



Near Miss Video Screening—Benefits of a Scalable Approach  
2025 Annual Meeting—MASITE



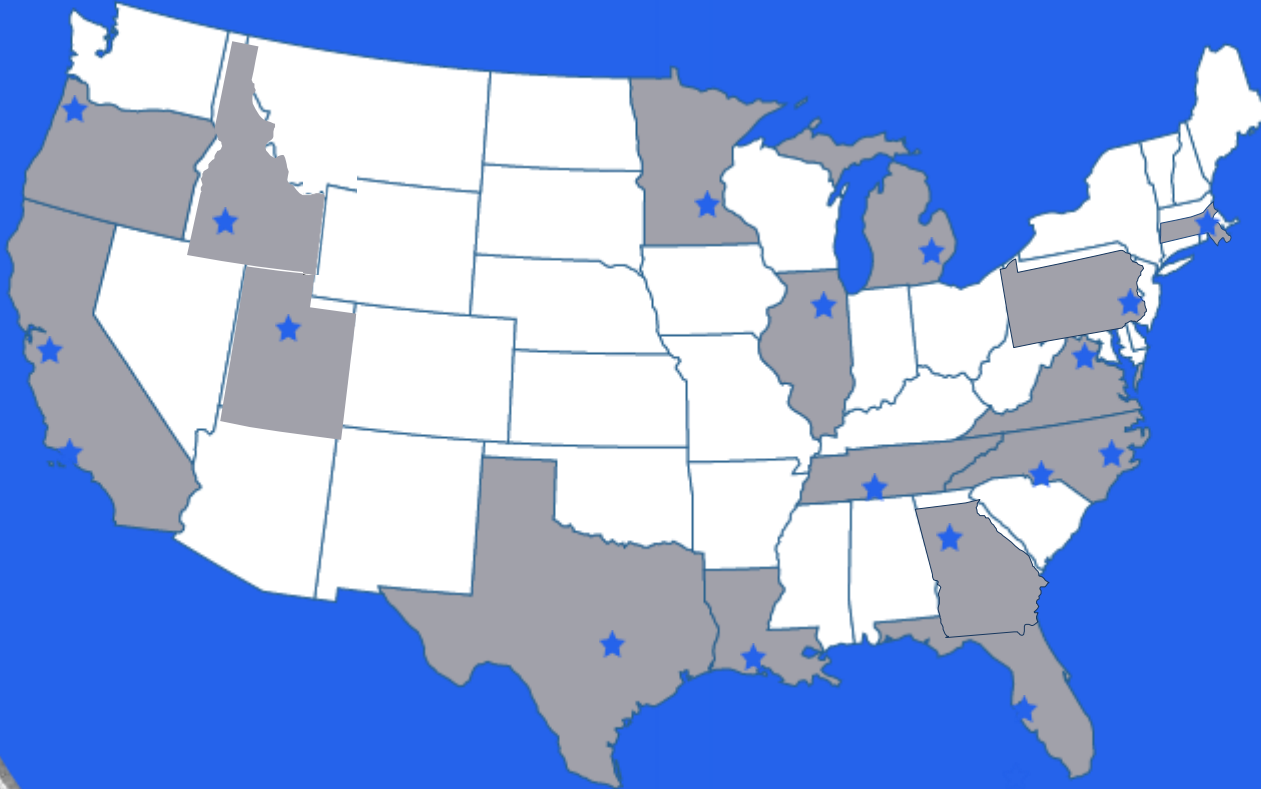
# **PRESTON HITCHENS**

## **Senior Business Development Manager**

- **Fightin' Blue Hen**
- **Expert knowledge of traffic signal operations, optimization and equipment**
- **Expert knowledge of traffic data collection, technology and means and methods**
- **Past President Mid-Atlantic Section ITE, Past President Mid-Colonial District ITE**
- **Past President East Penn Section of ASHE**
- **Avid Phillies' fan**
- **FHWA Private Pilot**
- **Amazed by his now six-year-old grandson, Cristian**

# //// WHO WE ARE

18 OFFICES



EMPLOYEE  
OWNED

278k+

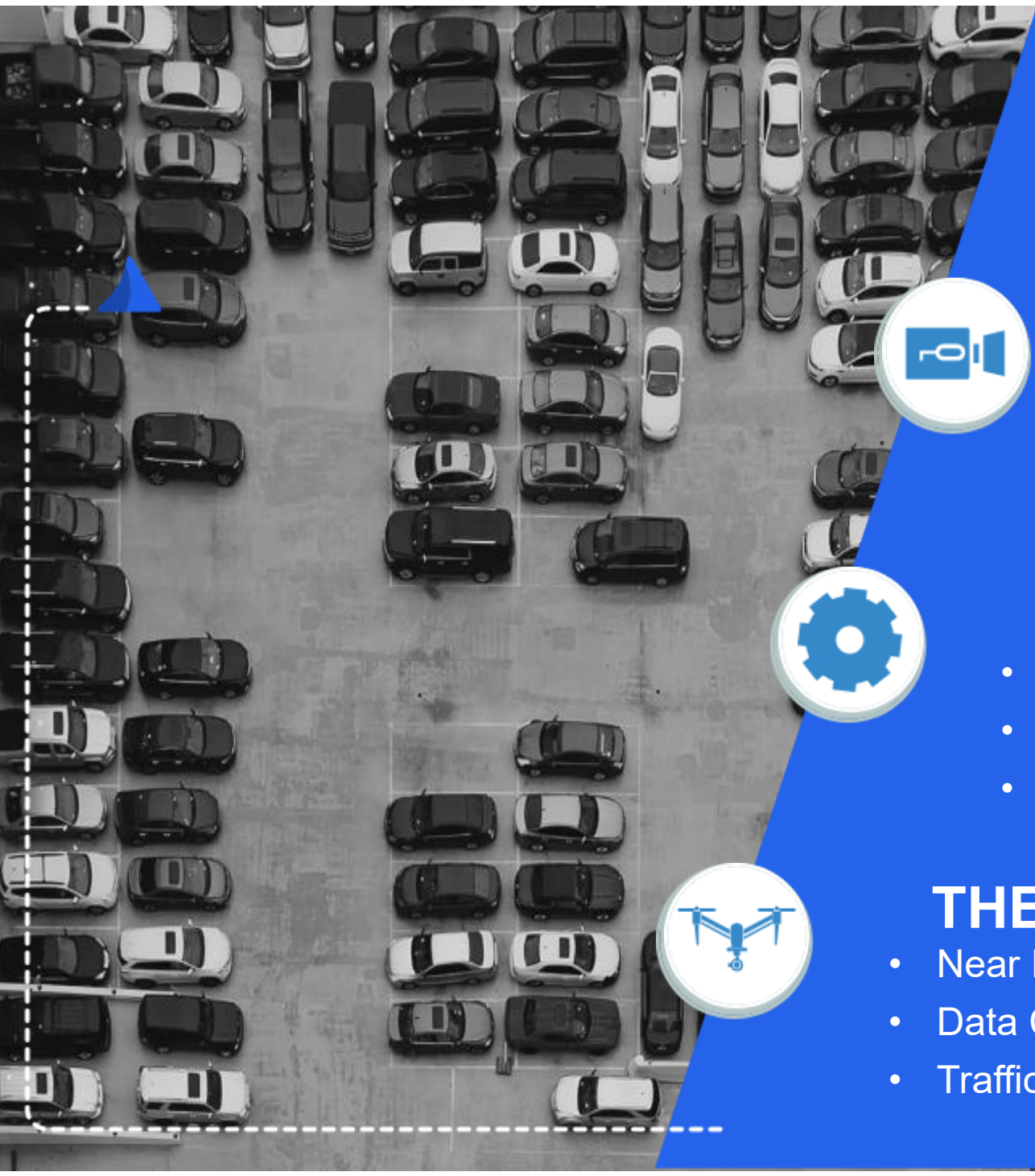
INDIVIDUAL COUNTS  
PERFORMED

25k+

PROJECTS  
COMPLETED

5k+

UNIQUE  
CLIENTS



# IF WE CAN SEE IT WE CAN COUNT IT



## THE TRADITIONAL

- Tube counts, TMCs, radar
- Queue Studies, Gap Studies, Occupancy Counts
- Parking Studies, Drone Projects



## THE LARGE SCALE

- Horizontal Curve Assessments
- ADA Ramp and Sidewalk Surveys
- Data Collection through a Fixed Wing Aircraft



## THE NEW & INNOVATIVE

- Near Miss Safety Data
- Data Collection Aided by Computer Vision (DataLens)
- Traffic Data Management (DataPoint)

# //// CAMERA DEPLOYMENT



# //// What Sets Us Apart



# BENEFITS OF AI DATA COLLECTION

1. Longer duration TMCs
2. Increased flexibility for collecting volume/class/speed data
3. Bike/Ped data can be included with ADT counts
4. **Near miss safety data**
5. GIS repository

# //// NEAR MISS CONFLICT ANALYSIS



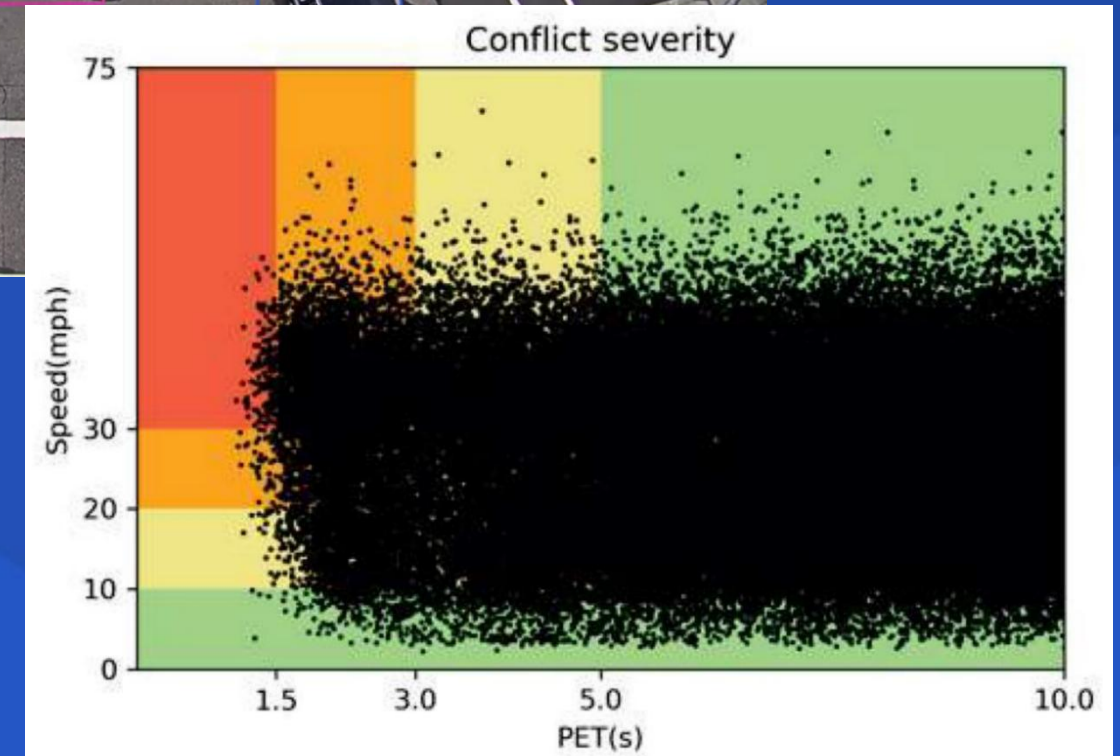
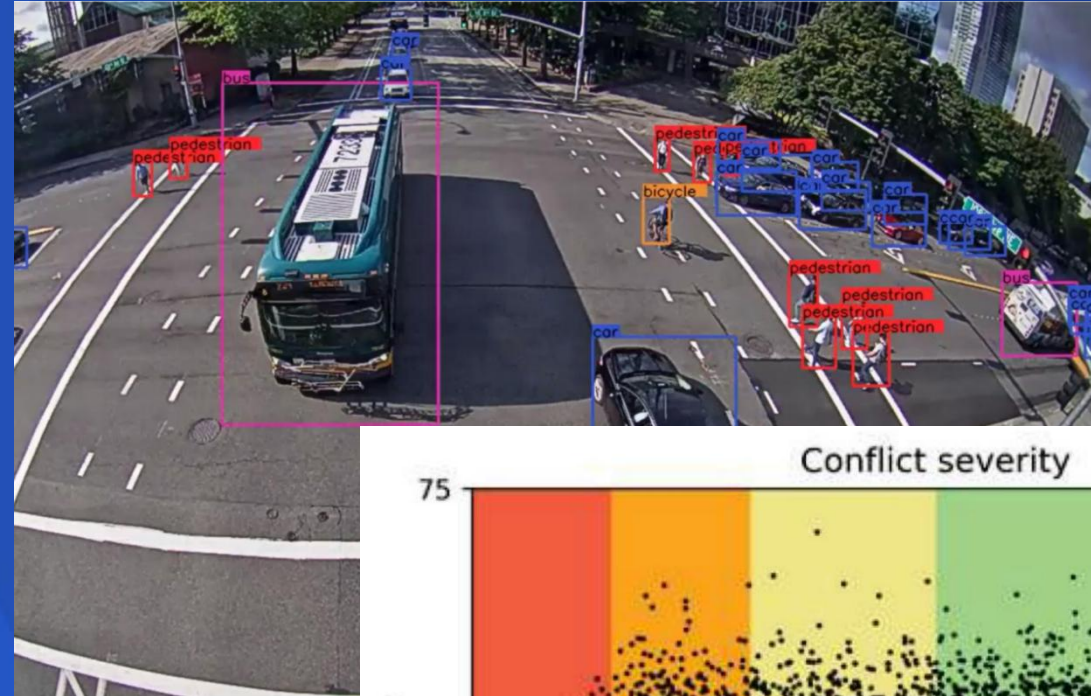
# **//// BENEFITS OF NEAR MISS SCREENING/ANALYSIS**

