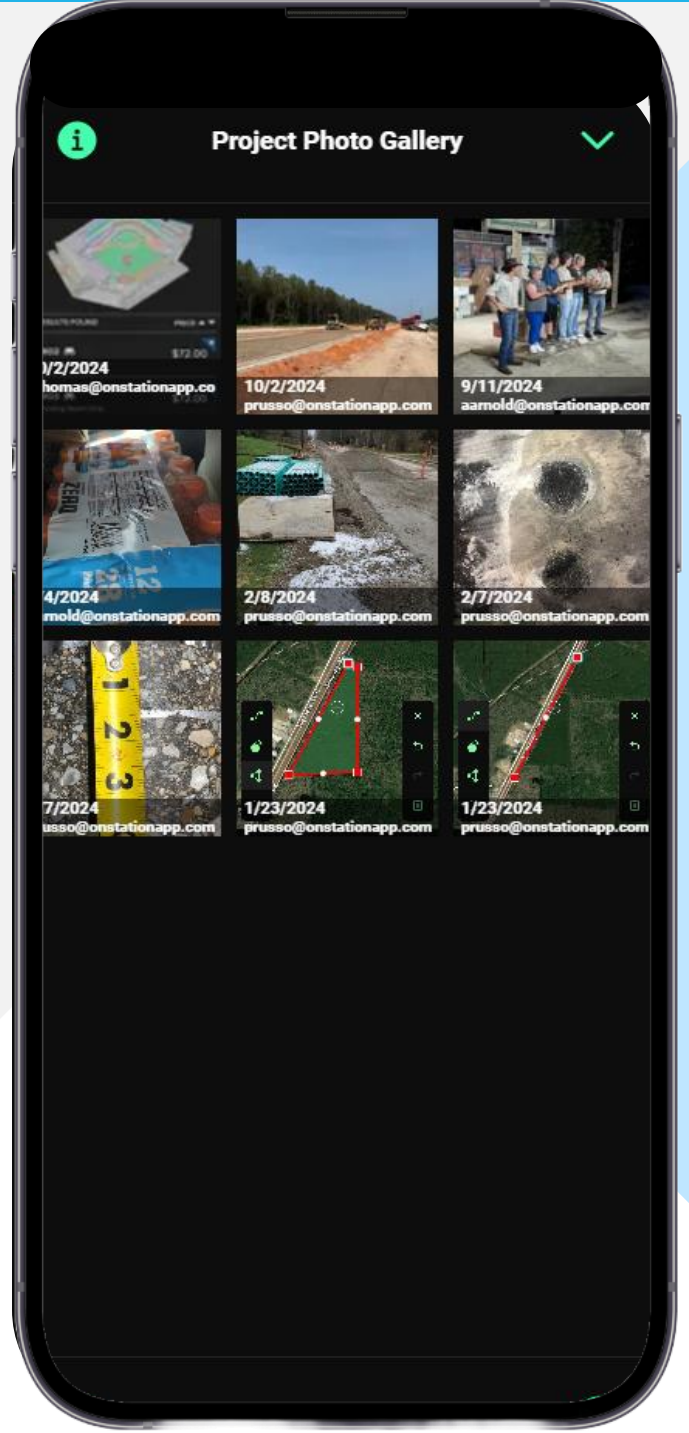
- “You are here.”
- Every worker can see their location
- Rich layer data from your CAD files
- Metadata pop up information
- Translate between location systems
  - Station / Offset, Mile Marker, LRS
- **Save labor costs, stop wandering**

