**GIS-Based Non-Signalized Intersection Data Inventory Tool**

**Deliverable:** ALDOT Intersection Data Inventory Web Portal Data Collection Tool

- A dual view GIS tool with a "download to shapefile" button (upper right downward pointing arrow) and searching capabilities using Google Maps and ESRI basemap with the Alabama linear referencing methods and an automatic "zoom to element" feature in View Mode.

**GIS Based Data Inventory Web Portal Cont.**

Data Collection Mode uses color matching of data entry screens to intersection or leg elements. Examples below show drawing and measuring tools, Google StreetView, and drop down menus for options on the basemap with the Alabama basemap.

- The intersection node (yellow) and all four leg elements (blue, green, orange, and pink) are color coded with the data entry screens.

Data Edit Mode allows editing capabilities for any elements associated with the previously catalogued intersection of interest.

**Project Scope**

- **Number of Lanes:**
  - Rural: 2 lanes, Multi-lane
  - Urban: 2 lanes, Multi-lane

- **Number of Legs:**
  - Rural: 2 lanes, Multi-lane
  - Urban: 3 lanes, Multi-lane

**Objectives**

- Use Geographic Information Systems (GIS) linear referencing methods and remote sensing.
- Collect and record geographic-referenced intersection characteristic data.
- 3-leg and 4-leg non-signalized intersections along state routes in Alabama.
- Develop:
  - a data collection methodology
  - an online GIS data collection tool
  - a level of effort for statewide implementation

**Data Collection Methodology**

- **Method:** Pull from existing datasets, assigned by visual observation or count, measured through remote sensing, investigated using Street View imagery.

**GIS Data Inventory Web Portal Examples:**

- **Intersection Attributes**
  - Example:
    - Intersection ID
    - Node ID
    - Intersection Category
    - Traffic Control Type
    - Lighting
    - Milepost
    - Latitude & Longitude
    - County & City
    - Terrain
    - Skew Angle
    - Offset & Offset Distance

- **Leg Attributes**
  - Example:
    - Leg ID
    - Leg Traffic Control Type
    - Link ID
    - Number of Turn Lanes
    - Leg Number
    - Turn Lane Widths
    - Intersection ID
    - Channelized
    - Leg Type
    - Right Turn
    - Leg Route Type
    - Right Turn Movement
    - Leg Speed
    - Control
    - Leg Width
    - Pedestrian Crossing Control
    - Number of Lanes
    - One Way
    - Number of Turn Lanes
    - Median Type
    - Width
    - Limited Sight Distance
    - AADT

- **Intersection Terminal Attributes Examples**

**Results**

- Data collection methodology and web portal: extensible to other states.
- Valuable intersection data inventory with a wide range of MIRE compliant data.
- Statistics can be generated from the inventory database: (of the 270 intersections investigated)

  - 17.4% have limited sight distance on at least one of the intersection legs.
  - 12.2% of the intersections have a pedestrian crossing control.
  - Percentage of intersections based on skew angle.
  - Percentage of mean types on intersection legs.

**Future Work**

- Investigating statewide implementation.
- Correlating intersection parameters with crash data to determine if characteristics led to higher crash frequencies.

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**Introduction**

- According to the National Highway Traffic Safety Administration, in 2012:
  - 45,637 fatal crashes crossed the United States.
  - 27.3% were intersection or intersection related.
  - Out of all crashes, 47.6% were intersection or intersection related.
- Roadway data inventory databases for decision making.
  - Intersection-specific data inventories.
  - Model Inventory of Roadway Elements (MIRE).
- Importance of geo-located data.
- Potential correlations with existing crash data.

- Select MIRE data inventories.
- Correlating intersection parameters with crash data to determine if characteristics led to higher crash frequencies.

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- Develop:
  - a data collection methodology
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  - a level of effort for statewide implementation