- **Crash data analysis is extensive review of events that have already happened. It is a LAGGING indicator.**
- **Conflicts happen more frequently than crashes.**
- **Conflict data provides instantaneous insights into intersection/roadway operations, can be used for real-time safety evaluation**
- **Video documentation of conditions—great tool for stakeholder interaction/meetings**
- **Near Miss Video Screening documents the behavior of Vulnerable Road Users (pedestrians, micromobility, cyclists).**

# //// NEAR MISS ANALYSIS

## THE TRADITIONAL APPROACH

- Record time 1-3 weeks, high resolution cameras
- Thorough and extensive reports and dashboards
- Schedule – Months to complete
- Often cost prohibitive to utilize at scale
- Most utilized as pilot projects and when grant



# **//// NEAR MISS VIDEO SCREENING**

## **THE QC SCALABLE APPROACH**

- **Low Cost** – Costs vary by market, and by specific project requirements, but typically are approximately \$1,500/intersection (including 24-hour TMC)
- **Project Types:** Low Cost allows for scaling into bike/ped safety projects, RSAs, network wide screening, etc.
- **Quick-Turnaround:** Cameras are typically set up the following week and TMC plus Near Miss reports are typically delivered a few days after setup.



# //// 2025 AGENCY ACCEPTANCE

## NEAR MISS VIDEO SCREENING

**State Agencies:** GDOT – FDOT – MDOT – MNDOT – NCDOT – ODOT – PennDOT – DelDOT

**Counties:** Middlesex County, NJ – Lee County, FL –  
Henrico County, VA – Washington County, OR

**Cities:** City of Tampa, FL – City of Richmond, VA –  
City of West Sacramento, CA – City of Hillsboro, OR

**Consultants:** Stantec – Kittelson – Kimley Horn – Creighton Manning – Atkins – DKS –  
Didonato – HNTB – Dewberry – CHA Consulting – VHB – Bolton & Menk

# **//// NEAR MISS EXPERIENCE**

- Georgia DOT: 20+ Projects
- Oregon DOT: 10+ Projects
- North Carolina DOT: 10+ Projects
- Florida DOT: 10+ Projects
- Maryland DOT: 2 Projects
- Minnesota DOT: 2 Projects

# //// NEAR MISS CONFLICT REPORTS

## Includes:

- Vehicle, Pedestrian and Bicycle Near Misses
- Near Misses Under 3 Seconds Are Flagged
- Highlight Reels For Each Location

## Advanced Metrics:

- Bike Ped Safety Miss Score (Developed by GDOT)
- Left Turn Conflict Rates
- Pedestrian Conflict Rates
- Full Details and Video of Each Near Miss Event

| Site Name                                       | Total Conflicts |            |            | Veh - Veh Conflicts |            |            | Ped - Veh Conflicts |            |            | Bike - Veh Conflicts |            |            | Notable Events                    |
|-------------------------------------------------|-----------------|------------|------------|---------------------|------------|------------|---------------------|------------|------------|----------------------|------------|------------|-----------------------------------|
|                                                 | 0.0 - 1.5s      | 1.5 - 2.0s | 2.0 - 3.0s | 0.0 - 1.5s          | 1.5 - 2.0s | 2.0 - 3.0s | 0.0 - 1.5s          | 1.5 - 2.0s | 2.0 - 3.0s | 0.0 - 1.5s           | 1.5 - 2.0s | 2.0 - 3.0s | By Location                       |
| <a href="#">Robert St &amp; Mendota Rd E</a>    | 3               | 14         | 267        | 2                   | 8          | 227        | 1                   | 3          | 31         | 0                    | 3          | 9          | <a href="#">Video Compilation</a> |
| <a href="#">Robert St &amp; Cub Food Dwy</a>    | 1               | 10         | 72         | 0                   | 5          | 66         | 1                   | 3          | 6          | 0                    | 2          | 0          | <a href="#">Video Compilation</a> |
| <a href="#">Robert St &amp; E Crusader Ave</a>  | 1               | 8          | 144        | 0                   | 4          | 122        | 1                   | 4          | 22         | 0                    | 0          | 0          | <a href="#">Video Compilation</a> |
| <a href="#">Robert St &amp; Carol Ln</a>        | 0               | 1          | 28         | 0                   | 0          | 13         | 0                   | 1          | 14         | 0                    | 0          | 1          | <a href="#">Video Compilation</a> |
| <a href="#">Robert St &amp; Lothenbach Ave</a>  | 8               | 35         | 398        | 1                   | 15         | 316        | 7                   | 20         | 77         | 0                    | 0          | 5          | <a href="#">Video Compilation</a> |
| <a href="#">Robert St &amp; Wentworth Ave E</a> | 7               | 25         | 166        | 0                   | 9          | 76         | 6                   | 10         | 74         | 1                    | 6          | 16         | <a href="#">Video Compilation</a> |

| MISS Score | Left Turn Conflict Rate (At Intersections)                 |      |      |      | Pedestrian Conflict Rate (At Intersections)                       |       |       |       |       | VRU Conflicts                                                    |         |           |         |          |         |          |         |         |         |
|------------|------------------------------------------------------------|------|------|------|-------------------------------------------------------------------|-------|-------|-------|-------|------------------------------------------------------------------|---------|-----------|---------|----------|---------|----------|---------|---------|---------|
|            | (Left Turn Conflicts Divided by Total Lefts During Period) |      |      |      | (Pedestrian Conflicts Divided by Total Pedestrians During Period) |       |       |       |       | (Vulnerable Roadway Users Crossing First and Second at Each Leg) |         |           |         |          |         |          |         |         |         |
|            |                                                            |      |      |      |                                                                   |       |       |       |       | North Leg                                                        |         | South Leg |         | East Leg |         | West Leg |         | Total   |         |
| Bike/Ped   | NB                                                         | SB   | EB   | WB   | NL                                                                | SL    | EL    | WL    | Total | VRU 1st                                                          | VRU 2nd | VRU 1st   | VRU 2nd | VRU 1st  | VRU 2nd | VRU 1st  | VRU 2nd | VRU 1st | VRU 2nd |
| 20,397     | 4.1%                                                       | 2.3% | 0.2% | 0.7% | 9.1%                                                              | 8.8%  | 10.5% | 14.7% | 11.0% | 7                                                                | 4       | 2         | 6       | 13       | 4       | 7        | 4       | 29      | 18      |
| 33,856     | 4.2%                                                       | --   | --   | --   | 150.0%                                                            | --    | 0.0%  | 2.3%  | 14.5% | 2                                                                | 8       | 0         | 0       | 0        | 0       | 1        | 1       | 3       | 9       |
| 43,673     | 6.6%                                                       | 5.8% | 0.4% | 0.3% | 13.6%                                                             | 30.4% | 3.7%  | 5.4%  | 6.7%  | 1                                                                | 2       | 4         | 3       | 2        | 3       | 8        | 4       | 15      | 12      |
| 50,470     | --                                                         | 4.9% | --   | 2.7% | 0.0%                                                              | 48.1% | 0.9%  | 1.1%  | 6.3%  | 0                                                                | 0       | 1         | 13      | 0        | 1       | 0        | 1       | 1       | 15      |
| 102,748    | 7.2%                                                       | 4.6% | 0.8% | 0.8% | 27.0%                                                             | 18.1% | 7.2%  | 4.1%  | 14.6% | 36                                                               | 29      | 17        | 4       | 9        | 5       | 3        | 6       | 65      | 44      |

**Middlesex County, New Jersey  
RSA Project (Stantec)**

- Duration of queue from nearby signal extending into intersection
- How queueing precludes sightlines between vehicles and peds/bikes
- Non-compliance of side-street traffic for right-turn only signing/stripping



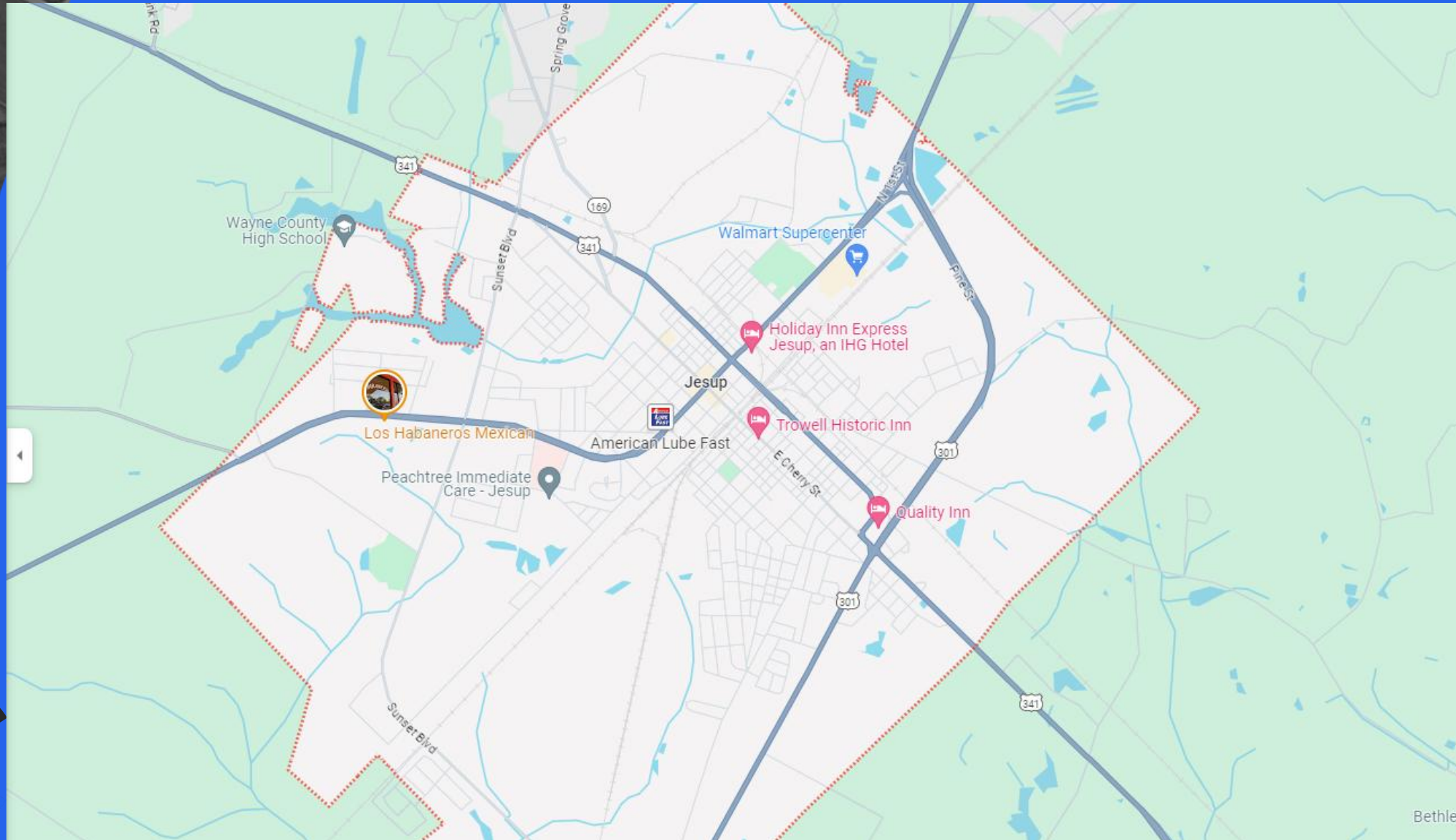
**Middlesex County, New Jersey RSA  
Project (Stantec)**

- Understanding how signal phasing creates confusion and conflicts
- Show presumed priority behaviors of traffic
- How signing, striping, and phasing can be revised