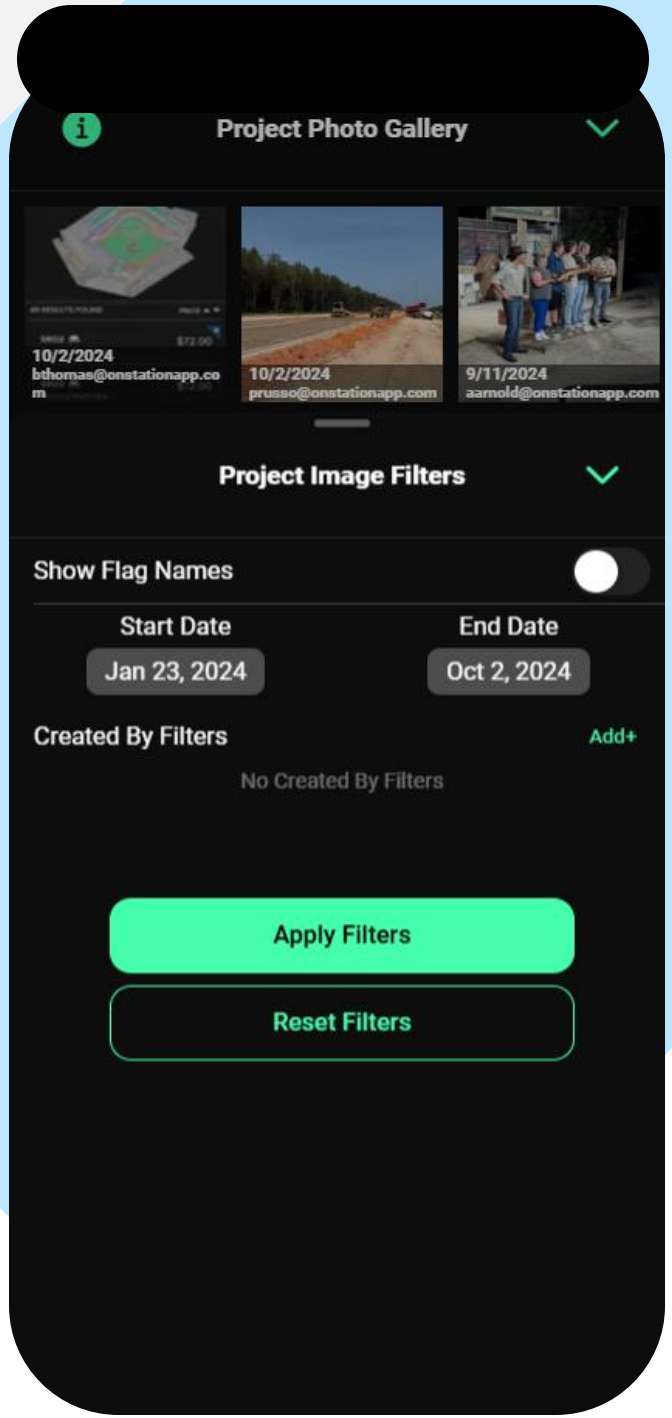


You are here.

A picture says it all

- Photo gallery captures all the pictures from the job
- Filter through many images
- Use the camera in your pocket – all OnStation Pictures are labeled with Date/Time/Station + Offset
- **See what happened, where**





Mobile Inspector®

- Web App for mobile devices.
- Field staff use to create Daily Work Reports (DWR).
- Locked DWRs are synced and uploaded to AWP Construction
- Photo attachments supported.
- Works with Trimble Mobile Measure.
- Refer to the AWPKB for installation and user instructions. https://awpkb.dot.wi.gov/Content/constr/LETContract/ContractProgress/MobileInspector.htm