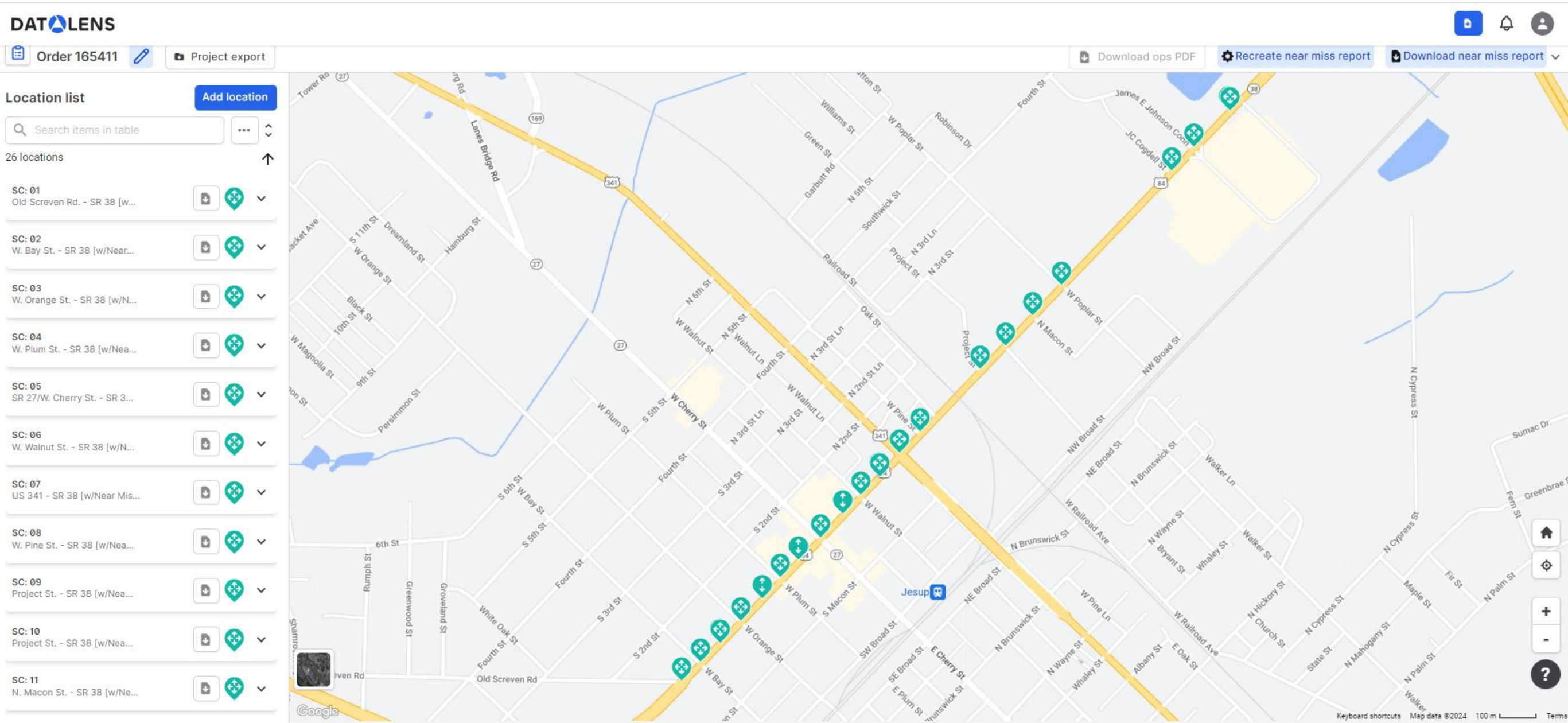
# //// RSA in Wayne County, GA

## SR 38 Corridor, Jesup, GA



# Wayne County, GA

## SR 38 Corridor, Jesup, GA



# National and Regional Comparison

City/State: Jesup, GA

QCJobNo: 165411

Date: 4/16/2024

Duration: 24 hours

|          |                              |               |              |                     |                   |              |                               | National Comparison |            |                         | Regional Comparison |            |                         |
|----------|------------------------------|---------------|--------------|---------------------|-------------------|--------------|-------------------------------|---------------------|------------|-------------------------|---------------------|------------|-------------------------|
| Sitecode | Intersection                 | Conflict Type | Control Type | # of Crossing Lanes | Left Turn Volumes | Thru Volumes | Permitted Left Turn Conflicts | Average Conflicts   | Percentile | Sample Size (Locations) | Average Conflicts   | Percentile | Sample Size (Locations) |
|          |                              | NBL x EBT     |              | 2                   | Low               | Medium       | 0                             | 7.8                 | --         | 448                     | 8.4                 | --         | 197                     |
| 16541112 | W Poplar St & SR 38          | SBL x WBT     | TWSC         | 2                   | Low               | Medium       | 9                             | 7.8                 | 63%        | 448                     | 8.4                 | 56%        | 197                     |
|          |                              | EBL x WBT     |              | 2                   | Low               | Medium       | 5                             | 9.7                 | 11%        | 518                     | 10.8                | 10%        | 232                     |
|          |                              | WBL x EBT     |              | 2                   | Low               | Medium       | 2                             | 9.7                 | 1%         | 518                     | 10.8                | 1%         | 232                     |
| 16541113 | JC Cogdell St & SR 38        | NBL x EBT     | TWSC         | 2                   | Low               | Medium       | 2                             | 7.8                 | 2%         | 448                     | 8.4                 | 1%         | 197                     |
|          |                              | SBL x WBT     |              | 2                   | Low               | Medium       | 6                             | 7.8                 | 31%        | 448                     | 8.4                 | 26%        | 197                     |
|          |                              | EBL x WBT     |              | 2                   | Low               | Medium       | 7                             | 9.7                 | 26%        | 518                     | 10.8                | 23%        | 232                     |
|          |                              | WBL x EBT     |              | 2                   | Low               | Medium       | 0                             | 9.7                 | --         | 518                     | 10.8                | --         | 232                     |
| 16541114 | James E Johnson Conn & SR 38 | NBL x SBT     | Signal       | 1                   | Medium            | Medium       | 3                             | 34.0                | 0%         | 525                     | 33.8                | 0%         | 271                     |
|          |                              | SBL x NBT     |              | 1                   | Low               | Medium       | 1                             | 12.1                | 0%         | 402                     | 12.2                | 0%         | 194                     |
|          |                              | EBL x WBT     |              | 2                   | Low               | Medium       | 10                            | 12.4                | 31%        | 680                     | 14.2                | 22%        | 316                     |
|          |                              | WBL x EBT     |              | 2                   | Low               | Medium       | 17                            | 12.4                | 80%        | 680                     | 14.2                | 69%        | 316                     |

# Benefit Cost Tool of VRU Infrastructure

- Excel tool developed by GDOT
- Used for midblocks with no crosswalk
- Incorporates:
  - Pedestrian crash history
  - Near Miss Data
  - Type of Counter Measure
- Predicted Crash Cost Formula
  - $\sum V^2 * E^{(-PET/1.5)} * E$
  - Based on 64 locations of near miss data

|    | B                                                                  | C                                             | D                          | E                                  |
|----|--------------------------------------------------------------------|-----------------------------------------------|----------------------------|------------------------------------|
| 1  | Benefit Cost Analysis for Pedestrian Improvements - 4 Step Process |                                               |                            |                                    |
| 2  |                                                                    |                                               |                            |                                    |
| 3  | Legend                                                             |                                               |                            |                                    |
| 4  | XXXX                                                               | Input your data into this cell                |                            |                                    |
| 5  | XXXX                                                               | Cell contains a formula                       |                            |                                    |
| 6  | XXXX                                                               | Cell references another cell                  |                            |                                    |
| 7  | XXXX                                                               | Heading                                       |                            |                                    |
| 8  | XXXX                                                               | Cell used to explain contents of another cell |                            |                                    |
| 9  |                                                                    |                                               |                            |                                    |
| 10 | Crash Data                                                         |                                               |                            |                                    |
| 11 | 5 years of crash data preferred                                    | Start Date                                    | End Date                   | Enter date in format<br>XX/XX/XXXX |
| 12 | Date range<br>of crash data                                        | 1/1/2018                                      | 12/31/2024                 |                                    |
| 13 | Severity                                                           | Severity<br>Abbreviation                      | Crash Cost                 | Pedestrian<br>Crashes              |
| 14 | Fatal Crash                                                        | K                                             | \$12,450,000               |                                    |
| 15 | Serious Injury                                                     | A                                             | \$2,740,000                |                                    |
| 16 | Visible Injury                                                     | B                                             | \$600,000                  | 1                                  |
| 17 | Complaint of Injury                                                | C                                             | \$129,000                  |                                    |
| 18 | Property Damage Only                                               | O                                             | \$28,000                   | 1                                  |
| 19 |                                                                    |                                               |                            |                                    |
| 20 | Midblock VRU Conflict Data                                         |                                               |                            |                                    |
| 21 | Number of Conflicts in the following PET or TTC Range (Sec)        |                                               | Number of Conflicts/24 hrs |                                    |
| 22 | 0                                                                  | 0.25                                          |                            |                                    |
| 23 | 0.26                                                               | 0.5                                           |                            |                                    |
| 24 | 0.51                                                               | 0.75                                          |                            |                                    |
| 25 | 0.76                                                               | 1                                             |                            |                                    |
| 26 | 1.01                                                               | 1.25                                          |                            |                                    |
| 27 | 1.26                                                               | 1.5                                           |                            |                                    |
| 28 | 1.51                                                               | 1.75                                          | 3                          |                                    |
| 29 | 1.76                                                               | 2                                             | 5                          |                                    |



# Benefit Cost Tool of VRU Infrastructure

- Predicted Crash Cost Formula
  - $\sum V^2 * E^{(-PET/1.5)} * E$
  - Best performing formula
  - Regression analysis compared 64 locations of near miss data to VRU crash data
- Conducts Benefit Cost Ratio of 16 types of VRU counter measures
  - RRFB
  - PHB
  - Median
  - Etc.

|    |                                 |                                                                                  |                                           |
|----|---------------------------------|----------------------------------------------------------------------------------|-------------------------------------------|
| 41 | Countermeasure Name             | Service Life                                                                     | Capital recovery is based on service life |
| 42 |                                 |                                                                                  | Capital Recovery Factor                   |
| 43 | Pedestrian Hybrid Beacon        | 15                                                                               | 0.102                                     |
| 44 | User over ride of values        |                                                                                  |                                           |
| 46 |                                 |                                                                                  |                                           |
| 47 | Cost                            |                                                                                  |                                           |
| 48 |                                 | It is recommended that you define your own cost. Predefined costs are high level | User override values                      |
| 49 | Engineering                     | \$7,500.00                                                                       |                                           |
| 50 | Right of Way                    | \$0.00                                                                           |                                           |
| 51 | Utility                         | \$0.00                                                                           |                                           |
| 52 | Construction                    | \$175,000.00                                                                     |                                           |
| 53 | Total                           | \$182,500.00                                                                     |                                           |
| 54 |                                 |                                                                                  |                                           |
| 55 |                                 |                                                                                  |                                           |
| 56 | Expected Benefit Cost B/C       |                                                                                  |                                           |
| 57 | Observed Life Cycle Benefit     | \$49,323.55                                                                      |                                           |
| 58 | Predicted Life Cycle Benefit    | \$254,004.07                                                                     |                                           |
| 59 | Expected Life Cycle Benefit (B) | \$151,663.81                                                                     |                                           |
| 60 | Life Cycle Cost (C)             | \$18,615.00                                                                      |                                           |
| 61 | B/C                             | 8.15                                                                             |                                           |

# **Project for DeIDOT**

**August, 2025**

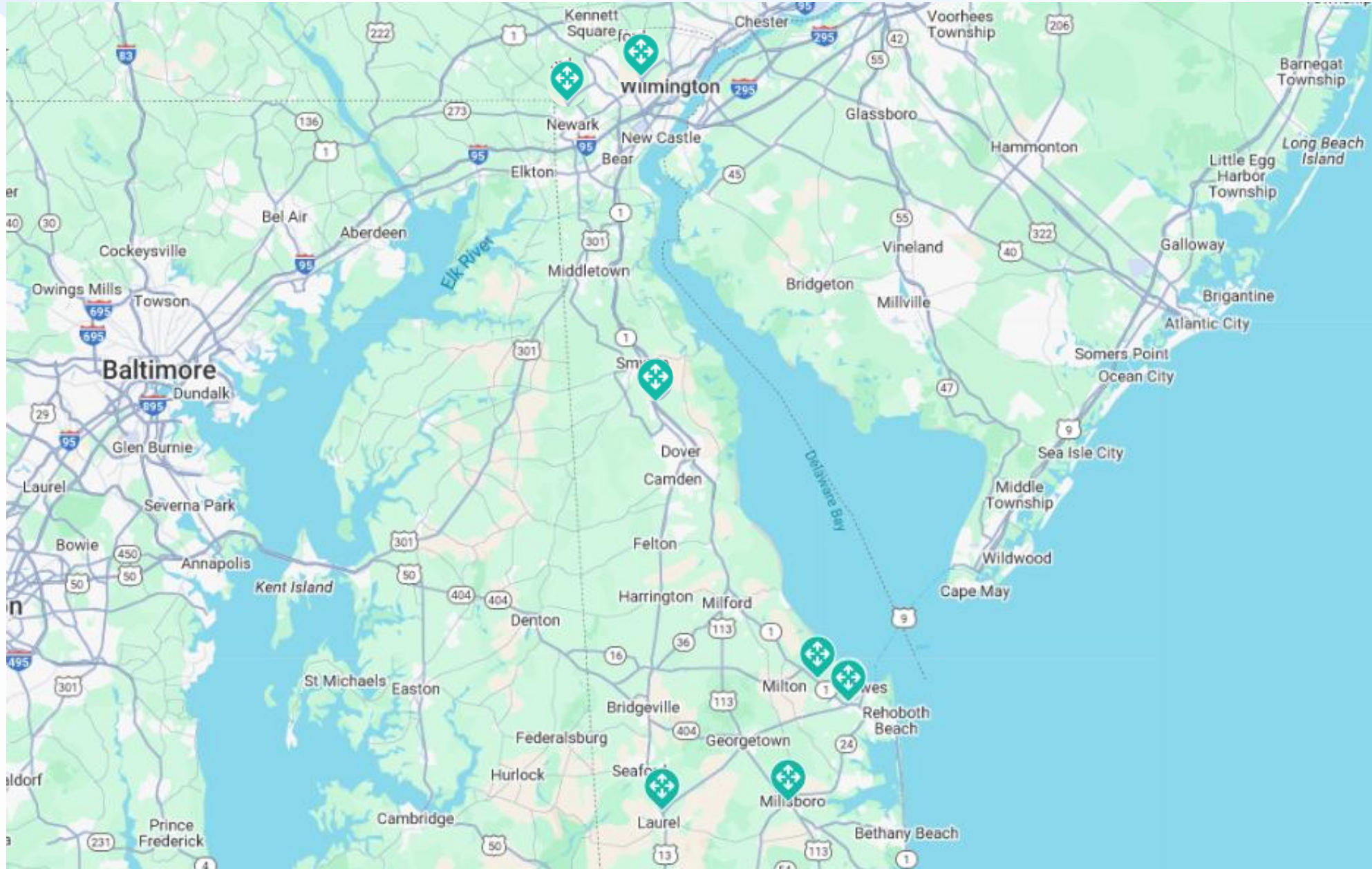
# Locations in Study

- 1. College Ave – Delaware Ave**
- 2. N Walnut St – E Front St**
- 3. US 13 – Hickory Ridge Rd/Spring Meadow Dr**
- 4. Belltown Rd/Salt Marsh Blvd – Rd 285/Plantation Rd**
- 5. Belltown Rd – US 9**
- 6. Hudson Rd / Steamboat Landing Rd – DE 1**
- 7. US 13 – US 9**
- 8. Delaware Ave – SR 24 (Laurel Rd)**

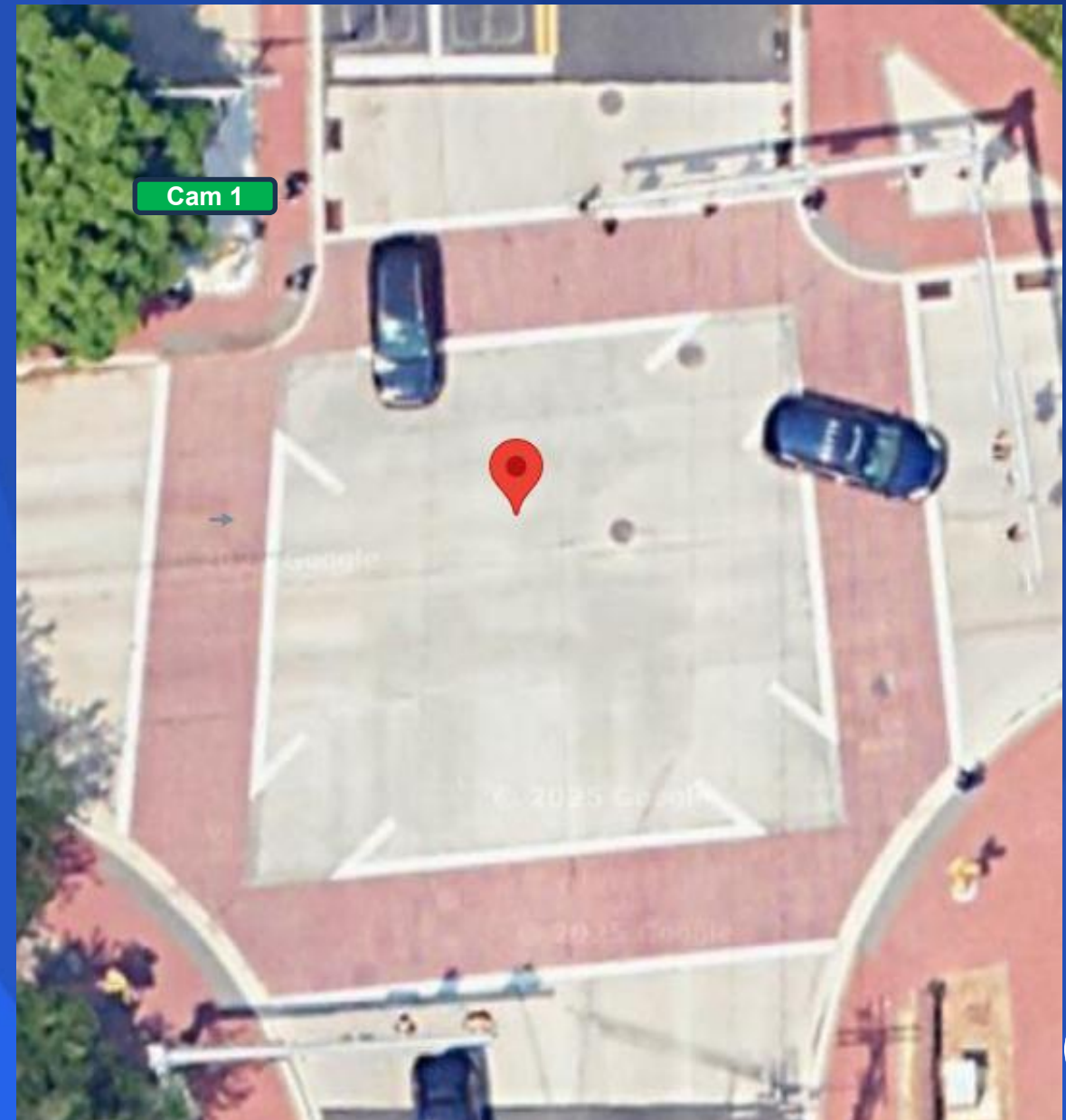
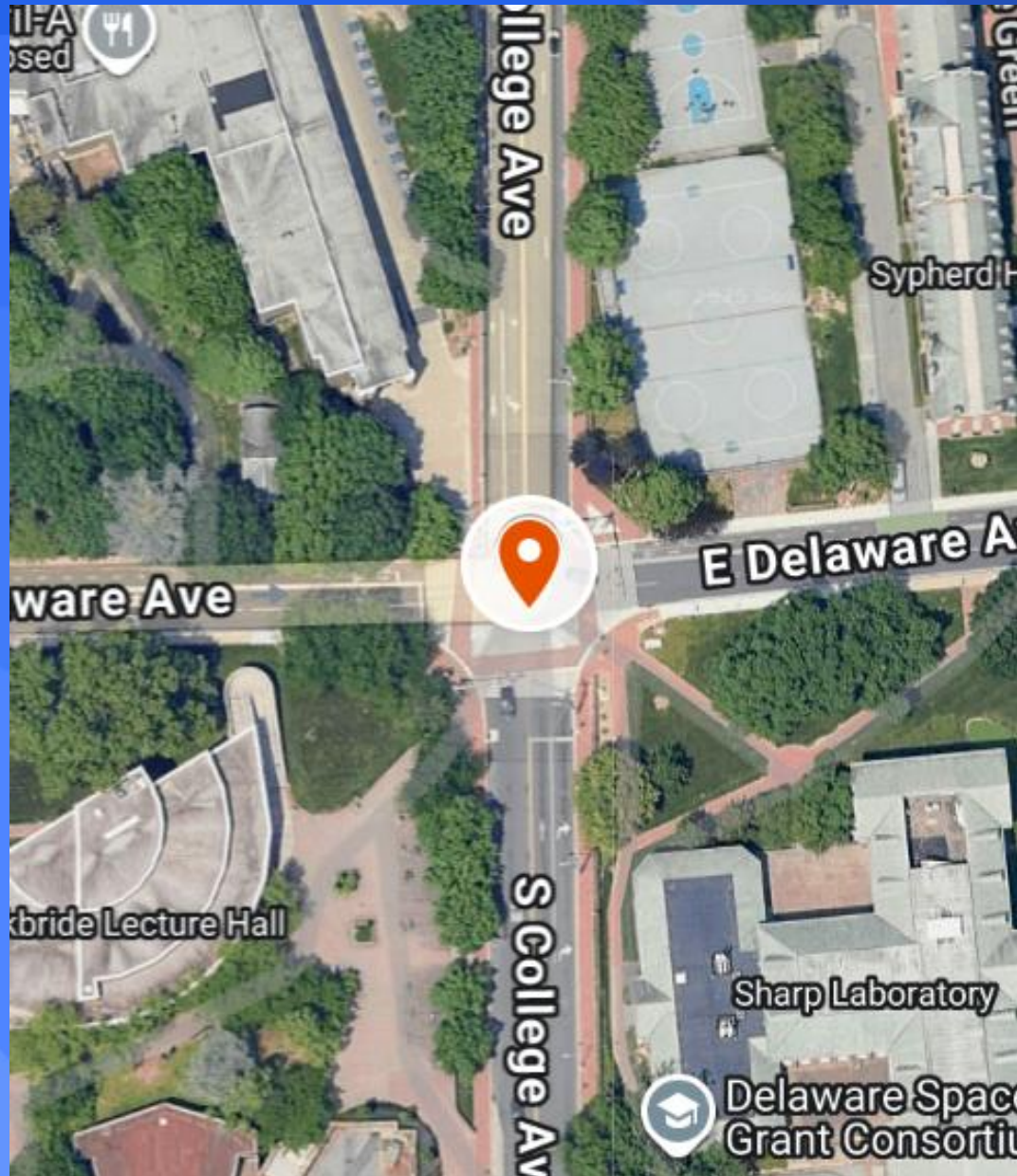
# Location Map