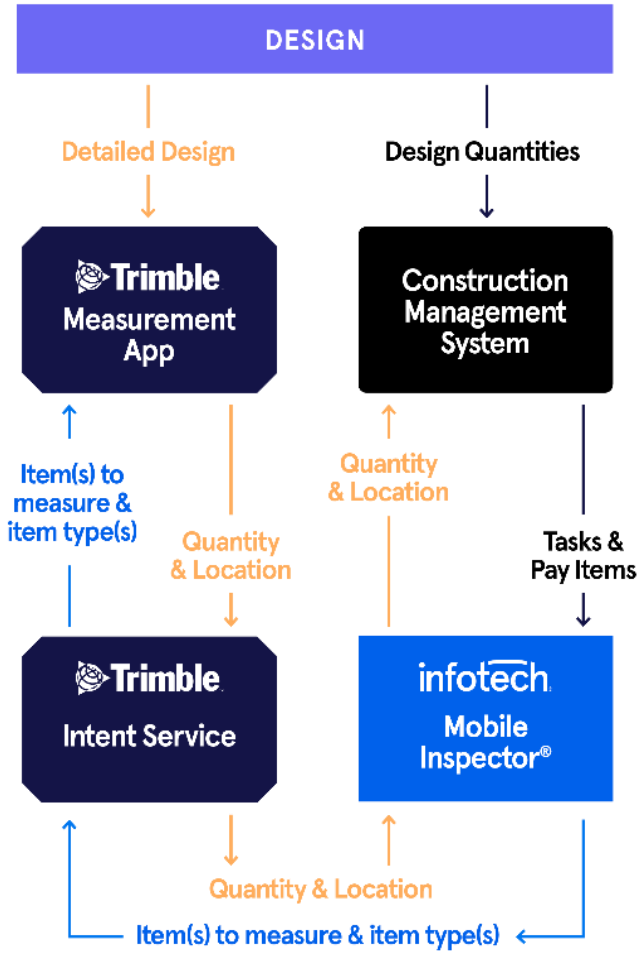
Trimble Mobile Measure Service

Trimble

- Integrates with Mobile Inspector.
  - Loaded on the Trimble Data Collector
- Both Mobile Inspector and the Mobile Measure Service (MMS) operate on a mobile device.
  - MMS captures and digitally maps location and asset data.
  - MMS syncs with Mobile Inspector.
  - Location data appears on the Mobile Inspector DWR.
  - Locked DWRs are synced and uploaded to AWP Construction.

What are the results two years into the successful integration ?

Trimble®Access™ ⇄ Infotech® Mobile Inspector® → AASHTOWare Project™



The Solution

On the job site

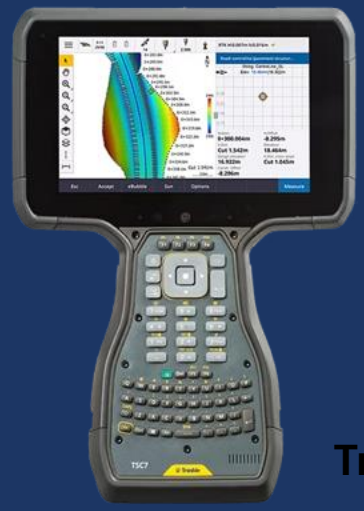
Trimble R12i

Trimble R780

Trimble R580

Trimble R2

Windows Based data collection platforms



Trimble TSC7

Trimble T100

Trimble T10x

Unmanned Aircraft System (UAS) aka Drone

- Additional Special Provision 6 (ASP-6)
- 107.27 Drones or Unmanned Aircraft Systems (UAS)
  - Licensing and Compliance
  - Flight Approval, Safety, and Incident Reporting
  - Insurance Requirements
- Consultant Guidance
- ? Application for Drone Flight Authorization of WisDOT?