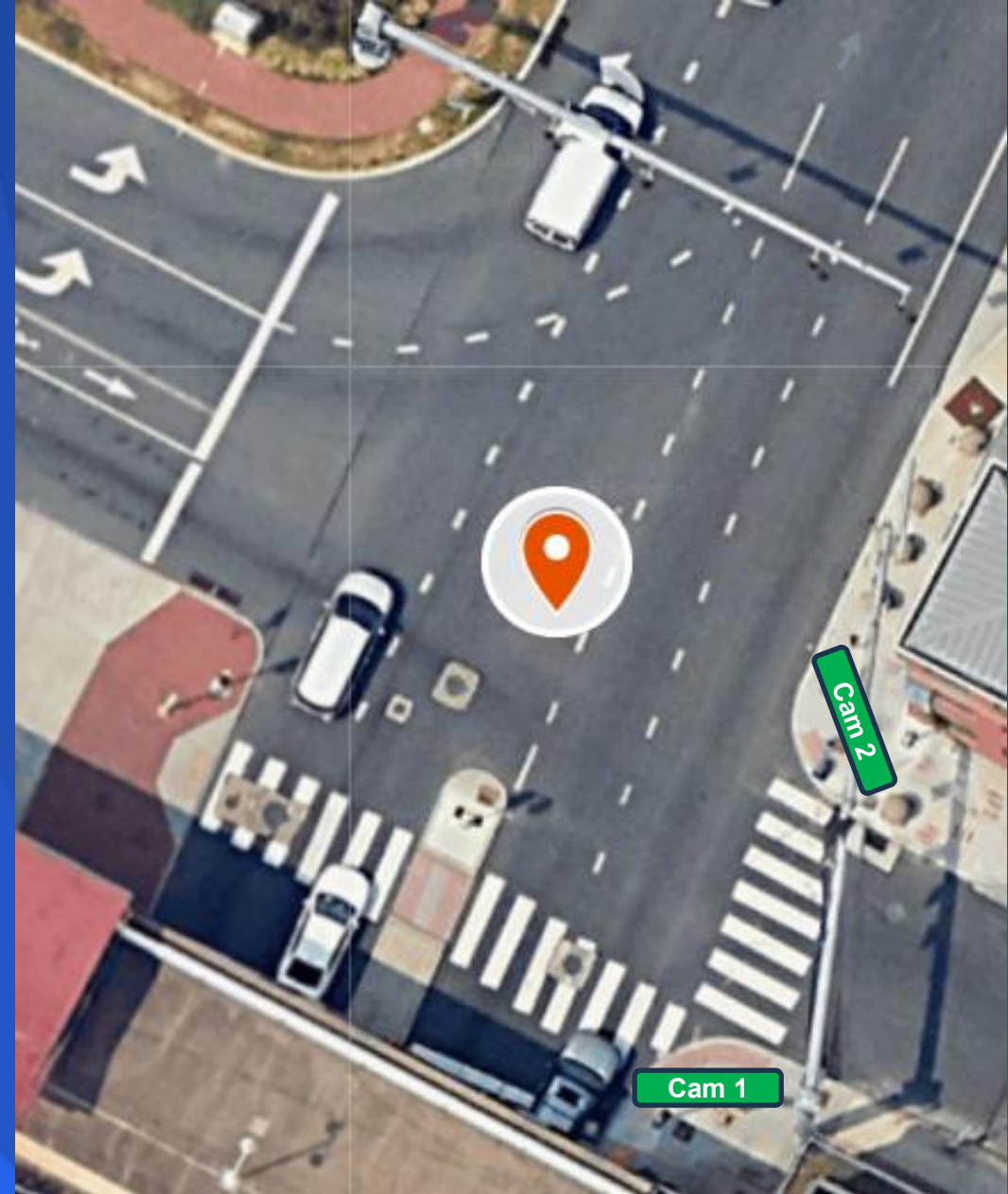
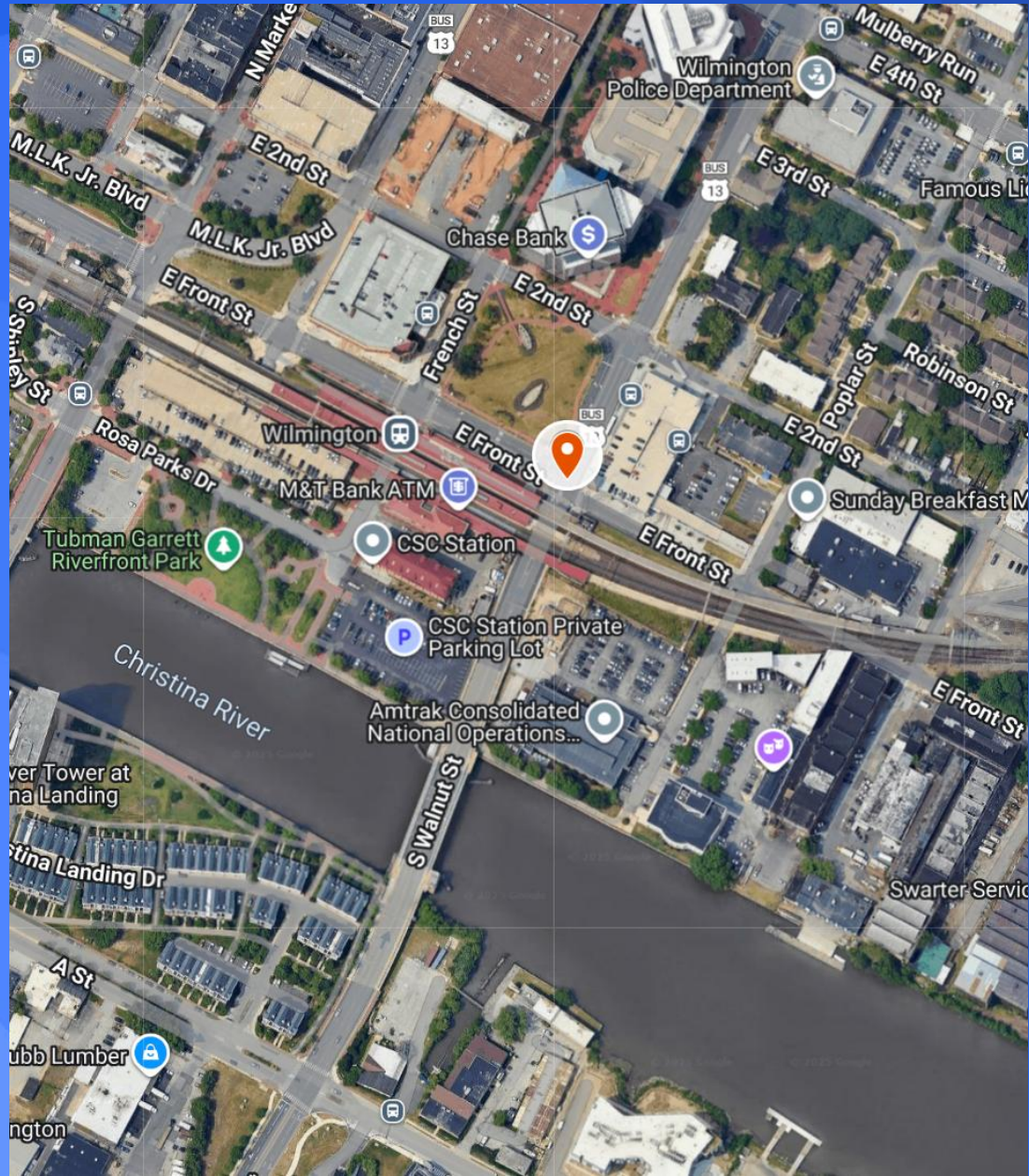
TRUE DATA TO IMPROVE MOBILITY



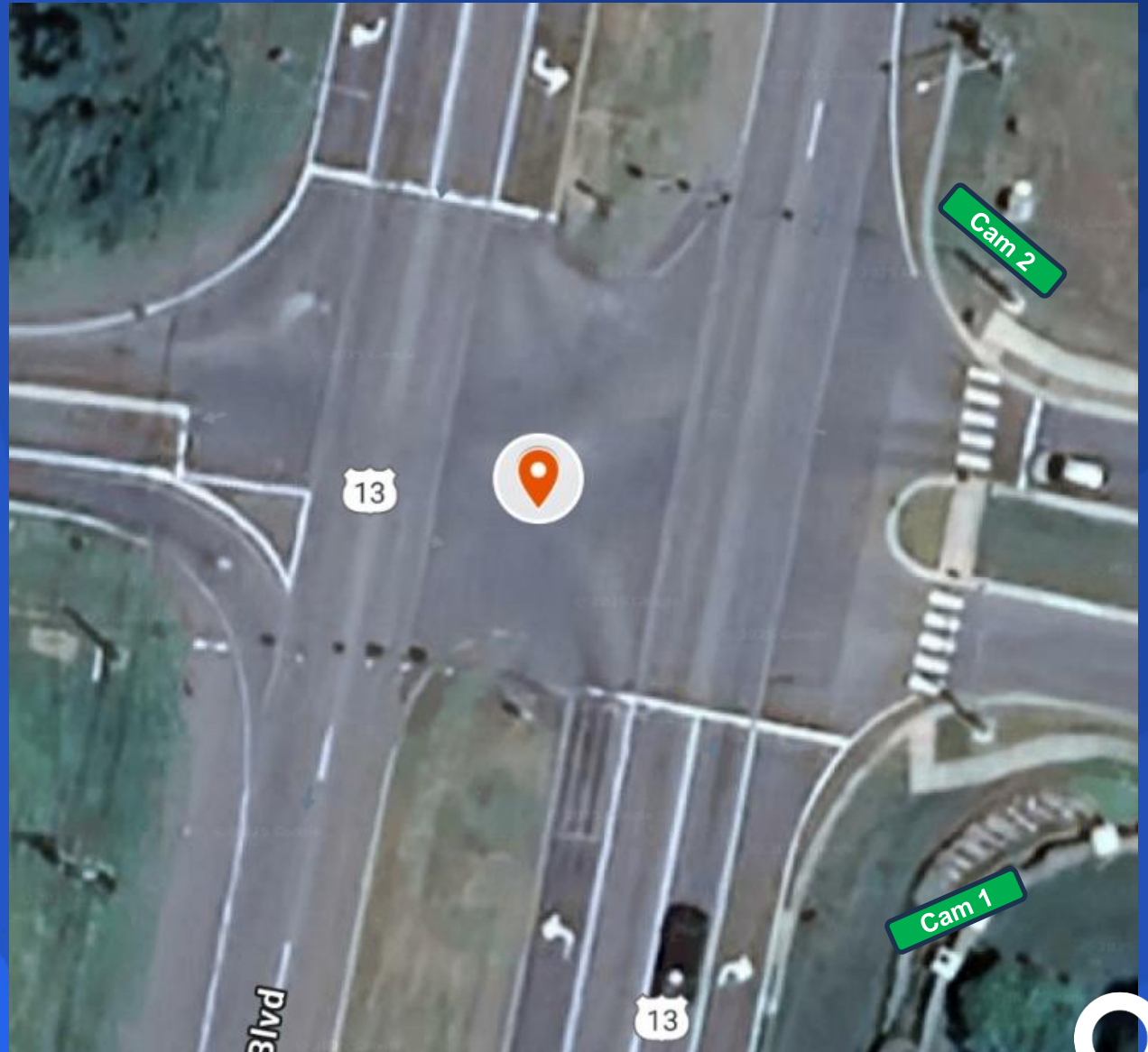
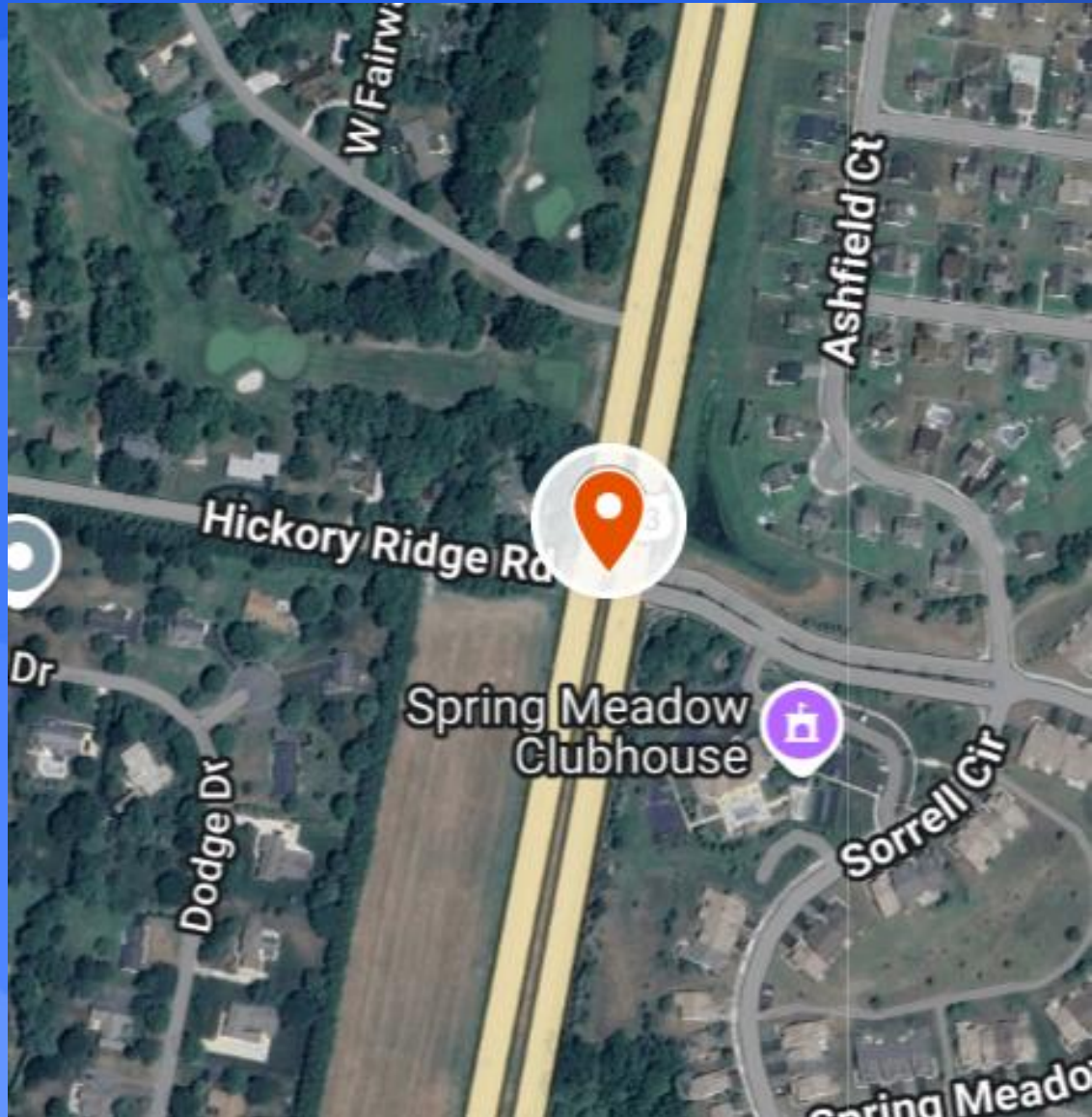
# College Ave – Delaware Ave



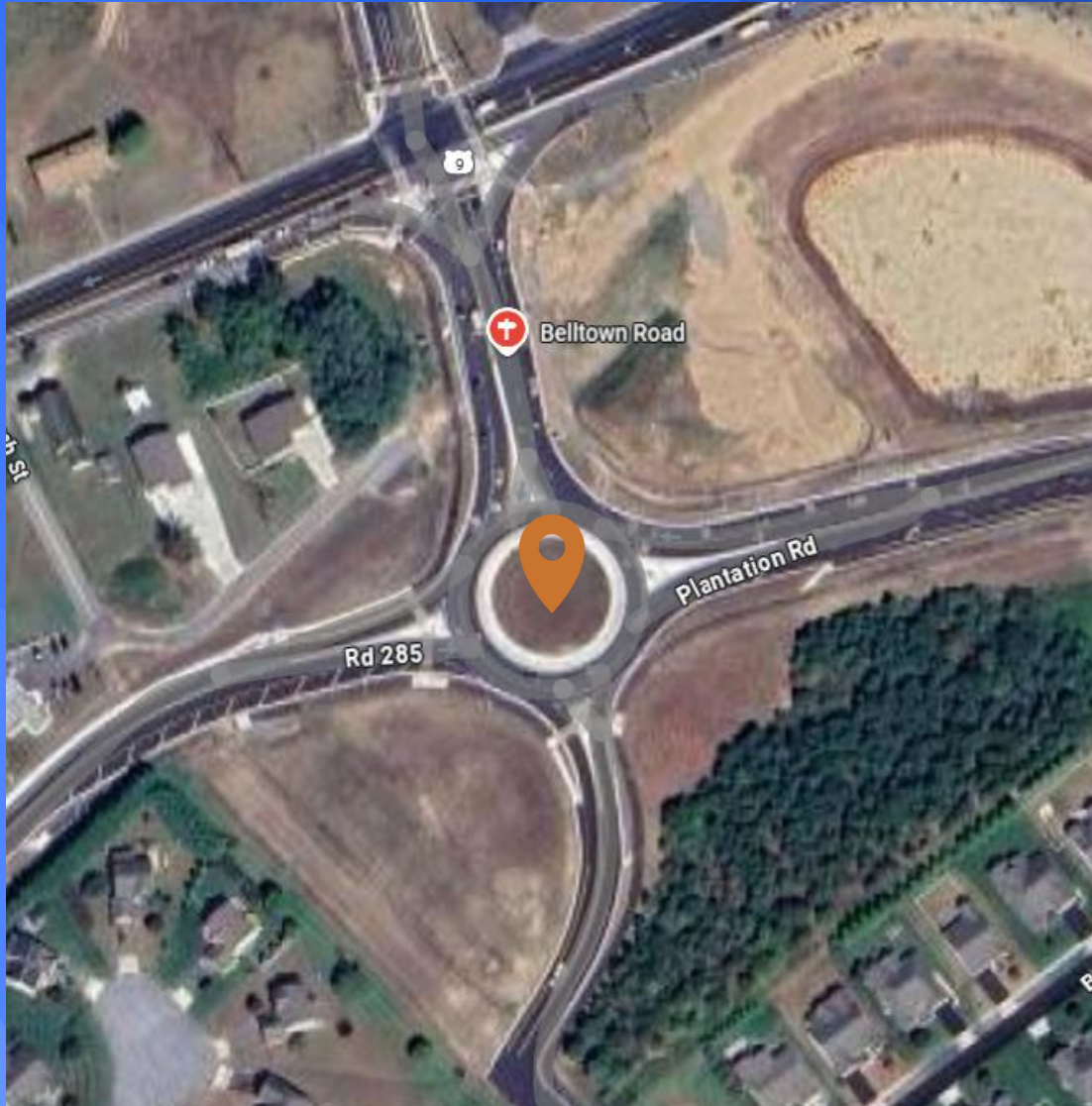
# N Walnut St – E Front St



# US 13 – Hickory Ridge Rd/Spring Meadow Dr



# Beltdown Rd – Salt Marsh Blvd & Rd 285/Plantation Rd



# Roundabout – Lewes, DE



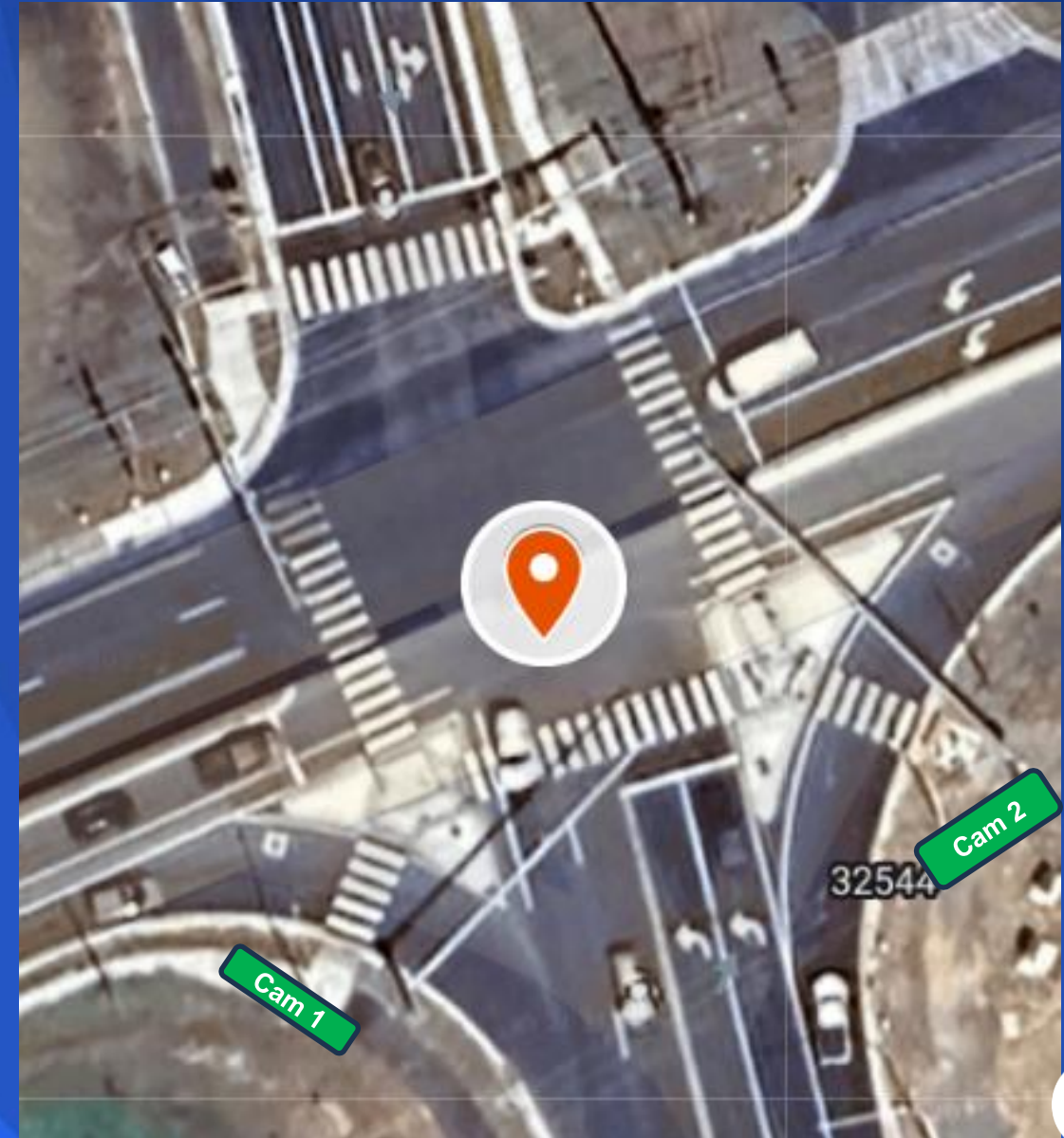
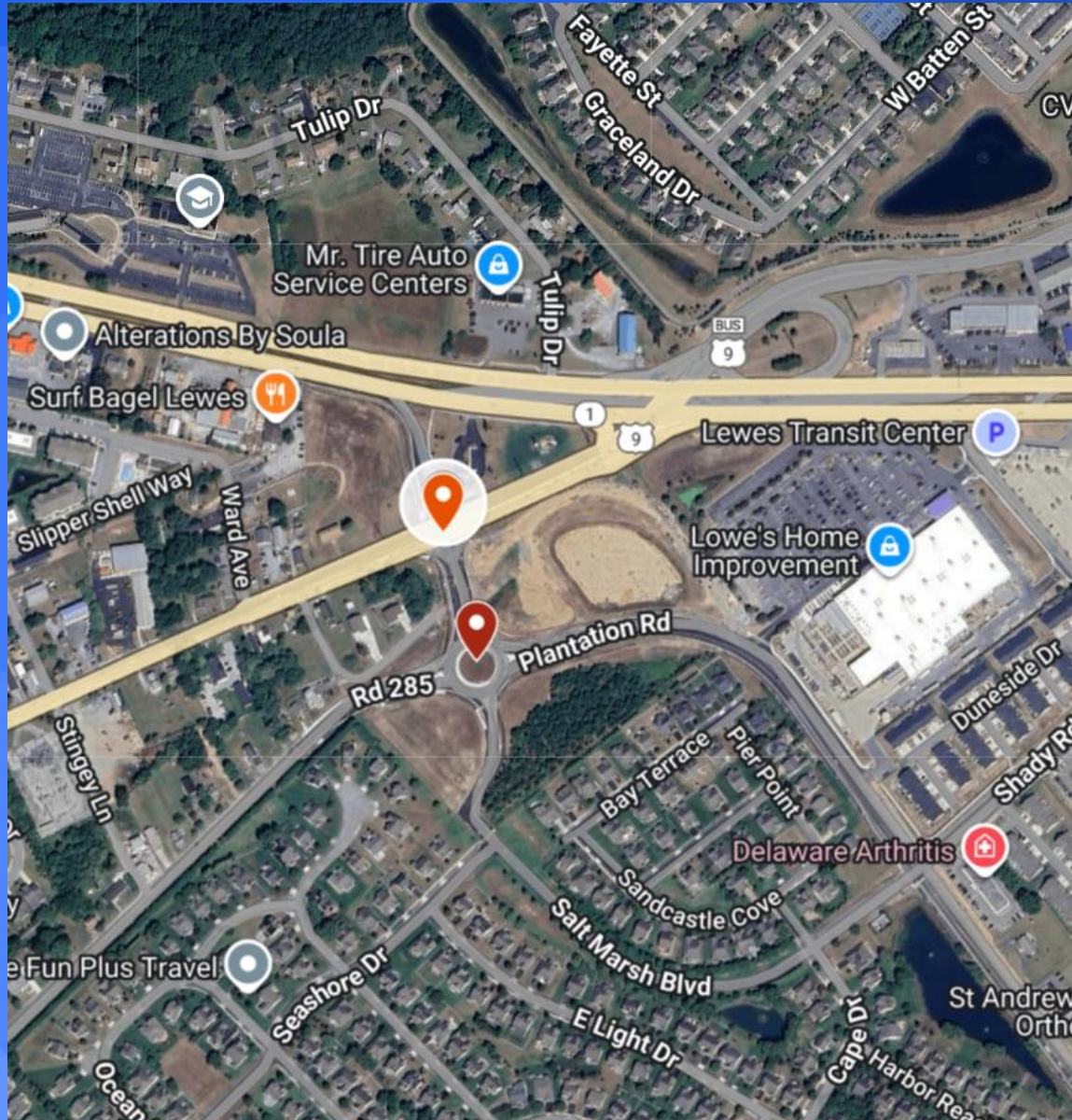
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# Roundabout – Lewes, DE