UAS – Banned List

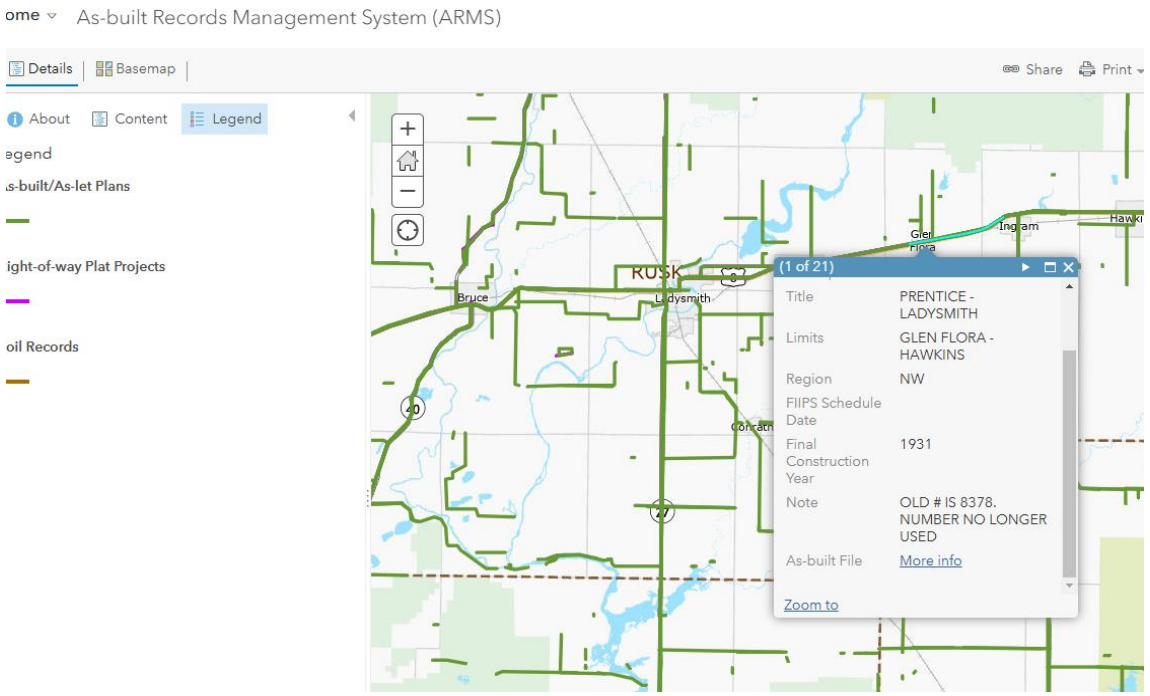
- National Defense Authorization Act (NDAA) is provisions to potentially banning Chinese's manufactured drones in the US.
- WisDOT and partners are prohibited from use of electronic part, products, or services that are prohibited by Federal Government.
  - Covered Foreign county: The People's Republic of China, The Russian Federation, The Islamic Republic of Iran, The Democratic Peoples's Republic of Korea)
  - Jan 1st, 2025 no banned UAS **should not be acquired** for WisDOT projects
  - Jan 1st, 2026 no banned UAS **will be used** on WisDOT projects

- What can be used – WisDOT recommends following Green and Blue UAS list

As-built Resource Manager (ARMS)

- ARMS includes
  - As-builts
  - Right-of-way Plats
  - Soils

- WisDOT Maps
- ARMS
  - Need a MyWisconsin ID



Geographical Information System (GIS)

- Maps and GIS
  - WisDOT Interactive maps
    - Highway Construction Skills Training Location
    - Wisconsin/Michigan Border Timber Routes
    - Culvert Inventory
    - Height Modernization Program
    - Wisc Roundabouts
    - Curb Ramps and Sidewalk Inventory
    - Asphalt Pricing
    - Disadvantaged Businesses
    - Improvement program
    - Weight Restricted Bridges
    - Traffic Counts
    - Winter Maintenance
    - Seasonal Weight Restrictions
    - Rustic Roads
    - Scenic Byways
    - Adopt-A-highway
    - Ag Roads Improvement

NearMap

- Nearmap is an aerial technology company that provides high-resolution aerial imagery and location intelligence.
- Is available more for urban areas
- High-resolution aerial imagery enables WisDOT to perform inspections of roads, bridges, and other infrastructure
- Aids in urban areas to provide maps and historical data, allowing WisDOT to analyze changes overtime
- Nearmap AI leverages machine learning technologies to extract info from aerial imagery
  - Automatic Feature Detection.

Artificial Intelligence

- Generative AI – generative new content (content creation, learning patterns, etc.
- Machine Learning – system learns from data to improve performance over time (Algorithms, Data, training models.)
- WisDOT Research Project
  - Transportation asset management
  - Transportation safety
  - Transportation Operations
  - Digital Twins
  - Autonomous vehicles
  - Generative AI
- Nearmap – Machine Learning
- MS Copilot – Generative AI
- Box AI – Generative AI

Don't forget to fill out the evaluation for this session.

These evaluations help shape future events.

THANK YOU