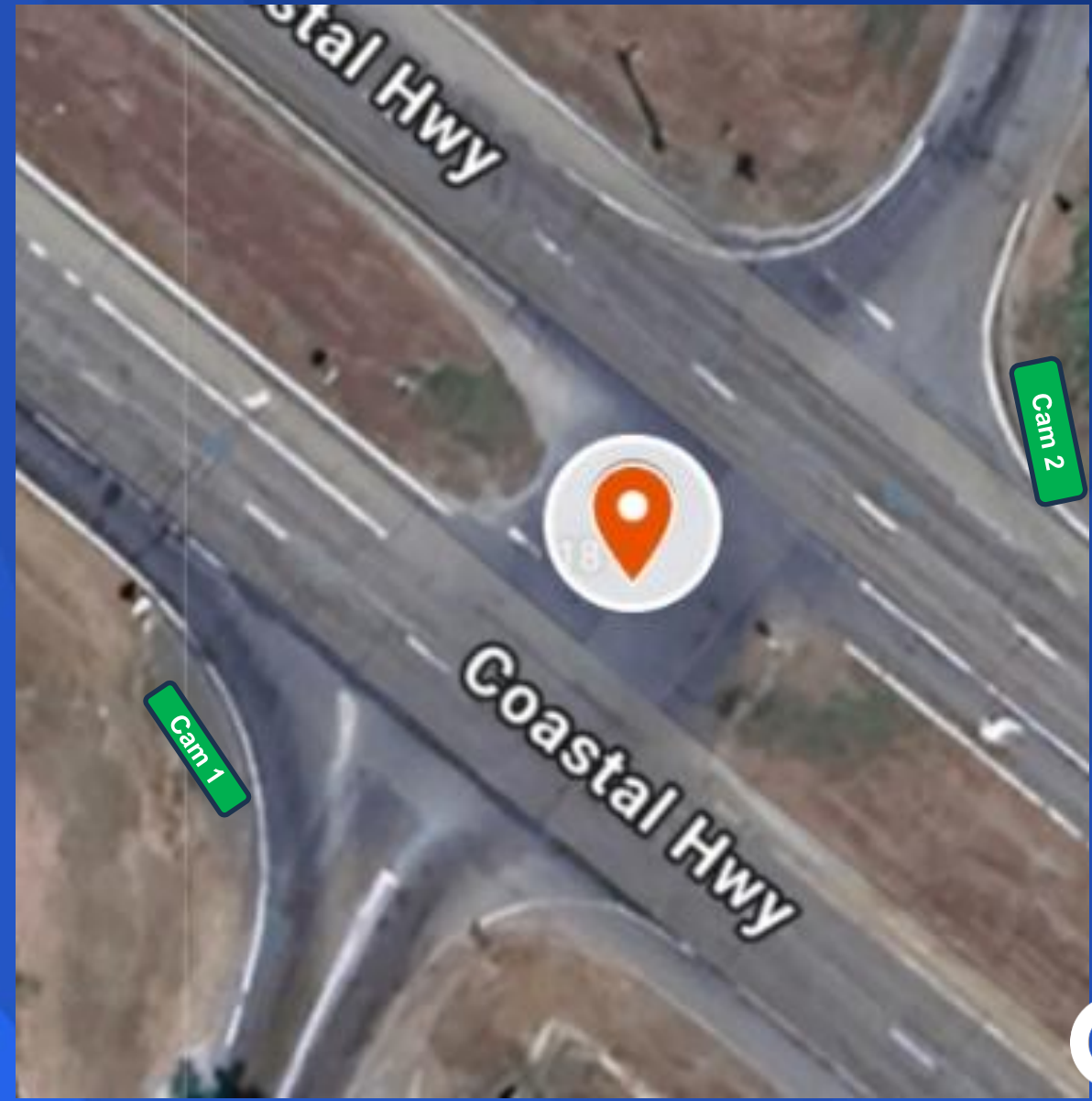
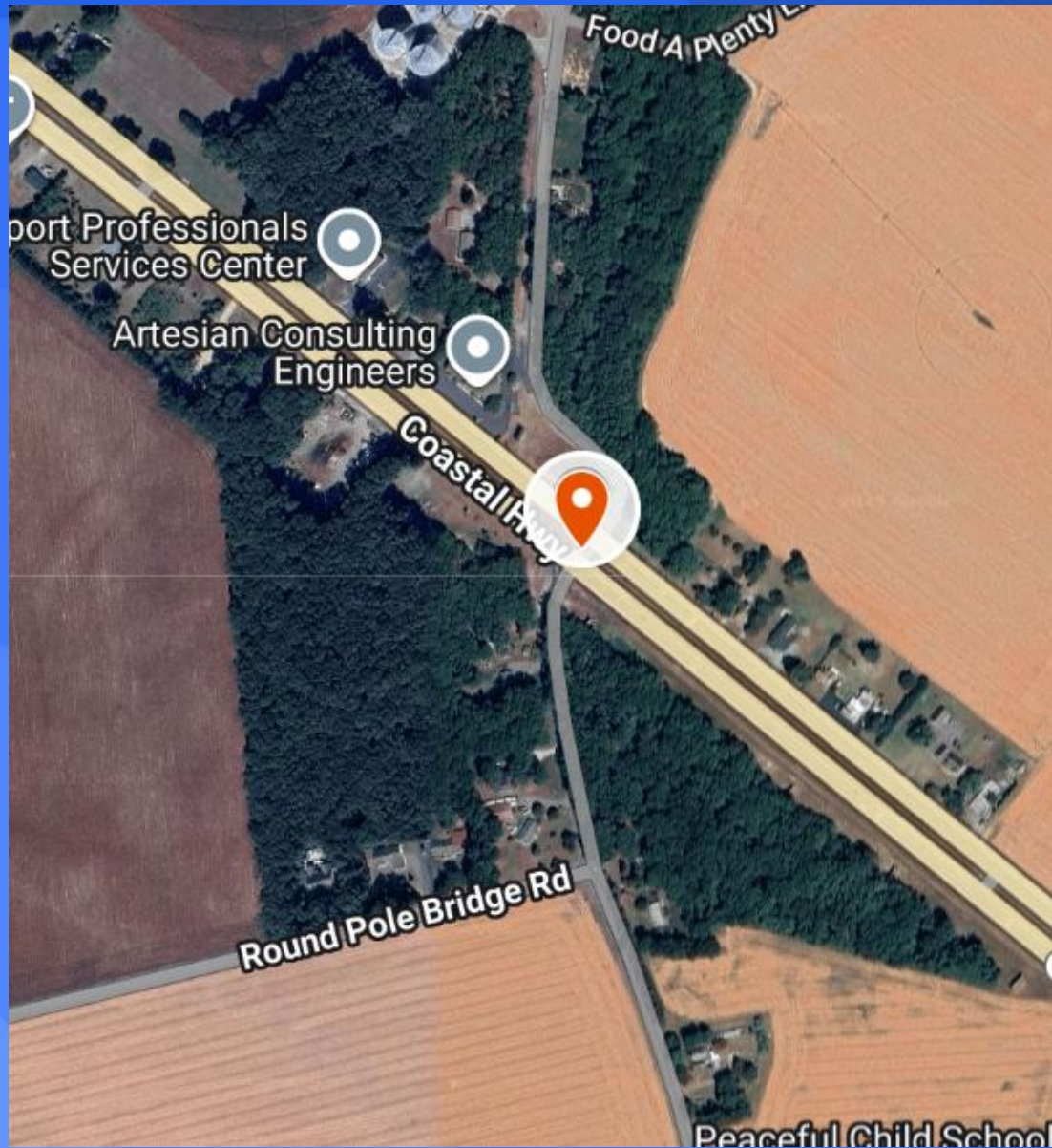


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# Beltown Rd – US 9



# Hudson Rd / Steamboat Landing Rd – DE 1



# Hudson Rd – Steamboat Landing Rd

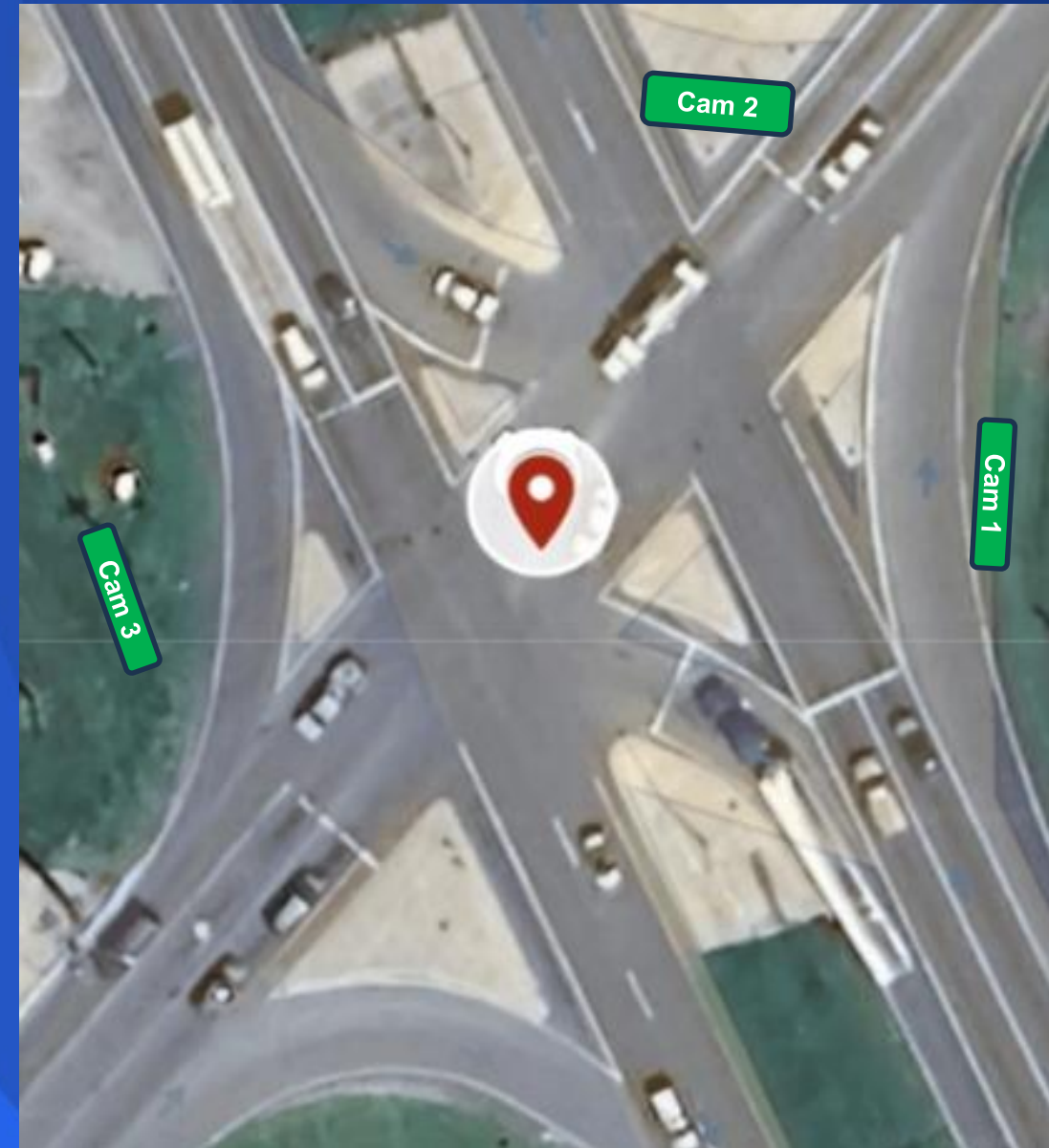
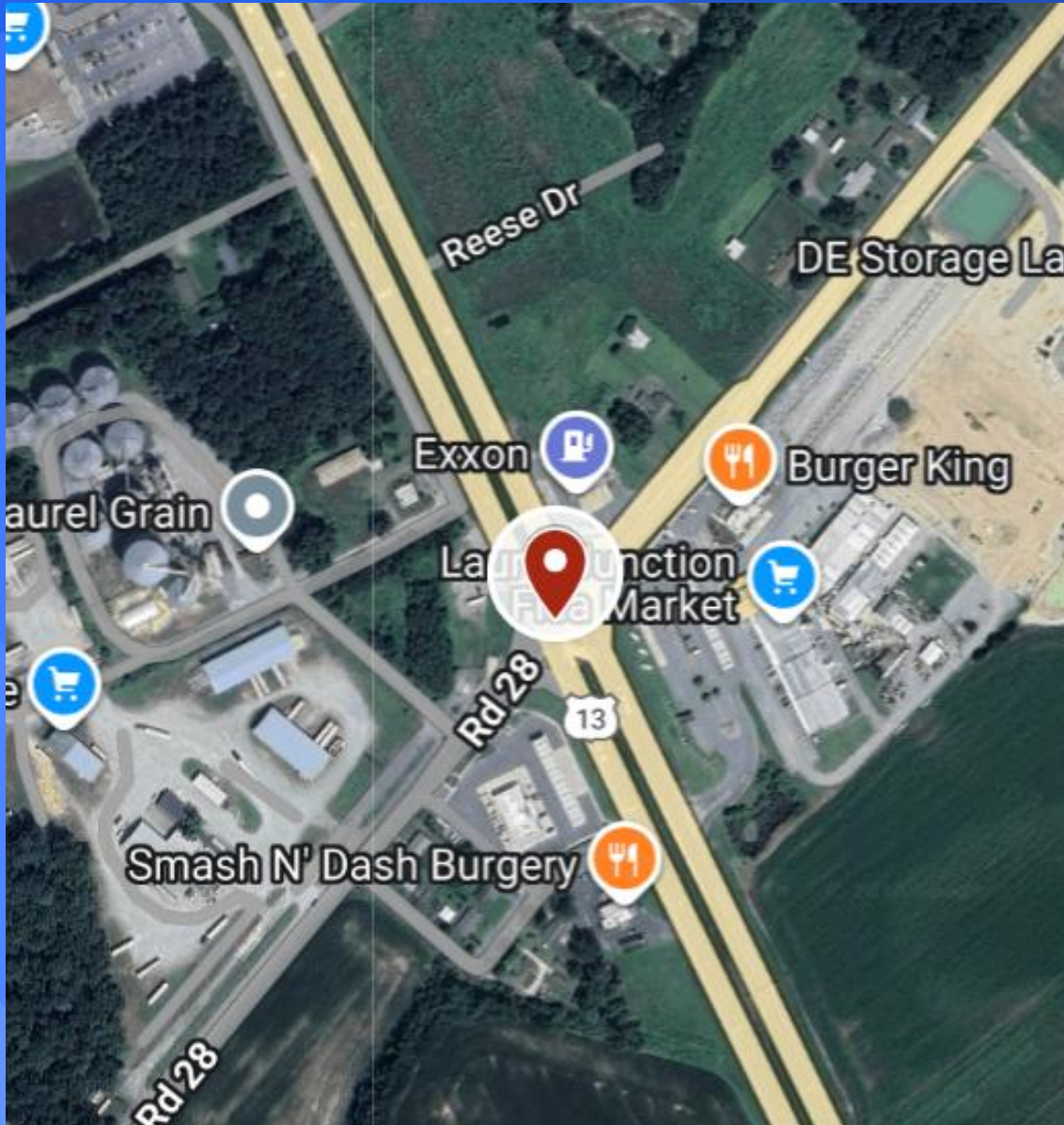


# Hudson Rd – Steamboat Landing Rd

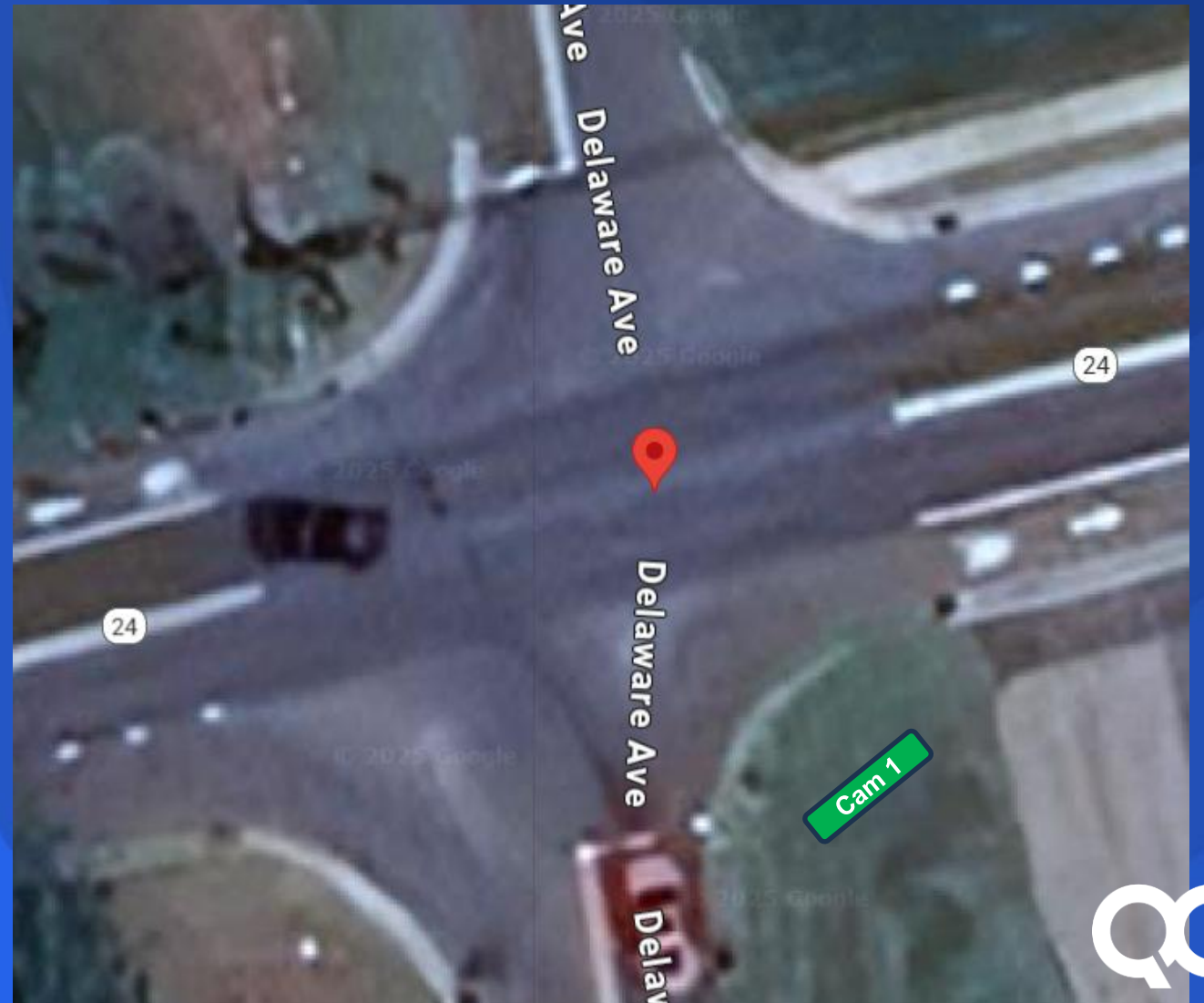
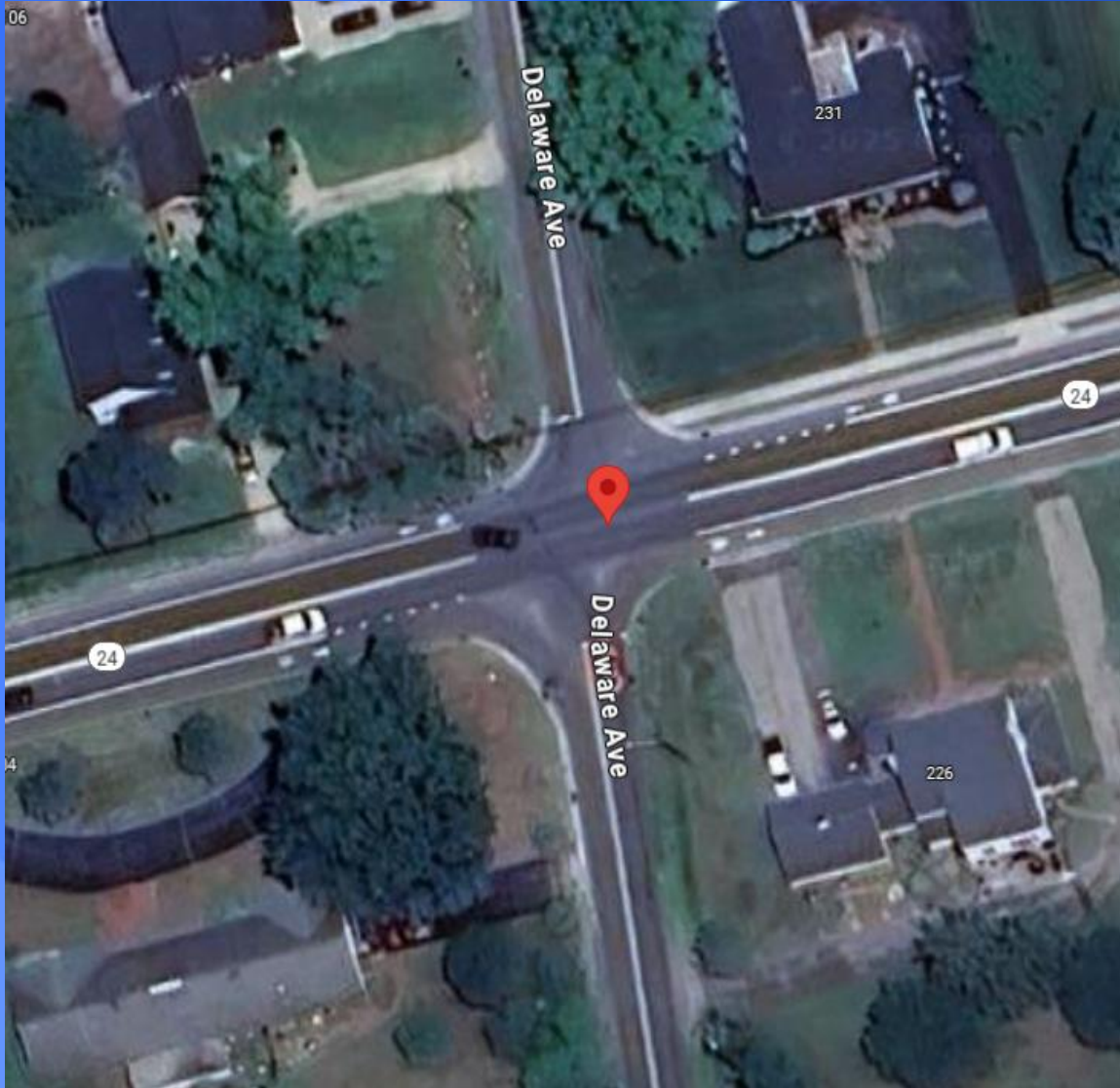


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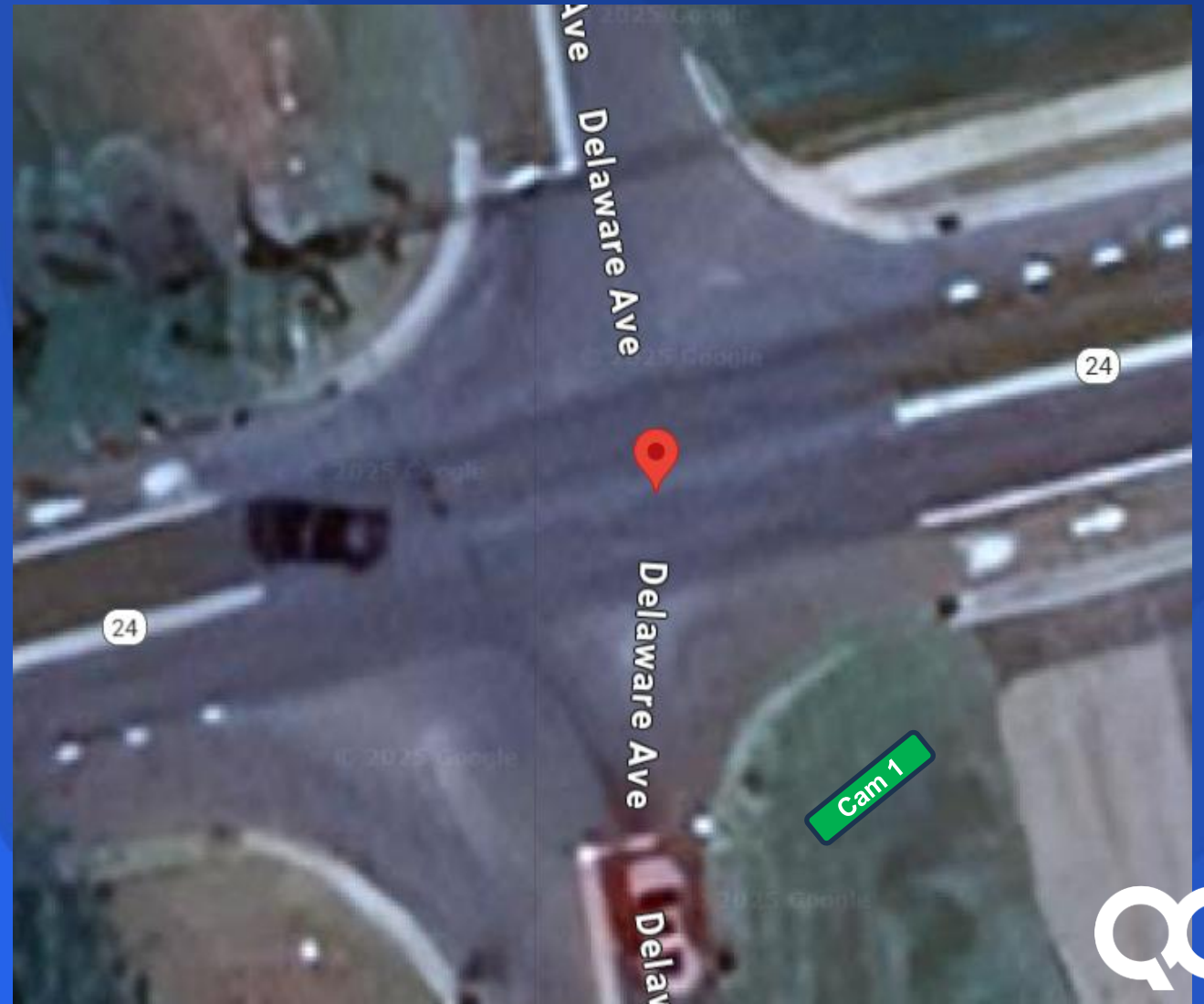
# US 13 – US 9



# Delaware Ave – SR 24 (Laurel Rd)



# Delaware Ave – SR 24 (Laurel Rd)



# THANK YOU!

